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AN INVESTIGATION OF THE EFFECTIVENESS OF COOPERATIVE LEARNING AS A REHEARSAL TECHNIQUE FOR IMPROVING HIGH SCHOOL BAND PERFORMANCE

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AN INVESTIGATION OF THE EFFECTIVENESS OF COOPERATIVE
LEARNING AS A REHEARSAL TECHNIQUE FOR IMPROVING
HIGH SCHOOL BAND PERFORMANCE

DISSERTATION

A dissertation submitted in partial fulfillment of the
requirements for the degree of Doctor of Philosophy
in the College of Fine Arts
at the University of Kentucky

By
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Elizabethtown, Kentucky

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Lexington, Kentucky

2015

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ABSTRACT OF DISSERTATION

AN INVESTIGATION OF THE EFFECTIVENESS OF COOPERATIVE LEARNING AS A REHEARSAL TECHNIQUE FOR IMPROVING HIGH SCHOOL BAND PERFORMANCE

The purpose of the present study was to investigate the effectiveness of cooperative learning as a rehearsal technique on high school full-band performance compared to traditional rehearsal methods. Two intact high school bands from the same Kentucky Music Educators Association District participated in the study. One band served as the treatment group using cooperative learning rehearsal techniques and the other group served as the control group using traditional rehearsal methods in a quasi-experimental non-equivalent control group design.

The study spanned six weeks in which both schools prepared the same performance piece, *Variants* by Jack Bullock. The groups were pre-tested using a recording of their recent Kentucky Music Educators Association (KMEA) concert festival performance to ensure no statistically significant difference existed in performance ability. The bands rehearsed the study piece for 15-20 minutes two times per week for a total of 12 rehearsals. The bands were also asked to play a researcher-composed warm-up prior to each rehearsal of the performance piece. At the end of the study, the groups recorded final performances of the piece and the warm-up.

The full-band performances were measured using the Performance Evaluation Form. Recordings of all tests were sent to four independent judges for evaluation. Statistically significant differences were found between the two groups on both post-test recordings, with the treatment group scoring higher than the control group. Additionally, the within-group comparisons resulted in statistically significant differences for both groups. The treatment group scored higher on the study piece than the pre-test while the control group scored lower on the study piece than their pre-test.

Descriptive and qualitative data were gathered on student self-assessment of performance and the implementation of cooperative learning into high school band. Results indicate that students in the cooperative learning treatment group varied greatly in ability to self-assess and that those abilities progressed over time. Students also engaged in the learning activities in a variety of ways. Factors that must be taken into consideration when implementing cooperative learning in a high school ensemble include the structure of the cooperative activities, the role of the band director, and the usage of time.

Keywords: Cooperative Learning, Band, Performance, Self-Assessment, Rehearsal.

Karen Renae Compton
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January 19, 2015
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Chapter One

Introduction

Band programs across the nation vary in size and ability levels but often share similar rehearsal structures and goals. These practices have been well established through a long history and tradition dating back to the early twentieth century (Allsup & Benedict, 2008; Garofalo, 1976; Holsberg, 2009). Band directors tend to look towards master technicians in the field and professional journals that promote traditional practices when seeking guidance on rehearsal strategies (Miles, 1993). However, proposed alternatives in philosophy and practice can be found among the scholarly literature on band (Allsup & Benedict, 2008; Bazan, 2011; Beitler, 2012; Bergee & Cecconi-Roberts, 2002; Blom & Poole, 2004; Brown, 2012; Cangro, 2004; Daniel, 2001, 2004; DiNatale & Russell, 1995; Dirth, 2000; Djordjevic, 2007; Elliott, 1995, 2005; Garafalo, 1976; Gustafson-Hinds, 1998; Hewitt, 2002, 2005; Holsberg, 2009; Inzenga, 1999; Reimer, 1970; Reynolds & Beitler, 2007). These divergent views include comprehensive musicianship, technology integration, focus on critical thinking, implementation of the national standards, cooperative and collaborative learning, reflective practices, constructivism, self-assessment, ArtsPROPEL, and student-centered classes. The present study further adds to the growing body of literature on alternative methods and the use of cooperative learning in musical performance settings.

Background

The idea of cooperative learning in education gained popularity in the 1970s through the writings and research of David W. Johnson and Roger T. Johnson (1974, 1992, 2000, 2009) who investigated competitive, cooperative, and individualistic goal

structures. Other educational scholars, such as Elliot Aronson (Aronson, Blaney, Stephan, Sikes, & Snapp, 1978), Robert Slavin (1977, 1980, 1983, 1984, 1985, 1987, 1989/1990, 1991, 1996, 1999, 2011), Shlomo Sharan (1980, 1992, 1999), and Spencer Kagan (1989/1990, 2007) began to develop specific cooperative learning strategies for use in classrooms. These methods were adopted into many subject areas and grade levels over the following decades. Currently, cooperative learning can be found in teacher resources, teacher preparation programs, research, and daily classroom practices in the United States and abroad (Slavin, 2011).

Although cooperative learning has become standard practice in many subject areas, it has not been so readily adopted into music classrooms, especially performance-based groups such as bands, choirs, and orchestras. The performance classroom is unique and has different needs from other subjects. These musical groups focus on authentic performances to demonstrate student learning and accomplishments rather than relying primarily on student test scores. Cooperative learning strategies have been implemented into general education classes as tools to improve individual student achievement. Adopting these cooperative learning methods directly into the performance-based classroom may not be compatible with the groups' goals and needs. In order for performing groups to be able to implement cooperative learning into their rehearsals, these strategies must be restructured to meet the needs of a performance-based class.

Statement of Problem

Existing research on cooperative learning in music mostly focuses on elementary general music classes. Of the studies on cooperative learning in performance-based classrooms, most are qualitative in nature or focus on non-performance variables. The

primary goal of the performance-based classroom is acquisition of the knowledge and skills necessary to improve musical performance. In order for cooperative learning to be applicable and useful to the performance-based classroom, strategies must be restructured so that they are compatible with the groups' goals and practices. Furthermore, these modified strategies must be investigated in an empirical manner for their effectiveness for improving ensemble performance.

Definition of Terms

The following operational definitions provide clarification of important concepts found throughout the study:

1. **Articulation:** The overall execution of the way in which notes are attacked, sustained, and released; the execution of indicated articulation markings.
2. **Blend/Balance:** The overall unity of sound and appropriate emphasis of musical lines in relation to their function in the piece (e.g., melody, countermelody, harmonic foundation).
3. **Cooperative Learning:** A process that enables students to interact with one another to accomplish a shared or common goal; must include individual accountability and positive interdependence.
4. **Dynamic Variation:** The execution of indicated dynamic markings with appropriate levels of contrast.
5. **Group Investigation:** A cooperative learning method in which students work together in small groups to gain knowledge and understanding of their topic of study.

