AN INVESTIGATION OF THE RELATIONSHIP BETWEEN LEARNING STYLES OF FIFTH GRADE ELEMENTARY SCHOOL STUDENTS AND THEIR MUSIC COMPOSITION PROCESSES AND PRODUCTS

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COMPOSITION PROCESSES AND PRODUCTS

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Bachelor of Science, Music Education, Western Connecticut State University, 1993
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ABSTRACT

This researcher sought to investigate the relationship between perceptual learning modalities of fifth grade elementary school students and their compositional processes and products. Music composition, at the elementary school level, has been studied for many years, as the creation of new music can give students a more active role in learning, and in many cases, a greater understanding of musical concepts than can performing and responding alone. However, there is no research to suggest that learning styles play an important role in music composition processes and products of the elementary school student.

The purpose of this study was to determine if a relationship existed between students’ preferred learning modalities and their music composition products, and if students articulated a heightened sense of confidence in the process of composing when creating music through their preferred learning modalities. Research indicates that innovative techniques to music composition are necessary to allow students opportunities to think in sound. It is agreed that while there may be multiple ways of teaching students to compose original music, often the methods of doing so dampen the motivation and creativity of children by being too structured to allow exploration and the development of musical decision-making, or, are so unstructured that they frustrate the children.
This study utilized the qualitative design, as the intent was to examine not only the products developed by the subjects, but the processes the subjects went through while composing. Each subject (n = 11) composed four musical compositions, initiated through each of the four learning modalities, (visual, auditory, tactual, and kinesthetic). Compositions were scored using a 6-point rating scale on the dimensions of *aesthetic appeal, originality, craftsmanship, and proportion* by independent music experts.

Following the music composition tasks, subjects completed a learning styles instrument, *Learning Style: The Clue to You! (LS:CY!)*, to detect preferred perceptual modalities. The perceptual modality scores derived from the *LS:CY!* were then compared to the scores from the music composition tasks. During the second phase of this study, semi-structured interviews allowed the researcher insight into subjects’ music composition processes as they related to preferred learning modalities.

An implication of this study is that by studying the optimal conditions by which students achieve success in music composition, educators might design appropriate composition tasks and assessments to further students’ musical understanding.
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AN INVESTIGATION OF THE LEARNING STYLES OF FIFTH GRADE ELEMENTARY SCHOOL STUDENTS AND THEIR MUSIC COMPOSITION PROCESSES AND PRODUCTS

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2010
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DEDICATION

This work is dedicated to:

*Lilliana Kathryn Navarra*

Lilli is my favorite young composer, as well as my beautiful and brilliant granddaughter.

Her creative spirit, love for music, and love for learning, inspire me daily.
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CHAPTER ONE: INTRODUCTION

Music composition and improvisation comprise the creating strand of the artistic processes: creating, responding and performing (Persky, Sandene, & Askew, 1998). Many elementary school music programs focus primarily on performing and responding, compromising the creating strand, which is the one that may truly develop music literacy; defined here as the ability to manipulate sounds and silences, in an organized way, to achieve deeper understanding of music (Cooper, 2005; Glover, 2000; Stephens, 2003). As music is a performance art form, some educators may not feel that creating is an important facet of a comprehensive music education, however, the National Standards for Music, adopted in 1994 by the National Association of Music Educators (MENC), provide for the inclusion of improvisation and composition as vital components of a comprehensive music education for every child.

Learning styles research reveals the importance of recognizing students’ preferred modalities in learning new and difficult information. As music composition is both new and difficult each time it is approached, understanding students’ preferred learning modalities and developing multiple opportunities for students to compose through these modalities may afford many more students the opportunity to experience success in music composition.

Research studies related to children’s music compositions indicate that the nature of the compositional task affects the composer’s work processes (Wiggins, 2003); however, no studies to date have analyzed the possible relationship between elementary school students’ preferred learning styles and their music composition processes and products. It was the intent of this study to determine whether or not such a relationship exists.
Rationale

Music literacy is the ability to manipulate the elements of music, in an organized way, to achieve a greater understanding of music. In the study of languages, children are often taught to speak, read, and then write. Research studies in language arts, however, indicate that children should write often while they are learning to read, and even before they learn to read, since we can write anything we can speak (Elbow, 2004). This philosophy can be applied to the language of music as well, but rather than writing words, students are writing, reading, and performing their own music. Following the definition of composition as it relates to this study, the “intent of the creator” (Wiggins, 2003, p. 141) may be best represented by alternate notation, rather than with standard music notation. Standard notation, like words on a page, is merely the symbolic representation of meaning, not the sound itself. As Swanwick (2001) states, “Music is a primary symbol system. Notations, verbal descriptions or graphic representations are secondary systems, offering a translation from one representational domain to another” (p. 232). Therefore, it would seem logical to find ways to allow and encourage students to develop notation that they can work with. This is not to say that students should not be required to learn standard notation, but rather, it should not be the most important qualification for composing.

The idea of children composing is certainly not a new concept. For decades, a variety of programs have been implemented to attend to the needs of students with regards to composition. These programs have had tremendous value in placing the importance of student composition into the professional literature (Rinehart, 2002). However, too often the research in the literature does not enter into classroom instruction, thereby having little to no benefit on student learning.

One reason that composition is not as commonplace in elementary school music education may be that when one thinks of children as composers, child prodigies often come to
mind. The danger of the preconceived notion that only the musically gifted can compose original music leaves out far too many in the population. The charge for elementary school music educators is not so much to teach an advanced theory of composition, but rather to assist children in developing the skills, dispositions, and knowledge necessary to capture their own musical ideas (Cooper, 2005; Webster, 1989). However, the tasks and activities provided to students can sometimes discourage motivation and dampen creativity when they are too far beyond the technical abilities of the student, too open-ended as to overwhelm, or too strictly guided by the teacher to allow for exploration by the child (Hickey, 2003).

Many researchers (Barrett, 1996; Bennett, 1975; Burnard, 2000; Burnard & Younker, 2004; Glover, 2000; MacDonald, 2006) have analyzed the processes by which children compose original music, as well as children’s music composition products. However, no studies to date have examined the possible relationship between students’ preferred learning modalities and the types of composition tasks that may best demonstrate students’ ability to create meaningful musical constructions.

**Statement of the Problem**

Although research supports the inclusion of composition in music curricula (Burnard & Younker, 2004; Gromko, 2003; Kaschub, 1997; Rinehart, 2002; Swanwick, 2002), there is little agreement about the optimal conditions through which students find success in music composition. The problem this study addressed was that by finding a relationship between students’ learning styles and activities that match their preferred learning modalities, elementary school music educators may more effectively engage students in composition tasks.
Potential Benefits of the Study

In many school music programs, children sing and play the compositions of others. Many students will even become fluent readers of musical notation and excellent performers. Learning the music of master composers is important to the development of musicianship (just as reading well written books is important to recognizing authors’ craft); however, creating original compositions allows students opportunities to gain knowledge of music through active participation in its development from a germinal idea to a realized product (Webster, 2003b). Therefore, through studying the optimal conditions by which students achieve success in music composition, educators can design and develop appropriate composition tasks and assessments to further students’ musical understanding (Hickey, 1999).

Research in learning styles indicates that when students work within their preferred modality, greater success is achieved (Dunn, Beaudry, & Klavus, 1989; Tendy & Geiser, 1998-1999). This concept has not been previously examined in the area of music composition and may be very beneficial to allowing children the benefit of being active creators of music, rather than consumers of music.

Brief Definition of Key Terms

1. Artistic Processes are the three processes (creating, responding, and performing) that are necessary for developing artistic understanding (Persky, Sandene, & Askew, 1998).

2. Creating refers to expressing ideas and feelings in the form of an original work of art; for example, a dance, a piece of music, a dramatic improvisation, or a sculpture (Persky, Sandene, & Askew, 1998).
3. **Responding** refers to observing, describing, analyzing, and evaluating works of art (Persky, Sandene, & Askew, 1998).

4. **Performing** refers to performing an existing work, a process that calls upon the interpretive or re-creative skills of the student (Persky, Sandene, & Askew, 1998).

5. **Music Composition** is “a series of interrelated musical ideas that makes a statement of its creator’s intent” (Wiggins, 2003, p. 141).

6. **Creative Products** are products that are creative to the extent that observers who have familiarity with the domain in which the products are created independently agree that they are creative (Amabile, 1982).

7. **Learning Style** is “a biologically and developmentally imposed set of personal characteristics” (Dunn, Beaudry, & Klavus, 1989, p. 50).

**Related Literature**

The literature review in Chapter Two is divided into three sections: Jerome Bruner’s theory of instruction, studies of children’s music composition processes and products, and research into learning styles. In Chapter Two, Bruner’s work is presented first as the theoretical lens through which the study was approached. Second, studies involving music composition processes and products are presented, as domain-specific literature reveals current understanding, or lack of, with the teaching and learning of music composition. Finally, a literature review of learning styles research demonstrates the importance of recognizing children’s ways of approaching learning tasks and processing new and difficult information. The next section highlights key concepts from the literature that are developed in Chapter Two.
Jerome Bruner’s Theory of Instruction

A major theme in the theoretical framework of Bruner is the importance of finding the most “appropriate version of any skill or knowledge” (Bruner, 1966, p. 35) to be taught, however preparatory the version may be, and the belief that anything can be taught, to anyone, at any age, providing the environments to optimize learning are arranged appropriately. Bruner describes the development of this construct as exploration of alternatives.

Exploration of alternatives. Exploration of alternatives is described as having three components: activation, maintenance, and direction. During activation, the learner is enticed into the learning process. There is a degree of curiosity that provokes activation. According to Bruner (1966), “The major condition for activating exploration of alternatives in a task is the presence of some optimal level of uncertainty” (p. 43). Once activation has occurred, maintenance is necessary to further exploration. During the process of maintenance, the benefits from exploring alternatives outweigh the risk. Bruner (1966) states, “The consequences of error, of exploring wrong alternatives, should be rendered less grave under a regimen of instruction...” (p. 44). Bruner (1966) describes direction as “a sense of the goal of a task and a knowledge of the relevance of tested alternatives to the achievement of that goal” (p. 44).

Modes of representation. Another theme in the theoretical framework of Bruner is that there is a sequence of representational systems that children acquire as they strive to make meaning of their worlds (Driscoll, 2005). Bruner (1964) identifies these modes of representation as enactive representation, iconic representation, and symbolic representation. Bruner (1964) posits that it is through these three modes of representation that information gained from experience is coded and processed, making memory usable, rather than simply the storage of information. The modes of representation, according to Bruner (1964), are “each depending
upon the previous one for its development, yet all of them remaining more or less intact throughout life” (p. 2).

Enactive representation is “a mode of representing past events through appropriate motor response” (Bruner, 1964, p. 2). A music learning approach that ascribes to enactive learning is found in the work of Emile Jacques-Dalcroze (Juntunen & Westerlund, 2001). Juntunen & Westerlund (2001) state, “the development of musicianship happens in action, through action, and within action” (p. 204). They further argue that “the body is not only an instrument through which musical thinking takes place, but that the body can be taken as a conscious and explicit object of transformation” (Juntunen & Westerlund, 2001, p. 204).

Iconic representation “depends upon visual or other sensory organization and upon the use of summarizing images” (Bruner, 1966, p. 10). Symbolic representation is evidenced by the learner’s ability to utilize a symbol system that “represents things by design features that include remoteness and arbitrariness” (Bruner, 1964, p.2). In making meaning of music, children can be encouraged to explore music through each of these representations (Gault, 2005).

**Music Composition**

Composition and improvisation tasks have long been included in music research in an effort to analyze students’ processes and creative behaviors in music composition (Bennett, 1975; Kennedy, 1999; Kratus, 1991; Kratus, 1989; Levi, 1991), to determine the quality of children’s compositions (Barrett, 1996; Hickey, 1999), and to support the inclusion of music composition in a comprehensive music education program (Glover, 2000; Swanwick, 2002). In addition, multiple research studies support the argument that children do have the ability to compose original music (Barrett, 1996; Glover, 2000; Gromko, 2003; Hickey, 2003; Kratus, 1989; Swanwick & Franca, 1999; Webster, 2003a, Wiggins, 2003). However, although there is a
growing body of research in music composition and its relation to students’ musical
development, there is much disagreement over the best approaches to instructing and assessing
student composition. Recent attempts have been made to organize and synthesize the research to
develop a theoretical rationale for firm inclusion of improvisation and composition in schools’
curricula (Hickey, 2003; Webster, 1989).

Learning Styles

Research indicates that when learners approach a learning task through their preferred
learning modalities, or learning style, greater achievement is realized (Cassidy, 2004). The Dunn
and Dunn Learning-Style model is based upon decades of research concerned with how
individuals “begin to concentrate on, process, absorb, and retain new and difficult information”
(Dunn & Burke 2005-2006, p. 2). Neurobiological and psychological research (Given, 1997-
1998) supports the model as meeting the needs of diverse learners. Given (1997-1998) states,
“Provisions for different ways of learning in each of the five domains [environmental, emotional,
sociological, physiological, and psychological] provide students opportunities to satisfy their
basic psychological and biological instructional needs” (p. 14). Much of the research on learning
styles is concerned with the physiological dimension, specifically the perceptual modalities:
visual, auditory, tactual, and kinesthetic and the psychological dimension: global/analytic
processing (Gremli, 1996; Lister, 2004; Minotti, 2005; Riding & Mathias, 1991). The basic
premise of the model is that all students can learn; it is just that they do not all learn in the same
manner. Discovering the most appropriate way of introducing new information to children may
be what is needed to help them to make meaning of the information presented.
Methods and Procedures

Research Questions

The following research questions have been developed to provide direction for this study.

1. How are the musical compositions of elementary school children related to their preferred learning styles?

2. When students compose music through their preferred learning perceptual modality (visual, auditory, tactual, kinesthetic), do they articulate a heightened sense of confidence with the compositional process, and is this sense evident in their musical compositions?

Description of the Setting and the Subjects

This study was conducted in a suburban, predominantly white, upper-middle class school system in New England. The district is comprised of six elementary schools, two middle schools, and one high school, and serves approximately 5,000 students. Subjects were selected for this study after an invitation was sent to all fifth grade students in the district the opportunity to participate in the study (N = 420). Fifth grade students were selected based upon a number of factors. It was believed that students at this level have enough musical capacity, based on their experiences with music, to complete the composition tasks created by the researcher. In addition, fifth grade students have the vocabulary skills necessary to complete the learning styles assessment selected for this study, and were more likely to have experienced working independently than younger students.

The study took place in an elementary school music classroom setting, where subjects had access to many pitched and non-pitched classroom instruments on which to compose. It was the intent of the researcher to allow students to work in the most natural music setting possible.
The first group of participants completed four composition tasks over a period of three weeks, two hours a day, three days a week (18 hours total), during August of 2007. The second group completed the music composition tasks during an after-school program from October through December of 2007. Both groups were provided an equal opportunity of time and classroom access, as well as flexibility in attendance.

Research Design

This study was qualitative in design as the qualitative paradigm is most appropriate for research that analyzes processes (Marshall & Rossman, 1999). To lessen the effects of bias and overcome weaknesses, this research included triangulation of sources, as well as methods, indicated by Lincoln and Guba (1985) as a process by which the researcher develops trustworthiness for the study (See Appendix A). Trustworthiness is established based upon four criteria: truth-value, applicability, consistency, and neutrality (Lincoln & Guba, 1985).

Truth-value. Truth-value is concerned with confidence in the findings discovered in the study within the context in which the study is carried out. Lincoln and Guba (1985) describe the primary criterion for demonstrating truth-value as credibility. In this research, credibility was established through the following strategies: prolonged engagement, persistent observation, and triangulation of methods and sources.

During the period of prolonged engagement, the researcher invests a sufficient amount of time within the culture of the subjects under study in a concerted effort to establish trust, as well as to identify and keep in check the researcher’s own distortions regarding the data, and preconceived notions about the subjects (Lincoln & Guba, 1985). The subjects in this study were drawn from an age group and demographic area with which the researcher had many years of experience. Therefore, because the researcher had experience teaching over one thousand
students in this age group during her teaching career, she understood the process of developing a healthy sense of trust and rapport, as well as how her interactions with students could affect their responses. While there was strength in using students from this age group and demographic area, there was also weakness, as it was incumbent upon the researcher to be aware that not all of the subjects had the same music instruction or experiences during their elementary school years, even though they were being drawn from the same geographic area. In addition, the researcher needed to discover a common language that all students could relate to for the composition tasks to have merit. Administering the pre-questionnaire was the strategy expected to help in this area. Additional credibility strategies of persistent observation and triangulation also helped to alleviate weaknesses. To achieve objectivity, it should be noted that although the sample for this study was drawn from the school district in which the researcher teaches, the subjects were not students who attended the researcher’s school.

Persistent observation contributes to the credibility of a study by providing depth through the identification of “those characteristics and elements in the situation that are the most relevant to the problem or issue being pursued, and focusing on them in detail” (Lincoln & Guba, 1985, p. 304). Through persistent observation of subjects’ music composition processes and products, as well as through semi-structured interviews, the researcher was better able to identify salient factors contributing to subjects’ understanding of music composition. Persistent observation helped prevent the researcher from pigeonholing subjects’ processes and products into her own preconceived notion that there may be a relationship between different types of music composition tasks and preferred learning modalities of the subjects under study.

A third strategy that was employed in this study to enhance its credibility was triangulation of methods (Lincoln & Guba, 1985). Triangulation helps to minimize distortions
by providing a “convergence of multiple perspectives for mutual confirmation of data to ensure that all aspects of a phenomenon have been investigated” (Krefting, 1991, p. 177). Triangulation of methods in this study was provided through analysis of music task assessment scores (product) provided by independent judges, the learning styles instrument administered to all participants, and through semi-structured interviews in which subjects analyzed the processes involved in each composition task and their own musical products (See Appendix A). Analyzing and comparing individual cases for patterns with regards to learning style preference and compositional approach established triangulation of sources.

**Applicability.** “Applicability refers to the degree to which the findings can be applied to other contexts and settings or with other groups” (Krefting, 1991, p. 174). Although it is recognized that qualitative research is not intended to be generalizable, the strategy of transferability (Lincoln & Guba, 1985) enhances trustworthiness through thick description. Thick description is defined as the inquirer’s development and reporting of “a sufficient base to permit a person contemplating application in another receiving setting to make the needed comparisons of similarity” (Lincoln & Guba, 1985, p. 360). In this study, the researcher provided thick description through analysis of and reporting of related research and through in-depth and clear reporting of the study’s subjects, context, setting, findings, limitations, and recommendations for further study.

**Consistency.** Dependability is the strategy through which a qualitative study meets the criterion of consistency. One way that dependability for this study was enhanced was through triangulation of methods. According to Krefting (1991), “Dependability can also be enhanced through triangulation to ensure that the weaknesses of one method of data collection are compensated by the use of alternative data-gathering methods” (p. 180). Triangulating the rating
rubric data from the expert independent judges who had no knowledge of, or connection to, the subjects with the learning styles assessment, and subjects’ interviews, enhanced the dependability of the research. Other strategies that were included in this study to enhance dependability were thick description of research methods (included in Chapter Three), peer examination of research plan and implementation, and the development of an audit trail (Lincoln & Guba, 1985). Lincoln and Guba (1985) describe the audit trail as “a residue of records stemming from the inquiry” (p. 319). In this study, these records include: written and audio-recorded music compositions; scores from the composition rating scale and the learning styles instrument; transcripts from semi-structured interviews; description of data analysis procedures and products, and themes and categories developed during the qualitative coding process; reflexive journal and notes regarding the inquiry process and findings.

**Neutrality.** Neutrality is the degree to which the findings of an inquiry are determined by the subjects and conditions of the inquiry (Lincoln & Guba, 1985). Confirmability is the suggested strategy of neutrality and was addressed in this study primarily through reflexivity and triangulation of methods and sources. Reflexivity is the process by which the researcher assesses how his or her own bias, motivations, interests, or perspectives may influence the data (Lincoln & Guba, 1985). It is incumbent upon the researcher to be aware of this influence and to make efforts to minimize the effect on the data. A reflexive journal was maintained by the researcher in an effort to maintain impartiality throughout the data collection and analysis processes.

**Data Collection**

Triangulation of methods in this study was achieved through the various data collection procedures that were implemented in the inquiry. There were four components to this study, each providing valuable data to the overall research. The first component of the study providing
the data was the music composition tasks (Appendix D). Fifth grade subjects completed a series of four researcher developed music composition tasks. Each composition task was approached through a specific learning modality: visual, auditory, tactual, and kinesthetic. The second component was an on-line multiple-choice instrument designed to detect learning style modality preferences (visual, auditory, tactual, and kinesthetic) and processing strengths (global/analytic). This instrument was administered to all participants (Appendix F). For the third component of the study, two independent judges, using a researcher adapted 6-point rating scale scored all of the music compositions on the following dimensions: aesthetic appeal, originality, craftsmanship, and proportion (Appendix E). The rating scale was based upon the work of Maud Hickey (1999), in which she identified common descriptors (aesthetic appeal, originality, and craftsmanship) that experts regularly state as dimensions of quality of a music composition. The descriptor proportion was added to the rubric for this study.

The data for the final component of the study were gathered through semi-structured interviews, using ethnographic interviewing techniques (Spradley, 1979), to determine if subjects could articulate their successes, or difficulties with the differing approaches to composition. Subjects were asked to analyze the processes involved in each of the composition tasks (visual, auditory, tactual, and kinesthetic). Questions ranged from broad to specific as students analyzed their own compositional processes and products, as well as, task preference.

**Instrumentation**

The data for this study were obtained from the following sources:

1. A researcher-adapted 6-point rating scale to assess aesthetic appeal, originality, craftsmanship, and proportion of student compositions.


Comprehensive descriptions of the instruments used in the data collection for this study, including reliability, validity, and rationale for instrument selection provided in Chapter Three.

**Data Analysis**

Data for this study were coded using HyperResearch (ResearchWare Inc., 2007). Analysis of semi-structured interviews provided an in-depth view of subjects’ attitudes toward music composition and the articulation of perceived success, or lack of success with music composition.
CHAPTER TWO: REVIEW OF THE LITERATURE

Music composition and improvisation tasks have long been included in music research in an effort to analyze students’ processes and creative behaviors in music composition (Bennett, 1975; Kennedy, 1999; Kratus, 1991; Kratus, 1989; Levi, 1991), to determine the quality of children’s compositions (Barrett, 1996; Hickey, 1999), and to support the inclusion of music composition in a comprehensive music education program (Glover, 2000; Swanwick, 2002). In addition, multiple research studies support the argument that children do have the ability to compose original music (Barrett, 1996; Glover, 2000; Gromko, 2003; Hickey, 2003; Kratus, 1989; Swanwick & Franca, 1999; Webster, 2003a, Wiggins, 2003). However, although there is a growing body of research in music composition and its relation to students’ musical development, there is much disagreement over the best approaches to instructing and assessing student composition. A common theme throughout the music education professional literature is the importance of giving students multiple and regular opportunities to compose throughout their schooling. It is incumbent upon the schools to provide students with the most comprehensive program possible, including composition. It is in the school music program where students are provided the tools and understanding needed to compose original works (Glover, 2000). In a report on a survey of music educators, however, it was indicated that only 52% of music educators incorporate music composition more than “rarely” in their teaching (Strand & Newberry, 2007). In addition, this same report inferred that music teachers devoted only 5% of their teaching to music composition (Strand & Newberry, 2007).

The importance of children’s original creations should not be minimized, regardless of the difficulties involved in teaching children to speak musically. The most common focus of music education at the elementary school level, however, is on performing and listening. This
narrow focus in music education undermines children’s compositional abilities by not exposing them to composing activities as a natural part of their music education (Glover, 2000).

The wealth of choices for compositional activities, as well as specific purposes for such activities, however, can overwhelm the music educator. The literature is fraught with inconsistencies regarding the best, or most comprehensive approach for teaching music composition to children.

As a fairly recent push in public school music education, composition has yet to gain solid footing in the music curriculum and programming. According to Glover (2000), “Although a range of classroom activities have been developed, which cluster under the general description of composing, there seems little consensus in curriculum planning about what composing means either for young children or for the population at large, as an ordinary activity in which any and all of us can participate” (p.12). The research indicates that several factors may affect the consistency of composition in school music programs. Among these factors are: lack of educator confidence in the teaching of music composition, lack of student confidence in the composing process, lack of time, and lack of interest (Andrews, 2004; Glover, 2000; Hickey, 2003; Stauffer, 2003; Strand & Newberry, 2007; Webster, 2003).

The literature review presented in this chapter is divided into three sections: Jerome Bruner’s theory of instruction, qualitative and quantitative research studies of children’s music composition processes and products, and research involving learning styles. In this chapter, Bruner’s theory of instruction is presented first as the theoretical lens through which this study was approached. Second, studies involving music composition processes and products are presented, as domain-specific literature reveals current understanding, or lack of, with the teaching and learning of music composition. Several studies related to children’s compositional
processes and products reveal the importance of composition in the music curriculum, and also the difficulties with teaching this vital area in music education. Finally, a literature review of learning styles research demonstrates the importance of recognizing children’s ways of approaching learning tasks and processing new and difficult information. This concept is strikingly familiar to Jerome Bruner’s ideas that all learning is possible when approached appropriately, in such a way that the learner is able to encode new information for later use.

**Jerome Bruner’s Instructional Theories**

**Theory of Instruction**

One major theme in the theoretical framework of Bruner (1966) is the belief that when one finds the appropriate presentation or version, any skill or knowledge can be taught to anyone, at any age. Finding the appropriate version of instruction, or approach to task, was the premise of this research study. Bruner’s theory of instruction focuses on “how to arrange environments to optimize learning according to various criteria” (1966, p. 37).

Bruner’s description of a theory of instruction as *prescriptive* (1966, p. 40) applies to the skills and knowledge necessary for music composition in the sense that there are specific musical rules and expectations that are followed in composition. While these rules are malleable, the structure of a quality music composition should contain a degree of aesthetics, originality, craftsmanship, and proportion (Hickey, 1999). Additionally, Bruner states that, “A theory of instruction is a *normative* theory” (1966, p. 40). The criterion, in the case of this study, was not the mastery of composition, but rather the general view of music composition as an achievable goal in the minds of the subjects under study. In general, Bruner posits that a theory of instruction is primarily “concerned with how what one wishes to teach can best be learned, with improving rather than describing learning” (1966, p. 40).
Bruner describes the four features of a theory of instruction as follows (pp. 41-42). This theory:

1. Should specify the experiences which most effectively implant in the individual a predisposition toward learning – learning in general, or a particular type of learning

2. Must specify the ways in which a body of knowledge should be structured so that it can be most readily grasped by the learner

3. Should specify the most effective sequences in which to present the materials to be learned

4. Should specify the nature and pacing of rewards and punishments in the process of learning and teaching

In this study, the researcher attempted to provide the subjects each of the above features as she utilized Bruner’s theory of instruction for music composition through the four perceptual modalities; visual, auditory, tactual, and kinesthetic.

