

The Effect of Group Composition on Student Musical
Self-Efficacy in the Middle School String Classroom

by

Tiffany Ou

Thesis

In partial fulfillment toward a
Master's Degree in Music Education
University of Michigan

Thesis Committee:

Associate Professor Dr. Michael Hopkins, Chair

Associate Professor Dr. Kate Fitzpatrick

Associate Professor Dr. Julie Skadsem

Acknowledgements

I would like to extend my thanks to the many people who have supported me in completing this thesis. First, my committee chair Dr. Michael Hopkins, whose guidance and feedback have been invaluable from start to finish. I would also like to thank Dr. Kate Fitzpatrick and Dr. Colleen Conway, who both helped to shape the original idea for this project. Thanks also to Dr. Julie Skadsem for contributing her time and expertise to my thesis committee.

A special thanks to my students for their participation in this study, and for bringing their kind and creative selves to our orchestra classroom each day. I am grateful to be their teacher.

I would like to thank my parents, James Ou and Melody Chiou, for their lifelong support of my personal and professional pursuits. They instilled in me a deep appreciation for the beauty of music, the joy of creativity, and the satisfaction of hard work. Finally, I would like to thank my partner Derek Ponticelli for his unfailing encouragement throughout this thesis project and my entire master's degree program. His constant support and sharp statistical mind inspired me to constantly improve.

Abstract

The purpose of this study was to determine the effect of group composition on student musical self-efficacy in the middle school string classroom. Middle school string students ($N = 73$) participated in a group composition curricular unit. Student's self-efficacy scores were collected, using a one-group, pre-test-post-test experimental design. Composition in this study was focused in the group setting, using a Theme and Variations form. The Self-Esteem of Musical Ability (SEMA) scale was adapted from prior research (Schmitt, 1977; Randles, 2010; Zelenak, 2011) and was used to measure student self-efficacy before and after the composition project. A musical background survey (MBS) about student's musical and compositional experiences was administered, and a Post Composition Project Survey (PCPS) was also used.

The research questions were:

1. How does participating in a group composition activity influence student musical self-efficacy?
2. How do selected variables (grade level, past musical experiences, gender) interact with the influence of a group composition activity on students' musical self-efficacy?
3. What is the relationship between Composition Satisfaction Score and musical self-efficacy score?

Table of Contents

Chapter I: Introduction	1
Introduction	1
Purpose Statement.....	3
Self-Efficacy	4
Group Composition.....	5
 Chapter II: Literature Review	 7
Children's Compositional Techniques.....	7
Individual composing.....	7
Group composing.....	10
Processes for Composition in the Secondary Ensemble Classroom.....	13
Self-Efficacy Research in General Education	19
Self-Efficacy Research in Music Education.....	22
Studies focused on music performance and improvisation.....	22
Studies focused on music composition.....	23
Synthesis.....	27
 Chapter III: Method	 28
Description of Participants	28
IRB, School, and Parent Permissions.....	29
Teacher Research	30
Description of the Instruments.....	30
Development of the instruments.....	30
Procedure.....	32
Main study.....	32
Description of the composition unit.....	32
 Chapter IV: Results	 38
Musical Background Survey (MBS).....	39
SEMA Pre- versus Post- Test Data (All Participants)	39
Selected Variables that Interact with a Group Composition Activity to Influence Students' Musical Self-Efficacy.....	43
Grade level.....	44
Past musical experiences (MBS).....	45
Gender.....	46

Post Composition Project Survey	49
Post Composition Survey Comments.....	49
Chapter V: Summary, Discussion, and Implications for Future Research	50
Summary.....	50
Discussion.....	51
How does participating in a group composition activity influence student musical self- efficacy?.....	51
How do selected variables (grade level, past musical experiences, gender) interact with the influence of a group composition activity on students' musical self-efficacy?.....	53
What is the relationship between CSS and musical self-efficacy score?	55
Limitations of the Study	57
Implications for Further Research	57
Suggestions for Middle School Orchestra Directors.....	58
Appendix A: Self-Efficacy in Music Ability Scale (SEMA).....	62
Appendix B: Musical Background Survey (MBS).....	65
Appendix C: Parent Permission Letter	66
Appendix D: IRB Exemption Letter	68
Appendix E: Post-Composition Project Survey	70
Appendix F: Simple Gifts Notated Melody	71
Appendix G: Simple Gifts Playlist (Spotify)	72
Appendix H: Simple Gifts Final Performance Score.....	73
Appendix I: Post-Composition Project Survey Written Comments (Coded)	77
References	83

List of Tables

Table 1. Musical Background Survey	39
Table 2. SEMA Pre-Test and Post-Test Responses	40
Table 3. MBS Scores with SEMA Pre- and Post- Averages	45
Table 4. Post-Composition Project Survey Frequencies	48
Table 5. Composition Satisfaction Scores with Average SEMA Increase.....	49

List of Figures

Figure 1. Student Group Variation Composition Example One.....	38
Figure 2. Student Group Variation Composition Example Two	38
Figure 3. SEMA Change Pre- Post Based on Grade	44
Figure 4. SEMA Change Pre- Post- Based on MBS Score.....	46
Figure 5. SEMA Change Pre- Post Based on Gender.....	47

Chapter I: Introduction

Introduction

Self-efficacy is the thought process through which students assess their abilities to accomplish specific tasks (Bandura, 1977). Bandura's social cognitive framework states that thoughts and actions are caused by the interaction of cognition, behavior, and environment; these thoughts help students to form their self-efficacy. Those who have high self-efficacy are able to understand and visualize solutions to problems. The concept of self-efficacy has been widely researched in recent years, and researchers have found that the beliefs students hold about their abilities to succeed at academic tasks can powerfully influence their performance (Pajares, 1996; Bandura 2007, 2012). Self-efficacy can also affect self-regulation (Zimmerman & Bandura, 1994) and self-concept (Bong & Skaalvik, 2003). Students who believe that they can succeed at a task are likely to show greater interest, resilience, and effort when they encounter challenges (Pajares, 1996).

The concept of self-efficacy can be applied to student's beliefs of their music knowledge and ability. Music education researchers have studied self-efficacy in student musical performance. Researchers have found that musical self-efficacy has a positive influence on performance achievement (McPherson & McCormick, 2000). Researchers in the field have also developed scales to measure musical self-esteem (Schmitt, 1977; Randles, 2010; Zelenak, 2011). Self-efficacy differs from self-esteem because self-efficacy refers to the judgements of personal capability, while self-esteem refers to judgements of self-worth (Bandura, 1997). Prior researchers have noted that self-efficacy and self-esteem are similar concepts and have therefore used similar tools to measure both concepts (Zelenak, 2011).

Research has shown that mastery experience is the strongest influencer of self-efficacy beliefs (Bandura, 1986). Mastery experience is defined as the result of one's own previous attainment in a related task or area (Bandura, 1997). When a student completes a task, they naturally interpret the results obtained and judge their own competence according to their interpretation. When students believe that their efforts have been successful, or when they believe that their efforts have produced a desired result, this experienced mastery has long-lasting effects on their self-efficacy. Creative experiences like composition have been shown to increase student self-efficacy (Randles, 2010).

Composition has been a part of the national music standards for music students in instrumental ensembles since 1994 (Consortium of National Arts Education Associations, 1994). As part of the "Creating" category of the current National Association for Music Education's standards, students in secondary ensembles should be able to "compose and improvise ideas for melodies, rhythmic passages, and arrangements for specific purposes that reflect characteristic(s) of music from a variety of historical periods studied in rehearsal" (National Association for Music Education, 2014, p. 1).

Despite this national standard, not all teachers incorporate composition - especially teachers of secondary ensembles (Strand, 2006; Hopkins, 2013; Deemer, 2016). This is in part due to demanding performance schedules at the secondary level (Gillespie & Hamann, 1998; Hopkins, 2013). Secondary ensemble directors who do not include composition may not be allowing their students to achieve their full musical potential. Researchers studying group composition have found that composition assignments allow for newfound student creativity and ownership of their music education (Wiggins, 1999, Priest, 2006; Hogenes et al., 2016). While secondary instrumental classrooms offer diverse opportunities for musical learning, including

performing, reading, and listening to music, much of the music learning we engage in in the secondary ensemble rehearsal is “reproductive.” Students are asked to recreate the sounds written by a composer or modeled by a teacher. Composition encourages alternative forms of musical thinking from those used in traditional music performance by encouraging students to use “divergent” thinking instead of “convergent” thinking (Stringham, 2016).

Composing projects in the secondary ensemble can take on different forms. Individual, or “concurrent-style” composing is when students concurrently engage in side-by-side, individual composition (Kaschub, 2009). In contrast, “collaborative-style” composition involves students working together to create music together. There are many benefits to this style of group composition: students are presented with opportunities for dialogue, negotiation, compromise, and social development (Luce, 2001). Researchers have found that the quality of the group’s collaboration during these creating experiences influences the success of their compositions (MacDonald, et al. 2000, 2002; Miell & MacDonald, 2000). Musical self-efficacy may also be enhanced by positive collaborative group composition projects (Hopkins, 2015).

Researchers in music education have studied musical self-esteem (Schmitt, 1977), musical self-concept (Randles, 2010), and musical self-efficacy (Zelenak, 2011). However, there has been little research on the impact of group composing experience on student self-efficacy in a middle school setting.

Purpose Statement

The purpose of this study was to determine the effect of group composition on student musical self-efficacy in the middle school string classroom. Middle school string students ($N = 73$) participated in a group composition curricular unit. Student’s self-efficacy scores were collected, using a one-group, pre-test-post-test experimental design. Composition in this study

was focused in the group setting, using a Theme and Variations form. The SEMA scale was adapted from prior research (Schmitt, 1977; Randles, 2010; Zelenak, 2011) and was used to measure student self-efficacy before and after the composition project. A musical background survey (MBS) about student's musical and compositional experiences was administered, and a Post Composition Project Survey (PCPS) was also used.

The research questions were:

1. How does participating in a group composition activity influence student musical self-efficacy?
2. How do selected variables (grade level, past musical experiences, gender) interact with the influence of a group composition activity on students' musical self-efficacy?
3. What is the relationship between Composition Satisfaction Score and musical self-efficacy score?

Self-Efficacy

Bandura (1977) was one of the pioneers of self-efficacy research and used the concept as a psychological construct within his social cognitive theory. In his research, cognition, behavior, and environment all influence each other, and people process all three aspects in determining their behaviors. Self-efficacy regulates the connection between cognition and behavior: "If people are not fully convinced of their personal efficacy they rapidly abandon the skills they have been taught when they fail to get quick results or it requires bothersome effort" (Bandura, 1989). Bandura identified the four main contributors to the development of self-efficacy beliefs: performance accomplishments, vicarious experience, verbal persuasion, and physiological states (Bandura, 1977). He wrote that mastery experience, an individual's past successes or failures with an activity, has the strongest influence on self-efficacy beliefs. Vicarious experiences, the

result of observing peers engage in activities, are also influential but have less influence than mastery experiences. Verbal persuasions (the judgements and opinions of others) and physiological states (levels of physical arousal and emotional mood) are also factors to consider. All four of these sources contribute to an individual's self-efficacy beliefs.

Self-efficacy research in general education has grown in recent years. Studies have been conducted about self-efficacy beliefs in math performance (Betz & Hackett, 1983; Pajares and Kranzler, 1994; Pajares, 1996; Chen & Zimmerman, 2007) and in writing performance (McCarthy, Meier, & Rinderer, 1985; Pajares & Johnson, 1994). These studies supported Bandura's finding that mastery experiences were the strongest influence of the four sources of self-efficacy. This past research in educational self-efficacy serves as foundational evidence for this study.

This study used Randles' (2010) SEMA tool, found in Appendix A. This scale, modified from Schmitt's (1979) original SEMA scale, is a 43-item music-specific self-esteem measuring tool. The test-retest reliability of the SEMA was reported as .91 (Schmitt, 1979). Austin (1990) reported this scale to reliably measure music self-esteem, based on a factor analysis of results for a large sample. In addition to the SEMA scale, a musical background survey was administered that contains questions about students' involvement with various aspects of music (years studied, other instruments played, past experiences with composition, etc.). These tools will be described in more detail in Chapter III.

Group Composition

For the purposes of this study, group composition refers to collaborative composition in small chamber ensembles. The proposed processes for teaching group composition can be found in Chapter III of this document. Group composition allows for many ideas to come to the

forefront, allowing students to brainstorm and combine ideas together. This increases student confidence in their ability to compose, potentially influencing student self-efficacy. Moving from reproductive music-making to creative, productive music-making may enhance the student's confidence in their ability to participate meaningfully in music composing, and may increase student motivation and engagement (Hogenes, et al., 2016).

Chapter II: Literature Review

There are many ways for secondary ensemble teachers to approach composition projects. It is important to review studies of the way children choose to create music on their own and in groups. In addition, the inclusion of composition projects to a performing ensemble can be approached in many ways. The constructs of self-efficacy and musical self-efficacy have also been studied by past researchers, and this literature provides an important backdrop to this study.

I will begin by reviewing the literature on children's compositional techniques both individually and in groups. I will then review research that has examined group processes for composition in the secondary ensemble classroom. Then, I will examine past literature about self-efficacy in general education. I will conclude by reviewing research examining self-efficacy in music education, with a focus on studies that have examined the impact of composing on students' musical self-efficacy.

Children's Compositional Techniques

Individual composing.

To explore how we can incorporate creative composition in the classroom, it is helpful to understand the processes and techniques children naturally use. Kratus (1989) studied the amount of time that children ($N = 60$) of various ages, sexes, and proficiency levels spent composing a melody. Students were given instructions to make up a song that had never been heard before, using white keys only and beginning on C. The participants were given 10 minutes and were then asked to record the same composition twice in a row. The researcher listened to recordings of each student's process and labeled each five-second interval as either "exploration," "development," "repetition," or "silence." Kratus found that younger students were more exploratory than the older students:

The seven-year-olds devoted most of their composition time to exploration and spent relatively little time on development, repetition, and silence. For the nine-year-olds, exploration was the process used most often, and approximately one-half of their time was divided between development and repetition. The 11-year-olds divided their time more evenly among exploration, development, and repetition and most often used the development process. (Kratus, 1989, p. 10)

Kratus found that repetition was key to students being able to produce the same newly-composed melody twice. Students who were able to play their melody the same or almost the same both times spent on average 49% of their time on repetition. The researcher found that as children get older, they spend less time in the “exploration” stage of composing. Kratus’ findings suggest that “all 60 students were able to approach a creative musical task in a meaningful way” (Kratus, 1989, p. 18), and that “teachers need not to wait until their students’ understanding of music is highly developed before introducing creative activities” (Kratus, 1989, pp. 18-19). This suggests that music teachers should be incorporating music composition projects to curriculum, even before they might think students can create something substantial.

New strategies for analyzing individual composition have also become available as technology advances. Younker (2000) explored the compositional strategies of eight- ($n = 3$), 11- ($n = 3$), and 14- ($n = 13$) year-old students using a music software program that captured their keyboard playing using a MIDI interface. Students were randomly selected to be involved in seven one-hour sessions of compositional instruction, software tutorials, and interviews. The researcher used audio and videotapes to analyze the data, revealing patterns in student’s decisions regarding timbre, rhythm, melody, texture, and form. Younker’s results show that “there may be a continuum of strategies and processes that are utilized while composing...

engaging students in metacognitive activities can raise the depth and scope of their awareness, and encourage them to begin to think like a composer” (Younker, 2000, p. 24). The author found that students of all ages explored timbre, edited tempi, and created melodies with rhythmic structure. Through this study, the author concluded that our field should move to involve students in making music to the same degree that we have involved students in becoming excellent performers.