6. **Section or Instrument Section:** A group of the same or similar instruments in band.
7. **Intonation:** The overall ability of the ensemble members to play in tune with one another; the sharpness and flatness of pitches.
8. **KMEA:** Kentucky Music Educators Association.
9. **Note Accuracy:** The ensemble's overall performance of correct written pitches (e.g., correct fingerings or slide positions).
10. **Performance:** Refers to musical performance on instruments or singing.
11. **Phrasing/Expression:** The overall interpretation and execution of expressive elements resulting in an appropriate degree of musical effect and representative style (e.g., phrasing through interpreted dynamics; interpreted articulation).
12. **Rhythmic Precision:** The overall correctness and unity in the performance of written rhythms.
13. **Sectional:** A small group rehearsal usually consisting of like-instruments in band.
14. **Tempo:** The overall execution of the indicated tempo markings in the musical score.
15. **Think-Pair-Share:** A cooperative learning strategy that involves a three-step process of students thinking in response to a question or prompt, discussing their thoughts with a partner, and sharing their conclusions with the larger group.
16. **Tone Quality:** The overall quality of instrumental and ensemble sound (e.g., maturity, airiness, support).

17. **Traditional Rehearsal Techniques:** Ensemble rehearsal strategies in which the conductor is the central source for detecting performance errors, giving instructions on how to correct those errors, and for making interpretive decisions.

Limitations

The study is limited in the following ways:

1. The participant groups were two separate intact high school bands in the same KMEA District that met during the school day. Student participation varied daily due to absences and school events. School scheduling varied over the six weeks sometimes interfering with the study schedule.
2. Not all cooperative assessment forms were returned to the researcher each cycle. The results of that data may not reflect the entire ensemble.

Delimitations

The study is delimited in the following ways:

1. Convenience sampling was used to select the two participant groups. Every effort was made to ensure they were of the same performance level and had similar demographics. Generalizations to groups outside of the participants may not be appropriate.
2. The primary dependent variable was full-band performance and not individual student achievement. The effects of the independent variable may not be generalized to other related variables.
3. Cooperative learning has differing definitions and theoretical foundations among the literature, as do the musical terms. The results of this study can only be

generalized to the extent that the definition of terms are interpreted as they are defined in this study.

Implications and Significance

The present study has implications for directors of performance-based classes and music education research. It offers insight into the possible effects of carefully structured cooperative learning activities on ensemble performance. Directors wishing to incorporate cooperative learning into their performance-based classes can use the activities in the study as models for developing their own strategies. This approach to rehearsing performance groups offers alternatives to traditional rehearsal structures in a way that engages students in their own learning process. No other studies have been identified that investigated the effects of cooperative learning on ensemble performance in high school band. This study offers a starting point for further experimental research on the topic.

Chapter Two

Review of Literature

Introduction

Research on cooperative learning can be found in most academic subjects and at all grade levels (Slavin, 2011). However, little research exists on cooperative learning as a tool to improve ensemble performance in high school band. The present chapter will discuss current educational practices in band, theoretical constructs of cooperative learning, significant research on cooperative learning, and existing research on cooperative learning in music education.

Current Educational Practices in Band

School band programs across the nation may vary in size and performance abilities, but typically have similar rehearsal structures based on long-standing and well-developed traditions dating back to the military bands of the early twentieth century (Allsup & Benedict, 2008; Garofalo, 1976). These teacher-centered practices often emphasize the importance of efficiency, discipline, and competitiveness, while being driven by performances and repertoire (Allsup & Benedict, 2008). According to a 1993 study by Miles, school bands participate in an average of 42.05 performances per year. These demanding performance schedules create an environment in which directors are under tremendous pressure to produce an exceptional product. In addition, the quality of a director and program is often judged on festival ratings and competition results rather than the learning that takes place within the classroom (Bergee, 1989).

Only a few significant developments have influenced educational practices in band and other performance-based classes during the last century. The ideals of aesthetic

education became the primary philosophy base for music education during the second half of the twentieth century exemplified in the writings of Bennett Reimer (1970). An aesthetic approach to music education focuses on great musical works, listening for aesthetic qualities in music, the intrinsic value of music, and the aesthetic experience (Panaiotidi, 2003). During the same timeframe in which aesthetic music education was being promoted, comprehensive musicianship was developed. This approach to music education encouraged teachers to include many facets of music in their curricula, such as theory, history, listening, performing, and creativity regardless of the type of music class (Contemporary Music Project, 1971). During the 1990s, the importance of these two movements in music education was solidified through the establishment of the National Standards for Arts Education (Consortium of National Arts Education Associations, 1994). In this historic document outlining what all students should know and be able to do in the arts, aesthetics and comprehensive competence can be found in the first paragraph of the synopsis (Consortium of National Arts Education Associations, 1994). The long-term effects of these movements can be seen in books, teacher resources, journals, and other educational material such as the *Teaching Music through Performance* series by Richard Miles and his colleagues (Miles, 1997, 1998, 2001, 2003, 2004, 2007, 2009, 2011, 2012).

A vast amount of research in band focuses on the conductors and their behaviors in rehearsals. Researchers have investigated the differences in teacher experience levels, approaches used for groups of different grade levels, the amount of time spent in performance and other rehearsal activities, the types of communication used by directors, the use of feedback in rehearsals, and the musical elements on which conductors focus

during rehearsals. This research provides a detailed depiction of what occurs in traditional band rehearsals. These studies are described below.

Several studies have compared the differences among teachers with various levels of experience using categories such as expert, experienced, novice, student, and pre-service teachers. In terms of musical performance, Goolsby (1999) found significant differences ($p < .01$) between novice and expert teachers' ensemble performance scores when preparing the same composition. An earlier study by Goolsby (1997) found that experienced teachers focused more on the overall sound of the ensemble while novice teachers concentrated on tuning individual notes while student teachers addressed wrong notes the most. The results of a study by Yarbrough & Price (1989) showed that experienced teachers were more disapproving but gave the highest amount of specific reinforcement to students. Goolsby's 1996 study found that student teachers talked the most and allowed students to perform the least. Experienced teachers also used modeling more often and divided rehearsal time more equally between warm-up and practice on musical selections. In terms of student discipline, Stuber (1997) found that less experienced teachers focused on discipline more frequently than experienced teachers.

Studies have investigated the differences in approaches for ensembles of various grade levels. Blocher, Greenwood, & Shellehamer (1997) looked at differences between high school and middle school directors' use of rehearsal time, types of instruction, and feedback to students. Results indicated that both high school and middle school directors spent approximately the same amount of time on non-musical activities (8%) and in direct verbal communication (31%). The two groups differed in their use of non-interactive listening with middle school directors using three times more than high school

directors (34% and 9%, respectively). The high school directors also used more non-verbal communication (43% and 11%) and spent more time in conceptual teaching (3% and 2%). In a study by Worthy (2003), the researcher compared how one director rehearsed the same piece with a college group and with a high school group. The conductor focused on multiple musical concepts simultaneously when working with the collegiate group and mostly single musical targets with the high school group. Additionally, talking episodes were shorter but more frequent with the high school group which the researcher described as being faster paced.

How conductors use their rehearsal time is another topic that has been researched extensively through micro-analyses of the types of activities, their frequencies, and durations. Yarbrough & Price (1989) looked at a several variables involved in music rehearsals. In terms of time spent on activities, all subjects spent over half of the time in performance and directions related to performance. Band teachers spent the most rehearsal time (M=66.14%) on performance compared to those teaching choir, college students, and pre-school children. Cavitt (2003) reported 28.98% of instrumental rehearsal time being devoted to performance by middle school and high school band directors. Goolsby (1996) found that experienced band directors spent approximately 51.2% of rehearsal time on performance with an average of 20.6% of the time in warm-ups, 28.9% on the first musical selection, and 32.5% on the second musical selection. They also averaged between 8.3 and 13.3 rehearsals to prepare a musical selection (Goolsby, 1999).

