

Composing with voice:

Students' strategies and processes, and the influence of text on the composed music

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Introduction

In our attempt to contribute to students' growth towards becoming independent, thinking musicians, we engage them in a variety of activities that involve performing, composing, improvising, reading, notating, listening to, and moving to music. Although such behaviours are all considered appropriate for educational activity, in most elementary and secondary music education programs composing is not promoted to the same degree as the other behaviours. Integrating composing activities in music curricula at all grade levels can provide additional ways in which to experience music.

Composing can be an experience in which students are discovering, interacting with, analyzing, and evaluating the expressive qualities of music. When composing a piece of music, students have the opportunity to refine, shape, and mold a musical composition, playing an active role in all of the decisions that will affect the final product. van Ernst (1993) discussed how composing "is a process where the making role is central" (p. 23) and that students, when composing, organize sound and give form to ideas in a tangible product.

Definition of composing

For this research project, composing is defined as the creation of original material, that is, students' compositions are students' original works. As Reimer (1997) stated, "A child creating a melody on a set of bells, guided in the process by decisions about which sounds seem to be musically compelling, is 'being a musician' (in this case a composer or improviser), and the melody, however simple, limited, or naive, is nevertheless a genuine instance of music" (p. 9). Regardless of the expertise of the 'composer,' there are similar experiences when composing music, just as there are similar experiences when performing music, regardless of the expertise of the performer. My working definition, then, does not include any evaluative connotations but refers to students' original works.

Focus of this project and relationships to previous related projects

This project is part of ongoing research in which the focus is learning about how students compose. The motivation for this research is a belief in and support for composing in music education settings. Previous research projects have included (1) learning about strategies and thought processes of novice and expert composers that occur while composing with technology, (2) learning about strategies and thought processes of public school-aged and university-aged students while composing with traditional classroom instruments, and (3) investigating strategies and thought processes of students that occur while composing before, and after, experiencing composing activities.

The novel aspect of this project, within my research focus, is asking students to compose with voice, as opposed to traditional classroom instruments or technology. Composing with the voice allows the students to experience an extension of themselves. Singing is an immediate human activity. "The intentional use of our body to create musical sounds is an intensely felt physical, spiritual and cognitive pursuit" (Doloff, 1998, p. 89). Everyone has a voice and sings in many different contexts from their earliest beginnings and can contribute to our definition of our sense of self. As Thurman (1998) stated, "Our voices are . . . connected to the deepest, most profound sense of 'who we are'" (p. 241).

Literature review

The body of literature that was examined for this project included studies in which children and adults, of various ages and musical backgrounds, composed. Within that literature, designs ranged from task-specific problems confined to specific elements to activities in which subjects composed with limitless choices about what, when, and how elements were to be molded. Examining these studies allowed me to compare the processes and strategies exhibited by students in the present study with those findings presented in the literature.

Six areas were revealed as a result of examining the literature: (1) stages students experienced while composing (Cohen, 1980; Bunting, 1987; Kratus, 1989; Levi, 1991; Citron, 1992; Christensen, 1993; Wiggins, 1992; Hickey, 1995; Daignault, 1996; Younker, 2000; Folkestad, Hargreaves, & Lindstrom, 1998); (2) time spent on different composing processes (Ainsworth, 1970; Kratus, 1989); (3) factors attributed to differences in composing strategies (Ainsworth, 1970; Bamberger, 1977; Scripp, Meyaard & Davidson, 1988; and DeLorenzo, 1989; Younker, 2000); (4) strategical processes identifiable within a developmental progression as exhibited by "novice" and "expert" composers (Davidson & Welsh, 1988; Colley et. al, 1992; Younker & Smith, 1992, 1996; Younker, 2000); (5) the relationship between the degree of the experiences that occurred during the processes and quality of the student's product (Hickey, 1995; and Daignault, 1996); (6) incorporation of known material (Younker, 2000). This literature provided the focus and motivation for this research project:

Purpose and research questions

The purpose of this project is to explore how students think in sound while composing with voice. Specifically I was interested in: (1) the strategies and thought processes employed by university music students while composing with voice; and (2) the influences, if any, of the text on the musical processes and products.

The following research questions were posed to guide this inquiry:

(1) What patterns of strategies and thought processes, if any, emerge from an analysis of students' musical discourse (humming and singing) and verbal reports collected while composing?