Individual composition projects also provide students with opportunities to connect their musical experiences with their life outside of the music classroom. Stauffer (2002) studied the compositional techniques children used to make connections between their musical and non-musical life experiences. Stauffer conducted a case study of six sixth-grade composers who were participants in a separate, longitudinal study of child composers. These students were in their third year of the longitudinal study, which offered classes in composition and computer music. In analysis of the students' commentary about their work, the researcher found four primary themes: instrumental influences; familiar melodies; media, school, and home referents; and ensemble experiences. Stauffer found that the instrument each child played in school influenced their composition choices. For example, one student wrote a piece called “Oboes Conquer” as a commentary on oboes not being allowed into the jazz band, followed by a second piece titled “Jazzical” to “show the teacher that oboes can do jazz” (Stauffer, 2002, p. 306). Stauffer noted that familiar melodies also impacted student compositions, with references to “Frere Jacques,” “Au Clair de la Lune,” and other pieces that students had learned on their instruments. Media, school, and home also influenced their compositions, with several student compositions referring to books they'd read, paintings they'd studied in class, and even conspiracy theories they'd seen in the media. Ensemble influences also affected the compositions, with the students choosing to

write in similar styles that they had seen in their ensemble classes (i.e. canons, or pieces imitating orchestral instrument balance). Stauffer's findings of student's lives impacting their compositions are robust and varied, showing that composition can be an excellent outlet for communication. As educators, we aim to support students in their development in and out of the classroom. This study reveals that through composition, students are naturally inclined to write pieces that allow them to share their life experiences.

Group composing.

While individual composition projects allow students to share their individual knowledge and experiences, group composition encourages students to create together and practice strategies for problem solving. Wiggins (1994) shadowed the group composition experiences of two fifth-grade students in a general music class over five months. The researcher purposely chose two students with contrasting personalities to observe their interactions with peers as they completed group composition tasks. Through each of the composition problems assigned, the two focal students were both inclined to see the bigger picture of each piece: "Let's put these in some kind of order"; "First you have to get everybody to decide on one choice – like fast music or slow music – or the topic" (Wiggins, 1994, pp. 240-241). Wiggins also counted 25 comments across three composition projects that reflected their ability to judge their own part in relationship to others in their group – "Guys, play a little slower, because he's going slow and you're going fast" (Wiggins, 1994, p. 247). Using video and audiotapes, the author carefully examined strategies for problem solving in group composition. Wiggins' study reveals that the teamwork involved in group composition can help students use musical terms to analyze their musical compositions. Wiggins found that these experiences also help to foster interpersonal interactions that influence student social development.

As teachers, we aim to teach students to communicate effectively both through with their words to their musical teammates, but also by expressing with their instruments. Morgan (1998) wrote that “children working in groups on music composition might establish a common understanding of the task by projecting their thoughts and ideas directly onto musical instruments rather than verbalizing them” (p. 55). This form of communication can be a more effective way for students to express their ideas than describing them in words. Teachers can help their students develop the ability to express their ideas, thoughts, and feelings through their instruments. The researcher presented a variety of composition projects with primary school students that all collectively found verbal interaction was not related to group composition productivity. In each study, the ability to communicate through instruments was more influential on group composition success, rather than student’s self-reported interest in music class or belief in group gender composition.

Group composition can pose different social challenges, particularly if students are paired to work with their friends. MacDonald, et al. (2000) researched the effects of friendship and previous musical experiences on the group composition process and the success of the group products. Students were asked to compose and record a piece of music about the rainforest, using a beginning, middle, and end. In pairing students to work together in either “friendship pairs” or “non-friendship pairs,” it was shown that the “friendship pairs” scored significantly higher. The researchers found that social factors had a big impact on the compositions, because of the weight of the communicative process in creative collaboration. Students were found most successful in their compositions when they communicated more, both musically and verbally, than their peers. Therefore, “friendship-pairs” were found more successful than “non-friendship pairs.” The

success that students feel in a positive group collaboration like this one help students learn that communicating ideas and talking through conflict can all help the group creation process.

Burland & Davidson (2001) studied the social processes involved with group musical composition. The researchers aimed to research how friendship, intelligence, and gender groupings of students would influence group composition collaboration and the quality of their interactions. The researchers used five groupings: friendship, non-friendship, matched-intelligence, mixed-intelligence, and random, at two differing school sites (one known for its musical offerings and one that offered few musical opportunities). Three composition sessions of approximately two hours each took place, and compositions were created on percussion instruments. Students were given 15 minutes to compose each piece and were videotaped and told that they would be observed. After the project, students were asked to complete a post-task questionnaire inquiring about their group interactions and their enjoyment of the activity. Interestingly, the researchers found that social groupings did not have much influence on the quality of the compositions. This could potentially be because students who are friends are sometimes off-task, or that the ability levels provided by the teachers originally to form the groupings were approximate and did not factor in music-specific abilities. However, there was a significant effect in the quality of interactions between students. Conflicts that arose between non-friends became very personal, leaving some students feeling very isolated or frustrated despite receiving a high score on their actual composition. This study is important to consider in this review of literature on group compositional processes as researchers in this field should carefully consider how students are grouped for this type of creative project.

Processes for Composition in the Secondary Ensemble Classroom

While composition is often found in elementary general music classrooms based in Orff-Schulwerk or Kodaly pedagogy, composition is less often used in the secondary instrumental ensemble. Gould (1963) wrote, “often the instrumental music curriculum, which should lead in the education of the creative person, falls into the snare of substituting technical achievement for creativity” (p. 59). He studied a classroom that began a group activity called Ensemble Improvisation that met for one hour, three times a week for one semester, to go through a series of ensemble exercises incorporating group composition. The researcher used an evaluating panel to determine answers to the following questions:

- (a) Creativity - Can ensemble improvisation lead students to a specific technique of creativity?
- (b) Heuristic Function. Are students placed in the position of having to think of music as creators? In order to improvise well, to create successfully, do they have to seek new knowledge and skills?
- (c) Skills. Does ensemble improvisation by virtue of its demands on the player lead to the development of increased listening and playing skills?
- (d) Style. Does ensemble improvisation foster greater awareness of differing musical styles?
- (e) Relationship to Large Group Performance. Will these students become more effective participants in their school bands and orchestras as a result of the experience gained in the study? (Gould, 1963, p. 60)

All panel members agreed on “yes” answers in all five categories, with some qualifications. They felt the improvisations were lacking in expressive intensity and structural unity, and that for the “creativity” technique, it would be difficult to ascertain the amount of transfer to formal composition processes. However, the author concluded that group composition in the

instrumental classroom will encourage the student to further study in music and will develop the aesthetic decision-making ability of the music student.

Another approach to composition in a secondary music classroom is to work with a professional composer. Kaschub (1997) worked with sixth grade general music classes and a high school choir class. Both projects involved a professional composer being partnered with students, allowing students to generate musical ideas while not limiting them to their younger musical knowledge set. The high school choir students were paired with a choral composer to learn about the music creation process and hopefully have more buy-in to the created piece since they had the opportunity to weigh in on the musical decisions made. The sixth grade students worked with a folk musician to create a folk song about their middle school experience. The focus of both composition projects was that of revision – students would be involved in the creation process but not directly responsible for creating all of the content. In both projects, a number of composition process issues occurred: in the high school choral composition, the composer was a conservatory trained professional who had little experience working with young musicians. The teacher needed to act as a ‘translator’ to help the students and composer understand each other. As the project developed, the composer learned to define complicated musical terms, and the students gained a new musical vocabulary. In the sixth grade classroom, students became very attached to their individual ideas and struggled to continue participating when their ideas were not accepted into the composition. In both projects, students’ lack of notation skills posed a challenge. The high school students worked to remedy the problem by working toward writing in standard music notation a line or two at a time, while the sixth grade students worked mostly in audiotape recordings. Kaschub notes that revision process posed another set of challenges: students whose ideas had been accepted into the composition by voting

did not want to see their ideas revised, and working with a large group of students made for many opinions that took a long time to discuss. The author writes that while the projects were both large undertakings, “One of the greatest benefits to come from engagement in compositional activities is the aspect of future learning... the students readily identified compositional techniques which they had encountered in their composition work in other pieces of music and more quickly learned to sing new music as they studied its construction from the perspective of the composer and reflected on how those compositional choices needed to be executed by the performer” (p. 27). Kauschub’s research demonstrates an example of a group compositional process that successfully incorporates professional composers.

It is important also to consider the importance of what students would consider to be culturally relevant, self-reflective music composition. Allsup (2003) examined the notion of democracy and composition in an ethnographic study of nine high school band students, ages 14-17. The author notes that band and orchestra programs provide diverse activities for students, including pep bands and jazz ensembles, but this study was “an attempt to expand this normative view of instrumental music education” (Allsup, 2003, p. 24). He goes on to add, “Missing in the formal education of our players are opportunities to create new music that is culturally meaningful and self-reflective” (Allsup, 2003, p. 24). The students met weekly after school for 11 sessions, each two-and-a-half hours long. Allsup collected data through philosophical inquiry, collaborative inquiry, and participant observation, using a tape recorder to document experiences. Given little structure for the requirements of their compositions, each group of high school students chose genres that then determined much of their group’s culture. One group formed a jam band, with students improvising individually until they come up with a melody they wanted to share. From there, that melody became communal property, and the group

adopted it often without talking. The second group was far more cerebral about the process, first debating form, tonality, style, and tempo. The author notes that their inability to generate musical ideas collectively made the process of group composition more difficult, unlike the first group. Allsup concludes that “when students are given space to explore freely, to work democratically, they will create (from one of their musical worlds) a context about which they are familiar, conversant, or curious” (Allsup, 2003, p. 35).

Group composition in the secondary ensemble can potentially also be a way to support underrepresented populations in their music education. Hoffman and Carter (2013) examined composition with underrepresented student groups, providing an important perspective seldom found in this literature. The authors focused on African-American middle school band students, noting that “although cultural diversity is important to the social context of classrooms, few researchers have explored school music experiences from the perspective of students of colour” (Hoffman & Carter, 2013, p. 135). As teacher-researchers, they introduced their students to technologies available for composition, including Garageband and Noteflight, and facilitated a composition assignment for students based off of Maya Angelou’s poem ‘On the Pulse of Morning’. Students were asked to compose based on a theme, emotion, or word from the poem. The researchers designed a collective case study of three participants in order to answer the question “How do African-American middle-school music students construct identities in the context of a composition-based curriculum?” (Hoffman & Carter, 2013, p. 141). The researchers found that by empowering their students to take charge of the creation of music, their students recognized a shift in power structures. While students recognized that the teachers were there to help them, they noted that they were not told specifically what to do. Hoffman & Carter describe the routine lack of respect students had for their teachers in the described school environment

and share a series of interviews with students that demonstrate “the need for an interpersonal relationship between teachers and students, rather than a top-down approach to classroom behaviour and learning” (Hoffman & Carter, 2013, p. 146). They found that by empowering students to take charge of their music classroom structure, the shared ownership of their musical learning and engagement increased. The authors raise important questions to consider: “Might music educators believe that there exists a correct versus an incorrect way of communicating in a music classroom setting? Are students encouraged to create music as well as replicate pre-existing music? Do music students find relevant connections between music performed in their school ensembles and the music performed, heard, and created in their communities?” (Hoffman & Carter, 2013, p. 147). In considering the importance of composition in the secondary classroom, it is imperative to consider under-represented student populations. These findings show important benefits to support underrepresented populations through the addition of composition to the music curriculum.

Teachers may find success in using a more structured compositional style for this kind of creative group assignment. Hopkins (2013) examined composition in middle school orchestra in a case study with two veteran string teachers. In the study, two seventh-grade classrooms at different schools participated in Theme and Variations composing projects. Using a Theme and Variations “provides a secure structural framework, while also providing many opportunities for distinctive musical choices to be made by students” (p. 29). By employing the Theme and Variations framework, students were given appropriate amounts of both scaffolding and freedom. The project was executed with many students composing in the same room, with each student composing their own variations; student’s individual pieces were then combined into a larger orchestral work. Both teachers interviewed in the case study described their concerns of a

chaotic and confusing atmosphere during a composing project in a classroom. Despite both valuing composition, they expressed concerns about having enough curricular time, wonderments about if their students were ready for such a composing project, and how the limited instrument skills of the middle school-aged student might impact their ability to compose. One of the two teachers did note that the composition project affected her rehearsal planning in preparation for upcoming performances. However, both teachers described benefits in students' level of engagement, the switch of the teacher role from director to facilitator, and the showcasing of students' musical ideas, deeper connections to the music, and benefits in their performance skills. Hopkins concluded that while teachers expressed concerns about student's ability to compose and about student behavior in a potentially chaotic setting, "these concerns did not materialize over the course of the study, and both teachers seemed pleasantly surprised at how successful their students were with the project" (p. 40).

Another example of composition in the ensemble setting can be found with Hopkins' 2015 study of collaborative composing with string chamber groups. In this study, the researcher studied high school string students ($N = 37$) across eight self-selected chamber music ensembles. Students were asked to create a composition on their orchestra instruments, two to four minutes in length, notated in any format. Hopkins used a quantitative indicator of music performance and composing experience (MPCE), along with detailed analysis of time on-task and off-task for both discussion and music making. The author discusses the challenges the students had with staying on task – a regular classroom issue for small group work without constant, direct teacher supervision. However, it was also noted that all groups spent a larger percentage of time engaged in musical communication rather than verbal communication to produce their compositions. This study provides numerous implications for incorporating collaborative composing in a high

school ensemble setting. While important skills like negotiation and compromise are practiced, it is suggested that teachers should actively facilitate discussions to keep students on task. Hopkins (2015) notes that “If the purpose of an education in music is to provide opportunities for students to express themselves, make sense of the world through the use of their imagination, and reflect on their actions, thoughts, and feelings (Veloso & Carvalho, 2012), then collaborative composing clearly has an important place in secondary music classes” (p. 421).

Self-Efficacy Research in General Education

McCarthy, Meier, & Rinderer (1985) explored self-efficacy in the context of writing, seeking to see how student self-evaluation of their writing ability affected quality of the composition. They examined self-efficacy through the lens of Bandura's social learning theory, defining self-evaluation as assessment of self-efficacy. To aid in their study of self-efficacy, the researchers identified three other psychological variables chosen by Bandura as connected to self-efficacy – “anxiety,” “locus of control,” and “cognitive processing of information” (McCarthy et al., 1985, p. 466). In studying anxiety, the researchers found that individuals with more writing apprehension will be less effective writers. “Locus of Control” refers to individuals' beliefs about whether the rewards and punishments in their lives are controlled by themselves, or by other people, fate, or luck. The researchers found that writers who have strong feelings of having internal control would have greater self-efficacy because they have a sense of their own capabilities. In researching “Cognitive Processing of Information,” they found that people prone to “deep” processing of information were more effective writers, as opposed to “shallow” processors who simply memorized material. In their study, McCarthy et al. tested the hypotheses that students who evaluate themselves as capable (i.e. those with strong efficacy) would be better writers than those with weak efficacy, and that students with less anxiety, more

belief in their internal locus of control, and who are deep information processors would be better writers than those with more anxiety, less belief in their internal locus of control, and those who are shallow information processors. In the study, the researchers assessed expository essays of college freshmen ($N = 137$) early in the fall term, and again near the end of the term. On the same day as the essay was written, they asked students to fill out a Self-Assessment of Writing questionnaire, and questionnaires measuring of levels of anxiety, perceptions of locus of control, and an inventory that assesses their deep or shallow cognitive processing. Four judges from the English department then analyzed the students' written performance, with a high interrater reliability ($r = .92$). The authors used step-wise regression analyses to analyze the data and found that strength of perceived efficacy was the only statistically significant measure; students with a strong sense of efficacy wrote better essays. These findings indicate that there is a strong relationship between students' evaluations of their own general writing skills and the overall quality of their written products. The authors also recommend further research in process versus product, to find if writers with strong self-efficacy behave differently as writers from those with weak self-efficacy.

Shell, Murphy, and Bruning (1989) studied the relationship between self-efficacy and outcome expectancy beliefs and achievement in reading and writing. They studied white, middle-class undergraduate students ($N = 153$) in a teacher preparation program and provided the participants with a questionnaire with self-efficacy and expectancy instruments. The researchers constructed two measuring instruments for assessing writing self-efficacy. One was designed to measure confidence in accomplishing various writing tasks, and the other was designed to assess confidence in specific writing skills (i.e. grammar, usage, composition, etc). Reading was assessed using a Degrees of Reading Power (DRP) test, and writing was assessed on a

holistically graded sample. To analyze the data, Shell et al. used a multiple regression analysis to examine the relation between individual self-efficacy and reading and writing achievement. They used the SPSSx "MANOVA" program for the analysis, designating the DRP and writing scores as dependent variables and self-efficacy scores as the independent variables. They calculated the canonical correlation to identify relations between the data sets. The researchers found a significant positive relationship between reading outcome expectancy and reading achievement ($r = .25, p = .007$) and also found a "higher but nonsignificant correlation between writing outcome expectancy and writing achievement ($r = .17$ vs. $r = .13$)" (Shell et al., 1989, p. 96). The results indicate that students' reading and writing outcome beliefs are related to performance for both reading and writing.