The types of activities in which the teacher engages have been analyzed using many different frameworks. Goolsby (1996, 1997, 1999) looked at the amount of time

spent on preparatory activities, teacher talk, warm-up, rehearsal, breaks, and dismissal. According to Goolsby's 1996 study, more rehearsal time was spent in full ensemble performance and verbal instructions while the least amount of time was spent on teacher talk at the end of the rehearsal. Goolsby's 1997 and 1999 studies indicated that experienced teachers more frequently used guided listening, focused questioning, and specific positive feedback. Carpenter (1986) looked at more than 20 variables in band rehearsals, including pedagogical elements, procedural components, personal qualities, and error-detection approaches. The majority of time was spent on verbal/technical directions (80%) and 14.5% of the rehearsal was devoted to modeling. Cavitt (2003) similarly showed a high amount of time on teacher talk (52.57%) and a lower use of modeling (6.12%), which occurred in episodes of approximately two seconds. According to Blocher et al. (1997), 8.47% of rehearsal time was spent on non-musical activities.

Few studies have investigated student actions during rehearsals. Cavitt (2003) found that student talk occurred less than 1% of the time. Yarbrough & Price's (1989) study showed that band and choir teachers engaged students in verbal and non-verbal responses the least when compared to pre-service teachers. Witt (1986) looked at student attentiveness during rehearsal and found that band students were more attentive than the orchestra students.

Considering the sizeable amount of time spent on teacher talk and instructions in rehearsals, researchers have analyzed the specific types of communication used by teachers (Blocher et al., 1997; Carpenter, 1986; Goolsby, 1996, 1997, 1999; Pontious, 1982; Witt, 1986). Pontious (1982) reported that, of their verbal communications, band directors focused on procedural instructions approximately half of the time (52%) and on

musical elements the other half (48%). Blocher et al. (1997) reported that high school band directors used verbal communication (43.04%) more than non-verbal communication during rehearsals (31.84%). Goolsby (1996) found that experienced band directors only spent .9% of their rehearsal time on discipline; they additionally used verbal communication 24.1% of the time and non-verbal cues 5.4% of rehearsal time. A somewhat unique investigation found that band directors used verbal imagery 1.8% of the time (Carpenter, 1986). Discrepancies exist among the literature regarding how teacher talk is used in rehearsals. Some of these can be explained by differences in definitions of the terms, the number of variables being measured, as well as data analysis procedures. Nonetheless, non-verbal communication clearly plays a large role in band rehearsals and directors address non-musical issues a considerable amount of time.

Feedback has been identified as an important component in becoming a self-regulated musician (McPherson & Zimmerman, 2002). Yarbrough & Price (1989) state that feedback is an essential part of the teaching and learning process. Students need immediate and relative feedback on their performance. They found that band directors, compared with choral directors and pre-service teachers, had the highest degree of reinforcement in rehearsal and that it was usually specific feedback. Contrastingly, Blocher et al. (1997) found that band directors only engaged in feedback an average of one minute and 36 seconds per 20 minute rehearsal segment. When looking at correlations between rehearsal characteristics and highly rated rehearsals, Carpenter (1986) found that feedback accounted “for 43% of the observed variance in overall rehearsal rating” (p. 58). In a survey of new general music teachers, Button (2010) found that they ranked feedback as one of the least important factors for effective teaching. Out

of 48 factors, feedback ranked 42nd. Napoles & Bowers (2010) compared the effects of teacher feedback and self-assessment on pre-service choral teachers' uses of specific reinforcement and found no significant difference between the two. Both approaches were identified as being effective in increasing the desired teacher behaviors.

Researchers have performed detailed analyses on the musical elements band directors address in rehearsals. Performance elements such as rhythm, intonation, and expression vary in definition, use, and categorization among the research literature making it difficult to compare results. Studies by Carpenter (1986), Cavitt (2003), Goolsby (1999), Menchaca (1988), and Pontious (1982) have investigated which musical elements directors attend to most during rehearsals. Carpenter (1986) found that band directors focused mostly on rhythm, tempo, dynamics, style/articulation, and instrumental fundamentals, and spent the least amount of time on theory, tone, intonation, expression, and blend/balance. Cavitt (2003) found that intonation/tone and articulation were given the most focus in rehearsal; they were distantly followed by rhythm and dynamics; and the least amount of rehearsal time was spent on tempo, pitch accuracy, and technical facility. Goolsby's (1999) study showed that expert directors spent drastically more time on rhythm and articulation. Dynamics, blend/balance, style, and expression/phrasing received moderate attention and subdivision, notes, airstream/posture, energy, entrances/confidence, intonation, and tone received the least amount of consideration. The variation among the studies makes it difficult to identify the degree of focus on musical elements, but it appears that rhythm, articulation, and dynamics generally receive the most attention. This summation is supported by Menchaca's (1988) conclusion that more time is spent on fundamentals rather than expression.

Comprehensive musicianship has shaped the way many directors approach their band classes (Willoughby, 1990). An important component in this approach is engaging students in higher-level thinking about musical concepts. With this growing philosophy in music education, researchers have increasingly investigated the degree to which directors implement these elements. Although high school band directors reported comprehensive musicianship as a high priority, it was not highly rated as a strength (Miles, 1993). Blocher et al. (1997) found that band directors engage in conceptual teaching for only 32 seconds in a 20 minute time frame. Some of the subjects did not use conceptual teaching at all during rehearsals. When comparing music teachers of different levels and in different performance mediums, Yarbrough & Price (1989) found that band and choir teachers provided the lowest amount of musical information to students and that band directors had a low occurrence of questioning in rehearsals. Carpenter's (1986) study echoed those results finding a low volume of questioning during band rehearsals. Most of the teaching moments were focused on basic performance skills. A study in the choral setting found that directors engaged students in critical thinking only 6.36% of the time and focused on lower-level concepts 45.96% of rehearsal (Garrett, 2009).

The National Standards for Music Education were developed to “advance both quality and accountability” (Consortium of National Arts Education Associations, 1994, p. 10) for arts education. These standards grew out of the movement towards comprehensive musicianship and encouraged music educators to focus on a variety of musical aspects in their classrooms, including listening, creating, performing, history, and culture (Diehl & Scheib, 2013). Although the performing and responding standards have easily been integrated into band classes, those focused on creating have been more

difficult to implement (Diehl & Scheib, 2013, Skube, 2002). Diehl & Schieb (2013) found several factors correlated with the implementation of the creating standards into rehearsals, including band size, performance schedule/demands, and the expressive qualities within certain musical selections. Interestingly, “teachers who selected repertoire based upon pedagogical criteria...were more likely to integrate the standards than those who emphasized technical or practical criteria” (Diehl & Schieb, 2013, p. 5).

Teachers’ perceptions do not always reflect what they are actually doing in their classrooms. Wang & Sogin (1997) found that general music teachers overestimated the amount of time they spent on activities and that teacher talk was relatively high. When looking at middle school teachers’ use of student-directed instructional (SDI) practices, Bazan (2011) found that teachers who highly valued SDI still emphasized teacher-directed instruction significantly more in their rehearsals. In a national survey (Miles, 1993), band directors identified their highest priorities as “teaching with the emphasis on aesthetic awareness” and “teaching with a comprehensive approach to music education” (Miles, 1993, p. 66). However, when asked about their program strengths, they most often reported high level of performance, community support, positive image of the program, and large enrollment. This disparity between perception and action in the classroom makes it imperative that activities and interventions are measured for effectiveness.