(2) What, if any, are the influences, as perceived by the students, of the text on the original music?

Methodology

This study involved six faculty of music students who were asked to compose, with voice, music for a poem that was selected by me. They were asked to complete the composition over three 30 minute sessions. The poem, "Caribou Land," was created by a Newfoundlander and was chosen for two reasons: (1) the location of the conference for which this paper was completed and, (2) the students' unfamiliarity of the poem.

Data in the form of humming, singing, playing and talking were captured on a tape recorder that run during each of the three 30 minute sessions. All activities took place in individual practice rooms that contained a piano and chair. There was an interval of time between each session, allowing the students to think about the composition while away from the setting.

The students were enrolled in my elementary music education course and volunteered for the project. During the course, which ran from September to April, the students had experienced composing activities that would be appropriate for students in a general school-based elementary music program. The uniqueness of this target population was two-fold: (1) students were faculty of music majors, and (2) none had studied composition in a formal setting.

My desire was to surmise how music students approached the activity of composing with as few external parameters as possible, therefore, they were not asked to complete specific tasks, but to create a piece of music. The external parameters that were implemented included the restrictions of voice, the poem, the number of sessions, and the length of time for each session.

Analysis

Since the focus of the study is a description of how students composed with voice, the descriptive mode was adopted. To explore students' processes and strategies that

occurred as they composed with voice, I used think aloud procedures. The students were asked to let the tape recorder run throughout the entire 30 minute sessions, recording all that was sung, said, hummed, or played.

For the purposes of this paper, a strategy is defined as a plan for the overall composition while a process is defined as the behaviours used to realize or implement the strategy. In this study, the strategies and processes were used to shape and mold musical elements and the expressive qualities of those elements into an original product.

Research question 1

The tapes were transcribed by a hired graduate student. I then went through each transcription while listening to the tapes, editing and making observations during the process. After several readings of the transcripts, I began to chunk the information by writing slashes at points that signified a turn of events, strategies, or processes. Rereading the transcripts again, I began to code what occurred during those chunks. The next step involved creating profiles for each student based on the information that emerged from the chunks and codes. The profiles consist of a detailed analysis of strategies and processes that resulted from examining what was in each 'chunk'; and an overall description of the students processes and strategies, and involvement with the various musical elements and expressive qualities of those elements.

When comparing the strategies and processes across students, I made a list of the various processes that were exhibited throughout each session. From the profiles, I discerned the student who exhibited the most strategies reflective of a 'novice' and the student who exhibited the most strategies reflective of an 'expert', and then plotted the other four students on a continuum from novice to expert. As well, I listed each student's focus in terms of elements of music and the expressive qualities of each element.

Research question 2

After reading and rereading the transcriptions, I made a list of musical decisions, for each student, that were influenced by the text from an expressive perspective. I then compared and contrasted across students to discern similarities and differences.

Results and Discussion

Findings from this study are in consonance and dissonance with findings of other studies. At this point, however, I caution that care be taken with generalizing the findings to larger groups of same age or like students. The number for the present study was only six, and the selection of students was within the confines of a particular geographical area, university, and course. While I will make reference to the body of literature examined for this project, I will focus the discussions and implications on what was found within the confines of this study.

Research Question 1 and 2

As a result of examining the data, patterns evolved around (1) the strategies used to approach the project and provide a framework in which to work, (2) the processes used when composing to implement the strategies, (3) the interactions with elements of music, (4) the decisions made about the expressive qualities of those elements, and (5) the reference to text when making the musical decisions.

Strategies

The strategies used to provide a framework for the composition differed across the students (see Table 1). Placed on a continuum, these strategies ranged from an atomistic, out of context style to a holistic, contextual style. This continuum reflects a "novice" to "expert" approach as described in the research of Davidson & Welsh (1988), Scripp, Meyaard, & Davidson, (1988), Colley, et. al (1992), Younker & Smith (1992, 1996), and Younker (2000). All of these researchers, except for Younker, were interested in strategies exhibited by novice and expert composers while composing. Younker was interested in thought processes and strategies of students of different ages whose only formal music instruction was in a school-based elementary music program, which did not include formal training in composing. In the present study, the students were full time university music students who had no formal training in composing.