Pajares & Johnson (1994) researched the relationships between self-confidence about writing, expected outcomes, writing apprehension, general self-confidence, and writing performance in undergraduate preservice teachers ($N = 30$) over one semester. In the study, the researchers asked students who were enrolled in a teacher preparation class to participate in two 30-minute essays. They then obtained Pearson Product-Moment correlations to assess the relationships among the variables. They also used two-tailed t-tests to determine what change, if any, occurred in students' self-efficacy in their writing skills, writing apprehension, and writing performance from the beginning to the end of the term. They used the writing self-efficacy instruments developed by Shell et al. (1989) and found a significant relationship between confidence in one's writing ability and writing performance. However, they found that writing apprehension was unrelated to performance. Pajares & Johnson used a regression model of the above variables and found that students' beliefs in their own writing skills and the pre-performance measure were the only significant predictors. General self-confidence was also

correlated with writing self-confidence, expected outcomes, apprehension, and performance, but did not predict writing performance in the regression model.

Self-Efficacy Research in Music Education

Studies focused on music performance and improvisation.

McPherson and McCormick (2006) researched students participating in the Australian Music Examinations Board (AMEB). In the day prior to their examination, students were asked to complete a questionnaire about their personal attitudes about their examination. The questionnaire posed topics of confidence percentages (0% to 100%) in the different testing categories (pieces, sight-reading, aural skills, etc). McPherson and McCormick concluded that just like any other habit of conduct, personal beliefs of competence need to be practiced and developed. The researchers concluded that self-efficacy theory should be further researched in regards to music education. Because self-regulation is a large part of music skill development, self-efficacy plays a very large role that needs to be further researched.

Coulson and Burke (2013) explored students' perceptions of creativity in their improvisation, and how music educators can successfully include improvisation curriculum to help foster creativity. The authors used data from students' written work, along with field notes from classroom discussions after improvisation lessons. Participants in this study included students from second to fourth grades ($N = 118$). Improvisation lessons using barred percussion instruments took place, with limitations for structure (i.e. specific given rhythms, or using notes only in the pentatonic scale). In the improvisation lesson debriefs, the fourth graders expressed difficulty in anticipating the sound of each bar before playing. However, the students commented that it was easy to improvise because there was no set melody that had to be played. In discussing what made an improvisation creative, discussion data showed that students believed

using many different notes and rhythms would help with creativity. Students also showed that in order for a piece to be creative, they believed it should contain aspects that made it unique from other pieces of music. The researchers also found that students believed they would be able to improvise with more confidence if their teachers gave them time to explore sounds before playing in front of the group. The authors note, "As the ability level of students increased, less structure was needed to ensure their success. Students eventually progressed to create more cohesive patterns with less reliance on the teacher. Fourth-grade students seemed to be able to produce more creative, original music when they were more comfortable with their musical ability" (Coulson & Burke, 2013, p. 439). The insight from student's perceptions of creativity in this study can help to shape our curricular choices as music educators.

In Hewitt's (2015) study about self-efficacy, self-evaluation, and music performance, middle and high school band students ($N = 240$) indicated their level of self-efficacy for performing a certain musical excerpt before performing it, and then self-evaluated their performance immediately after playing. The author found that there is a strong and positive relationship between self-efficacy and high self-evaluation. Hewitt also notes that there was a strong negative relationship between self-evaluation calibration bias and music performance, showing that as students increased their abilities, they became less confident in their self-evaluation.

Studies focused on music composition.

There has been a research interest in the last decade about the effects of composition regarding self-efficacy and creativity. Priest (2006) examined the relationship between students' self-assessments of their musical compositions as compared to experts' assessments. The researcher studied college students ($N = 54$) who were enrolled in a music fundamentals course

for elementary education. As part of the course, each student completed three composition assignments on soprano recorder, and then self-administered informational feedback. Each composition assignment had a structure: the first composition was to be between 20-60 seconds long, using at least three pitches; the second composition was to fit the rhythm of a poem, using at least five pitches; and the third composition required students to use a triple or compound meter, using at least five pitches. Students' third compositions were then used to assess compositional creativity, to sort students into high-, middle-, and low-creativity groups. Using Chi-square analyses of the informational feedback, statistically significant differences were found between the three different creativity groups. Priest noted that students' self-reported data generally matched the expert's assessments of their creativity levels: "the students in each creativity group rated themselves in a similar way when asked to give themselves a score (controlling feedback) on creativity and craftsmanship" (Priest, 2006, p. 57). Priest explains that students in the high-creativity group were more likely to engage in critical analyses and express optimism than those in the low-creativity group. In addition, he notes that the most successful composers were more able to negotiate relationships between macro and micro parameters, e.g. "I used varying lengths of sound to create a piece that I felt sounded musical" (Priest, 2006, p. 59). The less successful composers were much more limited in focus, citing specific attributes e.g. "I am having a difficult time switching from the F#s to Es" (Priest, 2006, p. 59). Priest's findings suggest that student's self-image was congruent with their creativity when composing. The author goes on to suggest that it may be helpful to offer students opportunities to compose in mixed groups with high- and low-creativity students.

Randles (2010) focused on composition with high school students, specifically studying the notion of self-concept. Noting that student retention is a challenge in secondary music

programs, Randles states that “research exploring the intersection of creative music making, identity (including self-concept; Bandura, 1977), and motivation theory (Covington, 1984) is necessary” (Randles, 2010, p. 10). He goes on to note that composition is an excellent way to put power into student musicians’ own hands, instead of performing music where the student has an obligation to the composer. Using the Self-Esteem of Music Ability (SEMA) scale along with a background questionnaire regarding student involvement with various aspects of music, the researcher studied high school band students ($N = 77$). For twelve weeks, students were given open-ended opportunities to compose music using Garageband software. To analyze data, the researcher used Pearson product-moment correlations with the pre-treatment data, focusing on selected factors including grade, gender, and private lesson experience. Randles notes that while most of the literature previous to this study regarding self-concept and composition had been qualitative, his work provided a new, quantitative way to look at identity and music composition. Randles’ SEMA scale (Appendix A) will be used in this study.

Zelenak (2011) examined the use of the Self-Assessment in Music Ability (SEMA) tool, as previously developed by Schmitt (1979). The author found that the way that students think about themselves and about the task at hand are just as important as the time devoted to instrument practice - “engagement with music compositional activities was a stronger predictor of music self-esteem than in music activities outside of school, performing in school ensembles, parental musical involvement, satisfaction level, and listening experiences” (p. 45). In Zelenak’s own Music Performance Self-Efficacy Scale (MPSES), he compared music student self-efficacy scores with the SEMA results while correlating the MPSES scores with the Sources of Middle School Mathematics Self-Efficacy Scale (SMSES, Usher and Pajares, 2009). In Zelenak’s study, secondary band, chorus, and orchestra students ($N = 290$) participated in the MPSES, which asks

questions about general self-efficacy, and music-specific questions about their performance history and class participation. Zelenak found his MPSES tool able to measure self-efficacy in a way that exhibited academic and writing self-efficacy.

In an experimental study, Hogenes, et al. (2016) studied the relationship between music composition activities and engagement in music education. They studied randomized groups of fifth and sixth grade classes in a pre-test, post-test, follow-up design. Eighteen weekly lessons of 45 minutes each were implemented, with an experimental group ($n = 66$) participating in musical composing activities, and a control group ($n = 65$) focusing on reproductive, teacher-centered music making. They then tested students musically through a singing assessment, a listening assessment, and a musical engagement questionnaire with Likert-type scales. Hogenes, et al. (2016) found that the music education style that emphasized “production” by composition showed greater effects in student’s engagement than music education with an emphasis on “reproductive” music making. No significant difference was found in regard to singing improvement, though the authors note that both the experimental (compositional, “productive” music education) and control (“reproductive” music education) groups improved in singing despite the control group spending much more class time singing. This may imply that the compositional curriculum that the experimental group participated in also helped them improve their singing in a non-traditional way. Hogenes, et al. (2016) found that “productive music education is evidently more engaging for students than reproductive forms of music education. However, productive music education requires teachers to have different pedagogical, didactical, organizational, and reflective skills than reproductive music education. For example, using forms of cooperative learning and differentiated instruction. This has consequences for teacher education” (p. 45).

Synthesis

Past literature about children's compositional techniques and about composition processes in the secondary ensemble suggests a need for more data about the measured impact of composition in the secondary instrumental classroom. While there is a research base in general education self-efficacy and some research in musical self-efficacy, there is not yet much research that demonstrates how composition projects can affect students' musical self-efficacy. Self-efficacy measuring tools have been developed in general education subjects and in music education, and the SEMA scale (Schmitt, 1979; Randles, 2010; Zelenak, 2011) can reliably be used in this study because of its use in past studies. It is notable also that the large majority of our classes is "reproductive," teacher-centered music making (Hoganes, et al., 2016) and the past literature notes a necessary shift to "productive," student-centered music making. One can expect that students who usually only play music by other composers will potentially feel empowered by a scaffolded group composition assignment with a feasible premise. As music educators, we try to increase the number of "mastery experiences" (Bandura, 1977) our students can achieve in music, and the past research shows that such a project might be an effective way to do so. Therefore, the study at hand integrates a group composition project in a middle school string classroom, to measure student self-efficacy scores before and after the composition curriculum.

Chapter III: Method

The purpose of this study was to determine the effect of group composition on student musical self-efficacy in the middle school string classroom. The research questions are:

1. How does participating in a group composition activity influence student musical self-efficacy?
2. How do selected variables (grade level, past musical experiences, gender) interact with the influence of a group composition activity on students' musical self-efficacy?
3. What is the relationship between Composition Satisfaction Score and musical self-efficacy score?

Description of Participants

For this study, the described middle school classroom referred to a combined seventh and eighth string orchestra classroom ($N = 73$), from a public school in the greater San Francisco Bay Area in California. Fifty-five percent of the students were in seventh-grade, and 45% were in eighth. 63% of the students were female, 34% were male, and 4% preferred to self-describe their gender identity. The school served approximately 700 students, of which 10% qualified for free or reduced lunch, and the student population was 39% Asian, 38% Caucasian, 14% Hispanic, 1% African-American, and 8% two or more races. In the city where the school is located, 80% of adults over age 25 had a bachelor's degree or higher as of 2016, and median household income in 2016 dollars was \$137,043 (U.S. Census Bureau, 2017). Most of the participants had been playing since at least 5th grade, with some students studying with a private teacher from an earlier age. Previous string instrument experience in fifth and sixth grade was needed in order to enroll in the class, but the class is non-auditioned and mixed in playing ability.

The students were split into two separate class periods by instrumentation and grade level, but not by musical ability. Although the study included two separate class periods, both classes were equal in level, and received the same instruction from the same teacher. They were therefore treated as one group for this study. Approximately 50% of students studied their instruments privately outside of their school music instruction. The described school's mission statement was to be "an inclusive community of students, families, and educators engaged in achieving high academic and social standards with respect for diversity in a positive school climate." The orchestral program mission printed in the handbook stated, "The mission of our orchestra class is to create a safe, supportive, and musical learning environment where students can learn and grow as musicians and as individuals. Above all, the mission of this program is to provide joy and an appreciation of music through innovative music engagement and performance opportunities" (Ou, 2016). Both of these missions aligned with the described project at hand: to provide students with a safe, inclusive environment that encouraged student creativity and autonomy.

IRB, School, and Parent Permissions

I obtained parental permission for students participating in the study, in a parent permission letter (Appendix C). It was explained to students and parents that participation in this study in no way affected their class grade, and that they had the option to opt out at any time. I also obtained permission from my school principal to run the study. The University of Michigan Institutional Review Board (IRB) issued a notice of exemption for the study, as it was considered to be research conducted in a commonly accepted educational setting involving normal educational practices that were not likely to adversely impact students' opportunity to learn.

Teacher Research

Following the action research paradigm of Roberts (1994) and Rowland (1996), I was both the researcher and the teacher of the students in this study. Given my relationship to students, I was able to know information about student musical ability that would otherwise be impossible for an outside researcher to obtain. This was helpful in forming similar-level composition groups, but being the teacher researcher may have also cause limitations to the study. All data collection was administered through Qualtrics to avoid having the teacher-student relationship jeopardize the validity of the data. I did not ask any of the survey questions to students face-to-face.

Description of the Instruments

Development of the instruments.

Self-esteem of music ability scale (SEMA).

Self-efficacy and self-esteem scales are based off of Bandura's social cognitive framework. The scale used in this study was developed originally by Schmitt (1979) and has been used by Austin (1990), Randles (2010), and Zelenak (2011), and can be found in Appendix A of this document. The test-retest reliability of the instrument is .91 (Schmitt, 1989, p. 82). The SEMA uses a Likert-type scale with 43 questions. The SEMA was also piloted with high school students from the same district prior to the study's start.

Scales of self-efficacy have been used in a variety of subject areas. Examples of these scales can be found in mathematics research (Lopez & Lent, 1992; Usher & Pajares, 2009), high school chemistry (Aydin and Uzuntiryaki, 2009), and academic self-efficacy in general (Usher & Pajares, 2009). In music self-efficacy research, scales were developed for jazz experience (Wehr-Flowers, 2007) and orchestra performance experience (Hendricks, 2009). These studies have

included participants from the middle school age through college undergraduates. Most of the scales used in past research used Likert-type responses (Schmitt, 1977; Randles, 2010; Zelenak, 2011).

Musical background survey (MBS).

This survey was administered before the composition unit began. This instrument collected background information about the student's grade, gender, how many years they had played their orchestra instrument, whether or not they played any other instruments, and whether they took private lessons outside of their school music instruction. The MBS was based off the survey tool used in Hopkins' 2015 study, and can be found in Appendix B of this document. This tool was first piloted with high school students ($N = 60$) from the school that many of this study's students will attend. The students who took the pilot of the Musical Background Survey were therefore of a similar demographic, and the pilot helped to clarify some of the wording that was then used in the final survey tool.

The MBS was coded so that one point is assigned to each "musical" answer for a score totaling 1-7. Students indicated what grade they began playing their instrument, and received one point for beginning in grades 6-8, one additional point each for beginning between grades 4-5, grade 3, grade 2, or before 2nd grade (4 points maximum for this item). Students received one point for having composed music before, and zero points for this item if they had not. Students received an additional point if they currently took private lessons outside of school on their orchestra instrument. Students also received an additional point if they currently took private lessons on an additional instrument outside of school (i.e. piano). The maximum possible MBS score was 7.

Post-composition project survey (PCPS).

This survey was administered after the composition project was completed. The survey is based off of Hopkins' (2015) Creative Music Project Exit Survey and asked students four questions on a Likert-type scale about whether they found the experience to be worthwhile, whether they enjoyed working with their group members, whether they liked the piece of music their group composed, and whether they felt they made important contributions to the composing of their group's piece. There was one open-ended question that asked students to describe what they learned from the project in 1-2 sentences. This survey was also administered via Qualtrics, and can be found in Appendix E of this document.

Procedure**Main study.**

A single-group, pre-test-post-test experimental design was used in this study. All students in the class participated in the composition project between the months of August and December, 2018. The project culminated in a performance of their compositions at their regularly scheduled orchestra concert in December 2018. Students participated in a musical background pre-survey (MBS) and a pre-test using the SEMA tool, and then a post-test using the same SEMA tool. The Post Composition Project Survey was administered after the project. All surveys were administered digitally using Qualtrics.

Description of the composition unit.

In following the success of similar group composition projects in recent research (Hopkins, 2013; Stringham, 2016) with a Theme and Variations (TAV) group composition project, students were asked to write a variation of the Shaker song "Simple Gifts." As the previous researchers noted, the TAV framework allows for student creativity while setting up

appropriate boundaries for the middle school-aged musician. In introducing the TAV concept, students participated in a 10-week composition unit, participating in composing activities for 30-45 minutes, once a week.