Defining what constitutes effective teaching is especially challenging in music education. Schools use a wide variety of assessment tools and criteria to evaluate teachers. In Kentucky, the location of the present study, a change recently occurred in how music programs are evaluated. The state moved from a paper-and-pencil based test

to Program Review, a more holistic evaluation system of the programs. Regardless of the formal evaluations done by schools and the state, performance-based music classes are often informally assessed by their festival ratings and performances. This emphasis on performance can place a great deal of pressure on both students and directors, making the performance product the main focus of rehearsals.

In a case study of six wind-band conductors, Gonzalez (2001) identified two factors for rehearsal effectiveness as (1) achieving musical goals and (2) “satisfaction for all involved as a meaningful musical experience” (p. iii). The analysis of the conductors’ procedures and philosophies identified several unifying characteristics: their rehearsal formats were systematic; they used philosophically-based procedures; conductors maintained an effective pace; and they made timely interjections and appropriate instructional comments. Sink (2002) identified traits for effective music teaching as knowledge of subject matter, use of modeling, use of verbal and nonverbal presentation skills, and analytic skills. Missing from these criteria are student performance and learning. The standards in these studies were identified by describing only what successful conductors do in rehearsals, without looking at the effects on students.

Music teacher evaluation approaches vary greatly among the literature and in practice. Madsen & Yarbrough’s (1980) book promotes the use of teacher self-evaluation using recordings of rehearsals and careful analysis of their behaviors, including verbal and non-verbal characteristics, use of approval/disapproval, and personal characteristics. They also promote analyzing student behaviors during rehearsals. Madsen & Yarbrough (1980) disapprove of blindly following tradition and state “It seems unfortunate that there are many inexperienced music educators who believe that

the best, if not only, way to develop the art of effective rehearsal technique is to amass isolated procedures or “good ideas” that have been garnered over the years from seemingly effective teachers” (pp. 17-18). Doerksen (2006) discusses the importance of evaluating teachers in terms of reaching lesson objectives and suggests that the evaluation process can be especially challenging in music classrooms. The author emphasizes the necessity for defining teacher tasks and using a specified system to evaluate them.

In a meta-analysis of research on rehearsal effectiveness, Duke (1999/2000) only found 13 studies between 1972 and 1997 that included assessment of student achievement as a factor for determining effectiveness. As a conclusion, Duke states that research needs to expand “to include the systematic measurement of teaching effectiveness in relation to the accomplishment of instructional goals” (p. 143). From this research, Duke (1999/2000) developed an approach to rehearsal evaluation called “rehearsal frames” (p. 19). The organizing principle of the frame becomes the performance goal rather than a time period. A variety of techniques may occur during a frame, including repetition, modeling, decontextualizing, and verbal directions. The frame concludes when the goal has been achieved. Irwin (2006) investigated the rehearsal frame as an instructional tool for choral directors and found that it increased the subjects’ perceptions of effective teaching. Yarbrough & Price (1989) suggest that a specific pattern of instruction is the most effective teaching method. This “optimal pattern” (p. 179) consists of presenting the task, student responses to task, and feedback. When evaluating experienced and pre-service teachers’ use of the pattern, they found that band directors completed the least number of complete patterns in rehearsals.

Research on student behavior or achievement in rehearsals is sparse, but the variables investigated include attentiveness, teaching intensity, and comprehensive musicianship. Witt's 1986 study compared class time use and student attentiveness in orchestra and bands (N=48). The activities were classified as student performance, teaching, or getting ready. During performance, students were found to be off-task less (M=3.4%) than during non-performance time (M=17.8%). Orchestra students were reported to be less attentive than band students during all rehearsal activities.

Madsen, Standley, & Cassidy (1989) investigated teacher intensity and found that it could be defined, recognized, demonstrated, and taught to music education majors. Yarbrough (1975) found no significant differences on achievement, attitude, or attentiveness between high and low magnitude conditions in choral rehearsals. However, the author reported that students received the lowest ratings under the low magnitude condition, were off-task less during the high magnitude rehearsal, and had a higher preference for the high magnitude conductor. Freeman (2011) looked at the effect of high intensity teaching in high school band and found a significant effect ($p < .001$) on musical achievement, student attitude, and performance.

An investigation by Gustafson-Hinds (1998) on the effect of comprehensive musicianship on group performance found no significant difference between the control and treatment group. However, the author found significant improvement in both groups' performances, showing that comprehensive musicianship was still an effective approach. Additionally, students reported enjoying the comprehensive musicianship approach and believed it improved their musical understanding. Montemayor (2006) found a positive significant correlation between performance quality and rehearsal effectiveness. The

author also found that ensemble skill level is more strongly correlated with performance quality and therefore cautions against evaluating teachers solely in terms of student achievement.

It is possible that some of the difficulty in evaluating rehearsal effectiveness could be related to the difficulties and inconsistencies in assessment practices in band. According to a study by Russell & Austin (2010), secondary music teachers typically place greater weight on non-achievement factors when determining grades (60%). Attendance and attitude are the most commonly assessed non-achievement factors. Achievement-based criteria include tests, quizzes, and performance. Burrack (2002) argues that technical skills are evaluated in a very subjective manner.

Some music education scholars have encouraged performance teachers to implement other forms of assessment into their classroom practices. Student-centered assessment practices have been researched using self-assessment, peer-assessment, reflection, and portfolios. Scholars have pushed for assessment to focus on comprehensive musicianship concepts such as listening, higher order thinking skills, problem-solving, and aesthetic aspects (Burrack, 2002). Bergee (1989) advocates for assessment that is curriculum-based and that focuses on the individual needs of students.

Several factors could account for the lack of change in assessment practices. Because high school bands have such demanding performance and rehearsal schedules (Miles, 1993), directors must have some system of accountability for students. Attendance is one of the most easily managed ways to achieve this. Performance assessment is time consuming since the director must listen to each student either in-person or through recordings. Paper-and-pencil tests require time to create and grade. If

a band has 100 members, the time demand is great. The low use of self-assessment and peer-assessment could be explained by a lack of experience or perceived value in these forms of assessment.

Many factors have been identified that affect performance evaluation, including musical and non-musical attributes. Lien & Humphreys (2001) investigated all-state band auditions in South Dakota and found scores were higher for students from larger schools, students who traveled shorter distances, and for female students. Contrastingly, Elliott (1995/1996) found no significant differences between genders, but an interaction between gender and instrument was identified. The author also found that race was a factor with black students scoring significantly lower than white students, as well as interactions between gender and race and between instrument and race. Conductor race was found to be a factor in performance and conductor ratings in a study by VanWeelen (2004). When investigating the effect of the race of the listener and of the performer, McCrary (1993) found significant differences between the ratings of the white and black performers given by the black listeners.

Appearance and attractiveness have been identified as factors affecting evaluation. Ryan & Costa-Giomi (2004) found an interaction between attractiveness and gender. Males rated the performances of high attractive performers lower than low attractive performers, while females rated high attractive performers higher than low attractive performers. Performer behavior was correlated with ratings on note accuracy and performer dress was correlated with ratings of rhythmic accuracy and expression. Similarly, Siddell-Strebel (2007) found that performer attractiveness was negatively correlated with performance ratings.