What is interesting, is that despite the varying musical backgrounds of the subjects across studies, there appears to be a similarity of the strategies exhibited by the novices and experts in the cited studies, the strategies exhibited by the students in Younker's (2000) study, and the strategies exhibited by the students in the present study.

Generally speaking, Shira¹ represented the novice while Sarah represented the expert, and the other students were placed between those two poles on a continuum. Shira began note by note without any overall framework while Lulu began with a framework within which to begin her composition. Once the framework was formulated she maintained it for the entire composing sessions, even when difficulties occurred because of the devised framework. Sven began with a framework, however, made a meter change when he realized that the original one would not work, hence, showing flexibility to change an aspect of the framework when difficulties are encountered. Cordelia began with a framework but was flexible about that structure while making decisions about the elements and expressive qualities. Op. 75 exhibited a different strategy in that she was flexible during the process of formulating the framework. The decisions were not made after one reading of the poem but evolved during multiple readings. There was evidence of discerning relationships between the whole product and the individual verses. As a result, there were more opportunities to explore the expressiveness of the text and entertain the possibilities when making musical choices, all of which were intertwined with formulating a framework within which to work. Finally, Sarah exhibited the same strategies as Op. 75, however, she did not begin to formulate a framework until she "played" with the text and explored musical choices. There were movements from making decisions within verses to making connections between those decisions and the product as a whole.

Table 1: Profile of Students' Strategies exhibited while Composing

Shira	Lulu
<ul style="list-style-type: none"> • no overall plan • atomistic throughout • one reference to unity • minimal exploring, evaluating, and editing • 1st—no decisions • 2nd—melodic content for first and last line of each stanza • 3rd—melodic content of lines 2–7, rhythm adjusted according to words in verses 2,3, and 4. 	<ul style="list-style-type: none"> • reads through poem • achieved a formal “sense” in terms of rhyming scheme, similar lines rhythm patterns and harmony • identified rhythmic structure for first verse (reading & clapping) created melody, and applied melody to subsequent verses altering rhythm as dictated by the words • step by step approach methodically maintained for duration of composing sessions • majority of exploring involved matching a rhythm pattern to the words • evaluated correctness of rhythm pattern after notation of each line.
Cordelia	Op. 75
<ul style="list-style-type: none"> • articulates what she desires and then realizes decisions • reads poem to “get thoughts together” • decides on a minor key (determined by the words), thinks of a melody, and begins • relates parts to previous and subsequent parts • flexible throughout in terms of listening to the text when determining expressive aspects 	<ul style="list-style-type: none"> • reads poems and generates ideas from the reading • decides on mood based text and seasons, shape of melody, endings of each verse (should be the same) • newly composed material created in relation to the whole (context) • flexible throughout in terms of listening to the when determining expressive aspects • working interchangeably with melody and rhythm, and how they can be created to be expressive of the words

Svren

- students—Gr. 5 or 6
- discerned form (AB), phrase (8 measures, call and response), and meter (4/4, then 12/8)
- adopted “Reflections” book because of lyrics
- sings line and notates
- explores rhythmic possibilities dictated by the words
- step by step approach methodically maintained for duration of composing sessions
- 1st—melody
- 2nd—accompaniment
- 3rd—harmony lines for certain words.

Sarah

- immediately began by playing a chord, singing a line, discerning similarities across lines
- notates and determines key in which she began
- continues composing while determining relationships between text and music, and between lines “Aha” experience during which the structure of her piece emerged through exploring and interacting with the expressive qualities of the text; flexible, open.

Processes

Students exhibited some of the composing processes as outlined by Cohen (1980), Bunting (1987), Kratus (1989), Levi (1991), Citron (1992) Christenson (1993), Wiggins (1992), Hickey, (1995), Daignault (1996), and Younker (2000). These researchers reported that students experienced processes such as exploring, developing, decision making, evaluating, refining, repeating, practicing, and performing in a recursive and dynamic fashion while composing. In the present study, all of the students exhibited these same processes, all at varying degrees. While exploring, the students clapped, snapped, or tapped the beat; played the piano; sang; played and sang; hummed; read the poem; notated; and employed solfege. While evaluating all played, sang, and played and sang back the created material, while three played back the tape to hear what they had created. The processes of accepting or rejecting, editing, and evaluating were exhibited by all of the students (see Table 2).

