Teacher Reflections on Students' Learning in a Music Composition Project

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Abstract

Sound Connections: Composing educational music is a multi-year, multi-site research project in which professional composers composed new music for young musicians. This article focuses on teachers' reflections on the students' learning through their participation in the project. The teachers listed specific rhythmic skills needed: percussive sounds below bridge; tremolo (pulsating rhythm); pizzicato; accented syncopation; varied and complex rhythm patterns; pivoting from notes of different durations; quick string crossings; tempo contrasts; and body percussion. Bowing skills, such as bow placement and articulations, were also required for the newly created compositions. First and third position fingerings, including the half position involving quick change patterns for accidentals, were essential. The jazz slide, portamento, and swells on long notes needed to be learned. Harmonics, both artificial and on open strings, also had to be taught. Further, exaggerated slow tempo (unison breathing) and quick tempo and metre changes had to be learned. Whole class (ensemble), group (sectionals) and independent work, research and practice were assigned. These were shaped through lectures, workshops, seminars, and individual conferencing. Demonstration occurred through teacher/peer modelling and watching videos. Drills and rote learning applied to practicing and memorization. Isolating problems and chunking were used to add more complex goals in progressive terms of easy to difficult and slow to fast. The findings will be interest to composers writing music for young musicians, teachers of strings in classrooms and private music studios, and to those teaching music composition in school and post-secondary settings. *Keywords:* educational music; music creativity; music learning

Introduction

Sound Connections: Composing Educational Music is a three-year study aimed at gaining an in-depth understanding of the relationship between music composition and music learning, through composer, music teacher and student collaboration. This project took place in partnership with the not-for-profit, Canadian Music Centre, that promotes the works of Canadian composers and school boards throughout Ontario. The overall focus of the project was on identifying and developing compositional techniques that best promote musical development in student youth enrolled in school music classes. The project takes the position that successful engagement among composers, teachers, and students in the creative process within classrooms is a necessary condition for the creation of quality music appropriate for young people (Camphouse, 2002, 2004, 2007). This article investigates the essential musical skills young students should acquire in school programs through the analysis of music teacher questionnaires on the learnings that evolved during the Sounds Connection Project.

Research Process: Theoretical Framework

The Sound Connections Project explores multiple perspectives by employing Integrated Inquiry. This method includes the gathering and analyzing of qualitative and/or quantitative data from different sources, or from the same source over an extended period of time, to glean a comprehensive understanding of a problem. The project is grounded in creativity research, which focuses on environmental factors, the creative process, creative persons, and creative products (Amabile & Tighe, 1993; Odena, 2012; Starko, 2005; Woodman & Schoenfeldt, 1989). These four dimensions have been described more specifically for music creativity; they include prerequisites, process, person, and piece. The project gathered data from the four of them.

- Prerequisites for composing (training, emotional understanding/expression, context) through the music Teacher Questionnaires;

- Process (strategies, techniques, sequencing) through the reflective Composer Reports;

- Person (characteristics, predispositions, and motivation) through the music Teacher Reports;

- Piece (features, style and impact of the musical "product") through the composers' Compositional Reviews.

As listed above, the qualitative triangulation of multiple data sources and perspectives was created through teacher and composer participants' reflections. The composers each created a reflective Composer Report to explain their problem solving (formative), and a Compositional Review to outline the structural characteristics of their composition (summative). Findings from the Composer Reports indicated that the composers used a variety of techniques to promote student musical development. Composers reported on the importance of balancing skills reinforcement and challenge, of encouraging participation in the creative process of composition, of developing music appreciation and understanding, and of communicating in the ensemble context. An unexpected finding was the importance of collaboration with the teachers and students in the composing process. The knowledge gained from the composer participant perspectives in this study adds to the scant literature on this topic, and may help composers, students training to be composers, and those who teach them, to have a better understanding and appreciation of educational music. Findings from the Compositional Reviews indicated that the composers in this study used a variety of techniques to promote musical development in student musicians. Composers reported especially on the use of techniques to encourage the development of rhythmic and expressive music skills. Simplicity was a prominent overarching theme of the reported characteristics. In addition, they described the importance of collaboration with teachers and students in their compositional process. The music teachers completed in-depth Teacher Questionnaires to identify the skills required and developed though the new

musical composition (summative). The Teaching Reports provided valuable information regarding suggested musical skills and concepts and elements required by students, and the requisite teaching strategies. Findings indicated that the composers most often wrote several movements, each which could be performed as an independent work and with themes that appealed to young people. The pieces were rated by the teachers as easy to medium level with some of them having particularly challenging sections which required additional rehearsal time. Overall, students were able to follow the development of musical ideas and understand the structure of the compositions. Several performance skills were developed such as preparing the entry, hand positioning, fingering, plucking, and bowing. Musical elements were also developed, including an understanding of dynamics, form, texture, timbre, pitch, and duration, in addition to melody, harmony, and rhythm (Robinson-Cseke and Andrews, 2021).

The overall focus of the project was on identifying and developing compositional techniques that best promote musical development in student youths attending music classes in school. A predetermining factor has been to establish the musical skills and concepts, needed by students, and taught through school music programming. Aligning with the creative music research dimensions, these musical skills provide the prerequisites for composing and playing. Such prerequisites include appropriate context, appropriate training, and emotional understanding and expression. Determining the needs of music students in terms of skills and concepts are the principal focus of this article. Data was collected from the music Teacher Questionnaires by way of written responses to fourteen questions (Table 1). These responses were analyzed to determine and understand prerequisite student needs and skills. There is substantial overlap with information in the Teacher Reports, so the reports have been used to cross-reference and support the responses in the Teacher Journals. There was also some overlap in questionnaire responses to the questionnaire questions. To avoid unnecessary repetition, the

topic headings to the questions do not guide this paper. Instead, information obtained from the questions have been organized in terms of context, emotion, and training.