Two studies have shown that school size, time of day, and performance medium were correlated with solo and ensemble festival ratings (Bergee & Platt, 2003; Bergee & McWhirter, 2005). Both studies found that morning performances were correlated with lower scores and that students from larger schools received higher scores. Bergee & Platt (2003) found that vocal ensembles received higher ratings than vocal solos while the opposite was found for instrumentalists with instrumental solos receiving higher scores than instrumental ensembles. The replication study by Bergee & McWhirter (2005) additionally found that vocal solos received higher ratings than instrumental solos.

The research on the effects of audio-only and audio-visual recordings of performances has produced mixed results. Studies by Benson (1996) and Wapnick, Mazza, & Darrow (2000) found no significant differences on performance ratings between the two types of recordings. A study by Howard (2012) found that audio-only recordings received higher ratings, while studies by Pope (2012) and Ryan & Costa-Giomi (2004) found that audio-visual recordings were rated higher.

Summary. The studies and scholarly writings in music education show that the traditional band paradigm is performance-oriented, teacher-centered, concerned with efficiency, and steeped in tradition. Band programs have demanding performance schedules and are often informally evaluated on those performances. The amount of research dedicated to conductor behaviors at the minute level demonstrates that great importance is placed on the conductors and their action in rehearsals. Rehearsals typically focus on fundamental musical concepts with minimal attention given to expressive elements or conceptual teaching. Student interaction with the director and one

another is minimal. Students generally engage in the learning experience by responding to the instructions given by the teacher.

Cooperative Learning

The idea of cooperative learning has a long history in the United States. John Dewey is probably the most well-known figure to promote the approach in education in the early twentieth century. His philosophies dominated education until the movement towards a more competitive approach to learning around the 1930s. In 1949, Morton Deutsch revived the ideas of cooperative learning in a study that compared it to a competitive learning environment. Subjects assigned to the cooperative environment were more successful in group coordination, individual contributions, attentiveness to group members, communication, product quality, and discussion quality (Deutsch, 1949).

Conflicting beliefs and approaches existed over the next few decades (Johnson & Johnson, 2009). The conservative approach valued discipline, homework, evaluation, and standards, which was vastly different from the progressive belief in a student-centered classroom in which student choice and interest were of great importance. In the 1970s, 1980s, and 1990s, cooperative learning gained popularity as a topic of research. Two of the most prominent early figures in the field were David W. Johnson and Roger T. Johnson (Johnson & Johnson, 1974, 1992, 2000, 2009). They produced numerous articles on the theoretical basis of cooperative learning, implementation, and research beginning in the 1970s. Robert E. Slavin (1977, 1980, 1983, 1984, 1985, 1987, 1989/1990, 1991, 1996, 1999, 2011) developed his own approach to cooperative learning and began publishing his research and theories soon afterwards. Many other figures began developing their own cooperative learning strategies and materials for the

classroom, as well as investigating cooperative learning in various subjects and grade levels. Cooperative learning can be found in classrooms across the United States and abroad, as well as in higher education (Bruffee, 1993).

Several theoretical perspectives on cooperative learning exist and provide the bases for a multitude of activities and educational strategies found in the literature. According to Slavin (1987), the two predominant theoretical perspectives are centered on development and motivation. The developmental perspective stems from the work of Piaget and Vygotsky, promoting the importance of the task and the interaction around that task. The tasks are designed to create cognitive conflicts within students' zones of proximal development. The process of resolving these conflicts facilitates the learning of the content. The motivation perspective emphasizes the role of rewards and peer motivation for helping one another in order for the group to succeed. The groups are only rewarded if all members achieve the learning goals. The biggest difference between the two perspectives is the role of rewards in the cooperative learning activities (Slavin, 1987). Those who adhere to the developmental perspective view rewards as unnecessary or harmful to the process and learning. In contrast, motivation proponents view the rewards as essential to the activity structures.

Other significant theoretical perspectives in cooperative learning exist, including social cohesion, cognitive-development, and cognitive elaboration. The social cohesion perspective, which is closely related to the motivational perspective, emphasizes the importance of group interdependence (Slavin, 2011). Tasks must be structured so that, in order for the individual to succeed, the group must succeed. Two perspectives exist that focus on the cognitive aspects of cooperative learning: cognitive-development and

cognitive-elaboration (Slavin, 2011). Both of these perspectives fall under the general category of developmental perspective. They differ mainly in the belief of how learning occurs. Cognitive-development relies on the resolution of the cognitive conflict as the impetus for learning, whereas cognitive-elaboration asserts that students must restructure or elaborate upon the new material in order for learning to occur (Slavin, 2011).

Identifying characteristics that qualify activities as being cooperative learning is essential. Johnson & Johnson (1992) explain that “simply placing students in a group and telling them to work together does not in and of itself result in cooperative effects” (p. 177). In a meta-analysis of research on cooperative learning, Igel (2010) makes a distinction between cooperative learning and collaborative/group-mediated learning and suggests that the two are not the same. The author defines cooperative learning as “a group instructional technique whereby members work together toward a shared goal” (Igel, 2010, p.7). Igel (2010) insists that cooperative learning must include positive interdependence and individual accountability among group members. Collaborative or group-mediated learning is defined as “any instructional technique in which members work together”, but positive interdependence and individual accountability are not required (Igel, 2010, p. 7). Cooperative learning is considered a subset of collaborative/group-mediated learning.

The distinctions between the two types of activities were made by Igel (2010) based on the differences in opinion found among the literature on what constitutes cooperative learning. The two most common factors identified by various cooperative learning scholars are positive interdependence and individual accountability. Positive interdependence is “a cooperative group goal structure wherein success on the part of one

promotes success among others within the group” (Igel, 2010, p. 7). Individual accountability occurs when a group’s success depends “on the individual learning of all the group members” (Slavin, 1989/1990, p. 52). These concepts can be found in theoretical writings by Johnson & Johnson (1974), Kagan (1989/1990), Sharan (1980), and Slavin (1977). Promotive interaction, instruction in group learning skills, and group processing are factors found in Johnson & Johnson’s (1974) approach to cooperative learning. Those who adhere to the motivational perspective, such as Robert Slavin (1977), include group rewards as an essential factor.

Understanding what constitutes cooperative learning can be helpful in analyzing and developing activities for the classroom. Based on Igel’s (2010) definition of cooperative learning, if activities are not structured for individual accountability and positive interdependence, they are not truly cooperative learning. There have been reports on teacher frustration with implementing cooperative learning into their classrooms. A lack of understanding of what constitutes cooperative learning and all of the factors that must be addressed is one possible source for this frustration.

Cooperative learning can appear in many forms in the classroom. These activities generally fall into three functional categories: formal groups, informal groups, and base groups (Johnson & Johnson, 1992). A formal group involves students carefully assigned to groups by the teacher according to the needs of the activity and students. They are typically used for acquisition of specific content and students are together only for that single activity. Informal groups are intended for brief interactions between students to clarify, discuss, or process information. These groups are assigned based on the proximity of students in a casual manner. Johnson & Johnson (1992) suggest these types

of groups are ideal for processing information given during lectures. Base groups recur over time and are intended to provide a support system for students. These could be a study group, students assigned to a specific table, or teams.

Several aspects of cooperative learning must be considered when designing and implementing cooperative learning activities, including group composition, task structure, student roles, group norms and expectations, imbedding positive interdependence, rewards, and assessment. When designing cooperative learning, the pre-instruction planning is essential. As with all lessons, the objective(s) must be established. Although cooperative learning can be useful in learning lower-level concepts such as memorization and answering simple questions, it can be very effective for higher-level thinking and problem solving.