Table 2: Processes Exhibited by the Students

Explores/Converges:

- Claps, snaps, or taps beat
- Plays
- Sings
- Plays and sings
- Hums
- Notates
- Reads
- Uses solfege

Evaluates:

- Listens to tape
 - Plays back created material
 - Sings back created material
 - Plays and sings back created material
 - Accepts or rejects
 - Edits
 - Evaluates
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Interaction with the musical elements and the expressive qualities of those elements

The quality and number of decisions increased with the amount of interaction that occurred with the elements and the expressive qualities of those elements (see Table 1). As well, there was a direct relationship between where the student was placed on the novice–expert continuum and the quality and quantity of decisions made about the composition (see Table 3). In the following section, I outline each student’s involvement with the elements of music and the expressive qualities of those elements, beginning with the student who had the least amount of involvement and finishing with the student who had the most.

Shira focused on form, rhythm, and melody. Specifically, she provided unity by having the first and last line the same, used the words to determine the presence of pickups so there would be a metrical fit, and sang solfege to guide her decisions about the melody. There were no other concerns about the expressiveness of the music.

Lulu interacted with form, melody, rhythm, and texture. Formally, the rhythmic scheme of each line, the phrase lengths, the harmony, and the words were to be balanced across verses. The form was to be strophic and there had to be a connection between verses from a musical perspective to provide cohesiveness. Melodically, one pitch was determined because of the words—a low pitch for the word “Caribou.” Lulu described her melody as “a simple melody” however, the reason given was based on the simplicity of the rhythm. The words determined the rhythm and pickups, while the phrase structure dictated the incorporation of longer durations at the end of every second line. The choice of meter was 4/4. The only decisions about texture involved implementing a quiet dynamic for the words ‘quiet’ and ‘echoing.’

Decisions about form, rhythm, harmony, and mood were made by Svren. He quickly decided that the form would be AB, strophic, and consist of call and response phrases, each eight measures long. The mood for the B section was to be different from

the mood for A, a decision for which no reason was given. As well, he targeted a grade level which provided structure for the level of difficulty. Svren began the piece in 4/4 but after notating the first line, changed the meter to 12/8 and noted that the presence or absence of pickups would be determined by the words. C major was chosen as the key and an accompaniment and descant lines were created after the melodic line was notated.

For Cordelia's composition, the form was to be strophic and the meter 3/4. Other decisions about rhythm included changing the tempo for specific words, ensuring that an *accelerando* inserted in the first verse worked at similar places in other verses, allowing the words to determine the rhythm, and extracting a word that, according to her, did not fit. Cordelia was very particular about specific pitches within the melodic and harmonic context and explored possibilities for the contour. At times, the melody reminded her of another song and as a result, she made changes to ensure originality. Harmonically, Cordelia chose the minor mode, a decision based on the mood of the words and created an accompaniment for the melodic line. She extended her composition by adding an introduction and coda that consisted of similar material to provide unity.

Op. 75 made decisions about form, melody, rhythm, and the mood. After her original composition was completed, Op. 75 implemented contrasting material to avoid too much repetition. Some of the decisions about the contrasting material were determined by the words. Melodically, decisions were made after the poem was read and specific words were noted. The overall shape was to represent an arch and each melodic line was to be compatible with previous and subsequent lines. Changes involving specific pitches and intervallic distances were determined by the words.

Rhythmically, Op. 75 chose a triple meter. The rhythmic durations, pickups, and changes in tempo were determined by the words, changes that were implemented by using shorter durations. Op. 75 spent time on determining the different moods for each verse. Using the words as a guide, she determined that the mood should be reflected of thoughts about the seasons, for example, happy feelings should be evoked for the "summer" verse, and warmth should be felt for the "fall" verse. In addition, she employed text painting for the words "shots" and "echoing."

Of the six students, Sarah was most involved with the elements and the expressive qualities of those elements. Decisions about form, melody, rhythm, harmony, texture, and mood were made. Formally, Sarah viewed the first verse as an introduction. Harmonically, the form was to be ABBA (specifically c minor–C major–C major–c minor, each of which was determined by the mood of the verse), and there was to be a cohesiveness within and across verses. Sarah quickly decided on a folk, "Maritimish" style with specific moods for each verse to be determined by the words. The melody was to be determined by a balance of contrast and unity, and the folk style. Initially, much of the melody was triadic, but further decisions involved inserting stepwise patterns to avoid too much repetition of triadic material. In terms of rhythm, pauses were inserted as determined by words and dotted rhythms were assigned to words that required an "aggressive" style. Texturally, dynamics were inserted as dictated by the words.