Research Process: Participants

A juried process via the Canadian Music Centre (CMC) was used to select the Ontario-based composers. Composer's experience, accolades, and performances of compositions were considered criteria. None of the composers had previous training in composing for student learners. Fifteen composers and fifteen public school music teachers from Ontario were invited to participate in the *Sound Connections Project*. The composers were asked to create new compositions specifically for string music students in public school music classes. Ultimately, fourteen music teachers and eleven composers participated over a three-year period. The teachers and composers were partnered to work as duo teams in creating and teaching Canadian compositions to students. There were three exceptions to the pairings. Two teachers shared one composer, and one teacher worked with two different composers and compositions. Due to the complexity of one of the compositions, one educator chose to work with only two out of the four movements of an assigned composition.

The students ranged from Ontario grades 7 through 12. Based on the reporting of five teachers, the students' independent music levels ranged from beginner to grade 6 Suzuki and grade 9/10 Royal Conservatory of Music. The teachers had similar training to one another in music and education, and they were all certified with the Ontario College of Teachers (OCT). This paper focuses on prerequisite information revealed through the Teacher Questionnaire entries of these music teachers. While the responses were prompted by fourteen posed questions, some of the music educators were selective with the questions to which they responded, or felt they had already answered a question in a previous response, or in their previous Teacher Report. Not all questions procured answers from all the teachers (Table 1).

Analysis/Interpretation: Context

Context, emotional understanding/expression, and training are the concepts used here to organize and understand the student's prerequisite needs and skills toward proficiency in music in general, and strings in particular. This section will establish the appropriate context for learning a new, contemporary musical composition. Context is important because a specific environment and circumstance can profoundly impact what is learned and how that learning unfolds. The physical context, in this case, is the music classroom in a typical Ontario school. The facilities and quality of equipment will vary somewhat within different schools, and specifics to this have not been collected. None of the teacher participants commented on a lack of adequate facilities, so an assumption is made that the space and equipment available to all participants has been appropriate and conducive for student learning in music. This would typically mean a specialty music facility with the appropriate room, acoustics, layout, equipment and instruments for music education. For optimal learning to take place, the tools and materials required should be available and the strategies must be in place. Effective teaching strategies come from strong teachers with appropriate training. The education and training level of the music educators in this study are comparable. All are OCT certified, and all have varied and substantial music teaching experience. As such, all are required to teach music under the guidelines of the current Ontario Arts Curriculum documents (MOE, 2009, 2010a, b).

Previously, in the Teacher Reports, the teachers described the music skills developed by their students in the *Sound Connections Project* in the areas of creative work, performance ability, music elements, interpretive expression, technical efficiency, aural skills, and music notation (Robinson-Cseke and Andrews, 2021). Most fall under the broad, overall Ontario arts curricular strand of Creating and Performing: Elements of music, techniques and technologies, and creative process. Aural skills, music notation and interpretive expression are integral to

creating and performance, but as skills they fall under multiple strands within the Ontario

curriculum, including Reflecting, Responding and Analyzing, and Foundations (MOE, 2009,

2010a, b). They will be addressed later, and more specifically, in this Analysis section, under

Emotion and Training. The Creating and Performing strand can be perceived at the most holistic

and presents the "big picture." It is aligned and strongly influenced by context, or situations that

impact learning. The main circumstance of this study is music students learning a contemporary

composition written by a composer who is not their teacher. The expectation was that

collaboration would occur between the composer and teacher, and with the students as well.

Through learning, the students were expected provide input into the creation of the new piece

and then perform it at the spring concert.

Table 1: Teacher Questionnaire

Question	Percentage Answered	
Conceptualizing: Generating Solutions		
What musical skills are your students developing this year? Describe.	12 / 14	86%
What teaching strategies can you use to develop these skills? List.	13 / 14	93%
Conceptualizing: Planning the composition		
Communication with composer	4 / 14	29%
What specific music skills will be developed in the new composition?	13 / 14	93%
What compositional techniques will be employed?	2 / 14	14%
What teaching strategies can you use to develop these specific skills?	13 / 14	93%
Composing: Producing the Music		
Are the musical ideas interesting to the students?	3 / 14	21%

How well do the students develop the specified musical skills by learning the new composition?	13 / 14	93%
How well does the new piece challenge them?	3 / 14	21%
How effective are the teaching strategies that you use in teaching these skills?	10 / 14	71%
Composing: Refining the Composition		
How well did the students perform/read their new piece?	3 / 14	21%
What problems did the students encounter in learning the new composition?	9 / 14	64%
Were the performance problems that occurred during the rehearsals effectively resolved?	4 / 14	29%
How were these problems resolved by the composer?	9 / 14	64%
Did my students enjoy learning the new music work? Why or why not?	3 / 14	21%

Creativity

At its most basic, to "create" means to bring something into existence, and it is interchangeable with "make" or "produce." Music can be created by simply playing an instrument. However, the Ontario arts curriculum documents take creativity beyond this, stating that creativity involves the invention and assimilation of new thinking and its integration with existing knowledge (MOE, 2009, 2010a, b). It goes on to breakdown the creative process in all the arts, including music, into eight stages: challenging and inspiring, imagining and generating, planning and focusing, exploring and experimenting, producing preliminary work, revising and

refining, presenting and performing, and reflecting and evaluating. Randles and Webster (2013) further define creativity in music as divergent and convergent thought processes. Creative work in music leads to new and useful musical products, within specific sociocultural contexts. Creative work is manifested through specific or combined modes of musicianship, like improvisation, composition, performance, analysis, and listening (Randles & Webster, 2013). So, creativity in music extends into various aspects of context, and is also linked to emotion and training. The creative work of the student is most successful when the student is interested and invested in her/his learning. It is the creative work of the educators, as well as the type of compositions being learned, that engage students. Self-reflection as the last stage of the creative process has been required by both. Most of the teachers gave their students opportunity to self-reflect during this project.