Structuring the task so students can be successful is arguably one of the most important and most challenging aspects of implementing cooperative learning (John-Steiner, Weber, & Minnis, 1998; Slavin, 1988). Igel (2010) insists that positive interdependence and individual accountability must be built into the activity. Positive interdependence is “a cooperative group goal structure wherein success on the part of one promotes success among others within the group” (Igel, 2010, p. 7). Competitive activities set up a system of negative interdependence, where, in order to succeed, others must fail (Kagan, 2007). However, competition between groups can be used in a way that still promotes positive interdependence among group members. The second key factor, individual accountability, is discussed in most books and articles on cooperative learning (Adams & Hamm, 1996, Antil, Jenkins, Wayne, & Vadesy 1998; Baloché, 1998; Bruffee, 1993, 1995; Cohen, 1994; Dean, Hubbell, Pitler, & Stone, 2012; Evensen &

Hmelo, 2000; Gillies & Boyle, 2010; Hancock, 2004; Hsiung, 2012; Igel, 2010; Johnson & Johnson, 1992, 2009; Kagan, 1989/1990; Koutselini, 2008/2009; Lou, Abrami, Spence, Poulsen, Chambers, & d'Apollonia, 1996; Peters, 2011; Peterson & Miller, 2004; Queen, 2009; Sharan, 1980, 1999; Slavin, 1980, 1983, 1987, 1996, 1999; Stepka, 1999; Summers, Beretvas, Svinicki, & Gorin, 2005; Veenman, Denessen, van den Akker, & van der Rijt, 2005; Webb, 1995). Slavin (1989/1990) states that for individual accountability "the group's success must depend on the individual learning of all the group members" (p. 52). Authors maintain that group grades should not be used (Kohn, 1991). This approach to grading can create problems for students and negativity towards cooperative learning for high achieving students (Fiedler, Lange, & Winebrenner, 2002). They often perceive a disparity in work load with some students getting credit for other's hard work.

According to Slavin (2011), "cooperative learning has been used and studied in every major subject, with students from preschool to college, and in all types of schools" (p. 344). Although no current study on the status of cooperative learning in U.S. schools was found, two studies in the 1990s indicate wide usage by teachers. Puma, Jones, Rock & Fernandez (1993) found that, of those surveyed, 79% of elementary school teachers and 62% of middle school teachers used cooperative learning strategies in their classrooms. A 1998 study by Antil et al. showed that 93% of teachers reported using cooperative learning in their teaching strategies with 81% reporting daily usage.

The reported benefits of cooperative learning in classrooms are vast in number and variables. Some of the most commonly claimed benefits are increased academic achievement, more positive attitude toward learning, increased self-esteem, increased

motivation, and development of stronger social skills (Battistich, Solomon, & Delucchi, 1993). Battistich et al. (1993) concluded that the effects of cooperative learning are dependent upon the quality of group interaction among students. They found that high quality experiences were associated with a positive classroom environment, increased liking of school, increased motivation, higher concern for others, and a higher sense of self-esteem. The study also found that frequent low-quality student interactions were linked to more negative outcomes. In a longitudinal study, Greenwood, Delquadri, & Hall (1989) found that students who were engaged in class-wide peer tutoring spent more time engaged in higher-level academic behaviors, more time in group activities, and less time waiting for teacher assistance and in hand-raising. They also made greater gains in language, reading, and math skills. After four years, the experimental group, which consisted of students of a lower socio-economic status, scored closer to the national norm than the control and comparison groups.

An early meta-analysis by Johnson, Maruyama, Johnson, Nelson, & Skon (1981) comparing the effectiveness of cooperative, competitive, and individualistic goal structures concluded that cooperation is superior to competition and individualistic structures in promoting achievement and productivity and that cooperative efforts which involve competition between groups is more effective than competition among individuals in terms of promoting higher achievement and productivity. McGlynn's (1982) response to the meta-analysis states "Johnson et al.'s primary purpose was ill-conceived and that the conclusions relating to it may be misleading in both theoretical and practical terms (p. 184). Cotton & Cook (1982) also reported unintentional bias in the Johnson, et al. (1981) report. Upon re-analysis of the studies, they suggest that

neither cooperative nor competitive reward systems are superior for productivity or achievement. Regardless of the potential problems with this early look at cooperative learning research, the topic has continued to be researched extensively. Studies consistently report positive results for cooperative learning in classrooms.

Correct implementation of cooperative learning appears to be the most challenging aspect for educators (Gillies & Boyle, 2010; Sharan, 1999). Grading is one such issue that must be carefully considered and planned (Kohn, 1991). As discussed earlier, most of the literature on assessment in cooperative learning recommends individual accountability. When teachers attempt to use group grades, it can become a source of frustration for students and teachers (Gillies & Boyle, 2010). Other concerns that arise are the perceived time requirements, lack of “fairness” to high achieving students, too much socialization, and classroom management issues (Gillies & Boyle, 2010). Fiedler, Lange, & Winebrenner (2002) reported gifted students having a negative attitude towards cooperative learning. An article that appeared in *ASCD Update* (Willis, 1990) expressed concern for the use of these strategies, suggesting that they will have a negative impact on gifted students by reducing the amount of challenging coursework they will encounter and reducing funding for gifted programs in schools. Slavin (1991) responded by reporting findings of studies that show gains for both high achieving and low achieving students. When investigating the effects of different types of cooperative learning strategies among 158 studies, Johnson, Johnson, & Stanne (2000) found that all the structures had significantly higher effects on achievement than competitive and individualistic strategies. In order of highest effect size to lowest, the strategies ranked: (1) learning together, (2) academic controversy, (3) student teams-achievement divisions,

(4) teams-games-tournaments, (5) group investigation, (6) jigsaw, and team accelerated instruction.

Cooperative learning research can be found in most core and elective subjects. Research into the use of cooperative learning in mathematics is especially extensive. A recent meta-analysis by Nunnery, Chappell, & Arnold (2013) found that Slavin's Student Teams-Achievement Divisions had a statistically significant positive effect on student achievement in math. The effect was stronger for adolescents than for younger children. An area of concern in mathematics is student anxiety towards math. A 2012 study by Daneshamooz & Alamohodaei compared 263 college students' anxiety, academic hardiness, and math achievement found that students with high and low levels of anxiety towards math performed better in math achievement when using cooperative learning strategies ($p < .01$). When combined with metacognitive training, eighth grade students ($N=384$) who participated in cooperative learning performed better in math than the other three treatment groups (individualistic learning with metacognitive training, cooperative learning without metacognitive training, and individualistic learning without metacognitive training). Cooperative learning has shown to be effective in increasing children's mathematics achievement consistently (al-Halal, 2001; Brecht, 2000; Conring, 2009; Karper & Melnick, 1993; Slavin, Leavey, & Madden, 1984; Slavin & Karweit, 1985).

An important consideration for cooperative learning is that results are not always immediate. Hsiung (2012) found that cooperative learning did not produce immediate improvement in academic achievement, was less effective in the early stages of implementation, and that teams matured over time. However, over the span of the study,

students in the cooperative learning group performed better on homework and unit tests. When looking at performance in pre-calculus, Whicker, Bol, & Nunnery (1997) found that cooperative learning produced higher achievement over a span of three chapter tests. The initial test scores were similar between the control and treatment group, followed by the second test having larger, but not significantly different means. By the third exam, the differences between the two groups' scores were statistically significant.