Table 3: Summary of Strategies and Focus of Elements

1. Shira began without any overall framework, and focused on melody and rhythm.
 2. Lulu began with a framework and focussed on form, melody, and rhythm.
 3. Svren began with a framework and focussed on form, meter, melody, rhythm, and harmony (an accompaniment and a descant line).
 4. Cordelia was flexible while working within a framework and first focussed on mood, tonality, harmony, form, rhythm, and melody. As process and product developed, focus included form and tempo, (compatibility of tempo across verses for specific parts). Specific words influenced choices made about the expressive qualities of the elements.
 5. Op. 75 was flexible within a framework and focused on the expressive qualities of the text. This focus was evident from the first read through. Framework, then, evolved while reading the text multiple times. Focussed on mood, melody, form (in terms of unity across verses), rhythm, tempo, and dynamics. Quantity and extensiveness of ideas were greater because of openness to what the text brought from an expressive perspective.
 6. Sarah began without a framework, but explored possibilities (flexibility) until she arrived at an "aha" moment. The structure then emerged as a result of the exploration period.
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Relationship between the text and words

Overall, the text influenced decisions about melody, rhythm, harmony, form, texture, and mood.² Most interesting was the overall number of decisions made as a result of text verses the small number of students who made each decision (see Table 4 for specific decisions per element).

Table 4: Relationships between text and music

Melody

- (a) Desired the same notes for 'Caribou land' each time. (1 student)
- (b) Specific words determined specific pitches. (1 student)
- (c) Included an ascending melody for the first part of last line of each verse to prepare for a descending line for 'in Caribou Land.' (1 student)
- (d) Represented 'caribou' with a low pitch because of size of the animal. (1 student)
- (e) A step-wise melody was not used for 'Bluster' to contrast with previous melodic material. (1 student)

Rhythm

- (a) Pickups dictated by the rhythm of specific words. (2 students)
- (b) Implemented an increase of tempo for line five of all five verses. (1 student)
- (c) Gave 'Shots' more emphasis (accents). (1 student)
- (d) Quickened the pace for 'Skates are flashing and to and fro'. (1 student)
- (e) Used dotted rhythms to enhance a folksong style. (1 student)
- (f) Winter, WIN and not TER placed on the first beat of the bar. (1 student)
- (g) The word 'bluster should sound aggressive, therefore a dotted rhythm was used to represent an aggressive feeling. (1 student)

Harmony

- (a) Minor key employed because of the mood of the piece—sad. (1 student)
- (b) Second and third verse were in major and first and fourth in minor because of moods of each verse. (1 student)
- (c) Minor key implemented to enhance folksong style. (1 student)

Form

- (a) Determined to treat two lines as one phrase (1 student)
- (b) Added 'will' in 'Our hearts go out to the landscape grand.' (1 student)
- (c) Took out the word 'and' from 'While skates are flashing, and, to and fro.' (2 students)
- (d) Poetry is similar throughout, therefore, ensured music was similar throughout. (2 students)
- (e) Removed 'and' from line five and line six. (1 student)

Texture

- (a) 'Echoing' given a softer dynamics to represent an echo. (1 student)
- (b) Soft dynamics used for 'quiet.' (1 student)
- (c) Increased dynamics to build intensity through the line that begins with 'Catkins.' (1 student)
- (d) Each verse required certain dynamics to enhance meaning of the lyrics. (1 student)

Mood

- (a) Music should represented the seasons as dictated by the words of each verse. (2 students)
 - (b) Connected lyrics with 'storms', 'eerie', 'Maritimish'. (1 student)
 - (c) Poem suggests something sad, so music represented someone wistfully remembering this land. (1 student)
 - (d) Music for last verse was sad as dictated by the words. (1 student)
 - (e) The word 'blows' suggests a feeling of motion and rapidness, so tempo and rhythm of music represented the same feeling. (1 student)
 - (f) Music for 'And the frost king' contrasted with 'On seas that bluster.' (1 student)
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Quite often a specific decision was made by one student, at most two. This is indicative of the relationship between the number of decisions made by each student and where each student was placed on the "novice-expert" continuum. One must keep in mind, however, the small sample pool of students and the differences across students in terms of strategies and processes. As a result, one would expect to find specific decisions made by few students.