In the Ontario Ministry of Education document, *Learning for All* (MOE, 2013), students' needs are placed at the forefront of learning. The premise is that for the best learning outcome, assessment and instruction should be tailored to students' particular learning and motivational needs (Fullan et al., 2015). A tiered approach is recommended that combines both Universal Design for Learning (UDL) and differentiated instruction with the added early identification of student difficulties through ongoing monitoring and precise student support. UDL involves planning and instruction for a varied and diverse group of students (Rose & Meyer, 2002). Differentiated instruction allows teachers to address varied and specific skills and difficulties (Tomlinson, 1999). On the ground, this is no small task, particularly with larger groups and only one classroom teacher. But a wide variety of teaching strategies will address a variety of learning skills for varied types of auditory, visual and kinesthetic learners (Gardner, 1983). While a teacher participant in this study explicitly expressed the importance of experiential/discovery learning (Dewey, 1938) throughout the music project, the "hands on" approach of "doing" was

implicit in most teaching strategies. Another teacher described the backwards design lesson

approach (Wiggins & McTighe, 1998) where the desired end was established, and then the

learning was broken down into discrete and easily apprehended steps. The music teachers used a

wide variety of teaching/learning strategies. Whole class (ensemble), group (sectionals) and

independent work, research and practice were assigned. These were shaped through lectures,

workshops, seminars, and individual conferencing.

Demonstration occurred through teacher/peer modelling and watching videos. Drills and

rote learning applied to practicing and memorization. Isolating problems and chunking were used

to add more complex goals in progressive terms of easy to difficult and slow to fast. Isolating

would take a learned skill, like basic phrasing instruction for example, into a whole learned

composition. With less frequency, there was also mention of lecture, structured discussion and

verbal explanation, text reading, and take-home exercises. These teaching strategies were

generally used by the teacher participants in their music classes, as well as particularly used in

this project to teach the new composition. Relevant teaching strategies will be further integrated

into this discussion as they relate to particular music skills.

Experimentation and Improvisation

Creativity is nurtured and facilitated by good teachers. It is developed both

collaboratively and independently, and emerges from experimentation (Lapidaki, 2013;

Trueman, 2012). Experimentation, along with the opportunity for self-discovery, revision and

self-reflection, and sufficient time are key factors in promoting student musical learning

(Webster, 2012). Experimentation was identified in the Teacher Reports as an instructional

strategy emphasized in the project (Robinson-Cseke and Andrews, 2021). It was not directly

mentioned in the Teacher Journals; however, it is intrinsically linked to discovery and new

opportunity in music making and study. Creative experimentation includes visualization,

harmonizing, playing by ear, problem solving, and improvising, which were all described by the teachers as required music skills. Self, peer and teacher skills in brainstorming, analysis and problem solving through class, group and individual opportunities were mentioned in general terms in some journal entries. It is worth noting that creative and critical processes, that foster problem solving, are valuable education skills that move beyond music.

Improvisation was listed as a required skill and is also directly related to creative problem solving. Improvisation generates and reforms musical ideas (Faulkner, 2003). One teacher wrote of the challenges of coordinating improvisational rap in the contemporary music composition. Improvisation relies on a variety of other skills including musical skill to play an instrument, knowledge in musical structures and styles, strategies to interpret and formulate, internalizing music during real-time performances, flexibility to make changes as needed, and understanding of how to apply personal musical style. Long-term memory and access to conscious and unconscious knowledge are factors in musical improvisation (Pressing, 1998; Hsieh, 2012).

Composer and Composition

The compositions, and the composers that created them, directly impacted context. The composers were collaborative with the teachers at some stage(s) of the composition development, and most were flexible, considered teacher and student feedback, and were willing to make changes, simplifications, or adjustments to better suit the needs of the students. Out of four teachers, who answered the question about communication with the composer (Table 1), two were pleased to have the collaborative opportunity to meet and discuss with the composer before the composition was created. They were able to make early suggestions for possible resources, an appropriate student ensemble composition, and how to develop musical skills, with their own students' needs in mind. They felt this helped create a stronger, more achievable piece for their students. The other two teachers expressed some frustration with the fact that they were

not part of the brainstorming process and experienced more collaboration at the revision stage.

The teachers valued a productive discussion about possible student difficulties, and the high

degree of flexibility of any composer. Composers that were "hands on" with the students and

provided added verbal descriptions of movements were appreciated.

The willingness and extent of the composers to modify or change their compositions to fit

the needs of the students varied. Some were receptive to only a very small number of revisions,

like some bowing suggestions or playing a high violin passage in octaves. Other composers were

very willing to make changes. Most composition revisions were simplifications for more

accessibility to the music students. Bowings were modified and adjustments were made to

eliminating complicated techniques, like glissando. Other simplifying examples given included:

playing down an octave; more planned/prepared bow placement for less subtle dynamics;

minimizing interval leaps; and simplifying off-beat rhythm with added articulations to emphasize

pulse. One composer even sketched out a basic drum-set part and used a recording for a more

complicated part. One teacher recognized the challenges for the composers and acknowledged

that without substantial teaching and string playing experience, it is a challenge to write for

newer players.

The compositions developed for the Sound Connections Project were as diverse and

unique as the individual composers themselves. Current, contemporary compositions respond

actively to our social context by considering a broader and a more nuanced world of music.

Uniqueness and contrast keep the music interesting and young musicians interested. There seems

to be a correlation between student interest and difficulty level. Finding a balance between the

two is important for optimal learning (Fulmer et al, 2015). Many of the teachers recognized that

a challenging or difficult composition was not necessarily a negative experience for students.

Three teachers reported that the compositions they were working with were fine. Any problems

their students had were not resolved by the composer, but instead their students worked through them. In one case, the composition presented had pedagogical challenges, so it was rewritten for a more advanced musical ensemble.