In Week 1 of the composition unit, the MBS and the pre-unit SEMA were administered. Students were then asked to play “Twinkle Twinkle Little Star” from a notated handout, and were asked to look at the music to make observations about its musical form. Students worked in their stand partner pairs to brainstorm a list of any possible factors that could be varied (i.e. tempo, time signature, key signature, articulations, etc). As a class, we listened to an audio recording of Mozart’s 12 Variations in C Major K. 265, a piece of music that uses the “Twinkle” theme as the basis for variations. As a class, we discussed what variation techniques were heard, and students added new ideas to their variation brainstorm lists.

In Week 2, we introduced the NoteFlight software (noteflight.com) to learn the basics of how to notate music with the program. Students used school-owned MacBook laptop computers and were each issued their own NoteFlight Learn login. They were asked to create a new musical document, and to set it up with a title, 4/4 time signature, D Major key signature, and clef of their orchestra instrument. They were then asked to write a one-octave D Major scale in whole notes, ascending and descending without repeating the top pitch. Then, after inputting a system break onto the next line, they were asked to write variations of their D Major Scale. They were asked to reference their “Twinkle Variations” brainstorm list for ideas, and were encouraged to write as many different variations on the scale that they could think of. This exercise served two purposes: to have students experiment with variation ideas with the strict pitch limitations of a scale, while also having them get comfortable with NoteFlight software. They were also provided with a list of NoteFlight keyboard shortcuts to make their musical input more efficient.

In Week 3, as a class, using NoteFlight on the SmartBoard (teacher inputting notation for the class to see), we completed a class variation on Twinkle, Twinkle Little Star using student ideas. This helped students to foresee potential challenges in composing – common middle school composition errors include incorrect number of beats in a measure, or unplanned dissonances. As a class, we worked on inputting the melody with variations, and then talked through how to compose an accompanying bass line and an accompanying harmony line. We discussed ways to use trial-and-error with NoteFlight's playback feature, and also learned how to change the clef of a line and transpose up and down octaves as needed so that it could be played by different instruments. As a class, we played through our collaborative variation as a bare-bones example of what an orchestral arrangement could sound like.

In Week 4, students received and played through the notated melody of “Simple Gifts” in the key of D Major (Appendix F). D Major was selected because it is an accessible key for all string musicians. This song was chosen because of its 4/4 meter, relative simplicity, and its AABA form that is accessible but provides interest. After the original melody was learned, students were assigned to input the melody themselves on NoteFlight. They were permitted to look at the notated melody on the handout, and were asked to duplicate it themselves in NoteFlight. This allowed them to practice using the software and its keyboard shortcuts, and also helped them to understand the form. For this first day, they were required only to notate the first 8 measures of the piece, but were encouraged to complete the full piece if they were able to do so.

In Week 5, the class listened to examples of Simple Gifts from a playlist of professional recordings (Appendix G). They were asked to take notes of possible variation ideas. They were then assigned to work in Composition Groups of 4-5 students. These groups were assigned by

the teacher, and were based on approximate quartet voicing (with some modifications to account for personnel, i.e. some groups had three violinists instead of a violist, and some groups had a bassist instead of a cellist). For the purposes of this study, the teacher assigned groups to help balance for instrumentation and generally equal levels of musicianship. In their Composition Groups, they brainstormed ways to vary “Simple Gifts” from what they had heard in the recordings and come up with their group’s consensus of top ideas.

With their composition groups, they were asked to choose two or three ideas that were significantly different from each other to explore (i.e. using only 16th notes, changing the time signature to 3/4, using eighth notes on beats 3 and 4, etc.). They were then sent to work in their groups to explore these variation ideas without notating them yet. By the end of the work period, they were asked to be able to play through their variation ideas (melody only) on their instruments.

In Week 6, students were given time in their Composition Groups to finalize their 2-3 variation ideas, and to review how to play them. From there, the teacher went around to each group to hear their variation choices, and helped the group narrow down to their one top choice. The group then worked to input their varied melody on NoteFlight. Because only one score per group was needed, they chose one person to be the NoteFlight “team leader” to use their account and be in charge of the notation while the others checked the work and helped to figure out the rest of the melody. They were allowed to either alter the document they had already created with the Simple Gifts melody, or to start over on a new score. For ease of notation, the team leader was asked to notate in the clef of their regular orchestra instrument, and then to copy paste the altered melody into the other orchestral instrument clefs. By the end of this work period, the varied melody was completed in all three clefs.

In Weeks 7 and 8, principles of how to write an accompanying bass line were reviewed, and students were asked to keep that line rhythmically simple (half notes). However, they were encouraged to explore moving the melody to different instruments to see what balance they preferred. Together the class reviewed what harmonies could sound like, and students were also introduced to an additional “Color Part” that could be added (percussion, etc.). Elemental compositional style (i.e. Orff-Schulwerk compositional style) was helpful in helping students efficiently and easily write complementary lines. Group work rules were clearly spelled out by the teacher, encouraging all students to be participating the whole time, whether that be inputting notation or trying out melodic ideas on their instruments. Students all had access to NoteFlight outside of class and some students chose to work on their compositions at home, though there was no requirement to do so. By the end of the Week 8 work period, the groups were mostly done writing their variations and were asked to practice what they had written to be able to perform for the rest of the class.

In Week 9, the class received a packet of scores including each group's variations. Each group's composition was played by the class, followed by a class discussion about what they liked about it. From there, the class voted on their favorite variation ideas to be used in the final performance version. The teacher then used the top voted ideas to prepare a final performance version of the piece that included the theme with five variations (Appendix H). The teacher used the compositions directly created by students, making minor changes to combine some group's work that had been similar.

In Week 10, the final parts were distributed and the piece was rehearsed. The final performance of the piece was given a few weeks later at the December concert, where the project

was explained to the audience by the teacher and students. Two days after the concert, the post-test SEMA was administered.

The PCPS was administered several weeks following the composition unit. Students refreshed their memories of their projects by meeting in their Composition Groups, looking at the score of the group's composition, discussing how the project went, and listening to their concert recording of the final product before completing the survey. These measures helped remind students about their group composition experiences.

Chapter IV: Results

The purpose of this study was to determine the effect of group composition on student musical self-efficacy in the middle school string classroom. Students participated in a group composition unit, using a Theme and Variations form. A Self-Esteem of Musical Ability (SEMA) scale was used to measure student self-efficacy before and after the composition project. A Musical Background Survey (MBS) and a Post Composition Project Survey (PCPS) were also administered. Figures 1 and 2 show examples of student group composition projects.

Figure 1. Student Group Variation Composition Example One.

Figure 1 shows a musical score for a student group variation composition. The score is in 4/4 time with a tempo of quarter note = 70. It features Violin, Viola, and Violoncello staves. The Violin part starts with a forte (*f*) dynamic and features a complex rhythmic pattern of eighth and sixteenth notes. The Viola part starts with a mezzo-forte (*mf*) dynamic and has a simpler eighth-note pattern. The Violoncello part starts with a mezzo-piano (*mp*) dynamic and has a simple eighth-note pattern. The score is divided into two systems, with the second system starting at measure 3.

Figure 2. Student Group Variation Composition Example Two.

Figure 2 shows a musical score for a student group variation composition. The score is in 4/4 time with a tempo of quarter note = 120. It features Violin, Violin 2, Viola, Violoncello, and Double Bass staves. The Violin part starts with a quarter note = 120 tempo and features a simple eighth-note pattern. The Violin 2 part starts with a quarter rest and then has a simple eighth-note pattern. The Viola part has a simple eighth-note pattern. The Violoncello part has a simple eighth-note pattern. The Double Bass part has a simple eighth-note pattern. The score is divided into two systems, with the second system starting at measure 3.

Musical Background Survey (MBS)

The responses to the MBS were scored to provide background information about the student participants. The range was 1-7 ($M = 3.90$, $SD = 1.55$). Table 1 shows MBS responses.

Table 1. Musical Background Survey.

Variable	Percentage of Students
Grade	
7th Grade	54.80%
8th Grade	45.20%
Gender	
Female	61.60%
Male	34.30%
Prefer not to say	0.00%
Prefer to self-describe	4.10%
Grade Student Began Playing	
Between 6th-8th Grade	10.90%
Between 4th-5th Grade	54.80%
Began in 3rd Grade	17.80%
Began in 2nd Grade	8.20%
Began before 2nd Grade	8.20%
Have you composed music before?	
Yes	21.90%
No	78.10%
Private Lessons on Orchestra Instrument	
Yes	65.70%
No	34.30%
Do you play other instruments?	
No	57.50%
Yes, with less than 5 years experience	31.50%
Yes, with more than 5 years experience	11.00%

SEMA Pre- versus Post- Test Data (All Participants)

Pre-test and Post-test responses for the SEMA are presented in Table 2. The reliability of the SEMA using Cronbach's Alpha was .93 for the pre-test and .94 for the post-test.

Table 2. SEMA Pre-test and Post-test Responses (All data in percentages)

Item	Strongly Disagree		Disagree		Agree		Strongly Agree	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
1. I can read music well.	0.0	0.0	9.6	5.5	71.2	68.5	19.2	26.0
2. I know music well enough to help others learn it.	1.4	1.4	24.7	20.5	61.6	63.0	12.3	15.1
3. I can write my own music.	11.0	2.7	56.2	37.0	31.5	53.4	1.4	6.8
4. Leading others in singing or playing would be difficult for me.	8.2	4.1	31.5	47.9	47.9	42.5	12.3	5.5
5. I can play or sing difficult rhythms	1.4	1.4	43.8	31.5	52.1	60.3	2.7	6.8
6. I could win a music contest.	32.9	19.2	42.5	60.3	23.3	16.4	1.4	4.1
7. I am glad when asked to sing or play for others.	17.8	16.4	60.3	50.7	17.8	30.1	4.1	2.7
8. Music teachers often embarrass me.	12.3	21.9	75.3	67.1	9.6	11.0	2.7	0.0
9. My parents expect a lot from me in music.	2.7	6.8	27.4	35.6	50.7	43.8	19.2	13.7
10. I usually feel uncomfortable when I am around music	52.1	61.6	41.1	30.1	4.1	8.2	2.7	0.0
11. I feel good when my parents notice my progress in music.	0	0.0	6.8	6.8	54.8	53.4	38.4	39.7
12. I really believe I'm talented in music.	1.4	5.5	43.8	39.7	50.7	47.9	4.1	6.8
13. My parents believe I can learn to play or sing really well.	0.0	0.0	11.0	6.8	72.6	74.0	16.4	19.2
14. Teachers notice my progress in music.	0.0	0.0	15.1	16.4	76.7	72.6	8.2	11.0
15. My friends really like my playing or singing.	1.4	00	30.1	31.5	63.0	60.3	5.5	8.2

16. My music teachers don't expect much of me.	23.3	23.3	69.9	72.6	6.8	4.1	0.0	0.0
17. I come from a musical family.	31.5	24.7	31.5	35.6	26.0	24.7	11.0	15.1
18. I could lead the class if my music teachers asked me to take their place.	32.9	23.3	49.3	56.2	17.8	16.4	0.0	4.1
19. Kids laugh at me when I make mistakes in music.	37.0	31.5	53.4	60.3	8.2	8.2	1.4	0.0
20. I'd be glad if teachers asked me to play or sing for programs.	11.0	11.0	38.4	35.6	42.5	46.6	8.2	6.8
21. I believe I could become a professional singer or player.	19.2	17.8	37.0	45.2	39.7	27.4	4.1	9.6
22. Kids notice my progress in music and give me credit for what I can do.	5.5	8.2	28.8	27.4	64.4	58.9	1.4	5.5
23. Music is all right for others but not for me.	45.2	43.8	50.7	50.7	2.7	4.1	1.4	1.4
24. I will not be good enough to be in choir or band in college.	12.3	15.1	53.4	46.6	27.4	30.1	6.8	8.2
25. I enjoy playing for others.	5.5	4.1	32.9	27.4	53.4	54.8	8.2	13.7
26. I expect a lot of myself in music.	1.4	2.7	15.1	19.2	52.1	57.5	31.5	20.5
27. People my age admire my musical ability.	8.2	8.2	46.6	47.9	42.5	41.1	2.7	2.7
28. I have a rough time learning in music class.	19.2	23.3	71.2	68.5	6.8	6.8	2.7	1.4
29. I find myself helping my friends with their music.	2.7	6.8	54.8	45.2	41.1	43.8	1.4	4.1
30. I am glad my family likes to listen to me perform.	2.7	4.1	15.1	12.3	54.8	56.2	27.4	27.4
31. Music is harder for me than for other kids.	15.1	16.4	69.9	69.9	12.3	12.3	2.7	1.4

32. I am not able to make progress in music.	41.1	38.4	54.8	60.3	2.7	1.4	1.4	0.0
33. At least one member of my family says I am really good in music.	0.0	2.7	13.7	8.2	57.5	57.5	28.8	31.5
34. I would like to have a professional career in music.	19.2	9.6	49.3	53.4	24.7	28.8	6.8	8.2
35. Usually I enjoy practicing music.	0.0	1.4	9.6	9.6	72.6	72.6	17.8	16.4
36. I like it when music teachers give me hard music to learn.	4.1	0.0	17.8	19.2	60.3	54.8	17.8	26.0
37. If my friends chose a music leader, they would probably pick me.	17.8	20.5	63.0	53.4	19.2	24.7	0.0	1.4
38. Other students sometimes ask me to play or sing with them.	9.6	11.0	53.4	42.5	37.0	43.8	0.0	2.7
39. I expect to play or sing in performing groups after high school.	9.6	9.6	41.1	43.8	41.1	38.4	8.2	8.2
40. No one pays much attention to my musical activities at home.	27.4	21.9	63.0	63.0	8.2	13.7	1.4	1.4
41. I don't have even one friend who would say I am any good at music.	31.5	31.5	63.0	61.6	2.7	5.5	2.7	1.4
42. My teacher thinks I can do well in music.	0.0	0.0	4.1	5.5	83.6	75.3	12.3	19.2
43. Compared with other students, I think I am talented.	9.6	9.6	46.6	49.3	38.4	37.0	5.5	4.1

A strong and significant relationship ($r = .83, p < .001$) was found between SEMA pre-test scores ($M = 117.95, SD = 14.91$) and SEMA post-test scores ($M = 119.95, SD = 15.6$) for the entire sample ($N = 73$). While SEMA scores did improve from pre-test to post-test, a paired

samples t-test revealed the change was not significant $t(72) = -1.910, p = .06$. Negatively worded items were reverse-coded in the data analysis.

In comparing the pre- versus post-test SEMA data, certain items showed larger changes in frequency. One of the biggest changes was in the item "I can write my own music." In the pre-test 67.2% of students answered "Strongly Disagree" or "Disagree," while 32.9% of students answered "Strongly Agree" or "Agree." In the post-test for this same item only 39.7% reported to "Strongly Disagree" or "Disagree" (with only 2.7% reporting to "Strongly Disagree") and 60.2% of students chose "Strongly Agree" or "Agree."

Another item that showed a larger change was "Leading others in singing or playing would be difficult for me." In the pre-survey 39.7% disagreed that being a musical leader would be difficult, but in the post-survey 52% disagreed. In the same statement, 60.2% agreed or strongly-agreed on the pre-survey that leading others musically would be difficult, but that number dropped to 48% on the post-survey. Also, the item "I usually feel uncomfortable when I am around music" had 52.1% "Strongly Disagree" response, and 2.7% "Strongly Agree" response in the pre-test. In the post-test these numbers changed to 61.6% "Strongly Disagree" and 0% "Strongly Agree."