Conclusions

As a result of this study and studies reviewed, I have outlined four points which are expanded below. The first has to do with the variety of strategies and processes exhibited by students while they compose and what that can tell us from a pedagogical perspective. The second is the role of ownership that is experienced while students compose. The third is focused on the relationship between text and words and how we can guide the students to think musically about decisions involving that relationship. The fourth is centered on what a classroom looks like when we involve students in composing activities and the possible implications of those settings.

1. A variety of strategies and processes were integrated by the students while they composed. Some of the differences are due to experiences and learning styles. There does, however, revealed through this and other studies in which students of varying backgrounds, abilities, and ages composed, a continuum of novice-expert behaviours. Those representing a more expert approach are able to step back, create a vision from a holistic point of view, work on the parts of that whole, define the connections and make those connections meaningful within the larger context. They are able to step back throughout the process and discern relationships between the choices, and between the choices and the whole. This approach resembles a recursive process during which the student works between the whole and the parts. For those who exhibit expert strategies, the whole picture may not be generated until there has been an exploration period. Those with a lesser expert approach formulate a framework but are open to make changes to that framework if the music warrens changes. Those who exhibit an even lesser expert approach formulate a framework but do not exhibit any flexibility to change that framework, even when difficulties occur. Lastly, those who exhibit a novice approach are the students who begin composing without any framework and work in an atomistic, note by note manner. The novice does not have an overall perspective nor relates the parts to the whole.

We can guide students to create a vision and a plan, a structure in which to work, that may or can determine further decisions. We need to, however, ensure that the students get a sense of the flexibility of a plan, that it can be changed, and may be desirous depending on where the creative process has taken them. As well, when the situation demands that they stay within a given structure, guidance is needed to construct the flexibility inherent within any structure. These pedagogical approaches are applicable to

any musical endeavor, whether it is performing, moving, composing, improvising, or listening.

2. Students consistently verbalize a sense of ownership that is experienced while they compose. This sense of ownership can be a motivational factor when asking students to be involved with music. Ownership can also, and should also, be experienced when they perform and listen. Having experienced the sense of ownership, they could be guided about how ownership can also be experienced (although differently) while making music by performing, listening, composing, or improvising.

3. Effective questioning techniques can be used to guide students in thinking about the interaction between text and music, the influence of text over music, and the independence music can have from the text. What affect do these kinds of thinking have on us when we compose, improvise, perform, listen, or move? Can we feel the power of just the text, just the music, both text and music simultaneously? Is it possible? Why? How? What are the differences when there is consonance between text and music and when there is dissonance? Can the music guide a set text? If so, how? If not, why not?

4. When engaging students in composing activities, we are successful in deciding what kinds of parameters should be given, and why they should be given, and when. These activities range from composing sound shapes to composing music as accompaniment for a story or a visual representation to composing music within an AABA form in which each phrase is eight measures long, the meter is 4/4, the rhythms include quarter and eighth notes, the key is C major, and the notes include C D E G A. Whatever we think of these kinds of activities is not the point here. The point is that we are not as successful in guiding students to experience flexibility, extensiveness, and originality when making musical decisions. We are not as successful in asking them to think creatively and critically when discerning and solving musical problems, that is, we are not asking them to think musically. We need to guide them in being more flexible (open to possibilities) to the many problems and solutions that they will create and discern while composing. Strategies and plans can, and need to be, flexible and open to the changes that can occur when interacting with the expressive qualities of music, when being sensitive to and perceptive about where the music and text can take you, and when experiencing the intra- and inter-relationships of the musical elements.

So what activities do we devise, questions do we ask, and strategies do we suggest without being dictatorial? Can this kind of environment be in a school structure? This is a challenge that is faced by music educators, and one that will continue to expand our thinking of what a music class should include in terms of activities, equipment, expectations, teachers' roles students' roles.

Endnotes

¹ Pseudonyms are used for confidentiality. Each student adopted a name for the project.

² See previous content for a discussion about the influence of the text on the insertion of pickup beats.