The compositions employed a variety of compositional techniques that most teachers felt were accessible. These techniques lead to the development of new skills and maintained student interested. Some of the techniques listed included: call and answer, thematic variations, alternate fingerings, melody writing, dynamic contrasts, mixed and contrasting rhythmic pulses, and contemporary string techniques such as false harmonics. The students also experienced a myriad of problems when learning their new techniques and compositions. There was frustration caused by technical challenges such new sounds and tonalities, unfamiliar notation, unusual rhythms, and melodies and patterns that didn't correspond with the students' traditional musical foundation. For example, complex/off-beat entrances affected tone quality, accurate dynamics and confidence. Lots of starting and stopping made flow hard to achieve. Students struggled with concepts behind pieces and experienced difficulty making sense of the composition as a whole. Accessibility for the students comes with a balance of interest and a "sweet-spot" of difficulty, as well as their past music experiences, capabilities, and interests of the individual students.

Time

Context affects the opportunity for the creative work required to learn and make music. As aforementioned, factors include an appropriate setting and access to instruments to play and practice, the guidance of effective teachers, and an accessible composition to the particular level of learners. Time is also a factor. Even the composers experienced time constraints. One teacher pointed out that their composer partner had little time to follow suggestions. While the intention is typically there, the realities of larger student groups and limited time presents big challenges for any teacher. Music teachers are no exception. Student proficiency in all areas of music was

highly dependent on the time, and extra time most often, spent learning and practicing. Teacher participants identified the requirement of extra time to teach new techniques and practice in combining music ideas seamlessly. More explanation, guidance from the teacher, and more practice meant better understanding and playing ability. There is rarely sufficient time for all students, particularly those with less of a musical foundation, or those with personal learning challenges.

Demonstration of Learning

A musical performance is one of the steps in the musical process in which the musical ideas are interpreted and/or determined and realized by the musician, then transmitted, and finally interpreted by the listener. The concert, concerto, recital, audition, gig and busking are all performances. They are multimodal experiences for the musician(s) and audience. The dress of the musicians and conductor, the physical arrangement of the players and instruments on the playing floor or stage, the visual attributes of the venue and the instruments themselves, all contribute to the visual experience of a musical performance. The experience is kinesthetic for the musicians as they physically play their instruments. It can be physically active for the listeners as they feel their bodies reverberate with the sounds, and express the music with their own bodies by way of humming or singing along, tapping, clapping, stomping and dancing. In a musical performance, the aural experience is the most dominant. A musical performance is meant to be heard.

The performance is the result of much creative work, training, practice and rehearsal for the musician. For the music participants in this study, this is manifest via the medium of strings—the violin and cello in particular. One music educator was hesitant to respond when asked about the effectiveness of their teaching strategies, likely because teachers use the performance as an indicator of teacher effectiveness. Another journal entry read, "my successful

teaching strategies have resulted in a decade of public performances that have solidified the reputation of our music program as being progressive, high level and desirable for ambitious young musicians." The final performance is considered the culmination of hard work and a demonstration allowing for a summative assessment of success. Ontario's *Growing Success* document (MOE, 2010c) claims that effective assessment should be for, as and of learning and be diagnostic, formative and summative (Rogers, 1993). In music education, much formative assessment, as an ongoing process to monitor incremental and ongoing learning, is achieved during practice and rehearsals. A summative performance results from formative practice and rehearsal. "How well did the students perform/read their new piece?" was a journal question. Four teachers responded, but none rated their students well or very well. Three felt their students performed well but with some difficulty. One of these teachers described some challenges with a composition with multiple movements of varying difficulty. In this case, the first two movements were easier to read and required more appropriate string playing techniques for the students' level. The last three movements were too difficult to sight read and took much effort to perform with minimal stops at a slower tempo. They contained very advanced rhythms, larger leaps or sudden changes in tonality, and dynamics that required advanced bowing technique. The fourth teacher admitted that the students experienced great difficulty with their performance in general. The performances of the compositions indicated skills learned. So, with only fair performances by some groups, there were still some required skills not fully developed within the timeframe provided. In general, however, the new performance techniques were well received by the music students.

Performance during practice and rehearsal allowed for and encouraged continued improvement. When asked if the performance problems that occurred during rehearsals were effectively resolved, the teacher responses were split between "yes" and "somewhat." Some of

the problem areas were described as follows. For some passages it was very difficult to decide on a fingering that made technical and musical sense. There were challenges with complex rhythms, phrasing, high position playing, and the technical demands of difficult fingering and uncomfortable bowing. Repetitive, long compositions required a lot of stamina to perform that the students were not used to. All respondents were clear that lots of practice was required for success. The "somewhat" or "mostly" teacher respondents added further practice as a way to eventually resolve most persistent problem areas.

Teaching Performance Skills

The teachers identified preparing the entry, breathing, body positioning, and the technical strategies of playing an instrument and playing with a group (ensemble) as required performance skills. They assisted their students with guided practice. This is a form of scaffolding, where learning naturally progresses with help, to practicing collaboratively, then independently, and finally towards skill mastery (Vygotsky,1978). The physical movements required to play music correspond to kinesthetic intelligence and learning (Gardner, 1983). Posture and body position enhances and overlaps with other teaching strategies such as speed adjustment, repetition, and muscle/music memorization. Watching the conductor, listening to other musicians, calming strategies (e.g., relaxed breathing), and reading music were also identified as valuable performance skills. The educators welcomed questions from students. The students asked questions about extended techniques such as harmonics or the occasional unfamiliar fingering. The teachers acknowledged that music skills were learned best when accompanied by teacher explanation and assistance. The students experienced more difficulties at first, but were able to work through them with guidance, practice and extra time.