Selected Variables that Interact with a Group Composition Activity to Influence Students' Musical Self-Efficacy

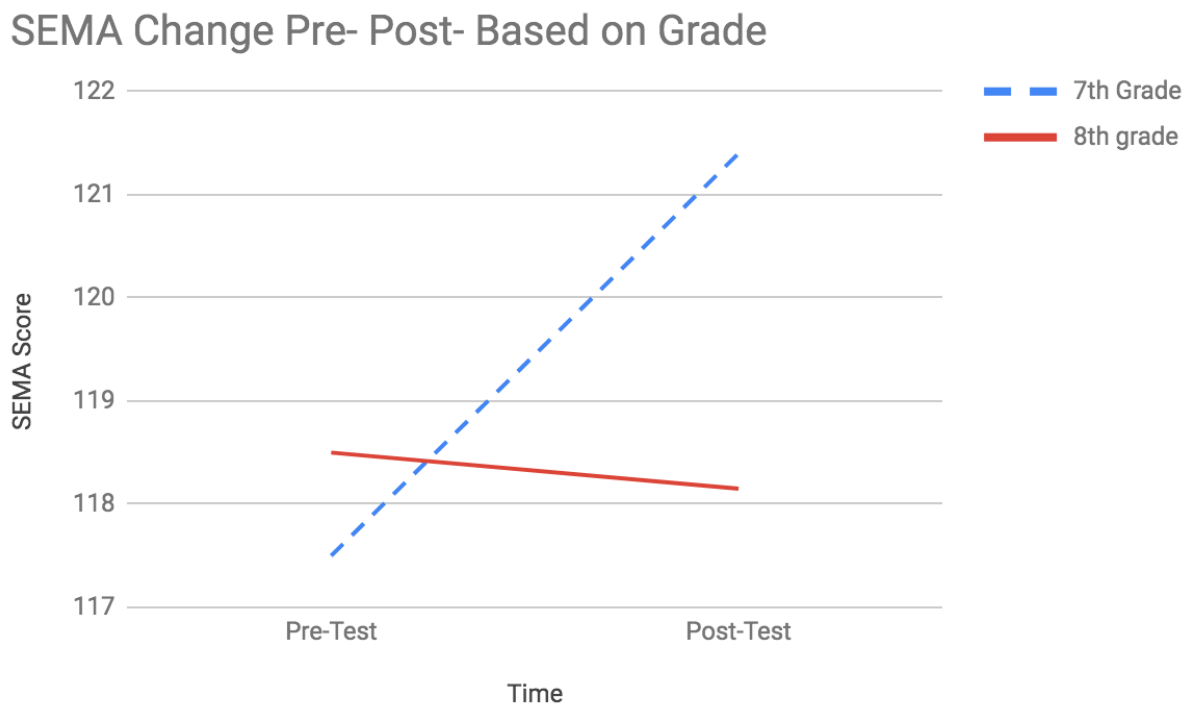
Comparisons between groups based on grade level, MBS level, and gender were made using t- tests with a Bonferroni correction. Alpha level was set at .01 as the threshold for statistical significance (i.e., $\alpha = .05/3$ comparisons).

Grade level.

To determine if there was a difference between seventh and eighth graders on the change in SEMA from pre- to post-test, a mixed ANOVA was used. This test showed an increase in the pre- to post-SEMA scores for the seventh-grade students surveyed, while the eighth data showed a slight decrease.

SEMA scores for seventh-graders ($n = 40$) improved from pre-test ($M = 117.48$ $SD = 16.04$) to post-test ($M = 121.43$ $SD = 16.86$). In contrast, SEMA scores for eighth-graders ($n = 33$) decreased slightly from pre-test ($M = 118.52$ $SD = 13.63$) to post-test ($M = 118.15$ $SD = 13.98$). A mixed ANOVA found there was a significant interaction between grade level and change in musical self-esteem from pre-test to post-test $F(1, 71) = 4.40$, $p = .04$, partial eta squared = .06. Figure 3 shows SEMA score change for seventh and eighth students.

Figure 3. SEMA Change Pre- Post- Based on Grade.



Past musical experiences (MBS).

MBS scores ranged from 1-7, with 7 being the highest possible score, with the majority of students in the middle of that range. In general, SEMA scores (pre- and post-) were higher with higher MBS scores. In addition, each average MBS score showed an increase in SEMA score from pre- to post-test, but that increase varied between each MBS score level.

A moderate relationship was found between the SEMA Pre-test scores and MBS scores ($r = .37, p = .001$). A moderate relationship was also found between SEMA post-test scores and MBS scores ($r = .32, p = .005$). Table 3 shows MBS scores with SEMA pre- and post- averages.

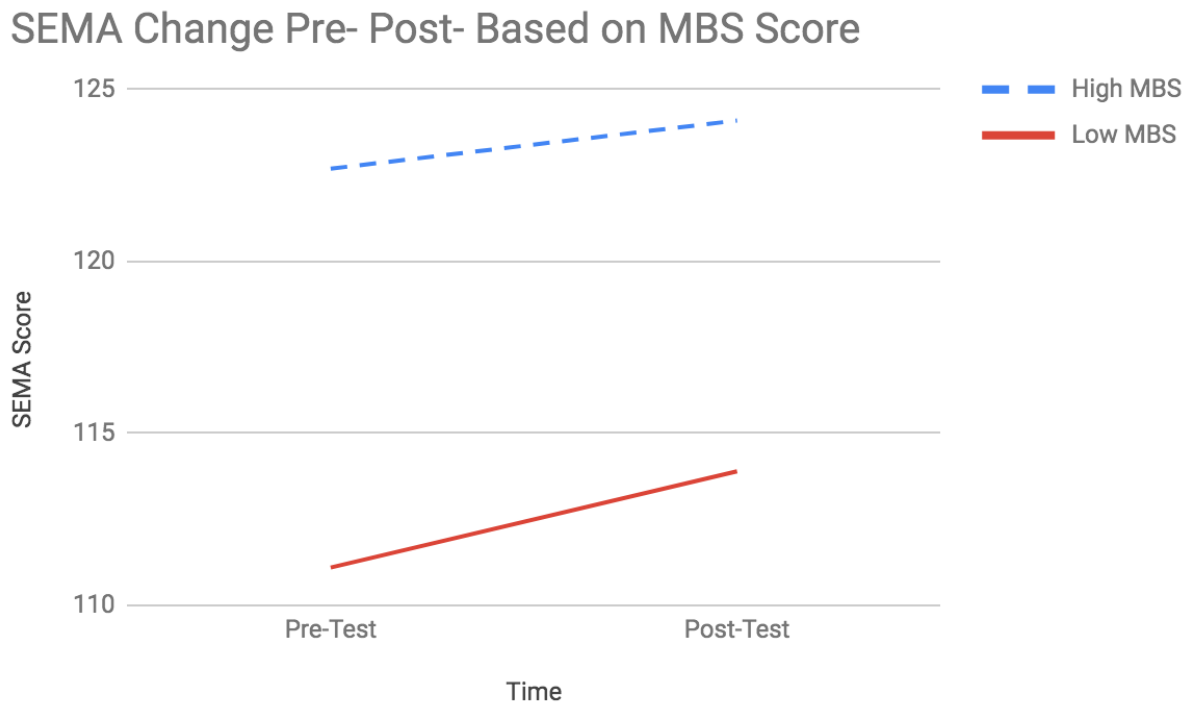
Table 3. MBS Scores with SEMA Pre- and Post-Test Averages

MBS Score	<i>n</i>	SEMA Pre-Test Average Score	SEMA Post-Test Average Score	Average SEMA Score Increase
1	$n = 2$	107	117.5	10.5
2	$n = 15$	110.5	113.2	2.67
3	$n = 13$	112.9	114.1	1.15
4	$n = 16$	122	122.3	0.3
5	$n = 17$	121.7	124.2	2.6
6	$n = 5$	121.4	124.2	2.8
7	$n = 5$	128.6	130.0	1.4

A mixed between-within participants analysis of variance test was used to examine the change in SEMA from pre- to post-test based on MBS level. MBS scores were categorized as low MBS (1-3), and high MBS (4-7). Because there were an odd number of possible SEMA scores, the low- and high- scores were separated by a clear separation in the average SEMA scores both pre- and post-. 41% of students were in the low MBS group, and 59% were in the high MBS group.

SEMA pre-test scores for high MBS students ($M = 122.56$, $SD = 13.92$, $n = 43$) were significantly higher than those for low MBS students ($M = 111.33$, $SD = 13.94$, $n = 30$), $t(71) = -3.39$, $p = .001$. SEMA post-test scores for high MBS students ($M = 124.19$, $SD = 15.81$, $n = 43$) were significantly higher than those for low MBS students ($M = 113.87$, $SD = 13.34$, $n = 30$), $t(71) = -2.92$, $p = .005$. While both SEMA post-test scores were higher than the pre-test scores, neither high MBS nor low MBS students showed a significant difference from SEMA pre- to post-test. Figure 4 shows the SEMA change pre- and post- for High MBS and Low MBS.

Figure 4. SEMA Change Pre- Post- Based on MBS Score



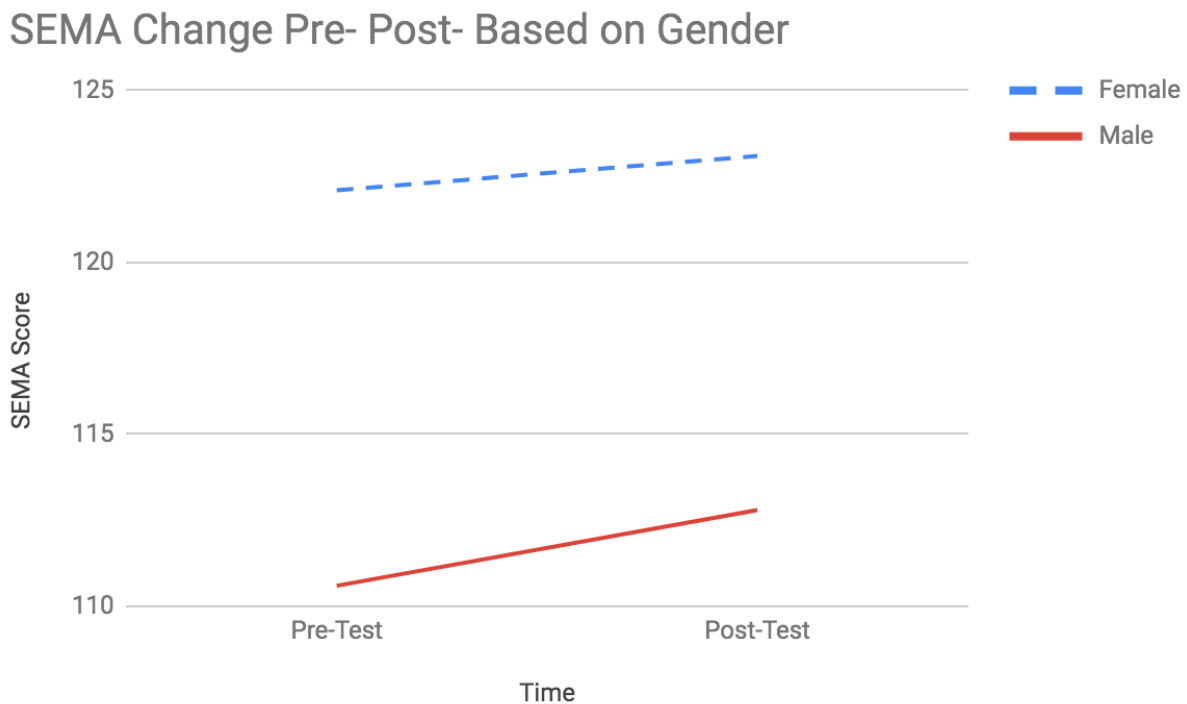
Gender.

Of the 73 students surveyed, 45 identified as female and 25 as male. Three students chose “prefer to self-describe” as their gender identity. In comparing female to male SEMA scores, the

average score was significantly higher for both pre- and post-tests with females than males. Their average SEMA post-test increase was about the same.

SEMA pre-test scores for female students ($M = 121.53$, $SD = 12.93$, $n = 45$) were significantly higher than those for male students ($M = 110.62$, $SD = 14.81$, $n = 26$), $t(69) = 3.25$, $p = .002$. SEMA post-test scores for female students ($M = 123.27$, $SD = 14.22$, $n = 45$) were significantly higher than those for male students ($M = 113.00$, $SD = 13.66$, $n = 26$), $t(69) = 2.97$, $p = .004$. While both SEMA post-test scores were higher than the pre-test scores, neither female nor male students showed a significant difference from SEMA pre- to post-tests. Figure 5 shows SEMA change pre- and post- for male and female participants.

Figure 5. SEMA Change Pre- Post- Based on Gender.



Post-Composition Project Survey (PCPS)

The PCPS (Appendix E) contained 4 questions on a Likert-type scale, and one open-ended question asking students to reflect on what they learned in the group composition process.

Table 4 shows frequencies for each PCPS question.

Table 4. Post-Composition Project Survey Frequencies. (All data in percentages)

	SD	D	A	SA
The Simple Gifts Composition was a worthwhile musical experience.	0.00	2.74	63.01	34.25
I enjoyed working with the members of my group on the project.	2.74	2.74	60.27	34.25
I like the piece of music that my group composed during this project.	2.74	8.22	78.08	10.96
I made important contributions to the composing of my group's piece.	0.00	4.11	73.97	21.92

Students were assigned a "Composition Satisfaction Score" (CSS) based on their answers, by receiving a 4 for each "Strongly Agree" answer, a 3 for each "Agree" answer, a 2 for each "Disagree" answer, and a 1 for each "Strongly Disagree" answer ($M = 12.73$, $SD = 1.49$). The lowest CSS a student received was 9, and the highest was 16. Correlation between CSS and SEMA post-tests was moderately strong and significant ($r = .39$, $p = .001$). This was not as highly correlated with SEMA pre-test scores ($r = .30$, $p = .01$). The reliability of the CSS using Cronbach's Alpha was .60, however the test had only four items. Table 5 shows average SEMA increases for each Composition Satisfaction Score.

Table 5. Composition Satisfaction Scores with Average SEMA Increase.

Composition Satisfaction Score	<i>n</i>	SEMA Pre-Test Average Score	SEMA Post-Test Average Score	Average SEMA Score Increase
9	<i>n</i> = 3	111.30	112.60	1.30
10	<i>n</i> = 1	74.00	92.00	18.00
11	<i>n</i> = 5	114.40	113.20	-1.20
12	<i>n</i> = 28	119.40	118.90	-0.50
13	<i>n</i> = 15	110.40	114.10	3.70
14	<i>n</i> = 11	124.90	128.60	3.70
15	<i>n</i> = 9	125.75	130.75	5.00
16	<i>n</i> = 2	125.50	129.50	4.00

Post Composition Survey Comments

Post-Composition Survey Comments can be found in Appendix I. These comments were coded for their three most common topics: mentioning an increase in Group-work skills (G), describing new Musical skills learned (M), or describing having learned to use the NoteFlight notation software (N). Of the 73 comments, 27 mentioned an increase in group-work skills, 64 mentioned learning more about musical content regarding composition, and 8 mentioned learning to use the NoteFlight notation software.

Chapter V: Summary, Discussion, and Implications for Future Research

Summary

This research question of this study was to determine the effect of a curricular unit in group composition on middle school orchestra students' musical self-efficacy. I was seeking to measure the degree to which student self-efficacy scores improve using the Self-Efficacy in Music Ability tool (SEMA) (Randles, 2010). The research questions were:

1. How does participating in a group composition activity influence student musical self-efficacy?
2. How do selected variables (grade level, past musical experiences, gender) interact with the influence of a group composition activity on students' musical self-efficacy?
3. What is the relationship between Composition Satisfaction Score and musical self-efficacy score?

Seventh and eighth students in a middle school orchestra setting participated in a group composition unit using a Theme and Variations framework. Students learned the main melody to the traditional Shaker song "Simple Gifts" and then worked in their groups to create a varied melody on the original theme, along with an accompanying bass line and at least one harmony part. Students used NoteFlight notation software to notate their work. Each group's composition was shared with the class and, in the end, a selection of variations was performed by the orchestra for the audience to complete the project. Before the composition unit, a Musical Background Survey (MBS) was administered to collect information about students' musical history. The Self-Esteem of Musical Ability (SEMA) tool was administered before and after the unit to measure any change in musical self-efficacy. A Post-Composition Project Survey (PCPS)

was also administered after the unit to measure student's satisfaction with their composition unit experience.

Discussion

How does participating in a group composition activity influence student musical self-efficacy?

The first research question of this study was to determine the influence of participating in a group composition unit on musical self-efficacy. The SEMA post-test showed improvement from the pre-test, though the difference was not significant at the .05 level. However, 43 of the 73 students showed an increase in their post-SEMA score, with the highest increase showing a 22-point increase. Seven students showed no change in their pre- and post-test SEMA scores. 24 scores showed a negative change in their SEMA scores, though of those 24, 21 were a negative change of 10 points or less.