To meet the expectation of the first feature, each composition task completed by the subjects was designed to implant a predisposition toward music composition by developing a comfortable, friendly, and safe arena in which the participants could explore sound constructions. Additionally, by approaching music composition through differing perceptual modalities, visual, auditory, tactual, and kinesthetic, the subjects experienced music composition in several ways. The question that provided direction toward this feature was the following: “what kinds of compositional activities will tend to make the child willing and able to learn to compose an original piece of music?” Bruner (1966) describes the development of this construct as “exploration of alternatives” (p. 43).
**Exploration of alternatives.** Exploration of alternatives is described as having three components: activation, maintenance, and direction. Bruner (1966) states, “A cut-and-dried routine task provokes very little exploration; one that is too uncertain may arouse confusion and anxiety, with the effect of reducing exploration” (p. 43). This belief is also found in music composition literature (Burnard & Younker, 2002; Hickey, 2003) in which difficulties are described that music educators may face when teaching children to compose by presenting tasks with such strict rules and parameters that leave little room for exploration and risk-taking, or by leaving tasks so open-ended as to overwhelm the learner. Maintenance is supported when “the benefits from exploring the alternatives exceed the risks incurred” (Bruner, 1966, p. 44). Throughout the completion of the music composition tasks, the subjects all felt, and several commented, that they were able to keep going in their tasks because they didn’t feel there were any wrong responses. The goal of direction is the prevention of randomness (Bruner, 1966) by making sure that the learner understands the goal of the task. All of the subjects in this study understood and accepted the goal of the tasks presented to them, to create four music compositions.

The processes to meet the second and third features were found in the structure of the music composition tasks. Bruner (1966) states, “Any idea or problem or body of knowledge can be presented in a form simple enough so that any particular learner can understand it in a recognizable form” (p. 44). The researcher structured tasks that were open-ended enough to allow freedom of response, but structured enough so as not to overwhelm the young subjects, and provided a sequential description of how to approach each task. To meet the fourth feature, subjects were rewarded by their own analyses of the processes of composing and the products
they created. In addition, all subjects adhered to a rigorous timeline for completion of both written and digital versions of their musical products.

**Modes of representation.** Bruner describes a sequence of representational systems that children acquire as they strive to make meaning of their worlds (Driscoll, 2005). Bruner (1964) identified these modes of representation as *enactive representation*, *iconic representation*, and *symbolic representation*. Bruner (1964) posited that it is through these three modes of representation that information gained from experience is coded and processed, making memory usable, rather than simply the storage of information. The modes of representation, according to Bruner (1964), are described as “each depending upon the previous one for its development, yet all of them remaining more or less intact throughout life” (p. 2).

Through enactive representation past events are represented through appropriate motor responses (Bruner, 1964). Physical response to music is one example of enactive representation. Movements one makes when listening to different types of music are the enactive representation of past events, responses to a familiar tune, or responses to a particular style of music. A music learning approach that ascribes to enactive learning is found in the work of Emile Jacques-Dalcroze (Juntunen & Westerlund, 2001). In an analysis of the work of Jacques-Dalcroze, Juntunen & Westerlund (2001) describe the development of musicianship as occurring in, through, and within action. They further argue that “the body is not only an instrument through which musical thinking takes place, but that the body can be taken as a conscious and explicit object of transformation” (Juntunen & Westerlund, 2001, p. 204).

Iconic representation “depends upon visual or other sensory organization and upon the use of summarizing images” (Bruner, 1966, p. 10). In this current study, all four of the music composition tasks were approached through this mode of representation, as the perceptual
modality focus of each task required the learner to develop some sensory image of music. According to Bruner (1966), “Iconic representation is principally governed by principles of perceptual organization and by the economical transformations in perceptual organization” (p. 11).

Symbolic representation is evidenced by the learner’s ability to utilize a symbol system that “represents things by design features that include remoteness and arbitrariness” (Bruner, 1964, p. 2). In this study, one of the goals was to attempt to lessen the effects of symbolic representation on the confidence level of the subjects to encourage compositional freedom by allowing the subjects to develop and use their own symbol system (notation) that had meaning to them, yet could be easily described to and understood by, the researcher. In making meaning of music, children can be encouraged to explore music through each of these representations (Gault, 2005). As Bruner states, “Of course, it may be that nothing is intrinsically difficult. We just have to wait until the proper point of view and corresponding language for presenting it are revealed” (Bruner, 1977, p. 40). The child learning to compose is a composer; in whatever capacity that child has in the realm of composition. This is not to say that every child’s composition is a masterpiece in the ear of the beholder, nor in the rules of music, any more than every composition written by the great masters were great works of art. The work of Bruner supports this thinking. He states, “The difference is in degree, not in kind. The schoolboy learning physics is a physicist, and it is easier for him to learn physics behaving like a physicist than doing something else” (Bruner, 1977, p. 14).
Music Composition Processes and Products

Recent attempts have been made to organize and synthesize the research to develop a theoretical rationale for firm inclusion of improvisation and composition in schools’ curricula (Hickey, 2003; Webster, 1989). The voluntary National Standards for Music (MENC, 1994) encourage the implementation of composition and improvisation at all levels of music education. Unfortunately, the standards themselves are somewhat ambiguous, not in the description of what students should be able to do, but rather in what students should understand about the process of creating music, its value to music education, and its place in a comprehensive curriculum (Benedict, 2006).

Research Studies

Children’s musical understandings through composition, performing, and responding. In a 1999 study of students’ composition, performance, and audience-listening (responding) skills, Swanwick and Franca hypothesized that the level of musical understanding in children may be revealed equally across the three artistic processes: performing, creating, and responding when the complexity of the tasks are controlled. The purpose of their study was to investigate the relative levels of musical understanding of children across the three artistic processes: performing, creating, and responding (Swanwick & Franca, 1999).

As music composition is the least attended to facet of music instruction, and because “the skills, procedures, techniques, and experiences of composing, performance, and audience-listening are very different” (p. 6), Swanwick and Franca (1999) hoped to discover that when approached appropriately, and within the realm of a child’s musical understanding, music composition is within reach of children with little to no prior composition experience. Additionally, Swanwick and Franca (1999) hypothesized that children’s music compositions
might reveal a deeper musical understanding than data collected from performance and listening alone.

The study took place in a private music school in Brazil over a five-month period. A purposive sample of 20 subjects was selected, based upon specific sampling criteria. All of the subjects in the study were between 11 and 13 years old, with a minimum of three years of piano instruction (Swanwick & Franca, 1999).

Data were gathered in each of the three areas under study: composition, performance, and responding. To gather data on composition, each subject developed three separate compositions. The subjects were provided a stimulus to begin their compositions, which they were allowed to alter, expand upon, or discard. None of the compositions were written in traditional notation, as the researchers determined that the problem of notating might interfere with the subjects’ compositional freedom by turning the focus away from composing and toward notation. The concept of written notation as a possible interference with the compositional process is reported in other literature as well (Gromko, 2003; Levi, 1991). Subjects were given 20 minutes to develop their compositions. When the subject determined that his or her composition was complete, an audio recording was made for scoring.

The performance data were gathered by recording three piano performances of each subject. The performance repertoire had been previously agreed upon between the subjects and their piano teachers as part of their normal music instruction. The subjects, throughout the semester, practiced their piano pieces to prepare for their performances.

To gather responding data, each subject participated in one individual structured interview in which they answered broad questions about three different musical selections they were listening to. Listening examples were selected from different Brazilian musical styles, and
although musically interesting, the researchers did not feel that the selections required complex listening skills. Each of the three musical selections was listened to three times before the subjects were asked to respond. According to Swanwick and Franca (1999), “The objective was not to test students’ discriminative skills, but to check what dimensions of music criticism captured their attention” (p. 9). Broad questions asked subjects to describe what they were hearing. All responses to the music were recorded as subjects listened to the selections.

In the Swanwick and Franca (1999) study, the data were analyzed by eight experienced music teachers against a set of criteria, based upon Swanwick and Tillman’s 1986 spiral model of music development. All eight of teacher-judges were familiar with the criteria prior to scoring. The criteria range from the most basic of musical understanding to profound knowledge. The criteria are as follows: sensory, manipulative, personal expressiveness, vernacular, speculative, idiomatic, symbolic, and systematic (Swanwick, 2002, pp. 88-89).

The results from this study indicated that there were striking differences between the responses given to listening, performance, and composition, with performance showing the lowest level of musical understanding of the three areas. The research reported statistical significance in the differences between the three activities. A Chi-Square was utilized to analyze the differences between the three activities with a significance level of p < .001. To determine whether the difference could be attributed to one activity, the researchers used a Friedman Two-Way ANOVA to calculate for each pair of variables. There was no statistical significance between composition and listening (p < 1.00), but there was statistical significance between listening/performing (p < .001) and composing/performing (p < .01). This discovery led the researchers to conclude that the variance was attributable to performance over the three activities (Swanwick and Franca, 1999).
Swanwick and Franca (1999) related that, “It is striking, and almost puzzling that in many cases they were able to play their own compositions more meaningfully and sensitively than their ‘normal’ piano repertoire – this despite the fact that they had ‘practised’ their performance repertoire for many weeks, even months” (p. 15). Additionally, the researchers reported that there were several instances where subjects constructed expressively shaped phrases in their own compositions, but had difficulty shaping a phrase in their performances (Swanwick & Franca, 1999).

These findings indicated that the subjects’ own constructions had such meaning for them that they were able to reproduce them with more meaning than any of the pre-composed pieces they were working on. This is not to say that the subjects’ compositions were of superior quality, but rather that they had more meaning to the composer as performer. The researchers inferred from the results that the subjects’ ability to demonstrate a higher level of musicality in their own compositions was because when playing their own musical constructions, they were using their musical skills in a more meaningful, and personal purpose than when performing the musical works of others (Swanwick & Franca, 1999), and that composition provided more freedom and imaginative play than either performing or responding. Additionally, composition “allows more breadth for decision-making over a much wider range and thus is particularly powerful in facilitating the development of musical understanding” (Swanwick & Franca, 1999. p. 17).

**Analyses of children’s computer-based compositions.** Nilsson and Folkestad (2005) conducted a qualitative case study of children’s musical worlds, as it related to their creativity, with the premise of showing respect for and interest in these worlds. The study sought to provide description and clarification of the creative processes of young children working on
computer-based compositions, and took place over a period of 18 months in a multi-ethnic age-integrated Swedish school. The nine subjects (5 girls and 4 boys), ranging in ages from 6 to 8, comprised the entire age-integrated year 2 class. Subjects were provided composition tasks, presented as invitations to compose their own music (Nilsson & Folkestad, 2005).

Subjects in the study utilized a synthesizer with a keyboard and sequencer program to create their musical compositions. The study had three phases. In the first phase, subjects were provided with tasks, presented as invitations to create music. The creative spark to develop their compositions was provided by visual art prints. The subjects were given instruction only on the use of the synthesizer and computer software. In the second phase, the subjects were asked to create a self-portrait, and then to develop a composition that went with their own drawing. Finally, subjects were invited to compose a piece of music without any specific prompt (Nilsson & Folkestad, 2005). The creative process was the unit of analysis and was qualitatively “analysed through participant observations, interviews, and the collected pieces of music (data files)” (Nilsson & Folkestad, 2005, p. 25). The researchers triangulated subjects’ compositions, observations, and interviews and identified five categories of variations in children’s creative music making processes.

As a result of their investigation, the researchers reported finding evidence of “five different variations of the practice of creative music making... each with a different object in the foreground” (Nilsson & Folkestad, 2005, p. 25). The object placed in the foreground differed with each subject and in each task. These objects were identified as: the synthesizer and computer, personal fantasies and emotions, playing of the instrument, the music itself, and the task. The researchers also observed that the foreground and background objects of activity oscillated as the children worked through the composing tasks. The primary findings of the
study indicated that “...young children without formal music training are able to create music with form and structure” (Nilsson & Folkestad, 2005, p. 35).

**An investigation of the effect of score writing on children’s composing processes.** In a 1991 qualitative study of children’s music compositions, Ray Levi investigated the role of regular music composition experiences for the elementary school child and attempted to discover whether or not writing a score would impede upon the composing process. The sample for this study was comprised of 22-second grade students in a Cleveland suburb.

This case study examined compositional processes and products of 22-second grade students over an 8-week period. Subjects under study improvised on Orff instruments daily with the goal of creating original music that could be performed for the researcher (Levi, 1991). After the pieces were completed and could be played through two times, the subjects were asked to create written scores for their compositions. Each subject created between three and five compositions (Levi, 1991).

Using prior research, the investigator in this study analyzed subjects’ use of melodic motives in their compositions. Levi defined melodic motives as having two to five pitches that formed distinct patterns (1991). The data indicated that in the first composition, 20% of the subjects used no apparent melodic motive, but by the third composition all of the subjects used melodic motives in their piece.

The development of notation systems by the subjects indicated that all but one subject had no difficulty notating their work in a way that had meaning to them. According to Levi, “They were able to read their pieces and so the scores served the purpose for which the children had designed them; providing a written record which could be used at a later time” (1991, p. 131).
Developmental differences in composing strategies. Kratus (1989) described the process of music composition as involving exploration and the development of musical ideas resulting in a unique musical product. Based upon this belief, Kratus (1989) designed and implemented a research study with the purpose of examining “the use of exploration, development, repetition, and silence by children of different ages, sexes, and proficiency levels who were engaged in composing a melody on an electronic keyboard” (p. 8).

The sample for this study included 60 children, ages 7, 9, and 11, with 10 boys and 10 girls from each age group. All subjects were chosen from a single elementary school, in a Cleveland suburb. To control for experiential advantage, subjects with prior keyboard experience were excluded from the study (Kratus, 1989).

To collect composition data, Kratus met with each subject individually, first acquainting each subject with the keyboard, and then describing the task to be undertaken. Subjects were given 10 minutes to make up an original song on the keyboard. The parameters for the task were specific in range (keyboard range from lowest pitch to highest pitch was an interval of a 17th), tone (keyboard was set to piano setting), starting point (middle C), and music materials (only white keys), which the researcher felt appropriate to allow the subjects “some degree of guidance and to help subjects begin the task” (Kratus, 1989, p. 9). As soon as the subject played the first note, the timer was set and the recording began. At the end of the allotted time, subjects were asked to play their completed compositions two times through.

Data for the study were analyzed using a series of four two-way ANOVAs, with the number of 5-second recorded intervals for each compositional process as the dependent variables to test for differences in age and sex with respect to compositional processes. To further
examine the differences, the researcher conducted a Duncan Multiple Range Test in the hopes of revealing significant developmental differences (Kratus, 1989).

The results of the Kratus (1989) study suggested that some developmental differences in children’s strategies for composing exist, although there was no significant difference between boys and girls in any of the age groups, with respect to compositional processes. The seven-year-old subjects spent significantly more time in the exploratory phase (p < .001) of composing than did the nine and 11-year-old children. Additionally, the data suggested that the seven-year-old subjects spent very little attention to development, repetition, and silence. Furthermore, the developmental differences described in this study indicated that although the younger composers were able to complete their tasks, their compositions were far more improvisatory than those of the older subjects.

An examination of composing strategies. In a comparison case study (n = 2), Mary Kennedy (1999) sought to discover similarities and differences between the compositional processes of a high school and collegiate composer. Her collected data, in this case study (n = 2), were based upon semi-structured interviews, observations, and document analyses. Each subject was asked to complete the same composition task; setting a poem for voice and piano. Two professional composers and the researcher critiqued the completed compositions. Kennedy (1999) found that there were striking similarities between the two composers with respect to strategies and procedures employed. As witnessed in studies of young children composing (Bennett, 1975; Kratus, 1989; Levi, 1991; Kennedy, 2002; Nilsson & Folkestad, 2005), each of the composers used exploration as a technique for generating compositional ideas (Kennedy, 1999). This improvisatory element to composition, therefore, seemed to be present at all levels of composing. The difference, however, was that those less-experienced composers seemed to
rely on this process more than the more experienced, or the professional composer. Other similarities discovered by Kennedy (1999) were the references to inspiration by both subjects, and the recognition of “the need to manipulate their materials in order to complete the piece” (Kennedy, 1999, p. 163). It was in the manipulation of materials, however, that Kennedy (1999) found the greatest difference between the subjects. The craftsmanship of the collegiate composer’s work was at a higher level than the high school composer’s work.

Research in music composition indicates that students can successfully compose original works when provided with the appropriate structure, incentive, materials, and encouragement. However, there were no studies to suggest that the appropriate structures through which students initiated composition would be through their preferred learning modalities.

**Learning Styles**

Research of learning styles indicates that when learners approach a learning task through their preferred learning modalities, or learning styles, greater achievement is realized (Cassidy, 2004). This premise is also found in Bruner’s work with regards to his belief that “there is an appropriate version of any skill or knowledge that may be imparted” (Bruner, 1966, p. 35). Arranging learning environments to allow for optimal learning is of great importance to the study of learning styles. Learning styles have been studied for several decades, with many different models. Although there are several differences in the various models and learning styles theories, the most important assumption remains similar amongst the various models: students have increased confidence and ability to learn new information when the new learning is approached through their preferred learning needs. Cassidy (2004) states, “There is general acceptance that the manner in which individuals choose to or are inclined to approach a learning situation has an impact on performance and achievement of learning outcomes” (p. 420).
Dunn and Dunn Learning-style Model

The Dunn and Dunn Learning-Style model is based upon decades of research concerned with how individuals “begin to concentrate on, process, absorb, and retain new and difficult information” (Dunn & Burke, 2005-2006, p. 2). According to Dunn and Dunn, learning style is “a combination of many biologically and experientially imposed characteristics that contribute to learning, each in its own way and together as a unit” (1992, p. 2). Neurobiological and psychological research (Given, 1997-1998) supports the model as meeting the needs of diverse learners by providing different ways of learning in five domains. These domains: environmental, emotional, sociological, physiological, and psychological provide students with multiple opportunities to find success in learning by satisfying their biological and psychological instruction requirements. When learners are instructed through their preferred learning style, the assumption, or theory, is that they will achieve significantly higher results than when instruction is not a match to their preference, thereby making the learning feel less comfortable (Given, 2000).

Much of the research on learning styles is concerned with the physiological dimension, specifically the perceptual modalities: visual, auditory, tactual, and kinesthetic and the psychological dimension: global/analytic processing (Gremli, 1996; Lister, 2004; Minotti, 2005; Riding & Mathias, 1991). The basic premise of the model is that all students can learn; it is just that they do not all learn in the same manner. Discovering the most appropriate way of introducing new information to children may be what is needed to help them to make meaning of the information presented. Perhaps Jerome Bruner (1977) was not so radical when he stated, “Any subject can be taught effectively in some intellectually honest form to any child at any stage of development” (p. 33).
There are several important differentiated instructional features included in the Dunn and Dunn model that attend to the individual needs of students. The model provides for three fundamental methods for the individualization of instruction. These methods include:


**Programmed learning sequence (PLS).** In a Programmed Learning Sequence (PLS), material to be learned is organized in small, simple steps. According to Burke (2009), “The objective [of the PLS] is to lessen the gap between children with different abilities through an instructional strategy that capitalizes on individual learning strengths” (p. 56). The design of the PLS is intended to allow the learner independence in the learning process, with little adult intervention. All Programmed Learning Sequences have the same basic principles: one item is presented at a time, learning requires active rather than passive participation of the student, responses are immediately reinforced, mastery of each phase is required before proceeding to the next, material progresses from easier to more difficult, and scaffolding is gradually lessened as the student progresses (Dunn & Dunn, 1992). Like other methods, the PLS is not effective for all learners. The Dunn and Dunn model specifies that the PLS is most effective for students who prefer to work alone, have a high level of motivation, and are task persistent (Dunn & Dunn, 1992). Additionally, according to Burke (2009), “PLSs remain most responsive to analytic students who prefer highly structured, visual, and tactual learning” (p. 58).

**Contract activity package (CAP).** In a Contract Activity Package (CAP), students have an individualized plan for learning. Research indicates that the CAPs can be particularly beneficial for teaching the gifted and talented, as they allow for significant differentiation, and independent study (Caraisco, 2007). The elements of a CAP are as follows: simple and specific
learning objectives, multisensory resources for meeting the objective, multisensory activity options that assess mastery of information in a creative way, alternate ways of sharing mastery, at least three small-group techniques, pretest, self-test, and posttest (Dunn & Dunn, 1992, pp. 332-334). Like the PLS, CAPs are not for all learners, however, they are described by Dunn and Dunn as, “responsive to most learning style characteristics, for they may be used flexibly with some students and with a precise structure for others” (1992, p. 329).

**Multisensory instructional package (MIP)**. The Multisensory Instructional Package (MIP) is an individualized instruction method that uses all four learning modalities, thereby making it appropriate for most learners. Students work independently, or with a friend to accomplish the tasks in the package. It is less effective for students who need more direct interaction with adults or peers. The MIP focuses on one objective, or concept and is particularly well suited to the student who needs a lot of structure. According to Dunn and Dunn, “The step-by-step procedures provide clear, sequenced directions that are repeated in a variety of ways until success is achieved” (1992, p. 411).

**Summary of Instructional Methods and Bruner**

Each of the above methods for individualized instruction is supported by Bruner’s theory of instruction with regards to exploration of alternatives. In each instructional package, activation is enabled by the focus on a single objective with many ways of approaching the learning necessary to meet the objective. Maintenance is supported because students work individually, allowing risk-taking without fear of embarrassment when they are incorrect. Students set the pace for learning, and may review as often as needed for deep learning. The single objective focus, as well as, the sequential learning also supports direction.
Research Studies

**Analysis of the effects of programmed learning sequences.** In a report on a study of the effects of programmed learning sequences on mathematics test scores of Bermudian middle school students, Tully, Dunn, and Hlawaty hypothesized that (a) middle school students would perform significantly higher results on unit tests after learning a fractions unit with a programmed learning sequence (PLS), rather than with traditional instruction, and (b) would achieve statistically higher attitudinal test scores than the control group (2006). The study was a pretest–posttest design with a sample of 100 sixth grade students from a single middle school, in six separate classes (three experimental, three control). Fifty-three males and forty-seven females participated at the beginning of the study, but a loss of one student per group resulted in $n = 98$ (Tully, Dunn, & Hlawaty, 2006).

At the start of the study, all students were administered the *Learning Styles Inventory* (LSI) to determine preferred learning styles. The LSI is an instrument that measures students’ perceptions of how they learn best in the form of a 104-item, self report questionnaire (Tully, Dunn, & Hlawaty, 2006). The LSI has high reliability and validity (Cassidy, 2004). In addition, it is designed for the practitioner, which makes its use in the classroom ideal (Cassidy, 2004). Following the administration of the LSI, all control and experimental classes were then administered a pretest on a fractions unit. There were no statistically significant differences between the groups prior to treatment. The instructional resource utilized with students in the experimental group was a PLS that incorporated both tactual and kinesthetic resources (Tully, Dunn, & Hlawaty, 2006). While all students in the experimental group received the PLS consisting of the tactual and kinesthetic resources, they received them in a different sequence to complement their learning-styles strengths, in three 20-minute lesson segments. The control
group received the same material in 20-minute lesson segments, but through a more traditional format, including working in a textbook, and participating in lectures and discussions (Tully, Dunn, & Hlawaty, 2006).

The posttest unit achievement scores used to support the first hypothesis, middle school students would perform significantly higher results on unit tests after learning a fractions unit with a programmed learning sequence (PLS), rather than with traditional instruction were analyzed by a univariate analysis of variance (ANOVA) and suggested that students who learned with a PLS demonstrated significantly higher achievement posttest scores compared to their peers who were taught traditionally (Tully, Dunn, & Hlawty, 2006). The experimental group scored significantly higher on the posttest than did the control group (F value = 12.336, p = .001). Additionally, the experimental group had a significantly higher pretest-posttest difference (F value = 19.517, p = .000).

To support the second hypothesis, middle school students would achieve statistically significant higher attitudinal test scores when taught with a PLS than those taught traditionally, students were administered the Semantic Differential Scale (SDS). According to Tully et al. (2006), “The SDS is a Likert-type instrument that examines attitudes toward two treatments or variables” (p. 5). The students in the experimental group scored significantly higher on the SDS than did those students in the control group. Tully et al. (2006) reported, “Data indicated that most participants [92%] preferred the PLS tactual and kinesthetic instruction significantly more than they did the traditional instruction methods” (p. 7).

An investigation of the effects of tactual and kinesthetic resources. In a study of the effects of tactual and kinesthetic instructional strategies on social studies test scores and attitudes of Bermudian sixth grade Learning Support Students (LSS), Lister (2004) sought to investigate
whether there were differing characteristics between LSS and average and high-achieving (HA) regular education (RED) students. Additionally, Lister examined the “mean- gain score of LSS in social studies when they are taught traditionally and those same students when they are taught with learning-styles responsive resources” (2004, p. 26). Finally, Lister investigated whether there would be “significant differences between the attitudes of LSS (students) when they are taught through LS approaches as compared with the attitudes of those same students when they are taught traditionally” (2004, p. 26).

The study took place in a Bermudian middle school, comprised of sixth, seventh, and eighth grade students. The 93 students in the sample were essentially demographically homogeneous. The sample was drawn from the sixth grade population. While the majority of students were identified as average or above average by the standardized test (Terra Nova) given in the school, 32 students were labeled as below average (LSS) and in need of learning support (Lister, 2004). Prior to the investigation, all participants were administered the Learning Styles Inventory (LSI). The LSI is a 104-item assessment designed to identify 21 elements of an individual’s learning style, and is based upon the Dunn and Dunn Learning Style Model (Lister, 2004). The LSI has repeatedly been reported to have high reliability and validity, and is designed for the practitioner (Cassidy, 2004).