Reference List

- Ainsworth, J. (1970). Research project in creativity in music education. *Bulletin of the Council for Research in Music Education*, 22, 43-48.
- Bamberger, J. (1977). In search of a tune. In: Perkins, D. & Leonard, B. *The arts and cognition*. Baltimore: Johns Hopkins Press.
- Bunting, R. (1987). Composing music: Case studies in the teaching and learning process. *British Journal of Music Education*, 4 (1) 25-52.
- Christensen, C.B. (1993) *Music composition, invented notation and reflection in a fourth grade music class*. Paper presented at the Symposium on Research in General Music, University of Arizona, Tucson, AZ.
- Citron, V. (1992). Where's the craser?: Computer-assisted composition with young music students. Paper presented as part of a panel, *The computer as catalyst: Creating opened-ended music tasks to foster musical thinking from kindergarten through conservatory*, (Vicki Citron, Harold McAnaney, & Larry Scripp). ATMI Conference, San Diego.
- Cohen, V.W. (1980). *The emergence of musical gestures in kindergarten children*. Unpublished doctoral dissertation, University of Illinois, Urbana Champaign.
- Colley, A., Banton, L., Down, J., & Pither, A. (1992). An expert-novice comparison in musical composition. *Psychology of Music*, 20, 124-137.
- Daignault, L. (1996). *Children's creative musical thinking within the context of a computer-supported improvisational approach to composition*. Unpublished doctoral dissertation, Northwestern University, Evanston, IL.
- Davidson, L. & Welsh, P. (1988). From collections to structure: The developmental path of tonal thinking. In J. A. Sloboda (Ed.), *Generative processes in music: The psychology of performance, improvisation, and composition*. New York: Oxford University Press.
- DeLorenzo, L. C. (1989). A field study of sixth-grade students' creative music problem-solving processes. *Journal of Research in Music Education*, 37 (3), 188-220.
- Dolloff, L. A. (1998). The Singing classroom: A Community of musicians. In (Brian A. Roberts, Ed.), *Sharing the voices: The Phenomenon of Singing*. Proceedings of the International Symposium, St. John's, NF, Canada. St. John's, NF: The Faculty of Education, Memorial University of Newfoundland.
- Folkestad, G.; Hargreaves, D.; & Lindstrom, B. (1998). Compositional strategies in computer-based music-making. *British Journal of Music Education*, 15(1), 83-97.
- Hickey, M. (1995). *Qualitative and quantitative relationships between children's creative musical thinking processes and products*. Unpublished doctoral dissertation, Northwestern University, Evanston, IL.
- Kratus, J. K. (1989) A time analysis of the compositional processes used by children ages 7 to 11. *Journal of Research in Music Education*, 37 (1), 5-20.
- Levi, R. (1991) Investigating the creative process: the role of regular musical composition experiences for the elementary child. *Journal of Creative Behavior*, 25 (2) 123-136.
- Reimer, B. (1997). Should there be a universal philosophy of music education? *International Society for Music Education*, 29, 4-21.
- Scripp, L., Meygaard, J. and Davidson, L. (1988). Discerning musical development: Using computers to discover what we know. *Journal of Aesthetic Education*, 22 (1) 75-88.
- Thurman, L. (1998). Science-based, Futurist Megatrends: Vocal and Choral Pedagogy in the Year 2097. In (Brian A. Roberts, Ed.), *Sharing the voices: The Phenomenon of Singing*. Proceedings of the International Symposium, St. John's, NF, Canada. St. John's, NF: The Faculty of Education, Memorial University of Newfoundland.
- van Ernst, B. (1993). A Study of learning and teaching processes of non-naive music students engaged in composition. *Research Studies in Music Education*, 1, 23-39.
- Wiggins, J. H. (1992). *The nature of children's musical learning in the context of a music classroom*. Unpublished doctoral dissertation, University of Illinois at Urbana-Champaign.
- Yunker, B. A. (2000). Thought processes and strategies of students engaged in music composition. *Research Studies in Music Education*, 14, 24-38.
- Yunker, B. A. & Smith, W. H. Jr., (1996). Comparing and modeling musical thought processes of expert and novice composers. *Bulletin of the Council for Research in Music Education*, 128, 25-36.
- Yunker, B.A. & Smith W.H. Jr., (1992) *Modeling the thought processing structure of high school and adult expert and novice composers*. Poster session presented at the annual meeting of the Music Educator's National Conference, New Orleans, LA.
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