It is notable that some of the most negative SEMA changes were for students in special situations. Of the negative changed scores, two were quite a bit larger than the rest (showing changes of -26 and -27 points). It is notable that both of those students were in special circumstances. At the time of the post-survey in December, one was going through a particularly difficult family trauma (and has since left our school), and one was having a difficult time with peers in class (one of whom was in their composition group), which may have affected their composition experience. While these may not be causal reasons why these two students had a particularly negative change in their SEMA scores, it is notable that their experiences may have been colored by outside factors. I chose not to omit these two students as outliers as their situations were both realistic for a middle school music classroom.

Bandura (1977) separated the influences of self-efficacy into four main categories in order from most influential to least: mastery experience/accomplishments, vicarious experiences, verbal persuasions, and physiological states. Mastery experiences or mastery accomplishments (an individual's past successes with an activity) were the biggest determinant of self-efficacy beliefs. In this composition project, the SEMA showed a large increase in positive answers for the item "I can write my own music." In addition, in the Post Composition Project Survey, nearly all students agreed or strongly agreed to the statements "I like the piece of music that my group composed during this project" and "I made important contributions to the composing of my group's piece." These items are all evidence of students' mastery experience with composition, that may have had a positive effect on their musical self-efficacy scores.

Bandura's second-most important category of self-efficacy influence was vicarious experience, or the result of observing peers engage in activities. In the Post Composition Survey Comments, over one third of students wrote comments about specifically improved group work skills, and that they learned from their peers working in the group setting. This may have contributed to an increase in self efficacy via vicarious experience. The third influence, verbal persuasion (the judgements and opinions of others), and physiological states (levels of physical arousal and emotional mood) were not necessarily captured in the data collection, however it is important to remember that factors like emotional mood may have affected student response on the survey devices.

How do selected variables (grade level, past musical experiences, gender) interact with the influence of a group composition activity on students' musical self-efficacy?

Influence of grade level on SEMA scores.

In comparing the data for the two grade levels, there was a significant increase in the SEMA scores for seventh-grade students, and a slight decline for eighth students. It is notable that both of the previously mentioned students with outside factors that potentially affected their post-score decrease, were in the eighth. The average seventh-grade score increased by 3.7 points, while the average eighth score decreased very slightly by 0.1 points. Some students showed an increase of as many as 22 points.

There may be a number of reasons for the difference between seventh and eighth scores. Because this is a mixed-grade class, it is likely that seventh-graders feel more intimidated by peers or by the curriculum at the beginning of the year. In contrast, the eighth students are returning to the same course they took the previous year but with an extra year of experience. Especially when the pre-survey was administered in August, the younger students may have felt a lower musical self-efficacy due to the discrepancy of musical ability seeming more blatant early in the year. It is possible that as the seventh-grade students became more confident and gained skill overall, their self-perception of their abilities increased by the time the post-survey was administered in December.

Although the average score decreased for eighth students, the majority of students actually saw either an increase or no change (19 of 30 students). However, the average decrease in eighth scores could also be on account of the mixed grade level nature of the class in which fall semester sometimes includes review concepts for eighth-graders. While older students in this mixed-grade class are given opportunities to act as leaders and teach the younger students, some

may feel more stagnant in their musical growth (and therefore their musical self-efficacy) over the course of the fall semester as the seventh-graders are learning new concepts.

Influence of past musical experience on SEMA scores.

The table regarding past musical experience shows that students with a lower MBS score had lower SEMA scores, both pre- and post. This makes sense, as musical self-efficacy scores should be higher for students with more musical background. This increase tapers off after the MBS score 5, and stays about the same for students with MBS scores of 6 or 7. Overall, it seemed that this composition project showed an increase in SEMA scores. The increases in average SEMA scores seem to be more obvious for students with particularly low (scoring one or two points) MBS scores, or medium-high scores (five or six points).

Influence of gender on SEMA scores.

The surveyed group of students included 45 females, 25 males, and three students who chose "Prefer to self-describe" for their gender identity. Both the female and male groups showed a similar increase in their pre- and post-test SEMA scores. However, the female scores were quite a bit higher than the male scores, on both pre- and post-tests. The female average post-test score was 123.3, while the male score was 113.8. This is a really interesting finding, and it echoes past research that found middle school self-efficacy scores in science were higher in females than males (Pajares & Britner, 2001).

The class is an elective (not compulsory) course, and students are self-selecting to be in the course in seventh and eighth. To some extent, especially at the middle school age, it seems that factors like class culture or teacher's personality may impact a student's decision to take the course. This is, of course, in addition to a desire to want to further their instrument studies. While the teacher truly believes she treats all students with equal respect and support, it is unavoidable

that some student personalities prefer or don't prefer the created class environment. The course is designed to be open to a wide variety of playing levels, featuring teamwork and group camaraderie as one of its top priorities. It is possible to speculate that perhaps male students with stronger senses of self-efficacy and/or ego (and perhaps therefore, less inclination toward the team-centered nature of the class) have not self-selected to be in this class.

According to recent research, orchestra classes tend to have more females to males, reported at 63.67% female to 36.33% male (Elpus, 2013). The participants in this study were 61.6% female and 34.2% male, quite similar to the previous finding. However, similar to the "missing male" phenomenon found in adolescent choirs, there may be issues of self-image or self-esteem linked to the lower scores in the male students from this study. Previous research on this topic suggests that a high level of achievement must be combined with a sense of belonging and a love for music making in order for adolescent males to find success in their music classes – any component individually does not necessarily encourage continued participation (Powell, 2013). This suggests that perhaps the combination of necessary criteria is particularly difficult to achieve with middle school boys.

For the students who prefer to self-describe their gender identity, there was a much larger average increase in their SEMA score. However, because there were only three students in this category, and because all three students describe their gender identity differently, it is hard to draw further conclusions.

What is the relationship between CSS and musical self-efficacy score?

The Post-Composition Project Survey allowed me to determine if the change SEMA score was related to the composition project. Because the two SEMA tests were administered with a 4-month gap in between, many other musical activities took place during that time in

addition to the group composition project. These activities included new instrument skills, performances, and other mastery experiences that could certainly contribute to an increase in musical self-efficacy. It was therefore important to look at students' satisfaction with their composition project experience to see if their satisfaction was related to the increase in SEMA scores.

Notably, nearly all students reported a positive experience with their composition unit experience. For all four Likert-type questions, at least 89% of students answered positively (either "Agree" or "Strongly Agree") regarding having a positive experience. The composition satisfaction scores ranged from 9 to 16, with most students reporting a satisfaction level between 12 and 14. Interestingly, the group with a composition satisfaction score of 12 ($n = 28$) reported a slight 0.5 point decrease in their average SEMA scores, while the groups with composition satisfaction scores of 13 ($n = 15$) and 14 ($n = 11$) both showed an average SEMA score increase of 3.7 points. It seems that while this does not point to a strong correlation, a positive composition experience also contributed to a higher increase in musical self-efficacy.

The open-ended question on the Post Composition Project Survey asked students to describe what they learned through the project in 1-2 sentences. The vast majority of the comments (64 of 73) described an increase in musical knowledge, either of the composition process or of how an orchestral arrangement works. Approximately one third of the comments (27 of 73) cited having learned to better work with their group members. These are both contributors to the "mastery experiences" (Bandura, 1986) that could cause an increase in student self-efficacy scores.

Limitations of the Study

This study focused on one middle school orchestra program, and therefore has a limited scope. The majority of students at this California Bay Area school live in an affluent area and are generally high achieving – Mathematics Proficiency is 80%, and Reading Proficiency is at 83% in comparison to the state proficiency level of 30% for math and 50% for reading. The surrounding community is very supportive of music programs, and the resources available to students in this study may not be representative of other areas. Nearly all students in these classes have at least two years of school music training on their instruments, but approximately 50% have additional training through private lessons or extra-curricular orchestras that may also affect their perceived musical self-efficacy over the course of data collection. As with any study that focuses on one teacher and one curriculum, the conclusions reached here are to be considered with the framework of this one school in mind. Teacher research allows for both positive contributions to the study, where the teacher researcher is able to implement appropriate level material for the students. However, this familiarity with the participants can also serve as a limitation to the study.

Implications for Further Research

Because this study was conducted in a single school in a relatively unique area, any conclusions drawn should be drawn with caution. Further research would allow for a larger data set, which may help to show any potential patterns in SEMA data. It seems likely that while the increase in SEMA scores was not significant, students had a positive composition experience and credited the composition assignment with helping to deepen their understanding of music theory and musical structure. It may be worthwhile to extend this research to find correlations between composition and students' technical knowledge.

This research project took place with middle school students and could certainly also work well with high school students. High school students would have more years of experience that they would be able to apply to their compositions and perhaps add more detail than middle schoolers. A large portion of the non-music body of self-efficacy research has taken place with high school students (Lopez & Lent, 1992; Pajares, 1996; Aydin & Uzuntiryaki, 2009), so it would be useful to add to the high school set of musical self-efficacy data.

Additionally, while this project allowed students to complete the process of creating a new piece of music and perform it within a short amount of time, it would be worth exploring taking this composition project much further. Students were given just about enough time to write out their variation with a melody, bass line, and harmony, and only a few groups were able to take the level of musicality much further to include articulations, dynamics, or other creative ideas. It is possible that working on a similar project with even more room for creativity (and more time) may further increase students' musical self-efficacy.

Suggestions for Middle School Orchestra Directors

While most teachers agree that composition is a useful tool, most secondary orchestra teachers do not incorporate it into their regular curriculum (Hopkins, 2013). Previous research also shows that collaborative composition projects can be impactful to music students (Hopkins, 2015; Hogenes et al 2016). From the student's overwhelmingly positive responses in the Post-Composition Project Survey, it is clear that this project was very impactful for them. In end-of-year reflections, months after the project was completed, over 50% of the students cited this composition project as something they learned from that they will take with them next year. It is suggested that middle school orchestra teachers consider including composition projects as part

of their regular classroom curriculum, for benefits in both teamwork skills and musical development.

A large part of the success of the group composition was the ability to use the browser-based software NoteFlight. While the basic version of NoteFlight is free, my school sponsored a subscription to NoteFlight Learn, which allowed each student their own login and the ability for their teacher to easily access their compositions. This allowed the groups to save their work and pick up in the same place each week. The students gained familiarity with the software over the course of the project, and most were able to use the keyboard shortcuts to input notes very quickly. The ability to play back their compositions using the software (instead of writing by hand) allowed groups to work more independently. Many credited the “guess-and-check” method as a main component of their composition success. The software also empowered students to correct dissonances, and helped to avoid common student composition pitfalls (incorrect number of beats per measure, incorrect stem direction, etc. would be automatically corrected on the software). While there is value in having students learn to handwrite their music, using NoteFlight helped students find success in their compositions more quickly. I would recommend using NoteFlight or similar software to allow students to play back their compositions on the spot.

For this project, groups were assigned by the teacher to help balance for equal instrumentation and overall group maturity (ability to stay on task). While this meant the members of the group were not necessarily close friends, it helped that each group worked at approximately the same pace. Students with stronger musical backgrounds were spread out throughout the groups to help answer questions and guide as needed, and students who were still working on basic note reading were able to work closely with the more advanced students. While

there may be benefits to allowing students to work with their own selected friends in composition projects (Hopkins, 2016), it worked well for this project for the teacher to assign balanced groups. In the Post-Composition Project Survey, many students credited this project with learning to work with peers they didn't know as well. For a similar project, with similar aged students, it can be beneficial to assign balanced groups.

It was particularly impactful for students to be able to perform their compositions at a regularly scheduled orchestra concert. During the concert, the teacher and select students explained the composition process to the audience. Teaching the audience about the process helped to complete the student's "mastery experience" and help them feel proud of their work. Each group's score was also printed and put in a visual display at the back of the concert venue. Students noted after the concert that it was striking to have their compositions played next to compositions by famous composers. Parents in the audience of the concert were excited to see a unique project on display. From the teacher's perspective, it was helpful for students to understand the compositional components of a melody, bass line, and harmony. Later in the year when working on festival performance music, the understanding of these concepts helped students understand their role in orchestral balance for the challenging repertoire in the spring semester.

While a composition project like this one does use valuable rehearsal time, the benefits of deeper musical understanding, increased musical self-efficacy, and strong team bonding potentially outweigh the missed rehearsal time. At the end of the school year, many students anecdotally credited this project as their most memorable moment from their year in orchestra, on par with field trips and tour performances. It is suggested to middle school orchestra directors

that they consider incorporating such a composition unit to their curriculum even with the rehearsal time demands of a performing ensemble.

Appendix A: Self-Esteem in Music Ability Tool (Randles, 2010)

(This was administered digitally using Qualtrics)

DIRECTIONS: This survey includes statements about your musical ability. Some of these statements may be true for you; others may not. Respond to each statement by choosing:

SD - if you strongly disagree

D - if you disagree

A - if you agree

SA - if you strongly agree

1. I can read music well. SD D A SA
2. I know music well enough to help others learn it. SD D A SA
3. I can write my own music. SD D A SA
4. Leading others in singing or playing would be difficult for me. SD D A SA
5. I can play or sing difficult rhythms. SD D A SA
6. I could win a music contest. SD D A SA
7. I am glad when asked to sing or play for others. SD D A SA
8. Music teachers often embarrass me. SD D A SA
9. My parents expect a lot from me in music. SD D A SA
10. I usually feel uncomfortable when I am around music. SD D A SA
11. I feel good when my parents notice my progress in music. SD D A SA
12. I really believe I'm talented in music SD D A SA
13. My parents believe I can learn to play or sing really well. SD D A SA

14. Teachers notice my progress in music. SD D A SA
15. My friends really like my playing or singing. SD D A SA
16. My music teachers don't expect much of me. SD D A SA
17. I come from a musical family. SD D A SA
18. I could lead the class if my music teachers asked me to take their place. SD D A SA
19. Kids laugh at me when I make mistakes in music. SD D A SA
20. I'd be glad if teachers asked me to play or sing for programs. SD D A SA
21. I believe I could become a professional singer or player. SD D A SA
22. Kids notice my progress in music and give me credit for what I can do. SD D A SA
23. Music is all right for others but not for me. SD D A SA
24. I will not be good enough to be in choir or band in college. SD D A SA
25. I enjoy playing for others. SD D A SA
26. I expect a lot of myself in music. SD D A SA
27. People my age admire my musical ability. SD D A SA
28. I have a rough time learning in music class. SD D A SA
29. I find myself helping my friends with their music. SD D A SA
30. I am glad my family likes to listen to me perform. SD D A SA
31. Music is harder for me than for other kids. SD D A SA
32. I am not able to make progress in music. SD D A SA
33. At least one member of my family says I am really good in music. SD D A SA
34. I would like to have a professional career in music. SD D A SA
35. Usually I enjoy practicing music. SD D A SA
36. I like it when music teachers give me hard music to learn. SD D A SA

37. If my friends chose a music leader, they would probably pick me. SD D A SA
38. Other students sometimes ask me to play or sing with them. SD D A SA
39. I expect to play or sing in performing groups after high school. SD D A SA
40. No one pays much attention to my musical activities at home. SD D A SA
41. I don't have even one friend who would say I am any good at music. SD D A SA
42. My teacher thinks I can do well in music. SD D A SA
43. Compared with other students, I think I am talented. SD D A SA

Appendix B: Musical Background Survey (MBS)

(This was administered digitally using Qualtrics)

Name: _____ Instrument: _____

Grade: 7th / 8th

Gender: M / F / Prefer not to say / Prefer to self-describe: _____

What grade did you begin playing your current orchestra instrument? *(dropdown)*

Grade 8

Grade 7

Grade 6

Grade 5

Grade 4

Grade 3

Grade 2

Grade 1

Kindergarten or before

Do you play other instruments besides your current orchestra instrument?

No

Yes (Please list the instruments and how long you have played them, e.g. Piano, 3 years)

Have you composed a piece of music before this project?

Yes

No

If yes, please describe the pieces you have written:

Private Lessons – If you have taken private music lessons, please complete this section. If not, please leave blank.

Instrument: _____ Number of years: _____

Instrument: _____ Number of years: _____

Instrument: _____ Number of years: _____

Appendix C: Parent Permission Letter

August 18th, 2018

Dear Parent/Guardian of Fletcher Middle School Orchestra Student:

Tiffany Ou, in partial fulfillment of the degree Masters of Music Education at the University of Michigan, School of Music, Theater, and Dance, invites your child to participate in a research study entitled *The Effect of Group Composition on Student Musical Self-Efficacy in the Middle School String Classroom*. You and your child are being contacted because your child is a member of the 7/8th Grade Orchestra class at Fletcher Middle School.