To gather data on social studies achievement, a unit on Christianity and Judaism (Lister, 2004) was taught, broken into four segments. Prior to teaching each segment of the unit, a researcher-developed pretest was administered to all LSS on specific content to be learned (Lister, 2004). The unit was segmented so that students were taught an alternate pattern of five 45-minute lessons traditionally and five 45-minute lessons using tactual and kinesthetic
resources. At the end of each of the four unit segments, LSS were administered a posttest (Lister, 2004).

The results of the from the LSI profiles indicated that for the first hypothesis, there were significant differences at p < .05 among five elements of the LSI between regular education students and those identified as LSS (Lister, 2004). According to Lister, “The LSS were less Motivated... less Persistent... less Responsible...wanted less Structure... and wanted closer supervision by Authority Figures...” (2004) compared to their regular education peers.

Analysis of the data from the pretest-posttests indicated that the mean gain scores of LSS were significantly higher when LSS were taught using tactual and kinesthetic resources than when they were taught traditionally (Lister, 2004), and these gains were found among all four treatments. Lister reports, “The within-subject effects were significant at F = 67.007, p < .05...” (2004, p. 33).

The third hypothesis tested the attitudes of LSS toward learning with particular resources. To measure the construct of attitude, the researcher administered the Semantic Differential Scale (SDS). Using a one-sample t-test, the researcher concluded that there was significant difference of positive attitudes in LSS at p < .05, depending upon learning-style instructional treatments (Lister, 2004).

The effects of tactual and kinesthetic instructional resources on third grade students. In a 1999 study, Searson investigated the effects of tactual and kinesthetic instructional resources on the science achievement of third grade students. The purpose of the study was to determine if students who were taught using tactual and kinesthetic resources would achieve significantly higher achievement scores on posttest assessments in simple recall and on higher-level responses than students who were taught traditionally (Searson, 1999).
Additionally, the study examined differences in attitude toward science between students instructed with tactual and kinesthetic resources and those students who were taught traditionally. Finally, the researcher examined the “interaction between students’ tactual and kinesthetic preferences and their achievement posttest scores and attitudinal effects” (Searson, 1999, p. 6).

This study was conducted in an upper middle-class suburban, public elementary school in northern New Jersey. All 59 third grade students in the school participated in the study, with 26 boys and 33 girls included in the sample. The principal of the school, prior to the study, created the three heterogeneous classes that comprised the third grade; therefore, there was no random assignment to group.

At the beginning of the study, all subjects were administered the Learning Styles Inventory (Dunn, Dunn, & Price, 1996), however, they were not made aware of their learning preference during the study to prevent this knowledge from interfering with achievement or attitude (Searson, 1999). The LSI is a self-diagnostic designed to measure an individual’s learning preference (Searson, 1999). According to Dunn and Dunn, the LSI identifies “how they [students] prefer to learn and also indicates the degree to which their responses are consistent” (1992, p. 38). The LSI has repeatedly shown to have high reliability and validity, and is designed for the practitioner (Cassidy, 2004).

The design of this study was a pretest- posttest experimental design over a six-week period of instruction. At the beginning of each science unit, all subjects were administered a pretest to establish prior knowledge of the unit presented. For each science unit, there were two treatment groups and one control group. All groups received one unit without treatment and two units with. The treatment for the study was the inclusion of a variety of tactual and kinesthetic
resources in the learning of the science units presented. The control group in each presented unit received traditional instruction. This instruction consisted primarily of simple recall of answers based upon textbook readings (Searson, 1999). Following each unit, the students were administered a posttest to measure achievement and the Semantic Differential Scale (SDS) to measure attitudinal changes. As previously reported, the SDS is a Likert-type self-report questionnaire used to examine attitudes toward two treatments or variables (Tully, Dunn, & Hlawaty, 2006).

To answer each of the four research questions in this study, data were analyzed using “repeated analysis of variance (ANOVA) and t-tests for appropriate post-hoc comparisons” (Searson, 1999, p. 18). There were two independent variables; tactual/kinesthetic and traditional treatments and two dependent variables; science achievement and attitude (Searson, 1999).

The results of data analysis for the first question, “Will there be a significant difference between the simple recall science achievement test scores on a posttest assessment?” (Searson, 1999, p. 6) suggested that there was a significant difference between the posttest assessments of the experimental groups versus those of the control group between unit levels. Additionally, the researcher reported that this significance was consistent for all three units taught (Searson, 1999). The researcher concluded from the data that the tactual and kinesthetic resources were beneficial not just for the students who had a tactual or kinesthetic learning preference, but rather for all of the students in general.

The results of the data analysis for the second question, “Will there be a significant difference between the higher-level cognitive science achievement test scores on a posttest assessment?” (Searson, 1999, p. 6) also suggested that scores on the higher-level posttest assessments were positively impacted by the instructional methods used in the experimental
groups. According to Searson, “Within each class, there was significant difference between the rubric scores (experimental versus control group) between unit levels” (1999, p. 19).

The results of the data analysis for questions three and four, both having to do with attitude, were reported by the researcher to be inconclusive as the scores on the SDS had too large of a variability per analysis. Therefore, the researcher could not reject the null hypothesis for these questions. The researcher suggested that a larger sample might yield significant results (Searson, 1999).

**A study of the impact of homework prescriptions on middle school students.** Minotti (2005) completed an empirical study of the effects of homework prescriptions, based upon middle school students’ learning styles, on the achievement and attitudes of middle school students. The investigation sought to examine whether developing homework prescriptions based upon individual students’ learning styles would positively impact achievement in reading, mathematics, science and social studies, and if subjects’ attitudes toward homework would improve after treatment (Minotti, 2005).

The sample for this study was a convenience sample of 167 students in grades six through eight from a New York City parochial school. Two pre-formed classes at each grade level participated in the investigation. Although there was no random assignment to group, classes were randomly assigned to either the treatment or control group. The investigator used students’ mean achievement scores in language arts, math, science, and social studies as a baseline measure of achievement. Following the 2-week homework prescription treatment, these baseline achievement scores were compared to unit test scores in each subject area to examine mean gain differences between the experimental and control groups (Minotti, 2005). Therefore, the content-area unit tests, knowledge of learning styles, and attitude were the dependent
variables, with the independent variable the method of study (traditional or homework prescription).

The findings of this study suggested that students who used homework prescriptions based upon their learning style had significantly higher achievement scores, as well as significantly higher attitude scores than those students who used traditional study methods.

An analysis of the effects of traditional instructional methods versus Contract Activity Package (CAP) and Programmed Learning Sequence (PLS) on the achievement and attitude of seventh and eighth grade general music students. In his 2002 doctoral dissertation study entitled: Effects of Traditional Versus Contract Activity Packaged and Programmed Learning Sequenced Instruction on the Short- and Long-Term Achievement and Attitudes of Seventh- and Eighth-Grade General Music Students, Jack Gremls sought to discover the relationship between differing instructional methodologies and the effect on student achievement and attitude in the general music classroom. The purpose of the study was to expand the research base of learning styles as it relates to the arts, which is an area in the literature that is severely lacking in the research literature. According to Gremls, “This research was the first experimental study conducted to investigate the effectiveness of a Contract Activity Package and/or a Programmed Learning Sequence on any population as it pertains to achievement in, and attitudes toward, the study of music” (2002, p. 8).

The study was conducted in a suburban middle school in New York State, with the sample consisting of seventh and eighth grade students (n = 90) in three academically heterogeneously grouped general music classes. Each class met for a 20-week semester every other day at the same time of the day, and in the same location.
At the outset of the study, all participants were introduced to the concept of learning styles and administered the Learning Styles Inventory (Dunn, Dunn, & Price, 1996) to determine their learning preferences (Gremli, 2002). As previously reported, the LSI is a self-diagnostic assessment designed to measure an individual’s learning preference (Searson, 1999). In addition, Contract Activity Packages and Programmed Learning Sequences were also introduced (Gremli, 2002). Following the completion of the LSI, all participants were administered a researcher developed pretest containing 45 questions divided into three sections of 15 questions based upon the content area to be studied.

To gather the data for this study, each class was taught three unit lessons over a period of 12 school days using a counter-balanced design (Gremli, 2002). Each lesson was delivered using a different instructional methodology and although all participants received the same instruction, they received the instructional methodologies in a different order. A two-period lesson on composers and history, designed by a team of four experienced middle school music teachers, reviewed by a jury of experts and previously field-tested (Gremli, 2002), was delivered using the traditional method of lecture and listening to musical examples of the composers introduced. A researcher developed two and one-half period lesson was taught, using a Contract Activity Package (CAP) for each student on the life of Scott Joplin. Specific objectives were provided to each student, with resource, activity, and reporting alternatives. The resource alternatives provided students the opportunity to learn through self-selected instructional media based on their learning preference (Gremli, 2002). The activity alternatives required students to utilize their new skill or knowledge by developing an original project intended to demonstrate their new learning (Gremli, 2002), and the reporting alternatives provided each student the opportunity to display the creative projects they developed (Gremli, 2002). This lesson was also reviewed by a
jury of experts and field-tested. Finally, a one and one-half period music theory lesson on the seven elements of music was presented using a researcher-developed Programmed Learning Sequence entitled, *Seven Elements of Music: SING, SING, SING!* (Gremli, 2002). In this PLS, material on the elements of music was presented to promote learning in small portions without the direct supervision of the instructor (Gremli, 2002). At the end of each lesson presented, participants were administered a posttest of 15 questions to assess short-term achievement gains, as well as the *Semantic Differential Scale* (SDS) to measure attitudes toward instruction to gather data on the effectiveness of each instructional methodology used (traditional, CAP, and PLS), with regards to attitude. To gather data on the long-term retention of the material presented, participants were administered the 45-item posttest four weeks after the initial presentation of the lesson materials (Gremli, 2002).

Data for short-term achievement were analyzed using repeated-measures Analysis of Variance (ANOVA). The ANOVA was conducted on “the growth scores for each of the instructional methodologies... A significant overall difference was found” at p < .001 (Gremli, 2002, p. 65). Comparing each set of methodologies (traditional versus CAP, traditional versus PLS, and PLS versus CAP), Gremli (2002) reported that the “data indicated significant differences between each of the instructional methods” at the 95% level of confidence. In addition, the analysis long-term achievement scores “revealed significant differences in teaching methodology at the 99% confidence level” (Gremli, 2002).

The primary findings of this study indicate that student achievement was significantly affected by the way in which the subject matter was presented and learned; students were more likely to achieve higher scores when instruction matched their learning preference than when it did not; there were differences in the “learning-styles traits that responded well to traditional
versus CAP versus PLS instruction” (Gremli, 2002, p. 105) and less than half of the students taught traditionally achieved their highest scores (Gremli, 2002).

**Summary of Learning Styles Research**

Learning styles research consistently supports the idea that students learn best, and can achieve at higher levels when new learning is approached in a way that is in their preferred style. This is not to say that every task, nor every piece of knowledge to be learned must be approached through one’s preferred learning style, but rather, that educators should make the effort to help students understand how they learn best and give them multiple opportunities to approach new learning in the manner most appropriate for them.

**Learning styles, music composition, and Bruner.** Finding the most appropriate version of instruction for optimal learning is a common theme among all of the areas of research presented above. Research in learning styles consistently suggests that students have greater success when new learning is approached through their preferred learning style. While the research in music composition is inconsistent in identifying or clarifying the most appropriate way to instruct children in composition, there does seem to be some consensus in the literature that children do have the ability to speak musically, and to compose. However, finding those most appropriate ways of instructing students in this area of music education is daunting and the insufficient time that most elementary school educators have to instruct their students in primarily performance-based programs lead many teachers away from teaching music composition to young students. Much of Bruner’s work also suggests that discovering the most appropriate way of instructing leads to learners being able to absorb and retain more about a given topic.
CHAPTER THREE: METHODOLOGY

This study was implemented to examine the relationship between elementary school students’ ability and confidence in writing their own musical compositions and their preferred perceptual learning modalities. Through semi-structured interviews, analysis of preferred learning modalities, and a musical composition rating scale, it was hoped that patterns would emerge that might be used to support elementary school students in the process of composing original works of music.

This chapter contains the following elements of the study: (a) research questions, (b) design of the study (c) research setting (d) sample selection, (e) instrumentation, (f) procedures, and (g) researcher information, and (h) ethics statement.

Research Questions

The following two research questions developed to frame the study were:

1. How are the musical compositions of elementary school children related to their preferred learning styles?

2. When students compose music through their preferred learning perceptual modalities (visual, auditory, tactual, and kinesthetic), do they articulate a heightened sense of confidence with the compositional process, and is this sense evident in their musical compositions?

Design of the Study

This study was qualitative in design as the qualitative paradigm is most appropriate for research that analyzes processes (Marshall & Rossman, 1999). To lessen the effects of bias and overcome weaknesses, this research included triangulation of sources, as well as methods, indicated by Lincoln and Guba (1985) as a process by which the researcher develops
trustworthiness for the study. Trustworthiness is established based upon four criteria: truth-value, applicability, consistency, and neutrality (Lincoln & Guba, 1985).

**Truth-value**

Truth-value is concerned with confidence in the findings discovered in the study within the context in which the study is carried out. Lincoln and Guba (1985) describe the primary criterion for demonstrating truth-value as *credibility*. In this research, credibility was established through the following strategies: *prolonged engagement*, *persistent observation*, and *triangulation of methods and sources*.

During the period of *prolonged engagement*, the researcher invests a sufficient amount of time within the culture of the subjects under study in a concerted effort to establish trust, as well as to identify and keep in check the researcher’s own distortions regarding the data, and preconceived notions about the subjects (Lincoln & Guba, 1985). Although there was not prolonged engagement in the conducting of this study, the subjects in this study were drawn from an age group and demographic area with which the researcher had over fifteen years of experience. Therefore, because the researcher had experience teaching over one thousand students in this age group during her teaching career, she understood the process of developing a healthy sense of trust and rapport, as well as how her interactions with students could affect their responses.

While there was strength in using students from this age group and demographic area, there was also weakness, as it was incumbent upon the researcher to be aware that not all of the subjects had the same music instruction or experiences during their elementary school years, even though they were being drawn from the same area. In addition, the researcher needed to discover a common language that all students could relate to for the composition tasks to have
Administering the pre-questionnaire was one strategy expected to help in this area, as it provided the researcher some understanding of subjects’ pre-existing experience with composition, as well general music understanding. Additional credibility strategies of persistent observation and triangulation also helped help alleviate weakness. To achieve objectivity, it should be noted that although the sample for this study was drawn from the school district in which the researcher teaches, the subjects were not students who attended the researcher’s school.

Persistent observation contributed to the credibility of a study by providing depth through the identification of “those characteristics and elements in the situation that are the most relevant to the problem or issue being pursued, and focusing on them in detail” (Lincoln & Guba, 1985, p. 304). Throughout the study, persistent observation of subjects’ music composition processes and products, as well as individual semi-structured interviews, the researcher was better able to identify salient factors contributing to subjects’ confidence in music composition. Persistent observation helped prevent the researcher from pigeonholing subjects’ processes and products into her own preconceived notion that there may be a relationship between different types of music composition tasks and preferred learning modalities of the subjects under study.

A third strategy that was employed in this study to enhance its credibility was triangulation of methods and sources (Lincoln & Guba, 1985). Triangulation helps to minimize distortions by providing a “convergence of multiple perspectives for mutual confirmation of data to ensure that all aspects of a phenomenon have been investigated” (Krefting, 1991, p. 177). Triangulation of methods in this study was provided through analysis of music task assessment scores (product) provided by independent judges, the learning styles instrument administered to all participants, and through semi-structured interviews in which subjects analyzed their own
processes involved in each composition task, as well as their own musical products. Analyzing and comparing individual cases for patterns with regards to learning style preference and compositional approach established triangulation of sources.

**Applicability.** “Applicability refers to the degree to which the findings can be applied to other contexts and settings or with other groups” (Krefting, 1991, p. 174). Although it is recognized that qualitative research is not intended to be generalizable, the strategy of transferability (Lincoln & Guba, 1985) enhances trustworthiness through thick description. Thick description is defined as the inquirer’s development and reporting of “a sufficient base to permit a person contemplating application in another receiving setting to make the needed comparisons of similarity” (Lincoln & Guba, 1985, p. 360). In this study, the researcher provided thick description through analysis of and reporting of related research and through in-depth and clear reporting of the study’s subjects, context, setting, findings, limitations, and recommendations for further study.

**Consistency.** Dependability is the strategy through which a qualitative study meets the criterion of consistency. One way that dependability for this study was enhanced was through triangulation of methods. According to Krefting (1991), “Dependability can also be enhanced through triangulation to ensure that the weaknesses of one method of data collection are compensated by the use of alternative data-gathering methods” (p. 180). Triangulating the rating rubric data from the expert independent judges who had no knowledge of, or connection to, the subjects with the learning styles assessment, and subjects’ interviews, enhanced the dependability of the research. Other strategies that were included in this study to enhance dependability were thick description of research methods, peer examination of research plan and implementation, and the development of an audit trail (Lincoln & Guba, 1985). Lincoln and
Guba (1985) describe the audit trail as “a residue of records stemming from the inquiry” (p. 319). In this study, these records include: written and audio-recorded music compositions; scores from the composition rating scale and the learning styles instrument; transcripts from semi-structured interviews; description of data analysis procedures and products, and themes and categories developed during the qualitative coding process; and a digital reflexive journal of notes, compositions, and thoughts regarding the inquiry process and findings.

**Neutrality.** Neutrality is the degree to which the findings of an inquiry are determined by the subjects and conditions of the inquiry (Lincoln & Guba, 1985). Confirmability is the suggested strategy of neutrality and was addressed in this study primarily through reflexivity and triangulation of methods and sources. Reflexivity is the process by which the researcher assesses how his or her own bias, motivations, interests, or perspectives may influence the data (Lincoln & Guba, 1985). It was incumbent upon the researcher to be aware of this influence and to make efforts to minimize the effect on the data. A digital reflexive journal was maintained by the researcher in an effort to maintain impartiality throughout the data collection and analysis processes. In addition, two independent judges not connected with this study completed the scoring of the subjects’ compositions. Their scoring enhanced the neutrality of the study, as they had no prior knowledge of, nor interest in, the subjects.

**Research Setting**

The setting for this study was a suburban Connecticut school district approximately 65 miles north of New York City, with a population of approximately 20,000 residents. The school district is in DRG A, which is a Connecticut district reference group of school districts based upon district population and resident income. There are nine school districts within this designated district reference group (Connecticut State Department of Education Website). The
Sample selection. The sample for this study was selected by inviting all incoming fifth grade students from each elementary school, except for the school in which the researcher teaches, the opportunity to participate in a music composition camp for three weeks during August 2007. In May 2007, 420 invitations were sent to prospective participants. Of these, 13 positive responses were returned. In July 2007, the researcher contacted all participants with a weekly schedule and expectations. Four subjects withdrew from the study at that time, as they were unable to commit to the requirements. Of the nine remaining participants, four participants completed the four music composition tasks within the allotted time. In September 2007, the researcher again invited fifth grade students to participate in the study as an after-school music program. An additional 15 participants joined the study, and of these participants, eight subjects completed the four composition tasks. One student dropped out of the study prior to the semi-structured interview phase. A total of 11 subjects completed the program related to the study.

Instrumentation

The data for this study were obtained from the following sources:

1. A researcher-adapted 6-point rating scale to assess aesthetic appeal, originality, craftsmanship, and proportion of student compositions (Appendix E).

3. One 30-minute semi-structured interview per subject (Appendix G).

**Rating scale.** The composition rating scale developed for this study utilized an assessment technique developed by Teresa Amabile (1983). The Consensual Assessment Technique (Amabile, 1982) is an assessment technique in which creative products are independently rated, not on an objective basis, but subjectively. The technique is based upon two important assumptions regarding assessment of creative products. The first assumption is that creative products can be reliably judged when the group judging has expertise in the domain being assessed (Amabile, 1982). The second assumption states that there are “degrees of creativity – that observers can indeed say, at an acceptable level of agreement, that some products are more creative or less creative than others” (Amabile, 1982). In this study, the first theoretical assumption was met in the selection of the assessors. Each judge was a university music professor. The researcher considered this pair of judges an *appropriate group* as they had a high level of experience within the domain being assessed (composition). The second assumption was also supported by the selection of judges as they were drawn from a similar background, but with some degree of difference in areas of musical expertise. The first judge held an AMusD degree and held university leadership roles as the associate chair of the university music department, as well as the graduate music coordinator. Additionally, he was a Pulitzer Prize nominated professional composer who taught music theory, choral conducting, choral ensembles, and composition. The second judge held a PhD and held university leadership roles as student teacher supervisor and music education coordinator. His professional teaching
roles included elementary and secondary music education courses and sight singing and ear-
training. He was also the author of two books on active listening lessons.

In addition to the theoretical assumptions, the technique defines a number of
requirements for the assessment procedure. They are as follows (Amabile, 1982):

1. All judges must have some familiarity in the assessed domain.

2. Assessments must be independent, based upon judges’ subjective views of creative
   products.

3. Judges should be asked to make assessments on other dimensions in addition to
   assessments regarding creativity.

4. Judges should be instructed to rate the products relative to one another rather than
   against some absolute standards they may have for the domain.

5. Products should be viewed in random order.

For this study, the above requirements, respectively, were met in the following ways:

1. Both judges were university music professors with familiarity in the assessed domain
   (composition).

2. Assessments were completed independently by each expert and based upon each
   expert’s view of creative products. To honor this important component of this
   assessment technique, simple definitions of each dimension being assessed (aesthetic
   appeal, originality, craftsmanship, and proportion) rather than overly specific criteria
   were provided to each judge prior to assessment.

3. Compositions were rated on dimensions other than creativity. The dimensions being
   assessed were aesthetic appeal, originality, craftsmanship, and proportion.
4. Judges were instructed to rate the compositions relative to one another, rather than against an absolute standard for composition.

5. Compositions were rated in random order.

The rating scale included items that the independent judges used to rate compositions on the following dimensions: aesthetic appeal, originality, craftsmanship, and proportion. Although no specific definitions of the four dimensions were provided, to protect the integrity of the CAT, each dimension was given a simple definition as follows: *Aesthetic appeal* refers to the intangible quality of a musical composition that draws the listener in, and makes the listener want to revisit the piece. *Originality* refers to the newness of the composition, something not done before. *Craftsmanship* refers to the internal and overall structure of the composition and appropriate use of musical elements. *Proportion* refers to how the various components of the composition relate to one another in an appropriate ratio. Each dimension was scored using a 6-point scale, as follows: 1 – none of the characteristic is present, 2 - little of the characteristic is present, 3 – some of the characteristic is present, 4 – characteristic is present at least half of the time, 5 – characteristic frequently present, and 6 – characteristic present throughout the piece.

The selection of the dimensions (aesthetic appeal, originality, craftsmanship, and proportion) was based upon previous research utilizing the consensual assessment technique in the rating of children’s musical composition (Hickey, 2001; Auh & Johnston, n.d.). Interrater reliability of the CAT is between $r = .72$ and $r = .91$.

**Learning Style: The Clue to You!** *Learning Style: The Clue to You! (LS:CY!)* (Burke & Dunn, 1998) is a learning styles instrument, based upon the Dunn and Dunn Learning-Style Model, that identifies 20 elements that affect student learning in the following categories: environmental, emotional, sociological, physiological, and psychological. For the purpose of
this study, the data drawn from this instrument were primarily in the physiological domain as the researcher was interested in the relationship between the four perceptual modalities (visual, auditory, tactual, and kinesthetic) and children’s music composition processes and products. The *LS:CY!* uses a scoring system on a sliding scale from *strongly does not prefer* to *strongly prefers* for each dimension assessed.

The *LS:CY!* is an online assessment developed for children in grades five through eight. There are five sections to the instrument. Each section begins with a short mystery story, followed by a series of questions intended to identify students’ particular learning-style preferences. The instrument contains a total of 69 questions in a multiple-choice format. Readability ratings for the *Flesh Reading Ease* are 78.7 (on a 100-point scale with scores closer to 100 having higher readability) and a Flesh-Kincaid Grade Level of 5.0 (Dunn & Burke, 2005-2006). According to Dunn and Burke (2005-2006), “The fifth-grade reading level was deemed low enough to avoid frustrating middle-school students and still contain vocabulary that would be interesting and challenging” (p. 12). Possible responses include both text and a picture image of the corresponding response. It is believed by the constructors of the instrument the “inclusion of both verbal and nonverbal message forms is a major feature of the instrument that allows response options to be processed in the style of the individual’s global/analytic preference or through preferred modalities” (Dunn & Burke, 2005-2006, p. 12).

The *LS:CY!* may be administered both individually and in groups. The instrument requires approximately 40 minutes to complete; however, it is not required to complete it in one time period. In this study, some of the subjects were administered the instrument in a small group in a computer lab, while others were administered the instrument individually.
Reliability studies have been conducted on the *LS:CY!*, with a test-retest reliability mean value of the coefficient at $r = .937$. Internal coefficients consistency reliability has been established with a mean of $r = .94$. An analysis of demographic variables found no significant differences among consistency scores, indicating that gender, location, school, ethnicity, grade, or order in which the test was taken had no effect on the results (Dunn & Burke, 2005-2006). Content validity has also been established for this instrument, as it relates to the Dunn and Dunn Learning-Style Model (Dunn & Burke, 2005-2006).

To maintain the integrity for the instrument *Learning Style: The Clue to You! (LS:CY!)* (Burke & Dunn 1998), which *does not* claim that specific learning styles are more likely to demonstrate creative behaviors, the data gathered in this study were not intended to demonstrate a propensity for specific learning modalities toward creative compositional ability, but rather whether specific *types* of composition tasks are more appropriate than others for demonstrating composition ability depending on learning style preference and processing strengths.