Cooperative Learning in Music

Although cooperative learning is well-established in most curricular subjects, music education has been slow to adopt these strategies. In the two volumes of the *Handbook of Research on Music Teaching and Learning*, there are no chapters dedicated to cooperative learning (Colwell & MENC, 1992; Colwell & Richardson, 2002). Elementary and middle school general music classes appear to be the settings in which cooperative learning can be more easily implemented. More cooperative learning research and resources are available for teachers at these levels. High school performance-based classes are arguably the educational settings that have least embraced the ideas of cooperative learning with only a few studies and resources available.

Five books have been identified that promote cooperative learning in music classes. Kaplan & Stauffer's (1994) MENC publication discusses the concepts and concerns inherent in cooperative learning. It provides sample activities for all grade levels and common music courses, including general music and music appreciation classes, instrumental and vocal performance classes, undergraduate and graduate music education courses, piano and guitar performance classes, and music theory. Wiggins' (2001) book is not dedicated to cooperative learning but discusses a constructivist

approach that is more interactive. The suggested activities are geared more towards general music in elementary and middle school classes. Books by Katz & Brown (Katz & Brown, 2011; Brown & Katz, 2011) and Carol Huffman (2012) are also geared towards younger students and general music classes. Of the books dedicated to band pedagogy, none were found that encouraged the use of cooperative learning strategies.

A limited number of studies were found that implemented cooperative learning in music. In elementary general music classes, three quantitative studies were published (Alexander & Dorow, 1983; Cornacchio, 2008; Jellison, Brooks, & Huck, 1984) and five qualitative analyses were found (Burnard, 2002; Burnard & Younker, 2008; Claire, 1993/1994; Wiggins, 1994; Wiggins, 1999/2000). Only one elementary level study was found outside of the general music setting and it was in beginning band (Alexander & Dorow, 1983). A distinct lack of research on cooperative learning in middle school music is evident. The two studies located were quantitative in nature and involved band students (Beitler, 2012; Cangro, 2004). At the high school level, most of the cooperative learning studies used qualitative methodologies (Allsup, 2003; Brown, 2012; Djordjevic, 2007; Goliger, 1995; Goodrich, 2007; Holsberg, 2009; Miell & Littleton, 2007) with five being in the area of band (Allsup, 2003; Brown, 2012; Goodrich, 2007; Holsberg, 2009; Miell & Littleton, 2007), one in orchestra (Djordjevic, 2007), and one in piano (Goliger, 1995). A study in choral music by Inzenga (1999) was the only quantitative study found with high school level students. *The British Journal of Music Education* has published a few articles on cooperative learning at the college level (Blom & Poole, 2004; Branker, 2010; Daniel, 2004; Hunter, 1999; Hunter, 2006; Pulman, 2009) with all but one (Daniel, 2004) using qualitative methodologies (Blom & Poole, 2004; Branker, 2010; Hunter,

1999; Hunter 2006; Pulman, 2009). Two quantitative dissertations were written on the use of cooperative learning in collegiate music appreciation courses (Holloway, 2001; Hosterman, 1992) as well as two qualitative dissertations – one on cooperative learning in an undergraduate piano course (Fisher, 2006) and one on collaborative coaching in string quartet performance (Cotter-Lockard, 2012). An additional quantitative study was found on the use of peer-assessment for performance (Bergee & Cecconi-Roberts, 2002).

One of the underlying principles of cooperative learning and constructivism is the idea of “shared understanding” (Wiggins, 1999/2000, p. 65). It is purported that as students interact with one another, with the content, and with the teacher, they develop a shared understanding of the concepts and skills. Wiggins (1999/2000) looked at shared understanding among elementary group members and found that it becomes apparent in student products, conversations, evaluations, and musical decisions. Additionally, creating in small groups nurtures musical thinking and allows for immediate feedback that requires adjustment in understanding. When looking at the interactions among high school musicians involved in their own band outside of the school setting, Miell & Littleton (2007) found that the group members developed a shared knowledge and were in a continuous state of performance evaluation based on that shared understanding. Although conflict sometimes arose, the environment was one in which the musicians were regularly generating new ideas and alternatives. In music, especially performance settings, a shared understanding could be beneficial in developing performance preparation skills among members of an ensemble.

The processes students undergo in cooperative musical learning activities can be affected by several factors. Claire (1993/1994) found that each class has its own

characteristics and students utilize their own group processes. However, the structure of the task affects those social processes. Another factor that can affect understanding and processes is the style of music being studied (Allsup, 2003). When creating music together, the interactions of the high school band students were closely related to the style of music they were attempting to create. The students working on rock music used a more improvisatory and exploratory approach with high student interaction. The students involved in creating more traditional band music worked more independently and conceptually. This latter group eventually switched to a jazz style due to the difficulties they encountered. The idea that certain musical and non-musical factors can affect the types of student interactions is supported by Burnard & Younker (2008). They found that, when involved in composing and arranging tasks, student interaction was affected by the types of instruments used, level of musical training and knowledge, assumed student roles, and the structure and rules of the activity. Additionally, they found that when the division of labor was not shared among students, conflict arose. These factors are important to consider when designing cooperative musical tasks for students. As the literature on cooperative learning suggests, merely putting students together in a group will not necessarily result in cooperative learning (Johnson & Johnson, 1992). It appears that this is especially true in the music classroom.

The role of the teacher is as important as the task structure. Implementing cooperative learning strategies requires the teacher to redefine their role in the classroom. Instead of being the disseminator of knowledge, the teacher must be able to transition between facilitator, resource, guide, and mediator continuously throughout the activity. Misconceptions of the purposes of cooperative learning and the importance of the teacher

role can be found among music research and scholarly writings. In an article in *Music Educators Journal*, DiNatale & Russell (1995) advocate for the use of cooperative learning in the performance classroom; however, the purported benefits illustrate some misconceptions. The authors state that “the entire framework frees the teacher to facilitate group dynamics and to deal with the selection of music, parts assignments, stylistic consideration, and rehearsal procedures” (DiNatale & Russell, 1995, p. 26). This sentiment is echoed in Daniel’s (2004) article when discussing that some colleges have tried implementing peer assessment in an effort to reduce staff loads. However, the results of Daniel’s (2004) experiment show a need for “greater staff involvement in terms of assisting students to improve their feedback skills and for such activities as feedback on feedback” (p. 103). A similar study by Bergee & Cecconi-Roberts (2002) concludes that “such nondirectiveness should be reconsidered, given the apparent difficulty of accurate self-evaluation and the novelty of asking students to assess their own and their peers’ performances” (p. 165). The teacher is just as important in cooperative learning and the demand on their time is just as great. Attempting to use these strategies to create extra planning time will most likely lead to frustration and failure.

The importance of the role of the facilitator becomes apparent in many music studies. Allsup (2002, 2003) recognized that the teacher role changed into one of facilitator while some students took on leadership roles. Brown (2012) viewed the emerging relationship between teacher and students as one of “partnership” within the band. Goodrich (2007) reports having to deliberately work on the balance between peer mentoring and teacher led activities. Role confusion was cited as one of the difficulties in Holsberg’s (2009) study, although the overall experience was viewed as positive.