In this project the students mostly played in group sectionals and large ensembles. The sectionals allowed for exploring, testing, developing, rejecting, and accepting musical ideas

(Faulkner (2003). The students learned other parts in the ensemble and this further lead to collaborative learning and empathy among peers. Collaboration can also drive creativity more than solo efforts (Robinson, 2011). In fact, one teacher felt that there was little value to independent practice in certain cases, and that playing as a group was far more productive.

Emotion

Emotional understanding and expression are broad goals in Ontario music education. Context matters for how emotion is experienced, expressed, perceived, and regulated. The creative work and performative abilities within the context of the Sound Connections Project, along with technical proficiency (training) and the feeling of the music (emotion) were the aspects of music most widely discussed by the teachers in this study. In this section, emotion will be examined both in learning and in music.

Emotion in Learning

The music teachers valued the emotional well-being of their students throughout the project. They were concerned with providing an environment where students felt comfortable enough to feel joy in the process of creative music-making. Certain routine affected students' emotions in a positive way. Routine that involves repetitive practice can play an important role in mental health. Anticipating what will happen next can give students a sense of emotional stability and reduce stress. Warm-ups, drills, and a familiar order of class progression are examples of repetition and routine that promote emotional comfort and a well-being. Opportunities for regular self-reflection, for both students and teachers, allow feelings and frustrations to be worked through, supporting a healthier emotional learning experience. An environment with emotional connection and support among the students, teacher and composer enhanced opportunity (Veloso & Carvalho, 2012). Two teachers reported that their composer talked and worked in person with their classes on multiple occasions. They identified

this connection with the composer as a reason for student enjoyment. One composer was a

retired teacher who understood students and the classroom dynamics of varying abilities. The

associate teacher felt this positively impacted the students' emotional investment in their

learning. Students were happy when they received plenty of encouragement from both their

teacher and the composer. The students enjoyed challenges when they could see daily

improvements. They were happy to learn and proud of their accomplishments. Medical research

supports what teachers know instinctively in education. It confirms that emotion influences the

cognitive processes in humans. These include perception, learning, memory, reasoning, and

problem solving. Emotion has a particularly strong influence on attention, especially modulating

the selectivity of attention as well as motivating action and behavior (Tyng, 2017). Positive

learning experiences, interest and enjoyment encourage and enhance learning (Robinson-Cseke,

2009; 2013; Dewey, 1913; Silvia, 2006). Students who enjoy what they are doing, will continue

to do it. This makes all other learning easier and more successful. The teachers reported that the

majority of the student participants were interested, eager, attentive, engaged and enjoyed the

process.

Emotion in Music

Emotion in music involves interpretive expression of the musical ideas through music

elements. The teachers felt the experience of working with a composer and a new composition

was positive. Most of their students appreciated the music and the novel challenges. It took time

to grasp many new concepts and to get used to the new structure and sound. The students could

not rely on their memory of known musical stereotypes. Some moments were less interesting and

enjoyable due to a lack of understanding of the musical ideas. Since students were unaccustomed

to the new sound, they sometimes became too focused on playing simply what was written.

However, in hearing immediate improvement that came with finding the best expressive concept,

most students felt invigorated and validated by their progress. They experienced the thrill of discovery enhanced by emotion through listening and expressive play. Listening is an aural musical skill learned by students, as well as an instructional strategy used by teachers. The teachers identified creative visualization and exploring contemporary playing techniques as opportunities for expression. Creative playing and interpretation of the music is intrinsically linked to emotion in music.

Emotion in Musical Elements

The elements in music are cues that determine emotion. These concepts, typically learned as musical theory, include dynamics, timbre, form, texture, harmony, melody and rhythm. Volume variation is difficult to learn on Strings. The teachers identified dynamics as a required skill in terms of control and contrast in the music. Some of the compositions were very dynamically challenging. The ability to establish discrete dynamic levels (pp, p, mp, mf, f, and ff) and dynamics on open strings were required. Dynamic accent notes were used (marcato) in a couple of compositions. Exercises on bow placement and weight assisted with efficiency and dynamic range. These exercises extended into tenuto, legato, sforzando, and tremolo.

String tone quality and musical projection was also listed as a required skills by the teacher respondents. Timbre or tone colour/quality was addressed through teaching an awareness of arm weight and isolating rhythms, measures and passages. Timbre was linked to range extensions, sul ponticello, bow angle and string crossings. Sounds at the tip of bow, playing with open strings in legato, swells and double notes, staccato and tenuto were other articulations that affected timbre in the compositions. Articulation was another listed musical skill. Articulation was taught through analyzing bow placement and practicing on open strings. One teacher's strategy for modelling sound quality was to establish the exact expressive quality in one player, and then match that quality throughout the ensemble.

Understanding Form, as the structure, architecture or arrangement of sections, was identified as a music skill more indirectly. Shape and design of the compositions were created through sound organization, and contrasts in theme, rhythm, tone sequences, and pattern. Lots of variety existed between and within compositions. Compositions were unique in: number of movements, fingering, dynamics, meters, melody, and contemporary string techniques like playing on the other side of the bridge and false harmonics. Students were expected to be able to talk and discuss using musical language. Recognizing and learning balance and blend within and between the elements, as well as throughout the ensemble was stressed by the teachers. Students were required to play a uniform and unified style suited to their musical compositions.

The overall quality of sound, or how melody, rhythm and harmony are combined, is texture. The simultaneous combination of musical lines/sounds was identified as a required skill for students. There were some less traditional textures that had to be learned by students. Balance, rhythm complexity, chords in pizzicato, chords in first and third positions, whole and half step positions were all identified as components of texture that needed to be learned. Teachers used hierarchies to break down musical sections into functions that can determine their prominence. This strategy for learning about texture was used with polyphony, homophony, and monophony. Students were directed to analyze and understand the direction of the music in more depth. The notation of some sparse rhythmic textures required harder rhythmic precision. Students were required to carefully work out their rhythmic placement.