**Semi-structured interviews.** This study utilized one 30-minute semi-structured interview with each of the 11 subjects. Each interview was conducted face-to-face with each of the 11 subjects, at a time and location convenient for each subject. The purpose of utilizing this technique of data-collection was to gain deeper understanding of the subjects’ perceptions of and attitudes toward the different approaches to composing music, as well as to how the subjects’ viewed their own musical products. Semi-structured interviews allowed the researcher to analyze the processes that the subjects undertook to complete the given tasks, as well as to determine if subjects could articulate their successes, or difficulties with the differing approaches to composition.
Using ethnographic interviewing techniques (Spradley, 1979), the researcher developed a set of questions (see Appendix G), with the counseling of her primary advisor, designed to elicit the most relevant data in the least amount of time. Descriptive questions included: specific grand tour questions, specific mini-tour questions, example questions, and experience questions. The specific grand tour questions allowed the subjects to describe their overall approach to music composition. Specific mini-tour questions allowed subjects to recount with more specificity the process they went through for each of the four composition tasks. The example questions developed as subjects analyzed their own music compositions (products), and the experience questions helped to identify not only the subjects’ prior knowledge of music, but also their attitudes toward music learning in general (Spradley, 1979). All interviews were recorded in both analog and digital formats. Digital recordings were saved as .WAV files and imported into HyperTranscribe (ResearchWare, 2005). The researcher then transcribed all interviews into text files for the data transfer to HyperResearch (ResearchWare, 2007). All original sound files were retained both on the researchers’ computer, as well as on audio CD. In HyperResearch, respondents’ statements were qualitatively coded for common and contradictory themes regarding musical compositional processes and products and how they related to subjects’ preferred learning styles.

**Procedures**

The main component of this study required subjects to approach the creation of four separate music composition tasks initiated through different learning modalities: visual, auditory, tactual, and kinesthetic, to determine if there were any relationships between the ways in which elementary school students approached a music composition task and how their level of confidence in that task, as well as the quality of their composition, was articulated. For each
task, subjects used a variety of classroom and self-selected instruments. Instruments selected by subjects included: electronic keyboard, xylophone, non-pitched percussion, violin, cello, and piano. All subjects wrote their compositions using traditional and/or non-traditional notation. The researcher played each composition into GarageBand (Apple Computer, 2007), following subjects’ notations, and direction. If a subject did not specify instrumentation, the composition was played using the piano. All subjects were provided the opportunity to edit, revise, and select instrumentation for their compositions individually on the computer. To protect the integrity of the subjects’ work, any and all revisions to subjects’ compositions were the work of the individual subjects. The input of the researcher was only to instruct subjects on the use of the software being used.

For the visual task, subjects selected one of eight art prints from which to draw inspiration for their musical compositions. Prior to developing their compositions, the researcher demonstrated the process, using a piece of artwork (not one that was included in the study). Subjects were given the freedom to determine specific lines or colors to draw from the print, the mood, rhythm, or any other concept that had meaning for them and gave inspiration for their composition.

The auditory task asked the subjects to develop a music composition based upon a short poem. Each subject listened to the same six poems to determine the one with which they wanted to compose. The researcher demonstrated the process of extracting rhythm patterns and mood using the children’s poem *Pease Porridge Hot*. This instruction included breaking the poem down into distinct measures and rhythmic patterns, although the subjects were also instructed that any musical concept might be extracted from any given poem, and they were free to decide.
For the tactual task, subjects were supplied with a covered shoebox containing a variety of objects of differing textures, sizes, and shapes and asked to create a music composition based upon what they felt. Some of the items included in the boxes were smooth stones, sandpaper, beads, fur, feathers, and small pompoms. Several items were glued to the bottom of the box, but others were loose. Although none of the boxes were exactly the same, each had a similar combination of objects. Before the subjects were given the boxes, the researcher provided several different items to the subjects for analysis, in order to assist them in developing adjectives that could describe what they were feeling. The objects used in the demonstration were random, and in no way correlated to exactly what was in the tactual boxes.

For the kinesthetic task, the researcher taught the subjects a series of movements, which they memorized, and then composed a piece of music to. Subjects were given the time they needed to learn the movements before being asked to compose. Several subjects left the room individually to practice the movements. This was allowed to alleviate any possible discomfort the participants felt by “dancing” in front of their peers.

In May 2007, 420 incoming fifth grade students were invited to participate in a composition program that the researcher would offer during August 2007. The expected time commitment for the composition component of the study was approximately 18 hours to complete the four compositions. Thirteen acceptances were returned. Of these 13 subjects, 9 subjects attended the composition program in August 2007. However, because five subjects withdrew from the study prior to completing the four composition tasks, the researcher extended the invitation again in September 2007 to allow additional students the opportunity to participate in an after-school composition program. Due to time constraints of the school year (subjects only being able to attend for an hour after-school), the researcher extended the program through
January 2008, to provide the necessary time for the subjects to complete their tasks in a relaxed, enjoyable manner. All subjects who completed the composition component of the study, whether they attended the summer sessions or the after-school sessions, worked on their four compositions for between 15 and 18 hours total. When all compositions were complete to the satisfaction of the participants (February 2008), the researcher spent the month of February putting all compositions into score form, coding the work for anonymity, and creating the CDs to be sent to the judges for scoring.

During the months of March and April 2008, subjects were administered the learning styles assessment *Learning Style: The Clue to You!* (*LS:CY!*); however, it should be noted that the researcher did not analyze these data until all interviews were complete, in an effort to reduce bias in the interviewing of each subject.

Semi-structured interviews were conducted between April 8, 2008 and May 28, 2008 at a time and location convenient to each subject in the study. Each face-to-face interview lasted for approximately 30-minutes. The time lapse between the completion of the composition component of the study and the interview may initially seem to be a limitation, however, the researcher ultimately determined that it was a benefit, in that when the subject could not easily recall the *emotional satisfaction* of composing through a particular modality, their responses to their products were more realistic.

In an extended effort to reduce bias during the interviewing of each subject, the researcher did not send the compositions to the experts for scoring until the interviews were underway. By doing so, she would not have knowledge of their composition scores in advance. Therefore, all compositions were sent to the judges in early May, after the majority of interviews were completed, and were returned to the researcher in mid-May 2008. All recorded
compositions sent to the judges were arranged in random order, and coded numerically, so the subjects’ identities were anonymous to the judges. The researcher felt that it was important to the study not to have information regarding subjects’ learning styles, or the judges’ composition scores until all interview data were collected from the subjects.

**About the Researcher**

The researcher in this study has been an elementary music educator for 16 years. As an elementary music educator, she has always appreciated the abilities of the young learner, and the incredible ability of children to surpass the learning expectations of adults, given the correct structure. Music composition has always been a facet of music education that she has had a great interest in. While at the beginning of her teaching experience, the researcher was highly confident in elementary teaching methods, music theory, and history, she would not have considered herself a composer, and has worked diligently to find the best and most comprehensive ways to include composition into her teaching.

This researcher began teaching in 1993. In 1994, the National Standards for Music (MENC, 1994) were ratified. These standards called for the implementation of the creating strand into music education. Improvising and composing, standards three and four, respectively, require (and as the standards are voluntary, encourage) educators to teach their students in these areas. Therefore, the researcher immediately began to experiment with composition in the music classroom, and attempted to infuse composition and improvisation at every grade level in her teaching. Additionally, she began her own attempts at composing and arranging, and to date has written and/or arranged several compositions for her own choral and instrumental students.

The researcher in this study has also recognized for many years, that people learn the same content differently. It was this recognition that drew her to the idea that learning styles
might impact, or influence, music composition. A friend, and colleague, who could write a score for band, sitting in a chair, able to hear every instrument in her head and how each would sound with the others, confounded this researcher. After trying to compose in the same manner, she recognized that she did not think in sound. In other words, she was not auditory, which can be a difficult realization for a music educator. However, if this researcher, who is quite musical, is not auditory and can admit it readily, how many of our children are not, and don’t even realize it. It was with this realization that the researcher began to think of and create other ways to compose music. Throughout her musical career, the researcher recognized that although she did not think in sound, she could create music by thinking verbally, or in pictures. Additionally, her tactual strength allowed her to create by feeling her way around the piano, her primary instrument. It was this realization that compelled her to develop tasks that were different from the standard methods of composing. If this researcher has a bias, it is only in that she believes that children can accomplish anything, when presented in a manner that they can accept.

**Ethics Statement**

Permission to conduct this research was granted from the district’s superintendent (Appendix H), the housing principal (Appendix I), and all participating students and guardians (Appendix C). To assure confidentiality, each participant was assigned a confidential identification code. All data were stored in a locked filing cabinet in the researcher’s home and will be maintained there until the findings have been published, accessible only to other researchers for whom the data will prove useful in further comparative analyses and who are affiliated with or enrolled in Western Connecticut State University’s Doctor of Education in Instructional Leadership Program.
CHAPTER FOUR: RESULTS

The results presented in this chapter include the findings from the four composition tasks completed by the 11 subjects in the study, the analysis of the compositions by the independent judges, the data from the learning styles assessment, and the insights of the subjects from semi-structured interviews. The two questions addressed in this study include:

1. How are the musical compositions of elementary school children related to their preferred learning styles?
2. When students compose music through their preferred learning perceptual modalities (visual, auditory, tactual, and kinesthetic), do they articulate a heightened sense of confidence with the compositional process, and is this sense evident in their musical compositions?

To describe the core findings of the study, each case is presented with detailed explanation of subjects’ analyses of their own compositional processes and products, culminating with comparisons within and between cases. The following themes emerged from the study:

1. Response to Task
2. Subject’s Perception of Process Consistent with Learning Style
3. Subject’s Perception of Product Consistent with Learning Style
4. Judges’ Perceptions of Product Consistent with Subject’s Learning Style
5. Confidence in Composing

Coding

Preliminary coding. Preliminary coding for this inquiry was developed as musical compositions were analyzed by independent judges, as well as by the subjects. Digitally recorded interviews were transcribed and analyzed for common themes within and among cases.
Coding was hierarchical as data from interviews, learning styles assessment, and independent judges’ scores were incorporated into the study.

The initial coding list within this study included 107 codes encompassing a broad range of categories that examined facets of the subjects’ musical abilities, experiences, attitudes, and perceptions as musicians and composers, as well as the subjects’ analysis of their compositional processes and products.

**Axial coding.** The 107 preliminary codes were collapsed to create axial coding and the categories that pertained most effectively to the two research questions in the study. The categories were developed from common statements and ideas resonating from the preliminary codes. Axial codes comprised five central categories that define the structure of the inquiry: Response to Task, Subject’s Perceptions of Process Consistent with Learning Styles, Subject’s Perceptions of Product Consistent with Learning Styles, Judges’ Perceptions of Product Consistent with Subject’s Learning Style, and Confidence in the Composing. These five categories were utilized to address the research questions presented in the study and generate theories on how the approach to music composition was related to learning styles. These categories were also used to frame and describe the details revealed in the findings from each case study. Each of the coded categories followed the vignettes to provide thick description, which was a primary need when working within the naturalistic paradigm.

**Response to task.** Subjects were asked to examine each approach to composition (process) and rank them from most to least liked. Most subjects were able to provide rich and detailed responses to the four composition tasks. Responses ranged from highly positive to highly negative, and the researcher had to analyze the data as a professional educator, as well as a researcher, weighing the words of children. When examining data for comments that would
indicate feelings of success or confidence in the process, the researcher discovered that statements such as, “liked,” “enjoyed,” “fun,” “felt great,” and “easy” all were related to confidence in the approach, whereas, “didn’t like,” “boring,” “difficult,” “hard,” and “frustrating” were most often used when there was a lack of confidence in the process.

**Subject’s perceptions of process consistent with learning styles.** The subjects’ analyses of the processes they went through while completing each task revealed an in-depth view of their thinking while composing. There was consistency over several cases where subjects’ perceptions of the compositional processes, based upon their comments, matched their assessed learning styles. In several cases, subjects mentioned that they obtained more compositional ideas from some of the tasks than from others. They were able to articulate reasons why they liked some tasks, but not others, and in several cases their descriptions matched their learning styles.

**Subject’s perceptions of product consistent with learning styles.** The subjects’ analyses of their own musical products may not have been as accurate as the analyses of the processes, since the subjects may have had difficulty extricating the process from the product. This set of data was a weakness in the design of the study, but necessary to answering the second research question posed as the subjects listened to and examined their own creations. This weakness was reduced significantly by having all of the subjects’ compositions scored by independent judges. It was also hoped that enough time had passed between phases of the study that subjects would find it difficult to remember which process led to which product. In most cases, this was the case.

**Judges’ perceptions of products consistent with subjects’ learning styles.** The judges scored all of the compositions on a 6-point rubric on the following four dimensions: *aesthetic appeal, originality, craftsmanship, and proportion*. Judges were asked to score the compositions
relative to one another, rather than to an absolute musical value. The judges had no knowledge of the subjects, and all examples were coded for anonymity. In most cases, the judges gave similar scores to individual compositions, and in several instances the highest scored composition and the lowest scored composition matched in terms of judges’ scores, preferred learning modality, strong preference in *not learning best* in a particular modality, and in the subjects’ responses to tasks (see Table 1).

**Confidence in composing.** The category ‘Confidence in Composing’ developed from the preliminary codes concerning *inspiration for composing, aesthetics, enjoyment, liked approach to composition*, among others. As 10- and 11-year-old children, the subjects were not always able to clearly articulate how they felt about their processes and products. Therefore, the researcher used her knowledge of this age group, and her experience as an elementary school music educator to extract multiple meanings from subjects’ observations and utterances.
Table 1

*Mean and Grand Mean of Judges’ Composition Scores*

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Table 1 (continued)

*Mean and Grand Mean of Judges’ Composition Scores*

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Cases

The 11 subjects in this study were all 10- or 11-year-old 5th grade students from five different elementary schools within the same school district. Although their musical experiences varied somewhat, they were a representation of the demographics in the district. Several of the subjects played musical instruments in the school orchestra or band, with three subjects having private music instruction on piano, or on their school ensemble instrument. None of the subjects indicated on the pre-study descriptive questionnaire any formal training in composition, although several indicated that they had created at least one musical composition in their young lives. To protect the identity of the subjects, all of the following cases are presented using pseudonyms.

In this study, each subject analyzed their own compositional processes and products as they worked through four composition tasks, related to the four learning modalities; visual, auditory, tactual, and kinesthetic. Their compositions were also scored by two independent judges (See Table 2). When appropriate, example compositions are provided for specific cases. These examples are included in Appendix D in the following order: Visual: Figure D1 through Figure D4, Auditory: Figure D5, Kinesthetic: Figure D6 and Figure D7, and Tactual: Figure D8 through Figure D14.
Table 2

Results of Learning Styles Assessment, Subjects’ Responses to Task, Subjects’ Responses to Product, And Rankings of Judges

<table>
<thead>
<tr>
<th>Subjects</th>
<th>LS:CY! Results</th>
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<th>Ranking of Preferred Compositions</th>
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Note: All rankings by subjects are based on a scale of most liked to least liked. All rankings by judges are based on ratings for each task. *No hyphen indicates that identical scores, or rankings were given.
Table 2 (continued)

*Results of Learning Styles Assessment, Subjects’ Responses to Task, Subjects’ Responses to Product, And Rankings of Judges*

<table>
<thead>
<tr>
<th>Subjects</th>
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<th>Learning Styles</th>
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Note: All rankings by subjects are based on a scale of most liked to least liked. All rankings by judges are based on ratings for each task.
Frank

Frank, an 11-year-old male, could be described as a confident music student entering the study in the after-school session. His father is a composer, and Frank had some exploratory experience with composition. Although in his interview he expressed some apprehension at the beginning of the process, he settled in quickly and completed his four compositions. As a cellist, he exhibited confidence in general understanding of music, but did not have any formal experiences with composing, although he indicated that he found it fun to “fool around” on the piano trying to create something. He could consistently and confidently articulate his rationale for task preference, often using appropriate music terminology with reference to melody and rhythm. The learning styles assessment indicated that Frank has a visual preference, or learns by seeing. He does not learn best by moving (kinesthetic), and his tactual and auditory strengths depended upon the task being completed.

Response to task. Frank had definite positive and negative reactions to specific composition tasks. He clearly articulated that the visual task was his favorite. He felt that looking at the print gave him several ideas of what his piece might sound like. He stated, “I liked the visual one because it gave me an idea of where the range of notes would be already, and it would get me started on the first thing to do.” From the researcher’s perspective, he was describing how the visual approach inspired him melodically. He also described how the colors within the print inspired pitch. He stated, “It inspired me because I also looked at the color it would be, so I could pick - like if it was like a bright yellow, I would choose a higher pitch.” In his analysis of product, Frank also selected the visual composition as the one he most enjoyed listening to.
Frank indicated that his second favorite task was the tactual composition. He articulated that it was fun because it “was interesting to see – well – feel.” He described how he felt all of the shapes until he found the ones he was interested in. He was very specific on one particular item in the box. He stated, “I think it is like a yarn, string thing, going wavy. Then, it stuck out straight – then it went up ... it was at the top of the box, so I used the violin for it.”

Frank ranked the auditory process third, although he still used the word “liked” in his description of the approach. He once again used melodic concepts when discussing the approach. He described listening to the poem: “It helped me because I kept on following the range of your voice, how it kept going up and down.” Upon listening, however, this composition was the one he liked least and described that selecting the right instruments for the composition became a distraction to him.

The kinesthetic composition approach was the only one in which Frank gave a negative response to task. His response, “I didn’t like that one because you couldn’t really tell what, well you could tell what the rhythm would be, but you could never tell what instrument would possibly fit in there and it’d be harder to figure out what note would fit in there. I just think it is more difficult for me.” In his analysis of the product, however, he did rank this composition higher than the auditory composition.

**Subject’s perceptions of process consistent with learning styles.** A comparison between the data obtained from the subject’s interview and from the learning styles assessment indicated, in this case, a relationship between the subject’s preferred learning modality and the approach to composition. The *LS:CY!* indicated that Frank demonstrated a visual preference: he learned by seeing. His descriptions of the visual task seemed to support this connection. His ability to specifically recall the lines and colors that he was able extract from the print and turn
them into music indicated that seeing the print had great influence on what he wrote. The
LS:CY! also indicated that Frank did not learn best by moving. The kinesthetic task was the only
one that Frank stated specifically that he did not like to use as an approach to composition. It
was interesting to note that the two remaining tasks, ranked second and third, respectively, were
tactual and auditory. Both of these preferred modalities on the LS:CY! indicated that the subject
may or may not have had a strength depending upon the task undertaken.

**Subject’s perceptions of product consistent with learning styles.** Frank emphatically
stated that he liked his visual composition over the other three; “I think it was the best one of
them.” Frank described the visual composition as giving him “a little more excitement than the
others.” It was difficult to ascertain if the process was so enjoyable to him that it influenced what
he heard. The scores of the judges were split on this composition, with one finding all four
dimensions at least half of the time, while the other not at all, or very little. The grand mean
scores of the judges, however, indicated that the visual composition was of higher quality than
his auditory or kinesthetic compositions.

Frank ranked the tactual composition as the product he liked second best. The judges
also thought that the tactual composition was of higher quality than his other works, and gave it
the highest score of his four compositions. The LS:CY! indicated that Frank may or may not
have had a tactual preference, depending on the task.

Frank’s least favorite composition to listen to was the auditory composition. He
described this composition as uninteresting because he only used “one instrument.” He also felt
that the composition “didn’t have any excitement to it. I think I should have written it better.”
The judges’ scores agreed with Frank’s analysis, and although it did not receive the lowest grand
mean score of his four compositions, it was much lower than his highest scored composition, the tactual.

**Judges’ perceptions of product consistent with subject’s learning styles.** In this case, the judges’ scores were not consistent with Frank’s preferred visual learning modality; however, they were consistent with Frank’s views of his auditory, kinesthetic, and tactual compositions. The kinesthetic approach was the only one that Frank articulated a dislike for the process, and it was the lowest of his compositions as scored by the judges. The *LS:CY!* indicated that the kinesthetic modality was not one of his perceptual modality strengths.

Additionally, although Frank indicated that he did enjoy the auditory process, he found that it was very difficult for him to complete, as there were too many choices for him. He disliked the way that composition came out, and the judges’ scores were consistent with his assessment.

The tactual composition was described in detail, as fun and interesting to “figure out ... what it could be” and the judges’ scores reflected Frank’s enjoyment of the process and the product. This composition was the highest scoring composition of the four that Frank completed. On the *LS:CY!*, it was indicated that tactual learning may or may not be a strength, depending upon the task.

**Confidence in composing.** Frank indicated that he was nervous when he first started his composing tasks. He saw other subjects working and was confused by what he was supposed to do. When asked how he felt about that, he laughed and said “I didn’t feel too good about that.” He went on to say that although he was a little confused at first, once he started working he “felt better and ... more interested in composing.” The visual composition was the first one he completed. Among the four tasks he completed, he exhibited the most confidence in creating his
visual composition (his preferred perceptual modality on the \textit{LS:CY})}; and in listening to his compositions, the visual composition was the one he most enjoyed hearing. However, analysis of the judges’ responses to Frank’s visual composition did not indicate that this confidence was evident in his final product.

Frank indicated the least amount of confidence in the kinesthetic task, which was consistent with his \textit{LS:CY} preferred modality (does not learn best by moving), and while he had no preference for the final product, the judges’ scores did reflect his assessment.

Frank did indicate that he enjoyed working on the tactual composition. This composition was scored the highest by the judges and was well liked by Frank, which may indicate that music composition was an area in which Frank might demonstrate a tactual preference. The \textit{LS:CY} identified this perceptual modality as dependent upon the task undertaken.

The \textit{LS:CY} also indicated that Frank’s auditory preference depended on the task, however, he did not prefer the auditory process, nor did he like the final product. The judges’ concurred with Frank’s assessment of his auditory product.

\textbf{Christine}

Christine, a 10-year-old female, entered the study in the after-school session. As a member of the school band, she felt comfortable reading music. She perceived creating as a fun activity and described some of her more exciting music classes as those that had to do with creating music, although she didn’t seem to feel as though she ever actually composed anything. She described composition as “just making up your own notes.” Christine recognized that composers might be inspired to compose for many different reasons. One visual indicator was provided when she stated that a composer might “see something that starts you on an idea.” The learning style assessment indicated that Christine has a strong tactual preference; she learns by
touching, and has a visual preference; she learns by seeing. Her auditory and kinesthetic strengths depended upon the task.

Response to task. Christine ranked her composition tasks with little hesitation: visual, kinesthetic, tactual, and auditory, although she gave no negative response to any of the four tasks. She stated, “Well, I liked them all.” She described the visual process as giving her ideas, and felt that the task wasn’t overly restrictive. She stated, “You are more free to like, make, you know it would have to be a higher or lower note, but you don’t know which higher or lower note... that’s what I liked: you could have a bit more choice in what you would write.” Additionally, she described the print as showing her melodic direction when she stated, “If it’s a picture, it will go... up, or down, or in the middle, or somewhere like that so you would know the range of notes. Usually there’d be... three or four that you might like, so that’s a bit easier.”

Christine felt that the tactual process was challenging for her because there were too many choices. She had difficulty deciding which shapes and textures to use in her work. When describing the auditory process, her least favorite compositional process, she combined a non-musical example with her analysis of the auditory approach. Here is her example:

Well, I’m not going to say that I get distracted, but sometimes when someone reads something to me... I know I was listening and hearing the words, but then I don’t remember what the person just read ... so the poem was a bit harder because actually it was a bit fast. It helped when you could pause it, but if it was a bit slower, it would have been much easier.

Subject’s perceptions of process consistent with learning styles. The LS:CY! did not indicate that the subject had a preference, or strong preference for not learning best in any of the four perceptual modalities. Her assessment indicated a visual preference and a strong tactual
preference, but auditory and kinesthetic depended upon the task. However, although Christine appeared to have a strong tactual preference, the tactual approach to composition caused distress for her. She felt that there were too many objects to choose from and couldn’t find the connection between what she was feeling and how to create music from the objects.

In her description of the auditory approach, which she ranked as her least liked approach, Christine used a non-musical example to describe how she often finds it difficult to recall what she hears, even when, as she stated, “I know I was listening.” She spent a significant amount of time listening again and again to her selected poem before developing her composition (see Figure D5).

Christine gave little feedback regarding the kinesthetic approach. She liked doing the movement and did not have difficulty developing her composition from the movements.

Her perception of the visual process was consistent with her indicated visual preference. In her description of the visual process, she provided the most feedback specific to the approach and clearly articulated how the shapes in the print provided her with composition ideas.

Subject’s perceptions of product consistent with learning styles. Christine’s case was interesting in her product evaluation. She was unable to match any of the listening examples to the approach taken, and she was fascinated to discover that the task she most enjoyed working on (visual) was actually the one she least liked listening to, by a significant margin. She stated, “I like the beginning, but towards the end I get bored and it’s a bit more quiet and not as good to me.”

Conversely, the composition she most enjoyed hearing was the tactual composition, which was consistent with her strong tactual modality preference. Although she didn’t have a dislike for this task, “I liked them all,” it was the one that caused her a great deal of stress in that
she felt there were too many choices. Perhaps she had difficulty choosing because she did like this approach the best, it matched her modality preference, and that was what made it so difficult and stressful. She would have liked to have used all of the possible choices, but time constraints on task completion were a reality.

Judges’ perceptions of product consistent with subject’s learning styles. The scores of the judges were very consistent for all of Christine’s compositions. Although Christine did not articulate a like or dislike after hearing her auditory composition, it received the highest grand mean score of her four compositions, from both judges in all dimensions. The $LS:CY!$ indicated that an auditory preference depended upon the task, however, Christine did not prefer working on the auditory task. The judges also gave higher scores to her tactual product, so their perceptions of her tactual composition were consistent with her strong tactual preference. The judges scores for her visual composition were not consistent with her visual preference, and were also not consistent with her feeling toward the visual approach.

Confidence in composing. Throughout the composition process, Christine was a confident subject, willing to take risks with her music. She enjoyed all four of the approaches to composition, “I liked them all.”

In her analysis of her visual composition, which was the task that she most enjoyed working on, but least enjoyed hearing, Christine articulated specific reasons why she enjoyed working on the task and also why she did not like the final product as well as some of her other work. She felt that the process gave her enough choices, without being overwhelming. She stated, “... You could have a bit more choice in what you could write, than in the others.” When asked to described what she did not like about her final visual product, she explained that after hearing her composition, “I wish I had made a different picture, but I couldn’t erase because I
had already made the notes and stuff... it was like high, high, high, high, high, low, low, low, low, high, high... and I got a little bored with it.”

In this case, the subject felt that too many musical choices were a problem for her. She articulated that the tactual task was frustrating for her, not because she was unable to turn what she was feeling into sound, but because there were too many objects from which to choose.