The purpose of this study is to determine the effect of group composition on student musical self-efficacy in the middle school string classroom. All 7/8th Grade orchestra students from Fletcher Middle School are eligible for this study.

If you agree, your child will participate as they normally would in orchestra class, participating in a composition unit for 30-45 minutes per week in the Fall Semester. Your student would participate in two pre- and post- test questionnaires regarding their musical background and musical self-esteem.

While your child may not directly benefit from participating in the study, the results of the study will help many music teachers learn about how middle school students experience composition in the secondary ensemble, which may enrich music education for students in Palo Alto and beyond.

There is absolutely no connection between this study and your child's grade or his/her relationship with the orchestra teacher. There will be no financial compensation for participating in this study.

The results of this study may be published, but the researcher will not include any information that would identify you, your child or the school. To protect confidentiality, no names will be used in the questionnaire, or anywhere else in the study.

There are some reasons why people other than the researchers may need to see data collected from the study, but again, no names will be made available to them or anyone else. This includes organizations responsible for making sure that the research is done safely and properly, including the University of Michigan, and the members of the thesis committee, who are all professors at the University of Michigan.

If you have questions about this research, you can contact Tiffany Ou at tou@umich.edu.

Sincerely,

Tiffany Ou, MM (In Progress)
University of Michigan

Parental Permission

By signing this document, you are agreeing to allow your child, _____, to be part of the study entitled *The Effect of Group Composition on Student Musical Self-Efficacy in the Middle School String Classroom*. Your child's participation in this study is completely voluntary. If you allow your child to be part of the study, you may change your mind and withdraw your approval at any time. Your child may choose not to be part of the study, even if you agree, and may refuse to answer an interview question or stop participating at any time.

You will be given a copy of this document for your records and one copy will be kept with the study records. Be sure that the questions you have asked about the study have been answered and that you understand what your child will be asked to do. You may contact the researcher if you think of a question later.

I give my permission for my child to participate in this study.

Signature

Date

Appendix D: IRB Exemption Letter**eResearch Notification: Notice of Exemption for (HUM00149962)**

1 message

eresearch@umich.edu <eresearch@umich.edu>Wed, Aug 8, 2018 at 9:35
AM

Reply-To: eresearch@umich.edu

To: mhopkins@umich.edu, tou@umich.edu



Health Sciences and Behavioral Sciences Institutional Review Board (IRB-HSBS) • [2800 Plymouth Rd., Building 520, Room 1170, Ann Arbor, MI 48109](#)-2800 • phone (734) 936-0933 • fax (734) 998-9171 • irbhsbs@umich.edu

Subject: Notice of Exemption for [HUM00149962]**SUBMISSION INFORMATION:**

Title: The Effect of Group Composition on Student Musical Self-Efficacy in the Middle School String Classroom

Full Study Title (if applicable): The Effect of Group Composition on Student Musical Self-Efficacy in the Middle School String Classroom

Study eResearch ID: [HUM00149962](#)

Date of this Notification from IRB: 8/8/2018

Date of IRB Exempt Determination: 8/8/2018

UM Federalwide Assurance: FWA00004969 (For the current FWA expiration date, please visit the [UM HRPP Webpage](#))

OHRP IRB Registration Number(s): IRB00000246

IRB EXEMPTION STATUS:

The IRB HSBS has reviewed the study referenced above and determined that, as currently described, it is exempt from ongoing IRB review, per the following federal exemption category:

EXEMPTION 1:

Research, conducted in established or commonly accepted **educational settings, that specifically involves normal educational practices** that are **not likely to adversely impact students'** opportunity to learn required educational content or the assessment of educators who provide instruction. This includes most research on regular and special education instructional strategies, and research on the effectiveness of or the comparison among instructional techniques, curricula, or classroom management methods.

Note that the study is considered exempt as long as any changes to the use of human subjects (including their data) remain within the scope of the exemption category above. Any proposed changes that may exceed the scope of this category, or the approval conditions of any other non-IRB reviewing committees, must be submitted as an amendment through eResearch.

Although an exemption determination eliminates the need for ongoing IRB review and approval, you still have an obligation to understand and abide by generally accepted principles of responsible and ethical conduct of research. Examples of these principles can be found in the Belmont Report as well as in guidance from professional societies and scientific organizations.

SUBMITTING AMENDMENTS VIA eRESEARCH:

You can access the online forms for amendments in the eResearch workspace for this exempt study, referenced above.

ACCESSING EXEMPT STUDIES IN eRESEARCH:

Click the "Exempt and Not Regulated" tab in your eResearch home workspace to access this exempt study.

A handwritten signature in blue ink that reads "Thad A. Polk". The signature is written in a cursive style with a long horizontal line extending to the left.

Thad Polk
Chair, IRB HSBS

Appendix E: Post-Composition Project Survey

First Name: _____

Last Name: _____

Q1: The Simple Gifts Composition was a worthwhile musical experience.

Strongly Disagree *Disagree* *Agree* *Strongly Agree*

Q2: I enjoyed working with the members of my group on the project.

Strongly Disagree *Disagree* *Agree* *Strongly Agree*

Q3: I like the piece of music that my group composed during this project.

Strongly Disagree *Disagree* *Agree* *Strongly Agree*

Q4: I made important contributions to the composing of my group's piece.

Strongly Disagree *Disagree* *Agree* *Strongly Agree*

Q5: Please write 1-2 sentences that describe what you learned from the Simple Gifts Composition Project.

Appendix F: Simple Gifts Notated Melody

Ms. Ou

Simple Gifts - Theme

Traditional - Shaker Song

♩ = 90 **A**

Violin

Viola

Cello/Bass

5

Vn.

Va.

Vc.

10 **B (OPTIONAL)**

Vn.

Va.

Vc.


14

Vn.

Va.

Vc.

Appendix G: Simple Gifts Playlist (Spotify)



Simple Gifts

TITLE	ARTIST	ALBUM
+ Simple Gifts	Traditional, Yo-Yo ...	Classic Yo-Yo
🔊 +	Appalachian Spring: Simple Gifts	Aaron Copland, N...
+	The Greatest Man That Ever Lived (Variati...	Weezer
+	Simple Gifts	Judy Collins
+	Simple Gifts: Four Shaker Songs: No. 4. Si...	Frank Ticheli, Mic...
+	The Gift to Be Simple	The Anonymous, ...
+	Air and Simple Gifts	John Williams, Yo-...
+	Over the Rainbow / Simple Gifts	The Piano Guys
+	Simple Gifts	Raffi

Appendix H: Simple Gifts Final Performance Score

Simple Gifts Variations
Composed by Fletcher MS 7/8th Grade Orchestra Students
Ms. Ou - Fall 2018
Traditional Shaker Song
Theme
♩ = 100

12

17 Var. 1 - 16th Notes

21

20

25

31

34 Var. 2 - Flautato 5

39

47

52

45

50

Var. 3 - Swing, C Major
♩ = 90

45

45

Var. 4 - 3/4 Time Signature
♩ = 100

75 9

Score for measures 75-80. Instruments: Va. (Violin), Va. (Viola), Vc. (Violoncello), Bb. (Tromba), B.D. (Basso Drum). The score shows a complex rhythmic pattern with various note values and rests.

80

Score for measures 80-85. Instruments: Va. (Violin), Va. (Viola), Vc. (Violoncello), Bb. (Tromba), B.D. (Basso Drum). The score continues with similar rhythmic complexity.

95 11

Score for measures 95-100. Instruments: Va. (Violin), Va. (Viola), Vc. (Violoncello), Bb. (Tromba), B.D. (Basso Drum). The score shows a continuation of the musical theme.

100

Score for measures 100-105. Instruments: Va. (Violin), Va. (Viola), Vc. (Violoncello), Bb. (Tromba), B.D. (Basso Drum). The score continues with similar rhythmic complexity.

Var. 5 - Minore
85 J=70 10

Score for measures 85-90, titled 'Var. 5 - Minore'. Instruments: Va. (Violin), Va. (Viola), Vc. (Violoncello), Bb. (Tromba), B.D. (Basso Drum). The score includes dynamic markings such as *f*, *mp*, and *mf*.

90

Score for measures 90-95. Instruments: Va. (Violin), Va. (Viola), Vc. (Violoncello), Bb. (Tromba), B.D. (Basso Drum). The score includes dynamic markings such as *mp* (melody) and *f*.

Var. 6 - Tripletto
102 J=80 12

Score for measures 102-105, titled 'Var. 6 - Tripletto'. Instruments: Va. (Violin), Va. (Viola), Vc. (Violoncello), Bb. (Tromba), B.D. (Basso Drum). The score includes dynamic markings such as *mp*, *f*, and *mp* (cymbals).

106

Score for measures 106-110. Instruments: Va. (Violin), Va. (Viola), Vc. (Violoncello), Bb. (Tromba), B.D. (Basso Drum). The score includes dynamic markings such as *mp*.

110 13

114

mp

p

This musical score covers measures 110 to 117. It features five staves: Violin I (Va.), Violin II (Va.), Viola (Va.), Violoncello (Vc.), and Double Bass (Bc.). A Double Bass Drum (B.D.) part is shown at the bottom. The score includes dynamic markings such as *mp* and *p*, and various musical notations including slurs and accents.

118 14

mf

ff

This musical score covers measures 118 to 121. It features five staves: Violin I (Va.), Violin II (Va.), Viola (Va.), Violoncello (Vc.), and Double Bass (Bc.). A Double Bass Drum (B.D.) part is shown at the bottom. The score includes dynamic markings such as *mf* and *ff*, and various musical notations including slurs and accents.

Appendix I: Post-Composition Project Survey Written Comments (Coded)

#	Group-work	Music-ality	Note-Flight	Comment
1		M	N	I learned how to use NoteFlight and how to make the harmony fit with the melody.
2	G	M		I learned how to work well with others, and how to combine our musical ideas.
3				The most important thing that I learned was the process of composing other lines of music once the melody had been established. At first, it took a lot of trial and error to figure out which notes to use, but with practice it became more natural.
4	G			How to get along with people better. Guess and check is good till it doesn't work
5		M		I learned how to change music and make it sound good not just putting random things on it. I also learned how to evaluate music and see how to make music sound different.
6	G	M		I learned about how you can make different variations of music. I also learned how to work with other people to compromise and create a sheet of music.
7	G	M		I learned more about group work and cooperation, like how to divide the work, who has what jobs, and how we are to write the music. I also learned more about musicality and how to find the right notes to add a harmony to the music. Altogether, it was a great experience.
8		M		I learned different steps to compose a piece, and how to make it our own version of a simple melody. For example, we added to our piece by adding a bass line, and a background in a higher octave, or changing the key or time signature.
9		M		I learned how to vary a piece so that my piece based off of it sounds similar but different from the original piece. I also never knew that composing is so hard.
10				I learned that it is quite difficult to write a harmony line.
11		M		I contributed to the harmonies and different ideas on what I could do. In the making of harmonies, I would play chords and also suggest chords to aid with that. I also suggested different bowing styles that would later be put in the final draft.
12	G	M		I learned how to work as a team and I experienced how it was to write music.
13		M	N	I learned how to write a bass line. I also learned more about how to use NoteFlight and use their writing shortcuts.

14		M	N	I learned how to use music notation software and how to add baselines that fit well.
15	G	M		I learned how easy it is to change a melody so it can be different and interesting. I also learned how to contribute more into the group.
16		M		I learned how different notes can sound really well with other notes. I learned how by just changing a key, you can make a sound sound a lot darker, or lighter
17		M		I learned what the different parts of a piece were, what they were for, and what they sounded like. Melodies, harmonies, and bass lines were something completely new to me.
18		M		Helped contribute to ideas that would eventually lead to the final variation of the project. Told the group that we could change the eighth notes to sixteenth notes.
19		M		I learned how different techniques impacted how the other parts sounded with it, even if it was a little change.
20	G	M		While writing the Simple Gifts composition I learned many skills. Some skills included working as a group as well as practicing looking at a piece and making variations. Also, I learned how to find notes that sound good with the melody - the bass line.
21	G	M		Going into this project, I had no idea how we would even start to compose a piece of music. I learned that it's helpful to listen to a melody and change it gradually, then work on bass/harmony lines. I also got better at working with people that I don't know.
22	G			I learned that you have to be thoughtful about your peers' ideas and thoughts. In addition, I learned that perseverance and group work is very important because it will help a lot when you work as a group to accomplish something.
23		M	N	I learned how to write a bass line and a harmony line that complemented the melody. I also learned how to use NoteFlight.
24		M		I learned how to play and make music without a conductor. I also learned about other instruments.
25		M		I learned that when composing music, keep an open mind about all ideas and don't get too stuck with one. Try lots of different things because you never know what might sound really good or cool. Don't be afraid to make mistakes! Finally, always press save (of course).
26				I have learn that composing music is hard and finding the right notes.
27		M		I learned that writing the harmony and bass line is difficult because only the right interval will make the piece sound good

28		M		How to write music that sounds good.
29		M		I learned that it is not always easy to find notes that harmonize the melody.
30		M		I liked learning about the process of how to compose music. This project allowed me to experience and learn all kinds of composition things.
31	G	M		I learned that to make compositions sound good, 3rds or 5ths are a good start, also, I kind of learned how to read alto clef from [student]. Finally, I learned to actually play a piece instead of just listening to the online version.
32		M		The Simple Gifts Composition Project taught me about different key signatures and what notes were sharp/flat in each, as well as how to turn a song into a major/minor piece.
33		M		I learned how to compose a bass line from the melody.
34	G	M		I improved on my collaborative working skills, and letting other people share their own ideas, I learned that there are many ways to change and modify a simple piece of music. I also learned different music skills such as different bowing skills, and also how to write the different parts of different instrument to accompany each other.
35		M		I learned that each detail in a piece no matter how big or small is key for it to sound good
36	G			I learned to volunteer myself to lead the group, and to compromise to some extent
37	G	M		I learned how to work and have fun with others to compose a variation on a simple piece of music. Also, I learned how to use the basic functions of NoteFlight.
38		M		I learned that once you have an idea on how you want to vary the piece, the process for varying the piece is pretty simple.
39		M		I learned how to make a harmony, but still have the rhythm line up with the melody
40	G	M		One thing I learned from the Simple Gifts composition project was that composing music/making a variation on a piece is harder than it seems. This made the experiment interesting, and I usually don't like collaborating with other people for group works, but this time it went pretty smoothly.
41	G	M		I learned that finding notes that go well with other parts is really hard and staying in time without a conductor is hard. I also learned that working in small groups on a project is fun especially when you each make contributions.
42	G	M		I learned teamwork and using peoples knowledge of their part to make their part of the music.