Harmony, as the vertical combination of pitches, requires a keen ear and active listening. Teachers specifically identified the understanding and creation of harmony and dissonance as required music skills. Arpeggio, chord and broken chord structures, and tonal progressions were learned through left-hand positioning and building from the bottom to top of the ensemble. Pizzicato chords with string crossings were required by the majority of compositions. Learning

new and unfamiliar keys and modulations were also needed. Tonality variation and familiarity

was required, learned, and taught through major/minor scales, first and third hand positions,

multiple finger positions/key modulation, and tuning down an octave to play at a higher position.

Harmonics, through the finger touching the string at nodes with a straight bow, were required for

sul tasto, from the fingerboard, and *sul ponticello*, near the bridge.

Melody, as a horizontal presentation of pitch shaped through phrasing, was linked

extensively to expressive playing, and the skills required for the new compositions. Learning

about melody overlaps with learning about texture and learning to listen. For example, when

playing glissando, an ear for melody through the slide between pitches is necessary. Pitch

accuracy and accidentals, as well as intonation (through flats, sharps and both), were practiced

through matching sounds. Teacher suggestions for improving intonation included: singing the

piece first; comparing fingered to open string notes; and tuning harmonies starting from the

bottom note. Precise accented syncopations, chromatic alteration, melodic sequences in new

keys, and breathing and moving together in unison were all listed as necessary skills.

Rhythm was the element mentioned the most often by teachers. The students were

frequently required to learn new rhythms during this project that were unfamiliar and

challenging. Rhythm precision, energy and matching were required skills. Reading rhythms and

rests were required and increased in difficulty when paired with extended passages. A wide

variety of skills were required to learn accentuated, uniform, repeating and cross rhythms. The

teachers listed specific rhythmic skills needed: percussive sounds below bridge; tremolo

(pulsating rhythm); pizzicato; accented syncopation; varied and complex rhythm

patterns/sequences; pivoting from notes of different durations; quick string crossings; tempo

contrasts; and body percussion. As expected, a wide variety of teaching strategies were also used

to teach rhythm. These included: rote practice; writing in the counting on music sheets; counting

out loud; subdividing long notes while playing and listening to others; singing the piece first; accenting with a metronomic pulse; and clapping the rhythms. Variation in tempo was a common teaching strategy; that is, starting at a slow speed first, and then working toward the required faster tempo.

Training

Training joins context and emotion as the third prerequisite to playing a new musical composition proficiently. Training is considered, here, as the formal process of teaching and learning a particular skill or behaviour. This section will examine musical competency, considered as specific curriculum objectives formulated around aural skills, music notation, and technical efficiency. Training, involving listening, reading music and instrument technique, are experienced mostly through musical practice (individual) and rehearsals (ensemble).

Chunking lessons into smaller subdivisions is common instructional and training practice across the curriculum. Subdividing was identified by all the music teachers as a common strategy in teaching the compositions in the music classrooms. Chunking in a music lesson will typically include: listening; whole group and small group discussions; teacher and student demonstrations; opportunities for guided, collaborative and independent practice; self-reflection; and performance. Subdivision when learning music skills includes tempo adjustments; repetition; memorization of fragments; and guided practice.

Listening Skills

Listening, as both hearing the sounds played and feeling the music, is developed through musical aural training. Listening is also instrumental in hearing musicality and developing musical appreciation among students. This appreciation was further developed through small and large group discussions on topics such as musical style. Further, discovery learning and

sometimes even independent study and research projects extended musical appreciation and understanding.

Ear training is integral to learning musical elements such as tone, pitch, chords, rhythm, intervals, and melody. For example, the ability to identify pitch is essential in being able to understand intonation and recreate it through playing. The importance of learning intonation was identified by all teacher participants. The necessary skill of simply tuning an instrument is not possible without correctly hearing the sound.

The teachers employed both audio and video musical recordings to allow student to hear emotion through playing, as well as hear uniformity between and across parts. They promoted active listening and interval recognition by students to individuals and small groups. A metronomic pulse was frequently used to allow students to focus on hearing instruments playing rhythmically and harmoniously together. Careful listening was demonstrated, encouraged and practiced to match playing and allow for peer feedback. Some lecture, but more often constructive, structured or guided large and small group discussions accompanied the practical experiences.

Hearing the sound made by an instrument is integral to the playing of that instrument. Musical skills are included here as many cannot be separated from listening skills. A myriad of required musical skills, intrinsically linked to listening were addressed by the teachers in this project. Vibrato/tremolo, raise/lower pitch of notes in accidentals, variations on chromatic scale, intonation with flats and sharps, sound quality/change/evenness in glizzandi, sul ponticello, sul tasto, spiccato, pizzicato, legato, hearing bouncing intervals, differentiating rhythms, listening to other instruments being played were all identified (also refer to Robinson-Cseke and Andrews). Demonstration and "call and answer" playing were commonly used by the teachers to model as well as promote training in listening and musical skills.

Music Notation

Musical literacy in terms of understanding musical theory and being able to read music are other required skills for music students. The music teachers used strategies such as using a word/symbol wall, sending students home with reading and writing exercises, and having students write in the counting onto their copies of the sheet music. The teachers began by introducing basic phrasing instructions and progressively adding more complex goals, with considerable amounts of practise throughout the learning process. Known/familiar notation, such as double bar lines, was reviewed and followed by learning and practising new notation such as double notes, for example. Musical directions (e.g., espressivo, marcato, secco, ritenuto, stringendo) were interpreted and discussed. Sight reading was a common objective. Learn, practice, and play were strong recommendations.