Claire

Claire, an 11-year old female, stated early in her interview that there were many other things more interesting to her than composing music. Her school music experience seemed to have left her bored with music education in general. She played cello in the school orchestra the previous year, and was in the school band at the time of the interview. She also had taken dance lessons for a few years. When asked to describe a particularly exciting music class, she shyly whispered, “I don’t really know... the music class in my school is not that fun.” After further deliberation, she did admit that the square dancing done in music was “sometimes fun.” Several of Claire’s responses indicated that she did have a solid grasp of musical concepts. She referred to tempo and originality in her description of musical preference, “I like it if it’s fast, it has like jump to it. It is different than most... it, uh, the tempo change a lot.” She specifically indicated a preference for rhythm as something that kept her attention when listening to a piece of music. She described slower music as music that is interesting to “older people.” The subject described composing, as “there is nothing wrong. It can be anything you like, and you can make it however you want.”

The learning styles assessment indicated that Claire has a negative visual preference, or does not learn best by seeing. She also does not learn best through her kinesthetic modality
(strong preference), and her tactual and auditory strengths depended upon the task being completed.

**Response to task.** Claire was very comfortable discussing each of the approaches that she took in discussing her compositions. She immediately stated that the auditory approach was her favorite, while the visual task was the one she least enjoyed. She described the tactual as her second favorite and the kinesthetic third.

In analyzing the approach to her favorite task (auditory), Claire talked about how she selected a poem that had “faster rhythms,” listened for sections, and worked through each. She stated, “Like, I did a section, tried to figure out how many measures ... and it was, like, fast, so it kept my interest.” She articulated that the most difficult part of the task was actually writing down the notation.

Claire was most animated when discussing the tactual composition approach. When asked to describe how the tactual approach helped her organize her thoughts, she stated, “Well, I did like a corner at a time, or I found the marble things ... and then I tried to follow the pattern. Then, I ... found something else near that that, and I found like soft, fuzzy things.”

In addition to looking for patterns, Claire responded to the textures of the items in the tactual box. Several of the items peaked her curiosity, and she used many of the items in her composition. When asked why she was “following the rocks,” she simple stated, “Because I wanted to see where they went.” She also stated that there was an object in the box that distracted her: “There was like this little thing that kept moving around ... it was like a chain that moved up and down.” Although she described the item as a distraction, she included it in her composition. “I just kept it straight, sort of,” she stated.
In response to the kinesthetic task, Claire described how the movements helped her organize the beats into “like sections.” She felt that the movements that were done with her feet were helpful, but stated, “the arms sort of got me messed up ... so I did them separate” (see Figure D6).

When describing the visual approach, Claire indicated that she did like that she was able to select the print to use and the shapes to use from the print, but found it difficult to “pick the notes.”

**Subject’s perceptions of process consistent with learning styles.** In this case, the subject’s perception of the composition process was consistent with her learning style, as it pertains to the visual and kinesthetic tasks. The *LS:CY*! indicated that Claire did not learn best by seeing (preference) and did not learn best by moving (strong preference). The visual and kinesthetic tasks were the two that she did indicate were more difficult for her. In the visual task, although she appreciated the opportunity to select her own print and the shapes from the print, she did not feel that it helped her “pick out the notes.”

The kinesthetic task was not inspiring to Claire, although she felt that it was easy to work on different sections because the beats were very clear. However, this task was the only one of the four that she specifically stated she did not like doing. She stated, “I didn’t like the dance one really ... it was very plain.” She later stated that the main problem for her was that the movements weren’t really “a dance.”

Although the *LS:CY*! gave no indication the Claire learns best by hearing or touching (it depends on the task), the auditory and tactual compositions were the two she most enjoyed working on. Therefore, an assumption might be made that, in the case of composing music, she demonstrated a preference for those perceptual modalities.
**Subject’s perception of product consistent with learning style.** After listening to all four of her compositions, the subject gave her lowest score to the kinesthetic composition and her highest score to the tactual composition, with no particular preference toward either the visual or the auditory compositions. In her analysis of the kinesthetic composition, the subject stated, “It’s really slow and I kept thinking, usually I hear a song that is slow, then something big happens. So, I’m waiting and waiting, and nothing happens.” She continued, “Something else I don’t like, you can see that it goes do-re-mi-fa-so [referring to the movements]. You can hear it going up, and you repeated it [the movement], so, make it different” (see Figure D6). She liked her tactual composition very much, and when asked if she would change anything, she would only have changed the tempo to make it “a little faster.”

**Judges’ perceptions of products consistent with subject’s learning styles.** Since all four of Claire’s compositions scored consistently in the middle (primarily three or four) on all four dimensions, except for proportion on the kinesthetic composition (two), the data in this case did not seem to support a consistency between the judges’ perceptions and the subject’s learning styles. However, the judges’ perceptions of Claire’s music were consistent with her own, with respect to the tactual and auditory compositions, with her tactual composition scoring the highest from both judges, as it did with Claire.

**Confidence in composing.** The data in this case did not provide enough evidence to demonstrate that the subject’s confidence in music composition was evident in her products, however, there was consistency with confidence in the approach to composition (process) and the subject’s preferred learning modalities. The subject articulated specific problems she had with the visual and kinesthetic composition processes that also reflected her preferred perceptual modalities.
Furthermore, although the *LS:CY!* did not indicate that the subject had a particular preference for approaching tasks through the auditory or tactual modalities (it depended on the task), there was evidence to suggest that in music composition, these modalities were her preferred modalities. Her level of confidence was heightened in these processes, as evidenced by her analysis of the processes. Her assessments of the tactual and auditory products were also consistent with the judges.

**Michael**

Michael, a 10-year-old male, could be described as quiet, reserved, and responsible. He took his role in this study quite seriously, and was very interested in the composition process. Michael did not play an instrument in school, but had a few years of private piano instruction. He was very comfortable reading musical notation, but did not have any experience with writing his own music. He referred to a typical school music class as “singing the whole time,” but enjoyed music very much. Michael described composition as “music that you write, and well, there’s a certain number of beats in a measure and you can get louder or softer.” When describing a piano piece that he was learning for a recital he identified and described the form, melody, and tempo as standing out in his memory and stated that he preferred classical music over rock or pop.

The *LS:CY!* indicated that Michael had a strong preference in three out of the four perceptual modalities: auditory, learns by listens; kinesthetic, does not learn best by moving; tactual, does not learn best by touching. His visual preference depended upon the task.

**Response to task.** Michael enjoyed working on the tactual composition far more than he enjoyed the other three, and spent the most amount of time discussing this task. He stated, “I liked how you had to touch stuff, and I didn’t really know which one to pick.” He went on to
describe how he selected objects based upon texture, size, and shape that inspired him to develop his composition. He continued, “well, if it was like furry or feathery, that would inspire me to do something soft ... and if it was rough, like sandpaper, I would do something loud.” Michael described his ability to organize his thinking as having “to do with the dimensions ... of the objects” that he selected.

The visual and kinesthetic processes were ranked second and third, respectively; with the auditory process being identified as one he disliked working on the most. He said, “I didn’t really know how to make music from a poem. I wrote down the beat (rhythm) first, like dut – dut – dutdut – dut (tapping out the rhythm) and then I would write like quarter note – quarter note – eighth – eighth – quarter note. Then I would choose some notes that fit together, that sound well together.”

**Subject’s perceptions of process consistent with learning styles.** With respect to the tactual and auditory composition processes, Michael’s preference for the composing tasks appeared to be in opposition to his perceptual strengths. However, a close analysis of his descriptions of the two tasks revealed an interesting dichotomy. In the subject’s description of the tactual process, he made very few specific references to music and composing, except to describe how the items influenced his thinking of dynamics (loud and soft).

However, in his auditory description, although he ranked this process as his least favorite, his descriptions of the compositional elements he was able to extract from listening to the poem were much richer and more specific to his composition. He could recall with ease, and accuracy, the rhythmic structure of his piece, and how he was able to extract the rhythm from the words he was hearing. He then described how he was able to write the melody by reviewing the rhythms he had notated and then selecting notes [pitches] that would “sound well together.”
Michael’s selections of the visual task process and kinesthetic process as lesser-enjoyed approaches were in alignment with his preferred modalities. He struggled with the movements required to accomplish the kinesthetic task, and as the researcher observed him working on the visual task, he expressed that while he understood what to do with the shapes in the print, he was having difficulty making it “sound good” several times. His final visual product was very dissonant, and will be discussed further in the next section.

**Subject’s perceptions of product consistent with learning styles.** In this case, the subject’s perceptions of his tactual product were not consistent with his learning style. The *LS:CY!* indicated that the subject did not learn best by touching. However, the tactual composition was the one that Michael most enjoyed working on, and was also the one he most enjoyed listening to. In listening to this composition, Michael stated, “I liked how one part sort of repeats, and the other part has more feeling. And, I like the end.”

In describing his visual composition, which was the one he liked least he stated, “Well, there’s a lot of clashes.” His identification of the “clashes,” or dissonance was also noted in the judges’ scores. One judge agreed with the subject’s perception, while the other found favor with the dissonance.

Although the subject stated that the auditory composition was his least favorite to write, he did like the final product. So, while his perception of the process may have been inconsistent with his learning style, his analysis of the product was consistent.

**Judges’ perceptions of product consistent with subject’s learning styles.** The data obtained from the judges’ scoring rubrics and the subject’s learning styles assessment showed a consistency between the judges’ perceptions of Michael’s auditory composition and his strong auditory preference, as well as between Michael’s kinesthetic composition and the data that
indicated that he does not learn best by moving. Additionally, the data obtained from the subject’s response to his own products and the judges’ scores indicated that the judges’ perceptions of Michael’s compositions were consistent with Michael’s perceptions of his tactual and auditory compositions. One of the judges also agreed with Michael’s analysis of his visual composition.

**Confidence in composing.** Overall, Michael felt that he grew as a composer and felt confident in several of the approaches that he took to composing. When asked how he felt composing, he stated, “I liked it. I felt good after I did all of my work and listened to my pieces ... cause I know that I had composed it.”

**Susan**

Susan, a 10-year-old female, entered the study in the after-school sessions. As a second year violinist in her school orchestra, she demonstrated confidence in musical understanding. Her memories of her general music class reflected her knowledge of reading as she described the mnemonics used to recall the names of the lines and spaces of the treble staff, and of class activities that required reading rhythm patterns. When asked how she would explain composing to a student who has never composed before she gave the following response:

Well, first I would ask them if they did [know the notes on the staff]. If they didn’t, I’d try to explain it to them, but I wouldn’t go into a lot of details because I am trying to teach them composing ... choose the first note you want to start with ... then you find notes that make sense.

She was unconcerned about whether or not students could actually read and write music, and did not see a lack of understanding of notation as a stumbling block to composing. She stated, “I would ... ask them if they wanted to choose which sound [on the piano or other
and then I would write it down on the staff for them.” Susan was very interested in thinking about how composers become inspired to write music, and considered several sources of inspiration; events, culture, and people in composers’ lives. She indicated that she had created a couple of her own compositions; one in class and one on her own instrument. She referred to the composition she created on her violin as “fun.”

The learning styles assessment data indicated that Susan’s perceptual modality strengths depended upon the task being undertaken. Therefore, other data from the assessment were used in the analysis of this case, including: conformity, task persistence, and self-motivation.

**Response to task.** Susan enjoyed all of the composition tasks very much. When asked to rank the approaches from favorite to least favorite, she immediately responded, “I liked them all.” After some thought, she ranked the approaches she took to composition in the following order: visual, tactual, kinesthetic, and auditory.

In her analysis of the visual approach, Susan stated, “I liked the visual a lot because I could really see what my thing was sounding like because it went a bit down, then a lot up on the staff. Then, I could see, did it do the same thing on the picture? So, it was kind of fun.” So, for this task, the subject compared the shape of her notation with the shapes she selected from her print. Some of her statements, however, indicated that she was less inspired to be creative in this task, and more interested in following her selected shapes specifically. She stated, “It was kind of like, if I already wrote it out, I’d be like, it sounds OK, but does it match what I did? What I was supposed to do. It’s not just a composition, it’s supposed to match the visual print.” She did feel, however, that the print gave her a lot of ideas to work with.

Susan also responded positively to the tactual task. She thought it was “kind of cool to feel, see if you made bumps in the music if it [the object] was bumpy.” The researcher noted that
Susan approached the tactual task differently from the way some of the other subjects
approached it (see Figure D12). She devised a list of “song traits” (see Figure D13) based upon
the selected items and wrote the following adjectives: bumpy, very loud, hard, has gaps, and
long. Her use of sixteenth notes indicated to the researcher that she viewed that rhythm as
bumpy, and her interesting rest placement provided the “gaps” she referred to (see Figure D14).

Susan’s response to the kinesthetic task reflected a sense of constriction with the
movements. She stated, “I thought the visual one kind of gave me the most freedom because I
could pick anything out if it [the print], but the kinesthetic, where you did the movements, kind
of wasn’t as much because you had to follow those movements instead of making up your own.”

When asked to describe the auditory task, Susan reiterated that she liked all of the tasks.
Although she ranked the auditory task as her least favorite, she qualified her ranking with “the
only reason I ranked that as four is because I liked the others a little bit better.” However, she did
say that she “just didn’t find the auditory one extremely inspirational.” While working on this
task, Susan spent a significant amount of time trying to extract the rhythm as precisely as
possible from the words she was listening to.

**Subject’s perceptions of process consistent with learning styles.** In Susan’s case, the
learning styles assessment did not provide the needed preferred perceptual modality data to
compare the subject’s learning style with the process of composing. Susan’s assessment
consistently showed that her perceptual modality preference depended upon the task undertaken.

However, ancillary data from the *LS:CY!* provided interesting information. According to
the *LS:CY!* this subject has a strong preference toward self-motivation, as well as task
persistence. Her preference toward conformity was evidenced in the specificity of her
description of the visual composition. In that task, it was more important for her to follow the
perceived rules of the task than to take a chance. Her words, “does it match what I did, what I was supposed to do. It’s not just a composition, it’s supposed to match the visual print,” indicated this connection to conformity.

**Subject’s perceptions of products consistent with learning styles.** Although the perceptual modality preference data from the *LS:C/Y!* did not provide enough information to compare the consistency of the subject’s perceptions of the products with her learning styles, the subject’s perceptions of her products showed some consistency to the composing processes. Susan indicated that the auditory approach was the process that she was least inspired by to write a composition. In her analysis of her final auditory product, she also rated this composition as her least favorite to listen to. She was also able to articulate what was missing from the composition that caused her not to like it as well as the others.

Throughout her 30-minute interview, Susan was consistent in her descriptions of music that she enjoys as “making sense” and tones “sounding well together.” In the auditory composition, Susan wrote a single line melody accompanied by non-pitched percussion (maracas). As she analyzed her other compositions, she articulated that she preferred when the instruments go together. Referring to the auditory product, she stated, “I’m not sure the violin went very well with the maracas ... the violin and maracas were not really harmonious together.”

Susan gave her highest scores to the tactual and kinesthetic compositions, and although she most enjoyed working on the visual composition, she rated it as one of her lower scoring products. The judges agreed with her assessment on the visual product.

**Judges’ perceptions of products consistent with subject’s learning styles.** The data did not support consistency between the judges’ perceptions of product and the subject’s learning
styles, however, there was consistency between the judges’ scores and the subject’s analyses of the visual process and product, as well as the kinesthetic product.

The subject rated her visual composition the second lowest of the four. It was rated the lowest by the judges. For the kinesthetic and tactual compositions, the subject scored them equally and gave them her highest rating, with higher scores given by the judges on all four dimensions as well. Additionally, the judges’ scores in this case were very consistent across the four dimensions; aesthetic appeal, originality, craftsmanship, and proportion except in the tactual composition.

**Confidence in composing.** There were no data to suggest that the subject’s articulation of confidence in composing was related to her preferred modality. However, the approaches to composition did give this subject confidence in the overall process of composing. She stated, “I feel composing is a little funner [sic]. There’s lots of different ways to do it, but the ways we usually learn to do it was to just pick notes that go together. But, this actually showed different ways, like to do it by looking at a painting or to do it by actually feeling something and making the music the same. It showed me different ways of doing it.”

**Marie**

Marie, a 10-year-old female, played in the school orchestra and was comfortable reading music, but she had never composed her own music. She entered the study in the after-school session. When asked to describe a typical music class, she explained that she didn’t find it very exciting, although she indicated on her descriptive questionnaire that music was an important part of her life. When asked to recall a particularly exciting music class, she drew upon a memory from kindergarten. She recalled, “I remember we had this old music teacher and she just let us, like, play with the xylophone, and it was really fun. It was fun making music on
them.” This recollection was included here because this subject used the xylophone to help her compose all four of her compositions, although she changed the instrumentation in three of her pieces once they were complete.

Marie’s description of composition was “it’s just a bunch of notes, put together in your own style, and you can use whatever instrument you feel like putting it in to make it your kind of style of music. It’s fun ... there is no wrong answer, you can just make whatever you want.”

Marie described the types of music that she enjoyed as fast, and with a catchy tune. She stated, “A melody, a nice melody that gets stuck in your head helps you enjoy it.” As a composer, she thought making music meaningful to the listener was the greatest challenge, “so it gets stuck in their [listeners’] heads, even though she determined that ultimately, the composer could like his or her work even if others didn’t.

The learning styles assessment indicated that Marie had a visual preference, or learns by seeing and a tactual preference, or learns by touching. She does not learn best by moving (kinesthetic), and or by listening (auditory).

**Response to task.** Marie ranked the approaches she took to composing in the following order from most liked to least liked: visual, kinesthetic, auditory, and tactual. She was able to articulate clearly how the visual process helped her gather ideas for her composition, and why the process was enjoyable to her. “I liked how I took a little shape and turned it into a musical sound, and you could see, like, the pattern that it has and make it into music.” When asked to describe what the patterns meant for her composition, she continued, “Like, sometimes it repeats, sometimes it is parallel form.”

As Marie analyzed her least favorite approach, the tactual approach, she described that it was more difficult for her to translate what she was feeling into musical sounds. Twice, she used
the word “hard” in her description of this approach. She stated, “It was kind of hard to turn what you feel into, like, music ... I kind of knew what they were, but it was kind of hard (see Figure D8). They were like round, and not as funky as some of the things in the painting, which was easier.”

Marie used the word “easier” in discussing the visual approach to composition, whereas the kinesthetic, her second favorite approach, was described as “fun.” She stated, “Well, it was kind of fun doing the little dance that you [the researcher] created, and you [the subject] could feel the rhythm in it to make it a little different – to make it into a piece.” It was noted that this composition was the only one that Marie retained the use of the xylophone, an instrument she recalled as being fun in kindergarten, in her completed product.

The auditory approach was not very interesting to Marie, as she didn’t feel that she had a lot of creative choices. She stated, “In the poem ... especially in the poem, like, well, because the words are like put together in a form and you kind of do it like that, only change it very little.” She was listening to the poem in a literal sense, as did many of the subjects. She did agree, however, that the auditory approach could be useful “if you wanted to make it easier for yourself.” The researcher felt that she was describing how listening to the poem did not provide her with any inspiration for a musical composition as a creative product.

**Subject’s perceptions of process consistent with learning styles.** The data gathered from the LS:CY! indicated that this subject learned best by seeing (visual) and touching (tactual), but did not learn best by listening (auditory) nor moving (kinesthetic). Therefore, in this case, the subject’s perceptions of the visual composition process and the auditory process were consistent with her learning preferences in those modalities. Her perceptions of the tactual and kinesthetic processes, however, were in contrast to her learning preference.
Marie most enjoyed the visual process, which was consistent with her learning preference. While working on the visual composition, she was confident and excited by the shapes she found in the print that inspired her to create music. When creating this composition, Marie selected one shape from the print that became the primary melody. She then selected a short dark line that went up, created a short, upward moving piano part, and effectively placed it at specific points throughout her composition.

Marie’s least favorite approach to composition was the auditory approach, which was also consistent with her preferred learning modality, she does not learn best by listening. Marie did not recognize how to use what she was hearing to elicit a creative musical response.

Although the LS:CY! indicated that Marie did not prefer to learn kinesthetically, she thought this approach to composition was “fun.” She learned the steps quickly and wrote her composition with no difficulty. However, she did indicate that this task would have been better if she could have made up her own steps to add to the given steps. She stated, “Show them the dance, and maybe have them add their own, so each of them are not the same.” In the kinesthetic task, Marie extracted the rhythms and melody almost exactly as they were created physically. This observation was not evident in each case.

Subject’s perceptions of products consistent with learning styles. Marie thought very highly of her compositions, as did the independent judges and the researcher. She gave the same rating to her kinesthetic, auditory and visual products, with her lowest score given to her tactual composition.

Marie’s perception of her visual product was consistent with her learning style, and with the judges’ interpretation of her product. The visual composition was one of the highest scores received by the judges across all cases and was the one that the subject most enjoyed working on.
Marie indicated that the tactual composition (see Figures D8, D9, D10, and D11) was the one she least enjoyed working on and it was also the one she least enjoyed listening to, without being able to identify the approach upon hearing. These data contrasted with the learning style data, which indicated a propensity toward learning by touching, but it was consistent with the subject’s feelings about the tactual compositional process. However, the judges disagreed with the subject’s view of her tactual product and scored her tactual composition higher than either her kinesthetic or auditory products.

Marie’s perception of her auditory product was also in contrast to her learning style. The LS:CY! indicated that this subject does not learn best by listening, and although Marie felt that the auditory process was difficult for her, she enjoyed her final product. The judges, however, scored this composition the lowest of her four compositions.

Judges’ perceptions of products consistent with subject’s learning styles. The data obtained from the composition scoring rubrics indicated that the judges’ scores were consistent with the subject’s visual, tactual, and auditory preferences, but were inconsistent with her kinesthetic preference. Marie’s visual composition was among the highest scoring composition of all cases in any modality approach. Her auditory composition scored much lower on all dimensions, from both judges, supporting the data that indicated that Marie does not prefer learning through her auditory modality.

Confidence in composing. Marie articulated confidence in the visual process, and this confidence was also evident in her final product, as judged by her own analysis, and the analyses of the judges. She described this process as “making sense” to her; it was “easier” than some of the other tasks, and “fun.” She also described how she could “see like the pattern it had and how to make it into music, like what kind of music.” Marie did not articulate confidence in either the
tactual process or product, her other perceptual modality strength, however, the judges’ scores for her tactual composition were consistent with her tactual modality preference.

Nicholas

Nicholas, a 10-year-old male, could be described as a highly intelligent and musical child who was learning to play the saxophone in the school band. He entered the study in the after-school session. Although he was very confident about composing, he was easily distracted throughout the composition phase of the study, and often had to be redirected to the task at hand. It was sometimes difficult to get him to maintain his focus. Nicholas also brought some preconceived ideas of compositions to his work, so at times it was difficult to determine whether the tasks were influencing his compositions, or if he was fitting his preconceived ideas into the tasks. He also often wanted to be right, which posed some difficulty for the researcher in explaining that there were no right or wrong responses to the tasks.

Although Nicholas had no formal composition experience, he indicated that he did sometimes make up his own music to play on his instrument. He was often humming or whistling tunes while working. On the descriptive pre-study questionnaire, Nicholas indicated that music was an important part of his life. He described an exciting music class as follows:

I’d say one that was really fun and exciting is when we got to make our own music with a rainstick, the pod shaker, tambourine, and African drums, and we got into groups and had to make our own rhythms. It was exciting because we could really do anything we wanted to do.

Nicholas also had very specific ideas about what makes a piece of music enjoyable, or not. He stated, “Well, I would have to say that like, it’s OK to have a little bit of repetition, but not too much. Like, if it’s a piece that says something three times, like if that’s the chorus, three
times for the chorus, then that’s pretty good. But, if it says it like 50 times in one chorus, that’s kind of annoying.”

When asked to describe the steps he might take to compose, Nicholas offered the following:

The steps I take is that I think of a rhythm and I keep playing it over in my head, like humming a tune, like patting it [taps on the table] on a table, whistling it, or just thinking about it. I would just keep thinking of that tune until I finally ... got rid of all the bad things. And as I whistled it, hummed it, banged it out, or just thought about it, I would pull out all the stops to make it a really good piece. Then what I would do is ... try to put it down on paper, and then I would play it. If it was all right, I would keep going on it to see if I could make it even better.

The learning styles assessment indicated all of Nicholas’ preferred modalities were dependent upon the task undertaken, as were most other dimensions assessed by the instrument. However, the assessment may have been skewed by the rapid responses of the subject, causing inaccurate data for this case.

**Response to task.** Nicholas had very specific, and sometimes blunt responses to the four tasks he completed. His favorite process was the visual process. He stated, “I really liked the visual process because it gave me a vision of how my song, or composition was going to sound and feel. I picked the raging storm, and I got the feeling that it would feel rough and strong – deadly.” In this case, however, the researcher had the feeling that the subject selected his print because it fit into a preconceived idea that he already had for a composition.

The kinesthetic task was Nicholas’ least favorite. He had no difficulty at all sharing his thoughts on the process. “It was my least favorite because it was hard, hard to just do it, and it
was like, I’m sorry to say this, but it was annoying.” When asked to elaborate, he articulated that the process might have been better if he were able to create his own movements. The subject had little response to the tactual and auditory processes, except to rank them as second and third, respectively.

Subject’s perceptions of process consistent with learning styles. In this case, it was difficult to ascertain the validity of the subject’s learning style assessment responses. Nicholas completed the 30 to 45 minute assessment in approximately only 15 minutes. Therefore, the data may have been skewed. Nearly every dimension on the assessment came out as “It Depends,” which may indicate that he may not have thoroughly read all questions and responded appropriately.

Subject’s perceptions of products consistent with learning styles. Nicholas had an extraordinary memory for his compositions, and was able to identify the processes upon hearing his final products. Therefore, it was difficult to determine, in this case, the influence of his responses to the processes on his view of his products. It was not a surprise to the researcher, then, that his visual composition was the one he most enjoyed hearing, and his kinesthetic the least liked. When asked to describe the musical elements that he found attractive in the visual composition, the subject had difficulty articulating a response. He stated, “I don’t know how to answer that. It’s just all really good.” When asked what was “really good” about it he responded, “I don’t know. It’s just good, a masterpiece.” Nicholas also scored his tactual and auditory products in alignment with his preferred processes.

Judges’ perceptions of products consistent with subject’s learning styles. Although the data from the LS:CY! did not show a perceptual modality preference, the judges’ perceptions of the subject’s products were fairly consistent with the subject’s perceptions of his own
products. The kinesthetic composition scored the lowest of all the subject’s products, with the tactual composition scoring the highest, which was the subject’s second favorite process. The judges’ scores were not consistent with the subject’s perception of his auditory or visual products.