43		M		I learned how changing multiple parts of music isn't that hard. I also learned that making small changes to a piece of music can turn the piece into something completely different.
44		M		I learned about the steps a composer has to take in order to create a piece that sounds good. I also learned about some kinds of intervals that are commonly used to harmonize (like 3rds, 5ths and octaves).
45		M		I learned that even arranging a piece of music from the original is very hard and there is a lot of trial and error that is used. It must be very hard to create a successful piece of music that is original.
46	G			I learned that when you are in a small group, you should make sure to listen to everyone because they might have a really good idea and it might be hard to hear them.
47	G	M		I learned that how to write a bass line and harmony. I also got a lot of teamwork practice.
48		M		I learned about what makes up a theme and variations, along with some of the thought process of what goes into composing a piece for orchestra.
49		M		I learned how to check/practice ideas we brainstormed. I also learned how to constructively add to other peoples ideas. I learned how to improve our piece based on what didn't work
50	G	M		I learned how to write a bass line as well as a harmony line. I also learned how to work well in a small musical group.
51		M		While we were working on this project, I learned how to add different parts to a single part piece while still keeping the song recognizable. We took the melody and changed something about it, then adding a bass line and harmonizing it, even including a countermelody that completed the complexity of our variation.
52		M		I learned that I shouldn't overthink things too much in the way that writing down one thing is better than thinking about something and having a blank page. Writing down one thing will start the thought process better, which will lead to writing down other things that will end in a finished product.
53	G	M		I learned how to make harmonies and bass lines that match the melody. I also learned how important it was for everyone to contribute because not everyone can read all of the clefs.
54			N	I learned new techniques on NoteFlight when I was helping write the piece
55		M		Through this Simple Gifts Composition Project, I learned how to harmonize the violin, viola, and cello/bass parts and the importance of balance between the parts; I also learned how to work with people from other sections and cope this difficulties,

				such as when things don't sound right or when some people don't contribute ... but, it was worthwhile because I was able to play around and come up with something that I was happy with. Overall, it was a wonderful learning experience.
56	G	M		I learned more about which notes sound good with other notes, which made me deepen my understanding when it came to my contribution when we are playing a piece in orchestra. I also learned about how to better work well in a group, and make sure that my own ideas are used while other's ideas were listened to.
57	G	M		I learned many things during this project, some of which were how to cooperate with my group members when composing a piece of music. I also learned how many variations can be applied to the same melody but still maintain some of the same sound.
58	G	M		I learned how to change a melody line to change the feel of the music. Another thing I learned from this experience was to work with other group members and to incorporate everyone's ideas to create one composed piece.
59	G	M	N	I learned how to kind of use NoteFlight, and how to make some okay variations/harmonies. I also learned how to collaborate with my group.
60		M		I learned about the different parts of a piece such as the harmony and bass line and how to compose them.
61		M		I learned how to combine notes from the bass clef with those from other clefs and make them sound better.
62		M		One thing that I learned from the Simple Gifts Composition Project is how to work with harmonies and how to make everyone's part sound good as a whole. I also learned how to fix the notes that don't fit in and how to just work with each other.
63		M		I learned that the violins have to play a lot more notes even in simple pieces. One other thing I learned is that the cello/base/viola have almost the same notes.
64		M		I learned that harmony in music is important as well as the melody and bass.
65	G	M		In the Simple Gifts Composition Project, I learned to make compromises because people have varying opinions. Also, I learned how to write harmonies using intervals.
66		M	N	I learned how you can change a simple piece to a more complex piece. I also got better at using NoteFlight.
67		M	N	I learned how to use NoteFlight to write music and how to write music that isn't the same notes on all four parts
68		M		I learned how to varyate the melody of Simple Gifts during this project. I also learned how to make a bass line that went well

				with the melody I created. I had never composed anything before, and I didn't know much about how to do it, so it was a unique experience.
69	G	M		I learned that melodies can be changed and be played in many different ways. Also, I learned how to write the harmony, bass line, and other sounds to the music so the entire orchestra could play it. It was really educational as we could work with other students but also learn about music.
70	G			I learned it is hard to agree with team members all the time.
71		M		I learned that harmonizing and writing simple music is not as hard as it is made out to be and can be done simply but still well.
72		M		I learned how to make a piece of music.
73		M		I learned how to read in alto clef (the clef that violas play in). I also learned how to use the correct chords for a minor key signature.

References

- Allsup, R.E. (2003). Mutual learning and democratic action in instrumental music education. *Journal of Research in Music Education, 51*(4), 24-37. DOI: 10.2307/3345646
- Asmus, E. P. (1986). Student beliefs about the causes of success and failure in music: A study of achievement motivation. *Journal of Research in Music Education, 34*(4), 262–278.
- Austin, J. (1990). The relationship of music self-esteem to degree of participation in school and out-of-school music activities among upper-elementary students. *Contributions to Music Education, 77*, 20-31.
- Aydin, Y. C., & Uzuntiryaki, E. (2009). Development and psychometric evaluation of the high school chemistry self-efficacy scale. *Educational and Psychological Measurement, 69*(5), 868-880.
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review, 84*(2), 191-215.
- Bandura, A. (1989). Regulation of cognitive processes through perceived self-efficacy. *Developmental Psychology, 25*(5), 729–735.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: Freeman.
- Bandura, A. (2006). Toward a psychology of human agency. *Perspectives on Psychological Science, 1*(2), 164–180.
- Bandura, A. (2012). On the functional properties of perceived self-efficacy revisited. *Journal of Management, 38*(1), 9–44. <https://doi.org/10.1177/0149206311410606>
- Betz, N. E., & Hackett, G. (1983). The relationship of mathematics self-efficacy expectations to the selection of science-based college majors. *Journal of Vocational Behavior, 18*, 329-345.

- Bong, M., & Skaalvik, E. M. (2003). Academic self-concept and self-efficacy: How different are they really? *Educational Psychology Review*, *15*(1), 1–40.
<https://doi.org/10.1023/A:1021302408382>
- Chen, P., & Zimmerman, B. (2007). A cross-national comparison study on the accuracy of self-efficacy beliefs of middle-school mathematics students. *The Journal of Experimental Education*, *75*(3), 221-244. Retrieved from
<http://www.jstor.org.proxy.lib.umich.edu/stable/20157457>
- Burland, K., & Davidson, J. W. (2001). Investigating social processes in group musical composition. *Research Studies in Music Education*, *16*(1), 46–56.
<https://doi.org/10.1177/1321103X010160010901>
- Consortium of National Arts Education Associations. (1994). *The national standards for arts education*. Reston, VA: MENC.
- Coulson, A.N., & Burke, B.M. (2013). Creativity in the elementary music classroom: A study of students' perceptions. *International Journal of Music Education*, *31*(4), 428–441. DOI: 10.1177/0255761413495760
- Creswell, J. W. (2009). *Research design: Qualitative, quantitative, and mixed methods approaches*, 3rd ed. Thousand Oaks, CA: Sage Publications.
- Deemer, R. (2016). Reimagining the role of composition in music teacher education. *Music Educators Journal*, *102*(3), 41–45. <https://doi.org/10.1177/0027432115626253>
- Elpus, K. (2015). National estimates of male and female enrolment in American high school choirs, bands and orchestras. *Music Education Research*, *17*(1), 88–102.
<https://doi.org/10.1080/14613808.2014.972923>

Explore Fletcher Middle School. (2019). Retrieved May 25, 2019, from

<https://www.niche.com/k12/Fletcher-middle-school-palo-alto-ca/>

Gillespie, R., & Hamann, D.L. (1998). The status of orchestra programs in the public schools.

Journal of Research in Music Education, 46(1), 75-86. DOI: 10.2307/3345761

Gould, A.O. (1963). Ensemble improvisation as a creative technique in the secondary

instrumental program. *Bulletin of the Council for Research in Music Education*, 1, 59-61.

Hendricks, K. (2009). *The relationship between the sources of self-efficacy and changes in*

competence perception during an all-state orchestra event. (Unpublished doctoral dissertation). University of Illinois

Hoffman, A. R., & Carter. (2013). Representin' and disrespectin': African-American wind band

students' meanings of a composition-based secondary music curriculum and classroom power structures. *Music Education Research*, 15(2), 135–150. DOI:

10.1080/14613808.2012.685458

Hogenes, M., van Oers, B., Diekstra, R.F.W., & Sklad, M. (2016). The effects of music

composition as a classroom activity on engagement in music education and academic and music achievement: A quasi-experimental study. *International Journal of Music*

Education, 34(1), 32–48. DOI: 10.1177/0255761415584296

Hopkins, M. T. (2013). Factors contributing to teachers' inclusion of music composition

activities in the school orchestra curriculum. *String Research Journal*, 4(1), 15–36.

<https://doi.org/10.1177/194849921300100402>

- Hopkins, M. T. (2015). Collaborative composing in high school string chamber music ensembles. *Journal of Research in Music Education*, 62(4) 405-424. DOI: 10.1177/0022429414555135
- Hewitt, M. P. (2015). Self-efficacy, self-evaluation, and music performance of secondary-level band students. *Journal of Research in Music Education*, 63(3), 298–313.
<https://doi.org/10.1177/0022429415595611>
- Kaschub, M. (1997). A comparison of two composer-guided large group composition projects. *Research Studies in Music Education*, 8(1), 15–28.
<https://doi.org/10.1177/1321103X9700800103>
- Kaschub, M., Smith, J. (2009). *Minds on music: composition for creative and critical thinking*. Lanham, Md.: Rowman & Littlefield Education.
- 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. DOI: 10.2307/3344949
- Krathwohl, D. (2002). A revision of Bloom's taxonomy: An overview. *Theory Into Practice*, 41(4), 212-218. Stable URL: <http://www.jstor.org/stable/1477405>
- Lopez, F. G., & Lent, R. W. (1992). Sources of mathematics self-efficacy in high school students. *Career Development Quarterly*, 41(1), 3-9.
- Luce, D. W. (2001). Collaborative learning in music education: A review of the literature. *Update: Applications of Research in Music Education*, 19(2), 20–25. doi:10.1177/87551233010190020105
- MacDonald, R. A. R., Miell, D., & Morgan, L. (2000). Social processes and creative collaboration in children. *European Journal of Psychology in Education*, 15, 405–415.

- MacDonald, R. A. R., Miell, D., & Mitchell, L. (2002). An investigation of children's musical collaborations: The effect of friendship and age. *Psychology of Music*, 30, 148–163.
doi:10.1177/0305735602302002
- Martin, L. (2012). The musical self-efficacy beliefs of middle school band students: An investigation of sources, meanings, and relationships with attributions for success and failure. *Bulletin of the Council for Research in Music Education*, (191), 45–60.
<https://doi.org/10.5406/bulcouresmusedu.191.0045>
- McCarthy, P., Meier, S., & Rinderer, R. (1985). Self-efficacy and writing: A different view of self-evaluation. *College Composition and Communication*, 36(4), 465–471.
<https://doi.org/10.2307/357865>
- McCormick, J., & McPherson, G. (2003). The role of self-efficacy in a musical performance examination. *Psychology of Music*, 31(1), 37-51.
- McPherson, G. E., & McCormick, J. (2006). Self-efficacy and music performance. *Psychology of Music*, 34(3), 322–336. <https://doi.org/10.1177/0305735606064841>
- Miell, D., & Littleton, K. (2008). Musical collaboration outside school: Processes of negotiation in band rehearsals. *International Journal of Educational Research*, 47, 41–49.
doi:10.1016/j.ijer.2007.11.006
- Miell, D., & MacDonald, R A. R. (2000). Children's creative collaborations: The importance of friendship when working together on a musical composition. *Social Development*, 9, 348–369.
- Morgan, L. A. (1998). *Children's collaborative music composition: communication through music* (Ph.D.). University of Leicester (United Kingdom), England. Retrieved from <http://search.proquest.com/docview/301521023/abstract/B95876270CE74759PQ/1>

- National Association for Music Education. (2014). *Ensemble music standards*. Retrieved from <http://www.nafme.org/wp-content/files/2014/11/2014-Music-Standards-Ensemble-Strand.pdf>
- Ou, T. (2016). *Fletcher Middle School Orchestra Handbook* [Pamphlet].
- Pajares, F., & Johnson, M. J. (1994). Confidence and competence in writing: The role of self-efficacy, outcome expectancy, and apprehension. *Research in the Teaching of English*, 28(3), 313–331.
- Pajares, F., & Kranzler, J. (1995). Self-efficacy beliefs and general mental ability in mathematical problem-solving. *Contemporary Educational Psychology*, 20(4), 426–443. <https://doi.org/10.1006/ceps.1995.1029>
- Pajares, F., & Miller, M. D. (1995). Mathematics self-efficacy and mathematics performances: The need for specificity of assessment. *Journal of Counseling Psychology*, 42(2), 190–198. <https://doi.org/10.1037/0022-0167.42.2.190>
- Pajares, F. (1996). Self-efficacy beliefs in academic settings. *Review of Educational Research*, 66(4), 543–578. <https://doi.org/10.2307/1170653>
- Pajares, F., & Britner, S. L. (2001). Self-efficacy beliefs, motivation, race, and gender in middle school science. *Journal of Women and Minorities in Science and Engineering*, 7(4), 15. <https://doi.org/10.1615/JWomenMinorScienEng.v7.i4.10>
- Pajares, F., Johnson, M. J., & Usher, E. L. (2007). Sources of writing self-efficacy beliefs of elementary, middle, and high school students. *Research in the Teaching of English*, 42(1), 104–120.

- Pastorelli, C., Caprara, G. V., Barbaranelli, C., Rola, J., Rosza, S., & Bandura, A. (2001). The structure of children's perceived self-efficacy: A cross-national study. *European Journal of Psychological Assessment, 17*(2), 87-97.
- Powell, S. J. (2013). Musical and personal success: Perceptions of Australian males in choir. *Australian Journal of Music Education; Parkville, Vic., 1*(1), 53-63.
- Priest, T. (2006). Self-evaluation, creativity, and musical achievement. *Psychology of Music, 34*(1), 47-61. DOI: 10.1177/0305735606059104
- Randles, C. (2010). The relationship of compositional experiences of high school instrumentalists to music self-concept. *Bulletin of the Council for Research in Music Education, 184*, 9-20. Retrieved from: <http://www.jstor.org/stable/27861479>
- Roberts, B. (1994). Music teachers as researchers. *International Journal of Music Education, 23*, 24-33.
- Rowland, S. (1986). Classroom enquiry: An approach to understanding children. In D. Hustler, A. Cassidy, & E. C. Cuff (Eds.), *Action research in classrooms and schools* (pp. 25-35). London, UK: Allen & Unwin.
- Schmidt, C. P. (2007). Intrinsic-master motivation in instrumental music: Extension of a higher order construct. *Bulletin of the Council for Research in Music Education, 173*, 7-24.
- Schmitt, M. C. J. (1979). *Development and validation of a measure of self-esteem of musical ability* (Doctoral dissertation). Retrieved October 17, 2010, from ProQuest Dissertations & Theses: Full Text (AAT 8009164).
- Shell, D. F., Murphy, C. C., & Bruning, R. H. (1989). Self-efficacy and outcome expectancy mechanisms in reading and writing achievement. *Journal of Educational Psychology, 81*(1), 1-10.

81(1), 91–100.

<https://doi.org/10.1037/0022-0663.81.1.91>

Sherer, M., Maddux, J. E., Mercandante, B., Prentice-Dunn, S., Jacobs, B., & Rogers, R. W.

(1982). The self-efficacy scale: Construction and validation. *Psychological Reports, 51*, 663-671.

Stauffer, S. L. (2002). Connections between the musical and life experiences of young composers and their compositions. *Journal of Research in Music Education, 50*(4), 301-322. DOI: 10.2307/3345357

Strand, K. (2006). Survey of Indiana music teachers on using composition in the classroom. *Journal of Research in Music Education, 54*(2), 154–167. DOI: 10.2307/4101437

Stringham, D. A. (2016). Creating compositional community in your classroom. *Music Educators Journal, 102*(3), 46–52. <https://doi.org/10.1177/0027432115621953>

Fletcher Mission Statement. (2019). Retrieved May 25, 2019 from

<http://www.Fletcher.pausd.org/exploring-Fletcher/Fletcher-mission-statement>

U.S. Census Bureau QuickFacts: Palo Alto City, California. (2017). Retrieved June 28, 2018, from <https://www.census.gov/quickfacts/fact/table/paloaltocalifornia/EDU685216>

Vygotsky, L. S., Cole, M. (1978). *Mind in society: the development of higher psychological processes*. Cambridge: Harvard University Press.

Usher, E. L., & Pajares, F. (2009). Sources of self-efficacy in mathematics: A validation study. *Contemporary Educational Psychology, 34*, 89-101.

Wehr-Flowers, E. L. (2007). *An exploratory model of jazz self-efficacy and gender* (Doctoral dissertation). Retrieved October 17, 2010, from ProQuest Dissertations & Theses: Full Text (AAT 3281418).

- Wiggins, J. H. (1994). Children's strategies for solving compositional problems with peers. *Journal of Research in Music Education*, 42(3), 232–252.
DOI: 10.2307/3345702
- Wiggins, J. H. (1999). Teacher control and creativity: Carefully designed compositional experiences can foster students' creative processes and augment teachers' assessment efforts. *Music Educators Journal*, 85(5), 30-44. DOI: 10.2307/3399545
- Yunker, B. A. (2000). Thought processes and strategies of students engaged in music composition. *Research Studies in Music Education*, 14, 24-39. DOI: 10.1177/1321103X0001400103
- Zelenak, M. S. (2011). Self-efficacy in music performance: Measuring the sources among secondary school music students. *Graduate School Theses and Dissertations*. Stable URL: <http://scholarcommons.usf.edu/etd/3419>
- Zimmerman, B. J., & Bandura, A. (1994). Impact of self-regulatory influences on writing course attainment. *American Educational Research Journal*, 31(4), 845–862.
<https://doi.org/10.2307/1163397>