Instrumental Skills

Stringed instruments are complex. Reaching technical efficiency for playing a stringed instrument requires much time and effort. Helping students build skills in instrument technique took up much of the teachers' time and effort. Just as listening overlaps with musical skills, so do skills in instrumental technique. Learning double stops and string crossings were necessary with some compositions, as well as playing via less familiar locations on the instrument such as behind the bridge, on the wire tail piece, and high on the fingerboard. These were taught, like most of the instrumental skills, through verbal explanation and technical instruction. Training developed through practise strategies such as warm-ups, passage drills, rote copy and repeat, and rehearsals. Problems were commonly isolated into more accessible chunks of information to enhance learning. Starting slow and progressing to the regular tempo as students gained confidence and proficiency was a common teaching strategy for learning instrumental skills. Conversation was always linked to the practical exercise/practise as the teachers named

conferencing, interviews, seminars, workshops for individual students, peers or teacher/student brainstorming sessions, and problem solving. Bowing, fingering and shifting were listed by the teachers as the most important skills. Hand positioning and vibrato were also mentioned. Hand positioning included contraction and shape in whole and half step positions, and in vibrato. One teacher described teaching vibrato through "slow exercises of gliding the left arm up and down the fingerboard, while gradually shortening the distance, and finally sticking a finger to one spot on the fingerboard, while the rest of the arm imagines a back-and-forth motion." Entry, correct breathing, and eye-contact with the teacher/conductor were also listed as necessary technical skills.

Bowing

Bowing techniques, such as bow placement, articulation and speed, were listed by the teachers as required for the newly created compositions. They included: col legno, marcato, tenuto, staccato, ties and slurs, double stops, symmetric bowing (starting bow down or bow up), varying strokes, legato using the whole bow, and perfecting the contact point of bow to string. For sul tasto and sul ponticello, bow angle and control was required from the fingerboard to the bridge. For ricochet, students needed to be trained to allow the bow to bounce. For spicatto and tremolo, a relaxed hand was needed. Some student groups needed to learn unfamiliar, contemporary and quite advanced string techniques. Moving to different playing locations was learned through repetitive drills, and progressing from easy to more advanced positions.

Fingering

Students needed to solidify appropriate hand contraction to start and to understand the upper thumb position range. The fingering techniques and dexterity required by the students to play the compositions in the project were extensive. New first and third position fingering, including the half position, involving quick change patterns for accidentals were required. High

and low finger placement changes presented challenges: these included behind the bridge, playing on the tailpiece wire, and high off the fingerboard. Glizzandi, tremolo, trills, pizzicato and fingering needed to be learned. The jazz slide, portamento, and swells on long notes also needed to be learned. Harmonics, both artificial and on open strings, also had to be taught. Further, exaggerated slow tempo (unison breathing) and quick tempo and metre changes had to be learned. Teachers also suggested memorizing finger patterns and assigning students arpeggio practice with the left hand as appropriate strategies for learning.

Shifting

Shifting, as hand and finger movement, is a much-needed skill that requires considerable practise. Beginning with a contact point, shifting involves half and whole step slides at various frequencies and speeds. It is used in changing keys (modulation), and it also involves a focus on intonation. The teachers offered several strategies to successfully teach shifting on a string instrument. It is no surprise that practise was top on the list, particularly scales practise using basic shifting to perfect bow placement and left-hand positioning. For glissando, sliding practise is required to avoid hopping and to master the first and third fingers.

Conclusion

The Sound Connections Project enabled Canadian composers, music teachers and string music students to work together towards authentic and successful music learning in the school context. Through learning to play these new compositions, specifically developed for youth at the beginning through intermediate stages of development, a wide variety of necessary musical skills were identified and taught. Sources of data for the overall Sound Connections Project included the process of composing the music, the people involved, the compositional pieces themselves, as well as the prerequisite training, emotional understanding and context needed for optimal learning. This paper has specifically investigated these essential, prerequisite musical

skills that young students should acquire in their school programs. While student voices are always important so are the teachers' voices. These skills have been identified through the analysis of music teacher participant response and reflection. The teachers have shared their best practises in guiding their students toward learning success. Experienced educators will recognize many of the commonly used teaching strategies used by their teacher colleagues herein. The most common identified strategies were: multiple listening opportunities; subdividing the music into simplified sections for digestible learning; and a considerable amount of practice.

The teacher responses seem to reveal that teacher driven learning was considerably more prevalent than student driven learning during this project. Character, artistic voice, interpretation, and independence were identified as additional skills the music students developed over the project. Though they are areas mentioned less by the educators, they offer possibilities for further investigation in music education and new types of skill development.

Training, at its essence, is experiential learning. The act of "doing" develops muscle memory, familiarity and experience through the repetition of tasks. The teachers unanimously focused on listening skills and musical notation. However, the string instrumental skills of bowing, fingering, and shifting took up most of the focus in learning the musical compositions. The act of playing well is difficult to learn for most students so it demanded much time and effort from both students and teachers. Practise was emphasized by every educator as an absolute necessity to develop appropriate musical skill.

Emotion is pervasive in the arts in general and in music appreciation and instrument playing specifically. The music teachers determined that emotional understanding was a necessity for music appreciation, comprehension of the elements of music, and in the learning process in general. While having fun during the learning process was only explicitly mentioned

by one teacher, the connection of emotional experience to learning success is widely accepted in education.

Context has an enormous impact on learning. In this study, included: the physical environment; the social circumstances of the parties working together; the specific pieces being learned; and the parameters for arts education set by Ontario's Ministry of Education. As such, context heavily impacted the creative work and performance ability of the music students. Creative work was explored and developed through the Ministry's description of the Creative Process, which involved both sequential and rhizomic learning pathways towards an artistic solution, or in this case, musical competency. Creative work and musical learning included experimental and improvisational experiences. These were most successful with a musical composition that had the right balance of challenge and accessibility for the students, and sufficient time for the learning to effectively occur. It is no surprise that learning success directly impacted performance ability. Final musical performances were a culmination of the learning of musical skills taught in the project.