**Confidence in composing.** There was no evidence to suggest that the subject articulated increased confidence in composing when approached through his preferred modality. He clearly preferred the visual approach and disliked the kinesthetic approach, and while his perceptions of his kinesthetic product matched the judges’ perceptions, there was no evidence to suggest that the two were related.

**Hannah**

Hannah, a 10-year-old female, entered the study in the summer session. She had a year of experience playing the violin in the school orchestra, and some background playing the piano. She could read and notate music, and had excellent rhythmic skills. A willing and eager participant, she was very excited about the process of composing and approached every task with zeal. Hannah described the process of composing in the following way, “I would say, just let your brain do the work and just let the notes come to mind. You can write down any notes and it can become a piece of music.” When asked to describe how the notes can be organized into a meaningful piece, she continued, “Well, you have to know timing and beats, and be able to know how to do it. You have to have good timing.”

The learning styles assessment indicated that Hannah had strong visual, auditory, and tactual preferences. She learns well in three of the four perceptual modalities. In addition, the *LS:CY!* indicated a strong preference for not learning best by moving (kinesthetic).
**Response to task.** The subject was asked to rank the composition tasks from one to four, with one being the process she most enjoyed and four the process least enjoyed. She ranked the tasks in the following order: visual, tactual, auditory, and kinesthetic.

When asked to describe the visual process, Hannah responded, “I liked how when you created the pictures [based on the given print], the music kind of flowed along with it and it kind of matched the picture ... so it was easier.” She was unable to articulate anything that she would change about the process, and even after several months without seeing her print, she traced on the table the precise shape she selected to create the primary melody of her composition (see Figures D1, D2, D3, and D4).

In discussing her least favorite process, kinesthetic, Hannah stated, “It was kind of confusing sometimes because ... I had to mix and match it up to make sure it was the same as your dance. You [I] had to do it over and over again, and if you [I] forgot, then you [I] would get confused.” Hannah suggested that the process could be improved if “you could, instead of copying off the dance, be creative and make up your own for a certain amount of time.” This composition was the only one that Hannah did not write using traditional notation (see Figure D7).

**Subject’s perceptions of process consistent with learning styles.** The data from the *LS:CY!* indicated that Hannah was an unusual case, in that she had a strong preference for learning in three of the four perceptual modalities: visual, auditory, and tactual. For the kinesthetic modality, the *LS:CY!* indicated that she strongly did *not* prefer learning through moving. Evidence of how her strong visual preference assisted her in the compositional process could be found in her ability to clearly recall and articulate the shapes that she selected in her chosen print, and her description of how she used the shapes when developing her composition.
She thoroughly enjoyed working on the visual task and liked how the “music kind of flowed along.”

Hannah’s level of frustration and difficulty with the kinesthetic task was also consistent with her learning style, “it was confusing sometimes.” She does not learn best by moving; therefore, her perceptions of these processes were consistent with her most preferred and least preferred learning styles.

The subject was not consistent in her perception of the auditory task, as it related to her preferred auditory modality. Data obtained from field notes, however, indicated that she worked quickly on this task, with no frustration. Her interpretation of the rhythm in her selected poem was fairly accurate, and her selection of instrumentation reflected the subject of the poem.

Hannah’s perception of the tactual process was consistent with her strong preference for working in her tactual modality. She approached this task differently than most of the other subjects, opting to use each item in the box, and developing short motives based on her descriptions of the items she was feeling. She rhythmically notated each motive, and then created a melody for each at the keyboard. Once all of the layers were in the computer program, she dragged the tracks to determine the layers that would be combined harmonically, and which ones would stand alone.

**Subject’s perceptions of products consistent with learning styles.** Hannah clearly preferred her visual product to the other three, even though she was unable to identify the process by listening to the product [she thought it might be the tactual product]. She stated, “I don’t like it when it’s kind of just two instruments, or like one. I like the different sounds together.” In this composition, Hannah selected one main shape from the print, and two supporting layers (see Figures D1, D2, and D3). This analysis was consistent with her strong
visual learning preference and her analysis of the visual product was also consistent with the judges’ perceptions; they scored the visual composition as her best work.

Hannah’s perceptions of her kinesthetic, tactual, and auditory products were not consistent with her learning styles; however, they were highly consistent with the judges’ perceptions. She responded very positively to her kinesthetic product, ranking it as her second favorite composition; the judges also scored her kinesthetic product as her second best composition. Her auditory product assessment also aligned the judges’ scores. Her least favorite composition upon listening was her tactual. She did not like it as well as the other because “it’s mostly piano, and then I think the violin starts coming in and it’s just one instrument at a time basically. It’s not variety.” When asked how she would change it she stated, “I would definitely add more instruments and make it more thick.” The perceptions’ of the judges supported Hannah’s analysis of this composition with her tactual composition receiving the lowest score of her four compositions.

**Judges’ perceptions of products consistent with subject’s learning styles.** The judges’ perceptions were consistent with the subject’s visual learning preference. The judges gave higher scores on all dimensions, except for aesthetic appeal. Additionally, although the judges’ perceptions were not consistent with the subject’s learning style preferences, with respect to kinesthetic and tactual, they were consistent with the subject’s perceptions of these compositions in that with respect to the tactual composition, both Hannah and the judges agreed that it was not one of her better works. For the kinesthetic composition, however, although learning through movement was not considered Hannah’s strength, she and the judges agreed that it was one of her higher quality compositions.
Confidence in composing. In this case, the subject articulated confidence in composing through her visual perceptual modality, and this confidence was also evident in her visual product. Having never composed before, Hannah was surprised by her own comfort level in the compositional process. She reflected on how she felt at the beginning of the study, “I felt a little nervous because I had never composed before.” But, when asked how she felt with the process after completing all four, she stated, “Pretty comfortable, actually.”

Jonathan

Jonathan, an 11-year-old male, completed his compositions during the summer session. He played the violin in the school orchestra the previous school year, and was planning on joining the school band. He had indicated on the descriptive questionnaire, as well as in his interview that he had never composed before. Jonathan displayed solid rhythmic understanding, and although he had little experience playing the keyboard, he chose to use the keyboard to develop his compositions. He described his school music experience as doing projects and learning plays. When asked to describe an exciting music class, he stated, “Well, to me, I usually like to watch movies.”

Jonathan felt that writing music was a very personal activity. His description of composition centered on the composer’s view of a work as preeminent. He stated, “... if you make something that you like and other people don’t like it, you shouldn’t change it or anything so they like it. You should just keep it the way you like it.”

When asked to describe his personal musical preferences, Jonathan stated, “I’d describe it as soft, very light, and mellow.” He expressed a dislike for music that was “really fast, the music’s all messed up. It doesn’t go together at all.”
The learning styles assessment indicated that Jonathan has a visual preference, or learns by seeing. He does not learn best by moving (strong preference for not learning through his kinesthetic modality) or by touching (tactual), and his auditory strength depended upon the task being completed.

**Response to task.** Jonathan ranked the compositional processes from most liked to least liked in the following way: visual, kinesthetic, auditory, and tactual. He thought the visual was the “easiest” to get ideas from, but was unable to recall the print he had selected, or what made the process easier for him.

His least favorite task was the tactual composition. He was more articulate in describing the difficulties he faced with this composing task. He stated, “What made it difficult was that feeling something, or touching something didn’t really, um, make something pop into my mind to write about.” He spent a significant amount of time on this composition, even though it caused him some frustration.

Jonathan enjoyed the kinesthetic task because he felt that he had a better understanding of what was expected. He stated, “Usually when you’re moving, it’s like fast or slow; sharp or smooth, and that helped me a lot.” He did not feel as though he had to make as many choices in this task, and he seemed to like that. However, upon listening, this composition was his least favorite.

Considering the auditory task, which he ranked third, Jonathan didn’t feel inspired by any of the poems that he had to choose from. He stated, “Yeah, um, the poems, I didn’t really like them that much because ... [he hesitated] ... they were boring.” He thought that if he could write his own poem, the task would have been better for him.
Subject’s perceptions of process consistent with learning styles. The data obtained from the LS:CY! indicated that Jonathan had a visual preference, he learns by seeing. It also showed that he did not learn best by touching (tactual) nor by moving (kinesthetic), and that his auditory preference depended on the task. In this case, then, his perceptions of the visual and tactual processes were consistent with his learning styles preferences, since he most enjoyed the visual task, and least enjoyed working on the tactual task. His perceptions of the kinesthetic process were not consistent, since the LS:CY! indicated that he did not have a propensity toward learning through the kinesthetic modality, but he enjoyed approaching composition through this modality. There were no data to suggest or negate that his perceptions of the auditory process were consistent with his learning style as his auditory strengths were dependent upon the task. However, it might be inferred that in music composition, he did not prefer learning through his auditory modality.

Subject’s perceptions of product consistent with learning styles. After listening to his compositions, Jonathan rated his compositions from most liked to least liked in the following order: tactual, auditory, visual, and kinesthetic. This order was nearly in complete opposition to his task preference, as listed in the previous section, and was not consistent with his learning style preferences with regards to the visual and tactual modalities, but was consistent with the kinesthetic modality preference.

The tactual composition was Jonathan’s favorite one to listen to. He described it as follows, “I like the piano ... I also like how it goes nice and slow. I don’t really like anything fast.” He was unsure of the process he went through when creating this composition, but stated, “I was thinking it was the tactual one because it’s the last one I liked to do [his least favorite approach], but the first one I liked listening to.”
Jonathan’s least favorite composition was the one he created through the kinesthetic approach, which was consistent with his perceptual modality preference. He described his distaste for the product as “it kind of cuts off at the end ... it is shorter than the others.” In defense of his product, the researcher conceded that the length of the composition might have had more to do with her task construction, than with the subject’s compositional ability. Other subjects, however, used the kinesthetic task more as an inspirational springboard than did Jonathan. He was very true to the length of the movements, and found them lacking, both in process and product.

Judges’ perceptions of product consistent with subject’s learning styles. The LS:CY! indicated that the subject had a visual preference, or learns by seeing. The highest scored composition was the subject’s visual composition, which was consistent with the subject’s preferred visual perceptual modality. The subject’s lowest score was his kinesthetic composition, which was also consistent with his preferred learning modality.

In this case, the judges agreed with the subject’s analysis of the kinesthetic composition, and the scores were most consistent between judges for this composition of all others. Overall, however, this subject scored lower than most subjects on all four compositions.

Confidence in composing. Jonathan articulated increased confidence in the visual process, “it was easier,” which was commensurate with his preferred visual modality, although he wasn’t as pleased with the final outcome of the composition. The judges, however, both agreed that his visual composition was his best composition on all dimensions than any of his other works, as evidenced by the scores given.
Heather

Heather, a 10-year-old female, entered the study in the summer session. She had played violin the previous year in the school orchestra, so she had some instrumental experience, but she had never composed before. Midway through the composition phase, Heather’s mother indicated that the subject had attention deficit disorder (ADD) and was concerned that it might have an effect on her participation. The researcher did not have the same concerns, although she recognized the disorder in the subject.

When asked to describe a typical music class, Heather stated, “We just, um, watch movies, sometimes, and do projects and stuff ... worksheets about music and stuff.” She was unable to articulate a particularly exciting music class.

Interviewing this subject was a challenge, perhaps because of her ADD. She often answered questions with questions. It was a challenge for the researcher to ask the questions in a way that would elicit a usable response. When considering composition, the subject was clear on what might prevent her from succeeding as a composer. She stated, “How did you come up with all the notes and stuff, ... what came to your mind ... how did he get the tune in his head because I can’t do that? ... I make up my own songs, but I don’t really get to write it down because I won’t remember it.” Throughout the process, however, Heather was excited and happy to be composing her own music.

The learning styles assessment indicated that Heather had a visual preference, or learns by seeing and a tactual preference, or learns by touching. Her kinesthetic and auditory strengths depended upon the task being completed.

**Response to task.** The subject had some difficulty responding to the four tasks, as she had difficulty recalling each approach. The researcher needed to remind her several times what
each of the processes entailed before she gave her responses. She ranked the tasks from most liked to least liked in the following way: auditory, kinesthetic, tactual, and visual. She described the auditory task as providing her with the most ideas for composing and the visual task as providing the least.

Heather described the auditory task as her favorite task because she liked the poem she selected. She stated, “I just liked the poem, how it sounded, like the rhythm to it. Way down south where bananas grow ... cause it was like choppy.” Hearing the poem helped her establish a rhythmic structure that she could remember for creating a composition. Her judgment of this composition upon hearing was also consistent with her response to the task.

In Heather’s response to the tactual task, which she did not like as well, she stated, “I didn’t really like the box. That didn’t really do anything for it [the composition]. That didn’t really make me understand anything. It didn’t make sense.” Although she recognized different shapes and textures, she did not know what to do with them. She continued, “I didn’t know what to do, what notes to write down.” However, this composition was one of her favorites when listening.

**Subject’s perceptions of process consistent with learning styles.** The *LS:CY* indicated that Heather demonstrated a visual and tactual preference for learning. Her auditory and kinesthetic strengths depended upon the task. The subject’s task preferences, therefore, were inconsistent with her preferred learning modalities as both her responses to the visual and tactual tasks were negative responses; she did not enjoy these approaches to composition. It might be inferred, then, that in the case of music composition, the subject exhibited an auditory preference. She provided the most clarity when describing the elements of the auditory task that helped her organize her thinking and provided her with the most ideas.
Subject’s perceptions of products consistent with learning styles. After listening to all four of her compositions, Heather rated them in the following order from most to least liked: auditory, tactual, kinesthetic, and visual. The data from the LS:CY! indicated that Heather had a visual perceptual modality preference, so there was an inconsistency in this case between her learning style and the product she least liked. However, Heather’s perception of her visual product was in complete alignment with her process preference; the composition she least enjoyed working on and was most difficult for her was also the one she least enjoyed hearing. When asked to consider her visual composition, she stated, “I would do the whole thing over again ... it kept on repeating itself ... it just kept going and going and going.” It should be noted that this subject was unable to identify any of the compositional processes by listening to the finished products.

The subject’s perception of her tactual product was consistent with her preferred tactual modality. Heather gave a higher score to her tactual product, so although she disliked composing through her tactual modality, she liked the final product.

Heather’s preferences for the kinesthetic and auditory modalities depended upon the task being accomplished. She was not consistent in her perception of the kinesthetic process and product; she enjoyed the process, but disliked the final product. However, she was consistent in her perception of the auditory product and the process she undertook to accomplish that task; she enjoyed and was confident in both the auditory process and the product, and the judges fully agreed with her perceptions. She became animated when talking about the poem she selected to complete her auditory task, and even after several months could recite the words to the poem.

Judges’ perceptions of products consistent with subject’s learning styles. The judges scored Heather’s work consistently across all dimensions in her auditory, kinesthetic, and visual
task, but not in the tactual task. The perceptions of the judges were in complete agreement with Heather’s for her auditory task, and it also was one of the highest scoring compositions of all cases. So, although Heather did not demonstrate a preference for the auditory modality on the LS:CY!, the data suggest music composition may be an area in which her auditory modality was her preferred modality.

The judges also agreed with Heather’s perception of her kinesthetic task, and were in agreement with each other. The subject’s kinesthetic modality strength also depended upon the task undertaken, and although Heather enjoyed the dance, she scored her final product lower than her auditory and tactual tasks.

The visual composition scores from the judges were very consistent between the judges. Although they were not consistent with the subject’s learning style (visual preference), they were consistent with the subject’s own analysis of her visual product.

**Confidence in composing.** In this case, there was no evidence to suggest that the subject was more confident in the composing process when it was approached through her preferred visual and tactual modalities. The data in this case suggested that the subject found composing through her preferred modalities a hindrance, rather than help. However, it might be inferred from the data that in music composition, the subject demonstrated an auditory strength. This inference is supported by the subject’s analysis of the auditory process, her auditory product, and the perceptions of the judges.

**Jessica**

Jessica, a 10-year-old female, played violin in the school orchestra, took private piano lessons, and was very comfortable reading and playing music. Her instrumental instruction was of great importance to her, and when asked to describe her music program, it was her violin
lessons that came to mind, rather than her weekly general music class. She described a typical music class in the following way: “Well, we come in and we usually sit down in place where the music teacher placed you, and you play one song, and then another ... you practice the songs you are going to play.” She enjoyed playing for her teacher and classmates, and it gave her a sense of success and confidence. She stated that although she would occasionally make her own tunes on the violin at home, “he doesn’t let us bring it in.”

Jessica had no formal composition experience and described composition as thinking, “of something meaningful and try to make a rhythm ... and that’s pretty much it.” In her description of music that was meaningful for her, she described that the mood was very important. Music should make her happy. She enjoyed tunes that were “fun” and with “catchy rhythms.” She did not care for rap music because “when I think of rap, I don’t really think of any instrument.”

The subject’s responses to the types of music that were meaningful to her indicated that she understood and recognized form and rhythmic structure and that instrumentation was extremely important to her. She stated, “… in some pieces, you don’t know what the instruments are doing because some are not tying in with the others ... it sounds like they’re playing a whole different tune, or something. And others, some ... have it all set together, like one is playing one chord and one is on another and something like that.”

The learning styles assessment indicated that Jessica had a strong tactual preference, or learns by touching. She does not learn best by listening (auditory) and does not learn best through the visual modality (strong preference). Her kinesthetic strength depends upon the task undertaken.

**Response to task.** After a brief reminder of each process, Jessica quickly ranked the approaches to composition from most to least liked in the following manner: kinesthetic, visual,
auditory, and tactual. She selected the kinesthetic task as the one she enjoyed most because “it sort of helped you get a rhythm in your mind because of the movement ... but the other ones, you had to really make up something to go with them.” Rhythm was very important to this subject, as she earlier stated in her description of the composing process, “try to make a rhythm ... and that’s pretty much it.” So, in the kinesthetic task, the rhythmic structure was clear to Jessica, and gave her confidence to expand upon it.

The tactual task was identified as her least favorite approach. She stated, “It was very hard to make something up because feeling it, really like, I couldn’t think of anything when I felt them (the objects in the box). I was like – ahh – umm?”

The visual task, which she ranked second, appeared to give her the most melodic ideas. She stated, “Well, with the visual one ... the pictures curved and twisted, so it helped me with going higher and lower.” She composed this piece on the violin, and her notation was very specific. Because the researcher was playing the compositions into the computer, the subject needed to be very specific about the octaves, when required. Jessica identified the pitch by violin string to provide the correct octave when it was notated.

The subject provided little feedback for the auditory task, except that she did not enjoy this approach to composition. She was unable to find inspiration in the poem she selected.

**Subject’s perceptions of process consistent with learning styles.** The subject’s perceptions of the auditory process were consistent with her learning style (she did not prefer learning through the auditory modality), and her perceptions of the kinesthetic process were possibly consistent with her learning style (kinesthetic preference depended upon task), but her perceptions were inconsistent with respect to her visual and tactual learning preferences, as indicated on the learning styles assessment.
In this case, the preferred modality data indicated that the subject learns best through her tactual modality. The subject wished that she had been able to get more out of this task. When asked to expound on that thinking, she stated, “I might ... get more out of ... the textures of the things ... like soft.” She was easily able to recall the items that she selected. She continued, “There was sand ... carpet type things, a few cotton balls, and a rope.” However, this approach to composition was identified as her least favorite method of composing, and the one that gave her the most frustration. The subject stated, “it was very hard to make something up, because feeling it, really like, I couldn’t think of anything when I felt them [the objects].” She had great difficulty in turning the felt objects into sound.

Her favorite composition approach was her kinesthetic approach, which was identified as “it depends” on her learning style assessment. Jessica was comfortable and confident with her extraction of rhythm from this task, and the assessment indicator of “it depends” may demonstrate that this modality was her preferred modality with respect to music composition. Jessica was the only subject in this study to rank the kinesthetic approach as the favorite approach of the four, and although she did not deem it to be her favorite upon listening, it was ranked higher than both her tactual and auditory products.

Subject’s perceptions of products consistent with learning styles. Jessica listed her favorite products as follows: visual, kinesthetic, tactual, and auditory, although she ranked them all very closely, and liked all of her compositions. The subject’s favorite product, upon hearing, was her visual composition. When analyzing the visual product, the subject stated that she liked “the first, second, and third violin – they go together pretty well, and um, it’s very smooth and not jumping around.” Although Jessica was unable to identify the compositional approach by listening to the completed product, her responses toward the product were very similar to her
thoughts on the visual process. The visual approach inspired her melodically. When she said, “... it’s very smooth and not jumping around,” she was referring to the three melodies that she constructed, and how well she thought they went together.

The auditory product was Jessica’s least favorite, which was consistent with her learning style. The LS:CY! indicated that this subject did not learn best by listening. In earlier statements, she described that she preferred music that was smooth and did not “jump around.” Her description of her auditory composition confirmed these thoughts on music. She stated, “Well, it sort of jumped around [the auditory composition] a bit, and had a lot of pauses in it.”

**Judges’ perceptions of products consistent with subject’s learning styles.** Although the judges’ perceptions of Jessica’s tactual task were not consistent with her strong preference for the tactual modality, they were in complete alignment with the subject’s own perceptions of the tactual composition process. While the subject ranked her final tactual product rather high, she disliked the process and found frustration composing music through her tactual modality.

The subject’s auditory and visual composition scores were interesting in that one judge scored them both high, and the other scored them both low, relative to the subject’s other two compositions. So, in this case, there wasn’t enough consistency between the judges to determine if their perceptions aligned with the Jessica’s.

The judges scored the subject’s kinesthetic task as her best work. These data reflected an agreement between the subject’s and the judges’ perceptions of both the process and product, but in this case, preferred kinesthetic learning depended upon the task undertaken. Therefore, an inference was made that Jessica demonstrated a kinesthetic preference in composing music as the data from the subject’s response to the kinesthetic task, her ranking of the product, and the scores of the judges all agreed.
Confidence in composing. In this case, the subject was confident in her musical abilities prior to this study. Although she had never formally composed before, she had created some pieces for the violin on her own. She recognized that composers might be inspired to write a composition in several ways. She stated, “... I know [of] one composer who couldn’t think of a song, and he was just sitting there in his study. When he went outside, he heard the rustling of the leaves and the cars passing by. He thought of a rhythm to go with it.”

Jessica was surprised that she was one of the few subjects to notate all of her music on the staff. She felt that being able to read and write notation was important to the compositional process. In this case, the subject was able to articulate how all of the approaches assisted her in developing her compositions, regardless of her preferred learning modality. Each process gave her specific melodic or rhythmic ideas, which she was able to describe.

In this case, the data indicated that the subject had more difficulty composing through her preferred learning modality [tactual], but articulated greater confidence in both process and product when composing through the preferred modality that depended upon the task [kinesthetic]. This preference was supported by the perceptions’ of the judges.

Summary of Learning Styles Data

In the 11 cases presented above, the learning styles instrument (LS:CY!) identified the four preferred perceptual modalities (visual, auditory, tactual, and kinesthetic) within each case. Each subject was identified as having a strongly preferred, preferred, possibly preferred or not preferred depending on the task, not preferred, or strongly not preferred modality in each of the four perceptual modalities.

The visual learning modality was the preferred modality of six of the subjects (strongly preferred in one case), two subjects preferred the auditory modality (both strongly preferred),
five of the subjects had a preferred tactual modality (strongly preferred in three cases), and none
of the subjects demonstrated a preferred learning kinesthetically. Two of the subjects in this
study had no indicated preferred learning modality; their learning modality preferences in all
four perceptual modalities depended upon the task undertaken.

The *LS:CY*! also indicated that two of the cases did not prefer learning through their
auditory modality, six of the subjects did not learn best kinesthetically (strongly not preferred in
four cases), two did not prefer tactual learning (one case strongly not preferred), and two did not
prefer visual learning (one case strongly not preferred).

The data from the learning styles assessment further indicated that the auditory process
was dependent upon the task for seven of the subjects, five subjects may or may not have
demonstrated a kinesthetic modality preference depending upon the task, four subjects may or
may not have demonstrated a tactual modality preference, and for three subjects a visual
modality preference depended upon the task undertaken.

**Response to the visual task**

The visual learners, as identified by the *LS:CY*!, were Frank, Christine, Heather, Marie,
Jonathan, and Hannah, with Hannah having a strong visual preference (see Table 3). In every
case, except for Heather, these subjects articulated a preference for the visual process of
composing, based upon their responses during their interviews.
Table 3

Results Related to the Visual Modality Based on Learning Style Preferences, Subjects’ Interview Responses, and Judges’ Ratings of Compositions

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<td>Frank</td>
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<td>Positive</td>
<td>Negative</td>
</tr>
<tr>
<td>Christine</td>
<td>Preference</td>
<td>Positive</td>
<td>Negative</td>
<td>Negative</td>
</tr>
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<td>Claire</td>
<td>Does not prefer</td>
<td>Negative</td>
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<td>Positive</td>
</tr>
<tr>
<td>Michael</td>
<td>It Depends</td>
<td>Positive</td>
<td>Negative</td>
<td>Mixed</td>
</tr>
<tr>
<td>Susan</td>
<td>It Depends</td>
<td>Positive</td>
<td>Negative</td>
<td>Negative</td>
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<tr>
<td>Marie</td>
<td>Preference</td>
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<td>Positive</td>
</tr>
<tr>
<td>Nicholas</td>
<td>It Depends</td>
<td>Positive</td>
<td>Positive</td>
<td>Positive</td>
</tr>
<tr>
<td>Hannah</td>
<td>Strong Preference</td>
<td>Positive</td>
<td>Positive</td>
<td>Positive</td>
</tr>
<tr>
<td>Jonathan</td>
<td>Preference</td>
<td>Positive</td>
<td>Negative</td>
<td>Positive</td>
</tr>
<tr>
<td>Heather</td>
<td>Preference</td>
<td>Negative</td>
<td>Negative</td>
<td>Negative</td>
</tr>
<tr>
<td>Jessica</td>
<td>Strongly does not prefer</td>
<td>Positive</td>
<td>Positive</td>
<td>Negative</td>
</tr>
</tbody>
</table>

Christine described the shapes in her print as providing her with many ideas for her composition by showing her “the range of notes ... like going up or down ... that’s a bit easier.” Frank clearly enjoyed the visual process and also described how it helped him melodically. He related, “It gave me an idea on the range of notes, and it would get me started on the first thing to do.” Frank was the only subject to describe how the colors in his print inspired him melodically. He stated, “I also looked at the color ... like if it was ... a bright yellow, I would choose a higher pitch.”
Jonathan responded to the visual task as the “easiest to get ideas from.” His drawings, and notes based upon his print were very specific and accurate.

Marie was very articulate in her preference for the visual task, and described clearly how the visual task helped her gather ideas for a composition. Her favorite part was recognizing “how I took a little shape and turned it into a musical sound ... the pattern that it has and make it into music.”

Hannah described the visual process as the music flowing along and matching the picture. She also stated, “... It was easier” She so clearly remembered her print that she was able to trace the shape of her main melody even after several months of not seeing the artwork.

Heather was the only visual learner who described the visual process as causing difficulty for her and as providing her with the fewest ideas for composition. She preferred the auditory task, which was a preferred modality depending on the task.

Two subjects, Nicholas and Susan, whose learning style preferences depended upon the task, also identified the visual task as one of the more enjoyable tasks. Nicholas described the approach as giving him “a vision” of what his music would “sound and feel like,” while Susan described how the print gave her a clearer idea of melodic direction. She stated, “I could really see what my thing was sounding like because it went a little bit down, then a lot up on the staff. Then, I could see, did it do the same thing in the picture?”

Response to the auditory task

Subjects with an auditory preference, as indicated by the LS:CY?, were Michael and Hannah. Neither of these subjects ranked the auditory task as their favorite. Michael related that he “didn’t really know how to make music from a poem.”
However, although Michael ranked this approach as one of the least liked approaches, his description of the process indicated that it provided him with several musical ideas. He described the steps he took when constructing his auditory composition as follows: “I wrote down the beat [rhythm] first, like dut-dut-dut-dut and I would write ... quarter note-quarter note-two eighth notes-quarter note ... then I would choose some notes that fit together, that sounded well together.” This description indicated that Michael was able to extract musical understanding from what he was hearing.

Of all cases, only Claire and Heather gave positive responses to this task (see Table 4), and their responses to this task were highly positive. Both of these subjects were identified as having a preferred auditory modality dependent upon the task undertaken. Claire’s analysis of how the auditory task helped her indicated that she was able to find the structure for her composition in the poem. She stated, “I did it in sections.” For Heather, the poem she selected to write her composition inspired her rhythmically, and even after several months was able to accurately recite the poem.

Table 4

*Results Related to the Auditory Modality Based on Learning Style Preferences, Subjects’ Interview Responses, and Judges’ Ratings of Compositions*

<table>
<thead>
<tr>
<th>Subject</th>
<th>Auditory Preference</th>
<th>Response to Auditory Process</th>
<th>Response to Auditory Product</th>
<th>Judges’ Interpretations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frank</td>
<td>It Depends</td>
<td>Negative</td>
<td>Negative</td>
<td>Negative</td>
</tr>
<tr>
<td>Christine</td>
<td>It Depends</td>
<td>Negative</td>
<td>Negative</td>
<td>Positive</td>
</tr>
<tr>
<td>Claire</td>
<td>It Depends</td>
<td>Positive</td>
<td>Positive</td>
<td>Negative</td>
</tr>
<tr>
<td>Michael</td>
<td>Strong Preference</td>
<td>Negative</td>
<td>Positive</td>
<td>Positive</td>
</tr>
</tbody>
</table>
Table 4 (continued)

Results Related to the Auditory Modality Based on Learning Style Preferences, Subjects’ Interview Responses, and Judges’ Ratings of Compositions

<table>
<thead>
<tr>
<th>Subject</th>
<th>Auditory Preference</th>
<th>Response to Auditory Process</th>
<th>Response to Auditory Product</th>
<th>Judges’ Interpretations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Susan</td>
<td>It Depends</td>
<td>Negative</td>
<td>Negative</td>
<td>Positive</td>
</tr>
<tr>
<td>Marie</td>
<td>Does not prefer</td>
<td>Negative</td>
<td>Negative</td>
<td>Negative</td>
</tr>
<tr>
<td>Nicholas</td>
<td>It Depends</td>
<td>Negative</td>
<td>Negative</td>
<td>Positive</td>
</tr>
<tr>
<td>Hannah</td>
<td>Strong Preference</td>
<td>Negative</td>
<td>Negative</td>
<td>Mixed</td>
</tr>
<tr>
<td>Jonathan</td>
<td>It Depends</td>
<td>Negative</td>
<td>Positive</td>
<td>Negative</td>
</tr>
<tr>
<td>Heather</td>
<td>It Depends</td>
<td>Positive</td>
<td>Positive</td>
<td>Positive</td>
</tr>
<tr>
<td>Jessica</td>
<td>Does not prefer</td>
<td>Negative</td>
<td>Negative</td>
<td>Negative</td>
</tr>
</tbody>
</table>

Response to the tactual task

Subjects with a tactual preference, as indicated on the LS:CY! were Heather, Marie, Hannah, Christine, and Jessica, with Hannah, Christine, and Jessica all having a strong tactual modality preference. Of these five subjects, only Hannah indicated that she enjoyed the tactual task.

Heather described the tactual task as “not making sense,” while Jessica thought that “it was very hard to make something up because feeling it ... I couldn’t think of anything when I felt them [the objects].” Christine thought that there were “too many choices” for her to focus on in this task and Marie wanted to “look in the box” and thought it was “kind of hard to turn what you feel into, like, music.”

Several subjects, however, responded very positively to the tactual task (see Table 5). Of these subjects, four were identified as possibly having a tactual preference depending upon the
task: Frank, Susan, Nicholas, and Claire. Of these subjects, Frank, Nicholas, and Claire also
gave positive responses to their tactual products, as did the judges. Michael, who was identified
on the LS:CY! as strongly not preferring to learn tactually, ranked the tactual approach as his
favorite approach to composing. For Frank, Nicholas, Claire, and Michael, the judges agreed
with the positive assessment of their tactual products. The judges’ scores also agreed with Susan
and Marie’s positive responses to their tactual products.

Table 5

*Results Related to the Tactual Modality Based on Learning Style Preferences, Subjects’ Interview Responses, and Judges’ Ratings of Compositions*

<table>
<thead>
<tr>
<th>Subject</th>
<th>Tactual Preference</th>
<th>Response to Tactual Process</th>
<th>Response to Tactual Product</th>
<th>Judges’ Interpretations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frank</td>
<td>It Depends</td>
<td>Positive</td>
<td>Positive</td>
<td>Positive</td>
</tr>
<tr>
<td>Christine</td>
<td>Strong preference</td>
<td>Negative</td>
<td>Positive</td>
<td>Negative</td>
</tr>
<tr>
<td>Claire</td>
<td>It Depends</td>
<td>Positive</td>
<td>Positive</td>
<td>Positive</td>
</tr>
<tr>
<td>Michael</td>
<td>Strongly does not prefer</td>
<td>Positive</td>
<td>Positive</td>
<td>Positive</td>
</tr>
<tr>
<td>Susan</td>
<td>It Depends</td>
<td>Positive</td>
<td>Positive</td>
<td>Positive</td>
</tr>
<tr>
<td>Marie</td>
<td>Preference</td>
<td>Negative</td>
<td>Positive</td>
<td>Positive</td>
</tr>
<tr>
<td>Nicholas</td>
<td>It Depends</td>
<td>Positive</td>
<td>Positive</td>
<td>Positive</td>
</tr>
<tr>
<td>Hannah</td>
<td>Strong preference</td>
<td>Positive</td>
<td>Negative</td>
<td>Negative</td>
</tr>
<tr>
<td>Jonathan</td>
<td>Strongly does not prefer</td>
<td>Positive</td>
<td>Negative</td>
<td>Negative</td>
</tr>
<tr>
<td>Heather</td>
<td>Preference</td>
<td>Negative</td>
<td>Positive</td>
<td>Negative</td>
</tr>
<tr>
<td>Jessica</td>
<td>Strong preference</td>
<td>Negative</td>
<td>Positive</td>
<td>Negative</td>
</tr>
</tbody>
</table>
Frank liked the tactual approach because he “thought it was interesting to see, well, feel...” while Susan thought it was “... kind of cool to feel ... see if you really made bumps in the music if it was bumpy.” Although Nicholas did not provide insight into his task preference, he ranked the tactual process as his second favorite. Claire, however, was very articulate in describing how the tactual process peaked her curiosity and provided patterns for her to follow. She stated, “I found one (pattern) and then I tried to follow the pattern, and wrote it down.” When asked why she was following certain items in the box she explained, “Because I wanted to see where they went.”

The only subject who ranked the tactual approach as the most liked approach was Michael, who strongly did not prefer learning tactually, based upon the learning style instrument. The process, however, fascinated him based upon his interview responses, and when analyzing the approach, he referred to texture, dimensions, shape, and size of objects that inspired him.

**Response to kinesthetic task**

In this study, there were no subjects identified with a positive kinesthetic modality preference (learns by moving), with six subjects identified as not learning best by moving, and five subjects whose kinesthetic preference was dependent upon the task undertaken (see Table 6). Five subjects, Heather, Jessica, Christine, Jonathan, and Marie responded positively to the kinesthetic task. Of these five subjects, Jonathan and Marie were identified as not learning best by moving, while the kinesthetic modality preference was dependent upon the task for Heather, Jessica, and Christine.
Table 6

*Results Related to the Kinesthetic Modality Based on Learning Style Preferences, Subjects’ Interview Responses, and Judges’ Ratings of Compositions*

<table>
<thead>
<tr>
<th>Subject</th>
<th>Kinesthetic Preference</th>
<th>Response to Kinesthetic Process</th>
<th>Response to Kinesthetic Product</th>
<th>Judges’ Interpretations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frank</td>
<td>Does not prefer</td>
<td>Negative</td>
<td>Negative</td>
<td>Negative</td>
</tr>
<tr>
<td>Christine</td>
<td>It Depends</td>
<td>Positive</td>
<td>Positive</td>
<td>Negative</td>
</tr>
<tr>
<td>Claire</td>
<td>Strongly does not prefer</td>
<td>Negative</td>
<td>Negative</td>
<td>Negative</td>
</tr>
<tr>
<td>Michael</td>
<td>Strongly does not prefer</td>
<td>Negative</td>
<td>Positive</td>
<td>Negative</td>
</tr>
<tr>
<td>Susan</td>
<td>It Depends</td>
<td>Negative</td>
<td>Positive</td>
<td>Positive</td>
</tr>
<tr>
<td>Marie</td>
<td>Does not prefer</td>
<td>Positive</td>
<td>Positive</td>
<td>Positive</td>
</tr>
<tr>
<td>Nicholas</td>
<td>It Depends</td>
<td>Negative</td>
<td>Negative</td>
<td>Negative</td>
</tr>
<tr>
<td>Hannah</td>
<td>Strongly does not prefer</td>
<td>Negative</td>
<td>Negative</td>
<td>Positive</td>
</tr>
<tr>
<td>Jonathan</td>
<td>Strongly does not prefer</td>
<td>Positive</td>
<td>Negative</td>
<td>Negative</td>
</tr>
<tr>
<td>Heather</td>
<td>It Depends</td>
<td>Positive</td>
<td>Negative</td>
<td>Negative</td>
</tr>
<tr>
<td>Jessica</td>
<td>It Depends</td>
<td>Positive</td>
<td>Positive</td>
<td>Positive</td>
</tr>
</tbody>
</table>

Jonathan described the kinesthetic process as helping him because, “usually when you are moving, it’s like fast or slow, sharp or smooth ... that helped me a lot.” Marie thought “it was kind of fun doing the little dance that you created ... you could feel the rhythm in it to make it a little different, to make it into a piece.”

Heather and Christine did not articulate why they enjoyed the kinesthetic process, other than that it was “fun.” Jessica thought the kinesthetic approach helped primarily with the
rhythm. She stated, “It sort of helped you get a rhythm in your mind because of the movements... as the other ones you had to really make up something to go with them.”

Visual Learners

**Visual learners and their perceptions of process.** Five of the six identified visual learners preferred the visual process to the other three processes. Heather, who was also a visual learner, did not enjoy the visual approach to composition required in this study. The five visual learners who preferred the visual task were able to articulate parts of the visual art print that inspired them rhythmically, or melodically. Musical terms, such as “range,” were used to demonstrate an understanding of musical concepts based upon what was seen in the prints, and one case even used “color” to determine instrumentation based upon pitch.

**Visual learners and their perception of product.** Perception of product was not as consistent as perception of process. Only three of the visual learners identified their visual products as superior to the others, however, seven cases overall gave their visual product a positive rating. Of these three visual learners, Marie and Hannah not only agreed with their products, but the judges also agreed with the quality of their visual products. Of the subjects who were not identified as visual learners, Jessica and Nicholas rated their visuals compositions as the best of the four.

**Visual learners and the judges’ perception of product.** Of the six visual learners, the perceptions of the judges were in accord with learning styles in three of the cases, Jonathan, Marie, and Hannah.

**Visual learners and confidence in composing.** All of the subjects with a visual learning preference, with the exception of Heather, articulated confidence in the visual composition process. While some of the subjects used musical terms to identify how the approach helped,
like range, color, texture or thickness, and instrumentation, they most often described the task as “easier,” “fun,” or as “liked” or “enjoyed.” However, the triangulated data from the judges’ perceptions, subjects’ perceptions of process and product, and the $LS:CY!$ were not consistent enough to state that the subjects’ level of confidence was directly related to the approach to composition.

**Auditory Learners**

**Auditory learners and their perceptions of process.** Two of the subjects, Michael and Hannah, were identified as having a strong auditory modality preference, however, neither of these subjects articulated a preference for composing through the auditory modality, with Michael clearly articulating that he did not understand how to turn a poem into music. However, although Michael was unable to articulate how this approach to composition was helpful, his description of the process was rich with musical understanding of rhythmic structure. For Hannah, texture (thickness) was important to her and the auditory task was uninspiring to her in this way. She stated, “I should (have) added a bit more instrumental.”

**Auditory learners and their perceptions of products.** Of the two auditory subjects, Michael enjoyed his final product, but not as much as his tactual composition. Hannah disliked her auditory composition because it lacked thickness in instrumentation, which she had identified as important to her. Therefore, Michael’s perception of his auditory product was consistent with his preferred auditory modality, but Hannah’s perception was not consistent with hers.

**Auditory learners and judges’ perceptions of products.** The judges’ perceptions of Michael’s auditory product were consistent with Michael’s auditory modality preference, as well as with his own perception of his product. This composition was not his highest scored work by the judges, but was higher than the scores he received on the kinesthetic and visual products.
Only his tactual product was given a higher score. The scores for Hannah’s auditory product were split, with one judge consistent with her auditory modality preference, and the other consistent with Hannah’s own view of her auditory product.

**Auditory learners and confidence in composing.** Neither Michael nor Hannah articulated a higher level of confidence in the auditory process than for any of the other tasks. Michael felt some frustration with the auditory process, although he did appreciate his final product. For Hannah, she neither enjoyed the process nor the product. The data were insufficient to determine whether or not compositional confidence was related to the task.

**Tactual Learners**

**Tactual learners and their perceptions of process.** Of the five subjects identified with a tactual modality preference, only one subject’s (Hannah’s) perception of the process was consistent with preferred learning modality. While working on this task, Hannah was very specific about what each object might “sound like.” She used all of the various items in the box, assigning adjectives and possible instruments to each. She then sketched a contour of each shape and notated the rhythm.

In five other cases, subjects articulated a preference for the tactual process. Of these five, Nicholas, Susan, Frank, and Claire were identified on the *LS:CY!* as having their tactual modality preference dependent upon the task.

One subject, Michael, had a strong preference for not learning best through his tactual modality, however, perceived the tactual task as the most “fun” and as providing him with the most compositional ideas.

**Tactual learners and their perceptions of product.** The perceptions of the tactual products were consistent with the subjects’ preferred tactual modality in the following cases:
Heather, Marie, Christine, and Jessica. The exception was Hannah, who did not prefer her tactual product.

In the cases where the tactual modality preference was dependent upon the task, all four subjects indicated a positive perception of their tactual products. Michael, who was identified as not a tactual learner, also perceived his tactual composition as his best work.

**Tactual learners and judges’ perceptions of products.** Of all cases, the judges’ perceptions of the subjects’ tactual products with respect to learning styles were consistent in only one case, Marie. However, because Marie had consistently higher scores in all of her compositions, the data did not support the connection to her tactual preference.

The researcher noted more consistency between the judges’ perceptions and the products from those subjects with a modality preference dependent upon task. In all four cases where a tactual preference depended upon the task, subjects’ perception of process, subjects’ perception of product, and judges’ perceptions of product all matched positively.

There was also a high level of consistency between Michael’s perception of his tactual process and final product, and the judges’ perceptions. Michael was the case where he preferred a task that was contradictory to his learning style.

**Tactual learners and confidence in composing.** The data did not support a heightened level of confidence in the compositional process for subjects’ composing through the tactual modality. However, the data did suggest that four of the subjects might have had a tactual preference when composing, as evidenced by their perceptions of process and product, and those of the judges.
Kinesthetic Learners

Kinesthetic learners and their perceptions of process. None of the cases in this study had a preference for the kinesthetic modality; with six cases having a preference, or strong preference, for not learning best by moving; and five cases with subjects’ kinesthetic preference depending upon the task.

Of the five cases that provided a positive response to the kinesthetic task, only Jessica described this task as her favorite. Her perceptual modality preference depended upon the task undertaken. When creating her kinesthetic composition, Jessica felt that the process provided her with the most rhythmic understanding, which made it “easier” to complete the task. She stated, “It helped you get a rhythm in your mind... where the other ones, you really had to make up something to go with them.”

Kinesthetic learners and their perceptions of products. The only consistent data to support the kinesthetic task came from Jessica. She rated her kinesthetic product higher than most of her other work, which was consistent with her interpretation of the process. While listening to her final compositions, the subject was unable to identify the process she undertook to complete each product.

Kinesthetic learners and judges’ perceptions of products. In Jessica’s case, the judges’ perceptions of her product were consistent with her perceptions of the kinesthetic process, and with her final product. This composition was one of the highest scored compositions across all cases.

Kinesthetic learners and confidence in composing. No subject in the study was identified as having a preferred kinesthetic modality, so for this modality, there was a lack of data to support the relationship between learning styles and composing confidence. There was
some evidence that suggested that in five cases (Heather, Christine, Jonathan, Jessica, and Marie), subjects articulated enjoyment with the kinesthetic process. In five cases (Jessica, Marie, Susan, Michael, and Hannah), subjects indicated a preference for their kinesthetic product.

Findings Related to Research Questions

Research Question One

How are the musical compositions of elementary school children related to their preferred learning styles?

To analyze all of the data from this study, the researcher triangulated subjects’ responses from the semi-structured interviews, the judges’ scores from the 6-point rubric, and the learning styles instrument data to examine each case for salient patterns regarding the relatedness of learning styles to the music compositions of elementary school children.

To determine whether or not subjects’ learning styles were consistent with compositional approaches taken by the subjects, the researcher first analyzed the data from the LS:CY! to identify learning modality preferences, then matched these data to the subjects’ responses to the processes of composing. If a subject’s learning preference was the same as his or her preferred composing process, a high-high match was considered. In addition, because several of the subjects’ learning preferences depended upon the task, the researcher also analyzed all of the subjects’ responses to the process of composing and the final product for those subjects whose preferred learning modality depended upon the task undertaken. If there was consistency between the subjects’ analyses of their processes and products, the learning style was accepted as a match to these subjects. Finally, the researcher looked at what would be considered low-low matching, where the subject articulated an aversion to a particular approach consistent with a modality non-preference, or possible non-preference.
The data indicated that there were 15 instances across 10 cases where the subjects’ learning modality preferences matched their composing process preferences, or was a possible preference depending upon the task. In addition, there were 12 instances of low-low matches across nine cases where the subjects’ gave negative responses to tasks that were not within their preferred learning modalities, or where learning preferences depended upon the tasks. Additionally, there were 12 instances across seven cases that were related inversely, where the subject’s preferred modality was the least preferred when composing music, or where the subject responded favorably to a task that was not in their preferred modality. Furthermore, there were 5 instances, across all 44 possible instances where there was no match between learning modality and task preference. Finally, examining the 11 cases individually demonstrated that 10 out of the 11 subjects had at least one positive match. These data indicated that 10 of 11 subjects articulated a positive response to at least one composition task that matched their learning styles. For the low-low matches, 9 of the 11 subjects had at least one task that they articulated a level of frustration, or difficulty with a particular task, and the task was not in their preferred learning modality. Overall, there were 27 instances over the 44 tasks completed in which subjects responded positively or negatively to the task, or tasks that matched their preferred, or not preferred learning modalities, respectively.

The data indicated that the approaches to musical compositions of elementary school children and learning styles were related to the extent that children could articulate preferences for composition task approaches. There was evidence to suggest that when the composing task was approached through the subjects’ preferred learning modality, these subjects enjoyed the process of composing more than when it was approached through a modality that was not preferred. Conversely, there was also evidence to suggest that when the composition task was
approached through a modality that was not preferred, subjects articulated frustration and more difficulty with the task.

**Research Question Two**

When students compose music through their preferred learning perceptual modalities (visual, auditory, tactual, and kinesthetic), do they articulate a heightened sense of confidence with the compositional process, and is this sense evident in their musical compositions?

To respond to the second question this study sought to examine, the researcher examined the subjects’ confidence through their responses to their compositional processes and products, and triangulated these results with the learning styles assessment and the judges’ scores from the 6-point rubric. As the researcher analyzed the children’s utterances as they pertained to their compositions, it became increasingly clear that the primary data from the subjects were the perceptions they provided with regards to their perceptions of the processes. For several of the subjects, their opinions of their own musical products came more from pride of having composed, than from an unbiased ear, while for others, they were overly critical of their first musical constructions. Therefore, when examining the data for patterns as they pertained to confidence, and quality of the compositional products, the researcher deferred to the expert judges, and weighed their scores against the subjects’ comments. By doing so, the researcher felt that a more accurate result was achieved.

The visual task yielded the highest number of subjects who articulated confidence in the approach to the task. Nine of the 11 subjects in this study indicated a heightened sense of confidence toward and enjoyment in the visual task. These subjects were Frank, Christine, Michael, Susan, Marie, Nicholas, Hannah, Jonathan, and Jessica. Of these nine subjects, five subjects (Frank, Christine, Marie, Hannah, and Jonathan) had either a preference or strong
preference for learning visually, three subjects (Michael, Susan, and Nicholas) had a visual preference depending upon the task, and one subject (Jessica) did not have a visual learning preference. This level of confidence, however, was not evident across all cases in the final visual product, as indicated by the triangulation of the subjects’ responses to their visual processes and products with the judges’ scores. A match was observable in the compositions of Marie, Nicholas, Hannah, and Jonathan; the judges’ scores agreed with the subjects’ responses to the visual process, and for all but Jonathan’s opinion of his work, the visual products. Four of the nine products completed by the subjects who responded positively to the visual task (Frank, Christine, Susan, and Jessica) were of lower quality than some of their other works, as indicated by the subjects’ and/or the expert judges. In Michael’s case, the judges were split on the assessment of his visual composition; Michael agreed with the lower assessment.

The auditory task yielded the least amount of confidence in the young subjects. Just 2 of the 11 subjects, Claire and Heather, responded positively to this task. Both of these subjects had a possible auditory preference based upon the task. There was consistency between and among Heather’s articulated confidence level in the approach to this task, her perception of her final auditory product, and in the responses of the judges. However, although Claire responded positively to her auditory product, the judges scored it the lowest the four compositions she completed. Therefore, there was not a match. Two other subjects, Michael and Hannah, who had a strong auditory preference, gave negative responses to this task. In Michael’s case, however, although he did not enjoy the auditory process, he did like the final product, and it was his second highest scored composition by the judges. Examining the data from the subjects who did not demonstrate a preference for learning through their auditory modality (Frank, Christine, Marie, and Jessica), as indicated on the LS:CY! or through the analysis of the data used to answer
research question one showed consistency between learning style preferences (do not prefer), subjects’ responses to processes and products (negative), and judges’ responses (negative) in three of the cases (Frank, Marie, and Jessica).

The tactual task provided very interesting data. Five of the 11 subjects were assessed as having a tactual preference (Christine, Marie, Hannah, Heather, and Jessica), however, only one (Hannah) of the five subjects with a tactual preference articulated confidence in the tactual approach to composition. A tactual preference was possible for four subjects, depending upon the task (Frank, Claire, Susan, and Nicholas). All four of these subjects articulated confidence in the approach. Two subjects strongly did not prefer learning tactually (Michael and Jonathan), and although they both responded favorably to this approach to composition, only Michael’s final product was viewed favorably by both himself and the judges. In product analysis, 6 of the 11 tactual compositions received favorable scores by the judges, and were assessed favorably by the subjects as well. This task seemed to cause the most cognitive dissonance in the subjects. One possible explanation might be that tactual resources are rarely used in the music classroom for developing sound. The concept of *hearing with their hands* was very foreign to these subjects, as they tried to construct in their ears how a variety of felt objects might be used to develop a composition. Although one might argue that playing instruments is using tactual resources, instrumental playing is primarily used for the purpose of recreating, or performing. Performing is a different artistic process than is creating. However, it was interesting to recognize that 6 of the 11 tactual compositions scored favorably with the judges and the subjects.

In this study, there were no subjects who were identified on the LS:CY! as having a preferred or strongly preferred kinesthetic preference, however, five subjects, three of whom had a possible kinesthetic preference depending upon the task (Christine, Heather, and Jessica), and
two who were identified as not learning best by moving (Jonathan and Marie), articulated a positive response this approach. However, confidence was only evident in the cases of Marie and Jessica, as indicated by their responses to the process and products, and the judges’ interpretations of their products. Jessica, whose learning preference depended upon the task, therefore, demonstrated a kinesthetic preference in composing music. Additionally, confidence in composing and in her musical compositions was evident as indicated by the data. Marie, however, demonstrated an inverse relationship between her learning preference (she does not learn best by moving) and music composition, as indicated by the data.

The data indicated that confidence in composing and in the musical compositions of the subjects in this study was evident in 9 out of 11 cases when the approach to composition matched a preferred learning modality.

Data from the visual task results showed that 4 subjects, of the 7 subjects who were identified as having a visual preference, articulated a heightened sense of confidence in the composing process when it was approached through the visual modality, and this sense was evident in their musical compositions.