References

Amabile, T. M., & Tighe, E. (1993). Questions of creativity. In J. Brockman

(Ed.), *Creativity* (pp. 7–27). New York, NY: Simon & Schuster.

Camphouse, M. (Ed.). (2002). *Composers on composing for band, Vol. 1*. Chicago, IL: GIA

Publications.

Camphouse, M. (Ed.). (2004). *Composers on composing for band, Vol. II*. Chicago, IL: GIA

Publications.

Camphouse, M. (Ed.). (2007). *Composers on composing for band, Vol. III*. Chicago, IL: GIA

Publications.

Dewey, J. (1913). *Interest and effort in education*. Boston, MA: Houghton Mifflin Company.

Dewey, J. (1938). *Experience and education*. New York: Macmillan.

Faulkner, R. (2003). Group composing: Pupil perceptions from a social psychological study.

Music Education Research, 5(2), 101-124.

Fullan, M., Hill, P., & Crévola, C. (2006). *Breakthrough*. Thousand Oaks, CA: Corwin

Press.

Fulmer, S.M., D'Mello, S.K., Strain, A., & Graesser, A.C. (2015). Interest-based text preference

moderates the effect of text difficulty on engagement and learning. *Contemporary

Educational Psychology, 41*, 98-110.

Gardner, H. (1983). *Frames of mind: The theory of multiple intelligences*. New York: Basic

Books.

Hsieh, S.C. (2012). Cognition and musical improvisation in individual and group contexts. In O.

Odena (Ed.), *Musical creativity: Insights from musical education research* (pp. 149-165).

Surrey, UK: Ashgate.

Lapidaki, E. (2013). Learning from masters of music creativity: Shaping compositional

experiences in music education. *Philosophy of Music Education Review, 15*(2), 93-117.

Ministry of Education (MOE). (2009). *The Ontario curriculum; grades 1-8; the arts* (Revised).

Toronto, ON: Queen's Printer.

Ministry of Education (MOE). (2010a). *The Ontario curriculum, grades 9 and 10: The arts*

(Revised). Toronto, ON: Queen's Printer.

Ministry of Education (MOE). (2010b). *The Ontario curriculum, grades 11 and 12: The arts*

(Revised). Toronto, ON: Queen's Printer.

Ministry of Education (MOE). (2010c). Growing success: Assessment, evaluation and reporting

in Ontario's schools: Covering grades 1 to 12. Toronto, ON: Queen's Printer.

Ministry of Education (MOE). (2013). *Learning for All: A guide to effective assessment and

instruction for all students, kindergarten to grade 12*. Toronto, ON: Queen's Printer.

Odena, (2012). Perspectives on musical creativity: Where next? In O. Odena (Ed.), *Musical

creativity: Insights from music education research* (pp. 201-214). Surrey, UK: Ashgate.

Pressing, J. (1998). Psychological constraints on improvisational expertise and communication.

In B. Nettl & M. Russell (Eds.), *In the course of performance: Studies in the world of

musical improvisation* (pp. 47-67). Chicago, IL: University of Chicago Press.

Randles, C. & Webster P.R. (2013). Creativity in music teaching and learning. In E.G.

Carayannis (Ed.), *Encyclopedia of creativity, invention, innovation and entrepreneurship*.

New York: Springer

Robinson-Cseke, M., & Andrews, B. W. (2021). Teacher perspectives on string music for young

musicians. *University of South Florida M3 Center Publishing*, *3*(2021), 5.

Robinson-Cseke, M. (2009). Becoming Plastic: Don't Hate Me Because I'm Mean. *Visual

Culture & Gender*, *4*, 39-47.

Robinson, K. (2011). *Out of our minds: Learning to be creative*. (2nd ed.). Chichester, West

    Sussex: Capstone.

Rogers, W.T. (1993). Principles for fair student assessment practices for education in

    Canada. *Canadian Journal of School Psychology, 9*(1), 110-127.

Rose, D.H., & Meyer, A. (2002). *Teaching every student in the digital age: Universal

    Design for Learning*. Alexandria, VA: Association for Supervision and Curriculum

    Development.

Silvia, P.J. (2006). *Exploring the psychology of interest*. New York: Oxford University Press.

Starko, A.J. (2005). *Creativity in the classroom: Schools of curious delight* (3rd ed.). Mahwah,

    NJ: Lawrence Erlbaum.

Tomlinson, C.A. (1999). The differentiated classroom: Responding to the needs of all learners.

    Alexandria, VA: Association for Supervision and Curriculum Development.

Trueman, D. (2012). Teaching composition at Princeton. *Contemporary Music Review, 31*(4),

    323-329.

Tyng, C.M., Amin, H.U., Saad, M.N.M., & Malik, A.S. (2017). The influences of emotion

    on learning and memory. *Frontiers in Psychology, 8*, Article 1454.

    https://doi.org/10.3389/fpsyg.2017.01454

Veloso, A.L., & Carvalho, S. (2012). Music composition as a way of learning: Emotions

    and the situated self. In O. Odena (Ed.), *Musical creativity: Insights from music

    education research* (pp. 73-92). Surrey, UK: Ashgate.

Webster, P.R. (2012). Toward pedagogies of revision: Guiding a student's music composition. In

    O. Odena (Ed.), *Musical creativity: Insights from music education research* (pp. 93-112).

    Surrey, UK: Ashgate.

Webster, P.R. (2016) Creative thinking in music: Twenty-five years on. *Music Educators*

    Journal. 102(3), 26-32.

Wiggins, G. & McTighe, J. (1998). *Understanding by design*. Upper Saddle River, NJ: Merrill

    Prentice Hall.

Woodman, R. W., & Schoenfeldt, L. F. (1989). Individual differences in creativity: An

    interactionist perspective. In J. A. Glover, R. R. Ronning, & C. R. Reynolds

    (Eds.), *Handbook of creativity* (pp. 77–91). New York, NY: Plenum Press.