Data from the auditory task results showed that 1 subject, of the 4 subjects who were identified as having an auditory preference articulated a heightened sense of confidence in the composing process when it was approached through the auditory modality, and this sense was evident in her musical composition.

Data from the tactual task results showed that 4 subjects, of the 9 subjects who were identified as having a tactual preference, articulated a heightened sense of confidence in the composing process when it was approached through the tactual modality, and this sense was evident in their musical compositions.
Data from the kinesthetic task results showed that 1 subject, of the 3 subjects who were identified as having a possible kinesthetic preference depending on the task, articulated a heightened sense of confidence in the composing process when it was approached through the kinesthetic modality, and this sense was evident in her musical composition.
CHAPTER 5: FINDINGS, LIMITATIONS, IMPLICATIONS, SUGGESTIONS, AND CONCLUSIONS

A multi-case qualitative study was conducted to examine the relationship between elementary school students’ music composition processes and products and their preferred learning styles. Finding the most appropriate ways of affording elementary school students the opportunity to be active participants in the creation of their own musical works has been researched for many years (Barrett, 1996; Burnard, 2000; Gault, 2005; Glover, 2000; Hickey, 2003; Levi, 1991; Swanwick, 2002; Wiggins, 2003). While Jerome Bruner’s theory of instruction does not relate specifically to music learning, it was used as the theoretical lens through which the study was framed, as it encompassed the need to recognize how approaching instruction supports learning in any capacity. It is in the construction of tasks and appropriate version of tasks that optimal learning occurs. While it is recognized that music composition is an important facet of a well-rounded music education program, many music educators still shy away from teaching students in this area, in part because of fear that they cannot (Strand & Newberry, 2007).

The National Association of Music Educators (MENC) included music composition as one of the nine standards for a comprehensive music education in the development of the 1994 National Standards for Music (MENC, 1994); however, finding elementary school music programs that regularly include music composition is still elusive (Strand & Newberry, 2007). Research studies, such as those referenced throughout this paper (Glover, 2000; Gromko, 2003; Hickey, 2003; Kratus, 1989; Levi, 1991; Nilsson & Folkestad, 2005; Swanwick & Franca, 1999) all demonstrated that while young children do have the ability to create original music
compositions, there is little agreement over how to approach this area of music education at the elementary school level.

The traditional music class at the elementary school level focuses primarily on performing and responding, with far less attention to the creating strand of the three artistic processes. However, examinations of several researchers (Hickey, 2003; Swanwick, 2001; Swanwick & Franca 1999) consistently indicated that it is through composition that children may develop the greatest understanding of musical concepts. It is important to recognize that with technological advances, teaching students to think musically and to capture their own musical constructions and utterances may be more important to music education now than ever before.

As today’s students are bombarded with the ability to drag and drop public domain motives, such as Apple Loops, which come with every MacIntosh Computer’s GarageBand software (Apple Computer, 2005-2006) to create their own original music, there may come a time where children falsely assume that they are composing, rather than merely organizing sounds created by others. This is not to say that these creations are not at all creative, as children can learn a great deal about structure, tonality, and form through manipulating pre-composed sounds, or loops, but rather, these sounds are not the children’s own combinations of musical tones and rhythms, hence, their own compositions. Additionally, because computerized sounds leave little room for error, each construction may sound masterful to the child, where their own attempts at composing seem far less so, making it even more difficult for them to take risks with what is in each child’s own ears.

Any attempts to bring music composition research into the professional literature add to the wealth of options music educators have for instructing students in this area, although there is little agreement in the current literature about the optimal conditions in which students find
success in music composition. Organization and synthesis of the research for developing a theoretical rationale for firm inclusion of improvisation and composition in schools’ curricula is still needed (Hickey, 2003; Webster, 1989).

The problem this study addressed was that by finding a relationship between student learning styles and composition activities that match their preferred learning modalities, elementary school music educators may more effectively engage students in composition tasks. To examine this problem, the researcher developed the following questions through which to frame this study:

1. How are the musical compositions of elementary school children related to their preferred learning styles?

2. When students compose music through their preferred learning perceptual modalities (visual, auditory, tactual, and kinesthetic), do they articulate a heightened sense of confidence with the compositional process, and is this sense evident in their musical compositions?

**Major Findings**

In this study, the subjects developed and wrote four music compositions, using traditional and non-traditional music notation. In addition, all subjects analyzed both the process undertaken to complete each task, as well as the final product for each task. Nine of the 11 subjects in the study completed *at least* one composition in which all data sources supported both questions posed in this study. All of the 11 subjects articulated either a heightened sense of confidence when the approach to task matched their preferred learning style, or articulated difficulty when approaching composition through a modality that was identified on the *LS:CY* as *not* a modality of strength.
The visual task was the most highly received approach to composition. Nine of the 11 subjects articulated a heightened sense of confidence with this approach. Although this level of confidence did not consistently translate into a higher quality of composition, the subjects’ attitudes toward their compositional abilities was increased. Statements, like “it was fun,” “it was easier,” and “I was inspired by the picture” are all indicators of confidence in the visual process.

**Limitations**

This study was qualitative in design as the qualitative paradigm is most appropriate for research that analyzes processes (Marshall & Rossman, 1999). The qualitative paradigm allows for the development of deep and descriptive insights into processes, attitudes, and confidence levels of elementary school students when working in a less-familiar domain, music composition. In this study, although 420 elementary school students were invited to participate, only 24 subjects selected to participate. Of those subjects, 11 subjects fulfilled all of the requirements for full participation in the study. The small sample size (student n = 11) did not allow the researcher to examine the data statistically.

The researcher recognizes the possible limitations of her task design. Although she conferred with a learning-styles expert prior to developing the tasks for this study, she herself is neither an expert in learning styles, nor in constructing tasks to accommodate individual modalities. Therefore, in the design of her tasks, she was very specific that the modality approach was only for the commencement of each task. Subjects were allowed, and expected to draw upon other modalities to complete each composition task, however, they were limited by the specific tasks constructed by the researcher.
Implications for Practice

The findings presented in this study demonstrate that elementary school students can approach music composition through all four perceptual modalities, although the approach to the tasks for several subjects impacted their responses to the tasks, as well as their perceptions of their final products. While the composition tasks were similar, the impetus for developing a creative spark in the students was through each modality; visual, auditory, tactual, and kinesthetic. In the music classroom, these differing ways of jump-starting the compositional process might be done simultaneously by different students, working alone or in small groups. Another way of using this process would be to have students select two different ways of beginning a composition, and then comparing the two. In this study, once the creative spark was ignited, students completed each of their compositions in whatever manner they were most comfortable. Although some subjects opted to write their compositions using traditional notation (see Figures D4 and D14), several subjects developed alternate notation systems that had meaning to them and could be easily articulated by the subjects and deciphered by the researcher (see Figures D5, D6, D7, D9, D10, and D11). The subjects’ ability, or inability, to notate their compositions on the music staff did not seem to have any effect on the outcome of the scores received by the judges. In the capacity of an instructional leader, this process toward composition could be disseminated amongst a music staff for inclusion into the curriculum and workshops could be developed to train music educators in developing music composition tasks initially approached through each modality. As music composition is the least attended to standard in elementary school music education, finding the most appropriate ways of allowing children to discover their own voice is vital. Examples of subjects’ work for each of the four composition tasks can be found in Appendix D, following the description of each task.
Suggestions for Further Research

Because elementary school music composition is not extensively studied in a natural setting, nor is music composing as it relates to learning styles, additional studies are warranted to confirm and expand upon the finding of this study. Suggestions might include varied research design, larger sample, and more time. Ideally, a sufficient amount of time would be provided to thoroughly explore each approach to composition, and a refinement of the tasks might lead to more conclusive results. Another option for exploring the effect of preferred learning modality on music composition would be to administer the learning styles assessment first to extract a sample representation of all preferred perceptual modalities. Findings from this study might be operationalized for a quantitative study to show statistically whether or not there is a correlation between music composition approaches and learning styles, however, such a study would require a much larger sample and possibly more than a single researcher.

Conclusions

Firm inclusion of music composition into elementary school curricula as a normal and natural method for enhancing children’s musical understanding still requires that music educators be willing to take risks in their own teaching of music. As music is an aural art form, the ability to think in sound poses the most difficulty when attempting to compose. However, through an understanding of learning styles, and how to assist students in using their perceptual strengths, perhaps more educators and children will be willing and able to take that risk. The visual learner may take great pleasure and gain musical knowledge in seeing the patterns in and structure of a musical score, or find that they are more easily able to turn patterns all around them into sound. Tactual learner may enjoy feeling their way around instruments, discovering how to combine sounds in an organized manner. Kinesthetic learners might learn how to convert
their *physical responses* to hearing music into generating and capturing their own music, while the auditory learners might consider how rhythmic and melodic the world around them truly is, and utilize their strength for remembering what they *hear* to begin developing their own compositions. While it is understood that no method, approach, or theory is applicable to all students in all settings, it is the responsibility of the experts to make the effort to find the most “appropriate version of any skill or knowledge” (Bruner, 1966, p. 35) to be taught, however preparatory the version may be.
References


Gremli, J. (2002). Effects of traditional versus contract activity packages and programmed learning sequenced instruction on the short- and long-term achievement and attitudes of


Appendix A

Research Questions, Instrumentation, and Analysis
Table A1  
*Research Questions, Instrumentation, and Analysis*

<table>
<thead>
<tr>
<th>Research Question</th>
<th>Type of Methodology</th>
<th>Source of Information</th>
<th>Data Sources</th>
<th>Analysis</th>
</tr>
</thead>
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<tr>
<td>1. How are the musical compositions of elementary school students related to their preferred learning styles?</td>
<td>Qualitative</td>
<td>Students</td>
<td>Music composition task scores, learning styles instrument (<em>LS:CY!</em> )</td>
<td>Naturalistic inquiry</td>
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<td>2. When students compose music through their preferred learning perceptual modality (visual, auditory, tactual, kinesthetic), do they articulate a heighten sense of confidence with the compositional process, and is this sense evident in their musical compositions?</td>
<td>Qualitative</td>
<td>Students Judges</td>
<td>Semi-structured student interviews, music composition task Scores</td>
<td>Naturalistic inquiry and grounded theory (HyperResearch)</td>
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Appendix B
Research Outline and Timeline
Research Outline and Timeline

1. Students entering the fifth grade in the Fall 2007 were eligible to participate in this study.

2. In May of 2007, invitations were sent to 420 incoming fifth grade students

3. Specific day/time assignments for subjects were distributed in early July for the first group, and in late September for the second group.

4. Subjects attended “composition camp” as they were available. (Total time commitment for this phase of the study is 18 hours/student).

5. Subjects were taught a variety of ways to generate ideas for music composition (no composing experience was necessary).

6. Composition tasks were completed during August 2007 and October through December in the music room at researcher’s elementary school.

7. Learning styles assessment was administered in March of 2008.

8. Semi-structured interviews were conducted between April 8, 2008 and May 28, 2008. Each interview lasted 30-minutes.

9. For participating in the study, subjects received a CD of their compositions, and a printed score of each of their compositions.

10. A compact disc containing all compositions and the scoring rubric was sent to each of the independent judges for scoring in May of 2008 and returned to the researcher within two-weeks. The compositions were arranged in random order, and given numerical codes, so the subjects’ identities were anonymous to the judges.

11. In August of 2009, all interviews were transcribed by the researcher using HyperTranscribe and qualitatively coded using HyperResearch.
Appendix C

Parental Consent Letter
Consent to Participate in Research Study
Doctoral Dissertation Research Project to Study Music Composition and Preferred Learning Styles Modalities.

Dear Parent or Guardian,

My name is Nora Bennett and I am the music educator at [confidential] Elementary School and the elementary school music coordinator for the [confidential] Public Schools. I am also currently enrolled in the doctoral program for Instructional Leadership at Western Connecticut State University. This program requires that I design and implement a dissertation research study. I have selected a study of the relationship between preferred learning-style modalities (visual, auditory, tactual, and kinesthetic) and music composition.

The purpose of this research is to better understand if and how learning styles affect the music compositional process, and to help students feel more capable and productive as composers of original music.

As part of my research, participants in the study will complete four music composition tasks. Following the completion of the four tasks, I will be administering a learning styles instrument that detects students’ preferred learning styles. In addition, student interviews will be conducted to provide an in-depth examination of the music compositional processes as they relate to each of the composition tasks. **No previous music composition experience is necessary to take part in this study.**

This project is approved by the [confidential] Public Schools and it is hoped that at the completion of the research project I will be able to provide insight to [confidential] elementary school music teachers on music composition instructional practices that will benefit all [confidential] students.

All information is completely confidential. Data from the learning styles instrument is for research purposes only and will not be reported on an individual basis. **No school data will be collected on your student for this project.**

If you agree to have your student fully participate in this project, please completed the attached questionnaire, sign the attached statement (keep a copy for your files) and return questionnaire and signed consent to your child’s classroom teacher by May 30, 2007.

If you have any questions, or would like further information about my project, please contact me at

Sincerely,
Nora Bennett
Music Educator
Name _____________________________________

Directions: Please circle the response that is most like you. Circle “1” if the statement is Not At All like you, “2” if the statement is A Little like you, “3” if the statement is A Lot like you, and “4” if the statement is Completely like you.

Example -
1. I want to be a rock star.
   Not at All  A Little  A Lot  Completely
   1          2          3          4
   If you thought the statement was A Little like you, you would have circled number 2.
   There are no right or wrong answers, so respond to each statement as honestly as you possibly can. This information will be used for placement purposes only. The information provided will in no way affect your ability to participate in this study.

Statements

1. I take private instrumental lessons.  1  2  3  4
2. I take instrumental lessons in school.  1  2  3  4
3. I am comfortable reading music.  1  2  3  4
4. I can read and play rhythms.  1  2  3  4
5. I make up my own music at home.  1  2  3  4
6. I recognize patterns when looking at music.  1  2  3  4
7. I recognize patterns when hearing music.  1  2  3  4
8. Music is an important part of my life.  1  2  3  4

Comments:
_____________________________________________________________________________________________
_____________________________________________________________________________________________
_____________________________________________________________________________________________

Thank You.
Western Connecticut State University

Consent to Participate in Research Study
Music Composition and Learning Styles

I, _____________________________________, the parent/legal guardian of the minor named below, acknowledge that the researcher has explained to me the purpose of this research, identified any risks involved and offered to answer any questions I may have about the nature of my child’s participation. I freely and voluntarily consent to my child’s participation. I understand all information gathered during this project will be completely confidential. I also understand that a copy of this consent form has been provided for my files.

Name of Minor: ________________________________________________________

Signature of Parent/Legal Guardian ___________________________ Date __________
Appendix D

Music Composition Tasks

Visual
Auditory
Kinesthetic
Tactual
Visual Composition

Task: By analyzing a visual art print for line, form, rhythm, and texture, subjects will create a music composition using traditional and/or nontraditional notation.

Prior instruction: As a group, teacher will have the students identify and select elements to be included in a short composition. (Print used for demo will be Georgia O’Keeffe’s Ranchos Church – or similar print with clear lines and form). As students select the elements, the teacher will construct a soundscape from their ideas. She will then play the ideas that the students identify as important. Elements that might be identified include: melodic lines, texture (thick/thin), dynamic levels, balance). Students will then be asked to construct their own soundscapes from an art print, and from those generated soundscapes create a music composition.

Process for individual work:

1. Students are provided with an art print and sheets of plain paper.

2. Students will analyze the print for ideas that “stand out” to them as components to be included in a musical soundscape.

3. Students will create their soundscapes, organizing their ideas in a way that has meaning for them. For example, a specific ‘line’ in the print may become a melodic line that is repeated throughout the composition; a student may attach a certain color or shape in the print to a specific instrument.

4. Students will organize their visual material into measures (at least eight).
Auditory Composition
**Task:** Given a piece of poetry, subjects will discover, and apply rhythm and develop melody to create a composition, using traditional and/or nontraditional notation.

**Prior instruction:** Students will listen to a recording of a simple known poem (like *Five Little Monkeys*) and be asked to identify the rhythmic structure of the poem. Then, working in small groups they will develop a melody for the poem, or background music/side effects to accompany the poem, and perform it for the class.

**Process for individual work:**

1. Listen to several less-familiar poems.
2. Select a poem, based upon either strong rhythmic ideas or mood.
3. While listening, draft the rhythmic structure and form of the poem.
4. Develop contrasting rhythms to add variety and interest to the piece (optional).
5. Construct an original melody for the composition using the created rhythms.
Kinesthetic Composition

**Task:** After learning a series of dance movements, subjects will create a music composition, using traditional and/or nontraditional notation. Elements to be generated from the movements include: rhythm, melody, texture, dynamics, and tempo.

**Prior instruction:** Teacher will create a series of gross, fine, and locomotor movements for students to analyze. Questions regarding the movements will ask students to identify what the movement might “sound like.”

One example might be:

- Teacher takes four side-steps of equal length and then uses hands to “step up” four equal intervals and rhythmic units.
  - Examples of possible interpretations of students:
    - “Your music stays on the same pitch for four beats, then steps up for four beats.”
    - “The music moves slowly, with just one instrument playing. There are a total of eight beats. The first four are low and even, the second four are higher and move up.”

**Procedure:**

1. Participants will be taught a series of choreographed movements.

2. Using no less than two of the sequences, participants will ‘convert’ their movements into sound structures.

3. Participants will create a composition based upon their sound structures.
Tactual Composition
**Task:** Given a set of various sized and textured objects (fur, sandpaper, polished glass, stones, beads, cards, etc.), subjects will create a music composition, using traditional and/or nontraditional notation.

**Prior Instruction:** Subjects will be asked to explore a ‘sample box’ of a textured item (the item will be selected by the researcher and will be different from the items selected for the individual task) and describe to the researcher what a piece of music based upon the texture might sound like. As a group, a short composition will be constructed based on subjects’ responses.

**Procedure:**

1. Each subject will be given a sealed box, with an opening on the side.
2. Participant will have the opportunity to tactually explore the contents of the box, until they determine the textural items that are to be the basis of their music composition.
3. Participant will create a music composition, using the selected textures.

*Note – texture in this task has multiple meanings. The texture of the item (ie. soft fur) may have a variety of interpretations, none of which necessarily correspond to the definition of musical texture (thick/thin). “Soft” may indicate a dynamic level, the quality of a specific instrument, smooth and flowing even rhythms, etc. It is possible that the adjective assigned (by the researcher) to a particular item (like ‘soft’ fur) may not be the same as the adjective or thoughts of the participant selecting that item. Therefore, to help prevent preconceived ideas about the texture of the items, the participants will not be seeing the objects they are touching in an effort to prevent visual interpretation from interfering with the tactual.*
Figure D8 – Marie’s tactual ideas.

Figure D9 – “Furry and soft” written for clarinet, changed to flute by subject.

Figure D10 – “Hard and smooth” written for bass clarinet.

Figure D11 – “Rough and hard” became a percussion part.
Figure D12 – Susan’s tactual descriptions

Figure D13 – Susan’s tactual “song traits.”

Figure D14 – Susan’s final notated tactual composition
Appendix E

Composition Rating Scale
Composition Rating Scale

Directions: For each composition, please circle the score that best represents the amount of the characteristic demonstrated in the composition on a 6-point scale for each of the following dimensions – aesthetic appeal, originality, craftsmanship, and proportion.

1 – none of the characteristic is present  
2 – little of the characteristic is present  
3 – some of the characteristic is present  
4 – characteristic present at least half of the time  
5 – characteristic is frequently present  
6 – characteristic present throughout the piece

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Score</th>
</tr>
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<tbody>
<tr>
<td>Aesthetic Appeal</td>
<td>1</td>
</tr>
<tr>
<td>Originality</td>
<td>1</td>
</tr>
<tr>
<td>Craftsmanship</td>
<td>1</td>
</tr>
<tr>
<td>Proportion</td>
<td>1</td>
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</table>
Appendix F

Learning Style: Description of *The Clue to You!*
Administering the Test

The LS:CY! assessment consists of 69 questions interspersed among five sections. The detective work of the Whodunnits is divided into five stories with a series of questions following each:

- The Case of the Shattering Windows
- The Case of the Wrong Directions
- The Case of the Unwelcome Bat
- The Case of the Mummy’s Ring
- The Case of the Strange Noise

The following readability rates were assessed for the instrument:

- Flesh Reading Ease = 78.7
- Flesh-Kincaid Grade Level = 5.0

The Flesh Reading Ease rated text on a 100-point scale under the assumption that the higher the score, the easier it was to understand the document. For most standard documents, it was recommended to aim for a score of approximately 60.
Appendix G
Interview Questions
Interview Questions

**Descriptive Questions:** Grand Tour (specific grand tour most appropriate as there are no ‘typical’ ways of composing music. Subjects will be asked to describe their approach to the process of composing), Mini-Tour (remaining with the ‘specific,’ subjects will recount the process of composing for each of the four tasks they have completed), Example (these questions will be more developed as the subjects analyze their composition products, as related to the process they went through to complete them), Experience (these questions will help to identify subjects prior knowledge. This is important because individuals come to music study with a wide range of experiences that can affect their composition ability), Native Language Questions (these questions will help in the articulation of speaking in a musical language, although not necessarily in standard musical terms. Children sometimes have specific ideas about musical sound and structure, but may have difficulty ‘speaking the language.’

**Question Sets:**

1. I’d like you to think about your weekly music classes. Would you please describe a typical music class?
   
   1.1. I’d like you to think about a particularly exciting or meaningful music class that you have attended. Describe for me what made it so enjoyable and successful.

2. If you were a music teacher, how would you describe composing to a student who has never composed his or her own music?

3. We all have preferences for different types of music, and recognize that not all music sounds the same. Please describe for me a particular piece of music or a song that you really like

4. Describe for me a particular piece of music or a song that you really do not like

5. What do you think are some characteristics that separate a really good piece of music from one that isn’t as good?
6. When you listen to music, what strikes you as being the most important thing that adds to your enjoyment of the piece?

7. If you were going to interview a composer about how he or she creates a piece of music, what would be an interesting question ask?

8. Composers create music in a variety of ways. Could you describe for me the steps you take when you are asked to compose an original piece?

9. What kinds of things affect how you feel about creating a music composition?

10. What would be some ways a reluctant student could be encouraged to compose?

11. If you could play any instrument fluently, what types of music would you want to compose for that instrument?

More Task Specific Questions

1. You have completed four compositions. Please place them in the order of least liked approach to best liked approach. Remember, there are no right or wrong answers, just preferences. You are free to describe what you liked, or disliked about each approach to composing music.

1.1. When working on the (visual, auditory, tactual, kinesthetic) composition, describe the process that helped you to organize your thinking?

1.2. Describe how the approach you were asked to take in each composition distracted you, or made it difficult to complete the composition the way you wanted to?

2. Now, we will listen to each of your compositions (in random order). This time, I would like you to rank your preferences according to what you hear.

2.1. What is most striking to you as you listen to your highest ranked composition?
2.2. When listening to the piece you ranked the lowest, what makes you not like it as well as the others?

2.3. Describe your thinking as you were creating this composition (most-liked and least-liked).

3. If you were asked to complete this composing task again, what are some of the ways you would approach the task differently?
Appendix H
Superintendent’s Consent
Dear [Superintendent],

I am a doctoral candidate at Western Connecticut State University, Department of Education and Educational Psychology, Instructional Leadership Program and would like to secure your permission to conduct my doctoral research in the [confidential] Public School system. Fifth grade elementary school students will complete a series of four music composition tasks during August 2007. In addition, participating students will complete a learning styles instrument, and participate in semi-structured interviews to gain insight into the relationship between students’ preferred learning styles and their musical composition processes and products.

Your agreeing to my request to conduct this research will allow me to administer the learning styles instrument, Learning Style: The Clue to You! and to conduct interviews with all participating fifth grade students. Students may decline to answer any questions regarding their experience with music composition, and are free to withdraw from the study at any time. If students (or parents) do not wish to participate in this study, they will not be penalized in any way.

To protect all participants’ privacy, students will be given codes for identification purposes. In addition, in reporting the findings of this study, data will be reported in such a way that individuals, school, and district cannot be identified.

The research proposal for this study has been reviewed and approved by the Institutional Review Board at Western Connecticut State University.
If you allow me to conduct this research, please sign and return this consent form. If you have any further questions about this study, please contact me, my Primary Advisor, Dr. Thomas Cordy, or the Program Director, Dr. Marcy Delcourt at the email addresses or phone numbers below.

Thank you for taking the time to consider my research request.

Nora Bennett                     Dr. Thomas Cordy                     Dr. Marcy Delcourt

-----------------------------------------------

**Consent Form**

I have read the description of the research project and agree to allow it to be conducted. I am aware that the results will be used for research purposes only, that all identifying students, school, and district information will remain confidential, and that I may withdraw my permission to continue this research at any time.

Superintendent

Signature: _____________________________________________ Date: __________________
Appendix I
Principal’s Consent Letter
Dear [Principal],

I am a doctoral candidate at Western Connecticut State University, Department of Education and Educational Psychology, Instructional Leadership Program and would like to secure your permission to conduct my doctoral research at [confidential] Elementary School. Fifth grade students from the [confidential] Public Schools will complete a series of four music composition tasks during August 2007. In addition, participating students will complete a learning styles instrument, and participate in semi-structured interviews to gain insight into the relationship between students’ preferred learning styles and their musical composition processes and products.

Your agreeing to my request to conduct this research will allow me to administer the learning styles instrument, *Learning Style: The Clue to You!* and to conduct interviews with all participating fifth grade students. Students may decline to answer any questions regarding their experience with music composition, and are free to withdraw from the study at any time. If students (or parents) do not wish to participate in this study, they will not be penalized in any way.
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Thank you for taking the time to consider my research request.

Nora Bennett Dr. Thomas Cordy Dr. Marcy Delcourt

<table>
<thead>
<tr>
<th>Nora Bennett</th>
<th>Dr. Thomas Cordy</th>
<th>Dr. Marcy Delcourt</th>
</tr>
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<td><a href="mailto:nbennett@ridgefield.org">nbennett@ridgefield.org</a></td>
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<tr>
<td>(203)431-2830</td>
<td>(203)837-9121</td>
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</table>

Consent Form

I have read the description of the research project and agree to allow it to be conducted. I am aware that the results will be used for research purposes only, that all identifying students, school, and district information will remain confidential, and that I may withdraw my permission to continue this research at any time.

Principal

Signature: _____________________________ Date: ___________________________