A lack of attention to the role of the teacher in studies may negatively impact the results. In Cangro's (2004) study, no significant difference was found between beginning band students' achievement in the treatment group and the control group. When looking at the treatment, the instructor did not play a role other than as organizer in the cooperative learning activities. It is possible that this factor could have impacted the results of the study. Even in Inzenga's (1999) study, which found a small, but significant, improvement in choral reading, the author states that the teacher played practically no role in the cooperative activities. More teacher guidance could possibly have made a difference in student achievement. The teacher must be involved in the activities by monitoring students for more than just behavior. When students are on the wrong track, the teacher needs to steer them in the right direction. When groups are focusing on lower-level concepts, the teacher needs to prompt them for deeper thought. Students performing below their ability levels need to be guided to challenge themselves. Brown (2008) states that "the teacher becomes a coach who is always there to assist, but never to give answers away" (p. 33).

Increased student participation is one of the most commonly cited benefits of cooperative learning (Battistich, Solomon, & Delucchi, 1993). In music, we assume that because students are playing an instrument or singing that they are actively participating. By definition, this may be true, but students are not necessarily actively learning. A study by Djordjevic (2007) looked at cooperative learning in an orchestral class where students were put into chamber ensembles. Over the course of the study, students participated in more discussions that focused on musical problem-solving; students shared practice ideas; participation became more equal among students; and apparent

leadership roles were reduced. Musically, the students became more aware of how they sounded. The notion of increased participation is supported by a quantitative study by Cornacchio (2008) that showed a significant difference between on-task and off-task behavior between students involved in cooperative learning and those working independently. Two studies have found that students are more likely to contribute in a setting where sharing and exchange are valued and that cooperative learning can cultivate communication, develop problem-solving skills, promote active participation, and help develop independent learning in students (Branker, 2010; Hunter, 2006). After implementing a blogging and cooperative learning initiative in high school band, Brown (2012) found that students who were typically quiet and passive became more visible and participatory.

One of the most commonly cited problems or fears with implementing cooperative learning is conflict and classroom management (Gillies & Boyle, 2010). In a study that looked at a well-established mentoring program in a successful high school jazz program, Goodrich (2007) found that the older and more experienced members naturally mentored the newer students in more than just instrument playing. They helped the younger students to understand the expectations both musically and socially by addressing attitude problems, classroom management issues, and acting as mediators. The mentoring occurred during rehearsals, between pieces, and outside the classroom. New students would receive musical help when requested and when the mentors noticed an area of concern. When investigating the processes of a string quartet mentorship program, Cotter-Lockard (2012) identified important characteristics that allowed for

successful interaction – a positive environment, an environment where students felt safe to explore and ask questions, and a democratic process.

Peer acceptance can also be fostered through cooperative learning in music. Jellison et al. (1984) found that, when purposely structured to increase student interaction, peer acceptance increased in relation to the degree of structure. It was at its highest when a contingency of music listening was added to the structure. In a study by Cornacchio (2008), peer acceptance did not increase through cooperative learning activities. However, specific structures were not in place to ensure student interaction. This, again, demonstrates how imperative it is that tasks be structured appropriately.

Peer-assessment has become a practice in many music classes across grade levels and is strongly encouraged by initiatives like ArtsPROPEL (Gardner, 1989). This can be a form of cooperative learning if it includes student interaction rather than just paper-and-pencil tasks. When investigating the implementation of a four-stage peer learning initiative at a college, Pulman (2009) found four themes that emerged: self-knowledge, feedback, confidence, and honesty. As students moved through the four stages, they developed a stronger sense of their playing ability and areas of weakness. Participants relied on honesty, support, and feedback from their peers. Two components that were imperative to the program were careful preparation of the structure and flexibility. In Blom & Poole's (2004) study, college students had difficulty accurately assessing fellow students' performances and often gave grades that were too high and dissimilar to faculty assessments. They were overwhelmed with the breadth of the tasks since so many styles and performance mediums were involved. However, the students and staff perceived the activities as valuable, allowing students to gain a better understanding of performance

assessment. In contrast Bergee & Cecconi-Roberts (2002) found a small significant difference on college students' ability to self-evaluate after engaging in peer discussions of performance, although the effect faded over time. The authors recommended increased instructor involvement in future research. In a study by Daniel (2004), the author reported that students felt their peer's assessments were not very critical, but improved over the course of two semesters. Daniel (2004) suggests that time to develop critical listening skills and practicing performance assessment can be a useful tool for young musicians. Some of the feedback from students on the peer-assessment program included using more detailed assessment sheets, allowing students the opportunity to discuss performances immediately afterwards, and encouraging honesty among peers.

In performance groups, achievement is of the utmost concern. Musical achievement can occur in many forms, such as performance, composition, and knowledge acquisition. Researchers and scholars on cooperative learning have made strong cases for its effectiveness for increasing achievement. This is supported by the few studies found in music on cooperative learning and musical achievement (Alexander & Dorow, 1983; Beitler, 2012; Cangro, 2004; Goliger, 1995; Holloway, 2001; Hosterman, 1992; Inzenga, 1999). Cooperative learning has been investigated in college music appreciation courses as a tool for helping students acquire listening skills and factual knowledge (Holloway, 2001; Hosterman, 1992). Both Holloway (2001) and Hosterman (1992) found significant differences in listening skills between students who participated in cooperative learning activities and those who attended lecture only classes. No difference was found on the final exams which measured knowledge acquisition (Hosterman, 1992), but the experimental group showed improved attitude and had better attendance.

In performance-based music classes, cooperative learning has resulted in improved performance on piano (Goliger, 1995), in choral reading (Inzenga, 1999), and in band performance (Alexander & Dorow, 1983; Beitler, 2012). Along with significantly higher grades on piano final exams, Goliger (1995) reported decreases in absences, tardiness, and disciplinary warnings. Inzenga (1999) found that cooperative learning paired with a five-step approach to music reading resulted in significant gains in choral students' ability to sight-read music. These findings must be considered carefully since no control group was used. However, Inzenga (1999) concluded that cooperative learning is an effective method for teaching music reading. The author was not attempting to compare methods or find a better method. Peer-tutoring in beginning band was found to be effective for improving the performance of the students tutoring others (Alexander & Dorow, 1983). When paired with a focus on approval, tutees performed even higher. The students serving as the tutors did not make any significant gains in the first study of the investigation, but the post-test scores of the second study were significantly correlated with the number of completed exercises. In Beitler's (2012) study on improvisation in middle school band, significant differences were found between the cooperative reflection group's baseline scores and subsequent treatment scores. Again, methodological issues require Beitler's (2012) results to be considered carefully. Cangro's (2004) study comparing direct-instruction to direct-instruction with cooperative learning found no significant differences between the two groups. Aptitude was identified as a better indicator of performance. Research into the effects of cooperative learning in music is still in its infancy. Methodological issues and careful structuring of activities must be addressed in any future research.

Conclusion

The band paradigm is built upon long-standing traditions and well-established practices. In a discussion on teacher education in the arts, Colwell (2006) states that the field “needs to focus on distinguishing between assumptions, traditions, and effective practices” (p. 17). As demonstrated by the numerous studies in band, the traditions and effective practices have been thoroughly investigated. However, little attention has been given to the assumptions on which these studies and practices have been built.

Performance-based music education practices have evolved based on the assumptions that the director is the central figure in the rehearsal and that the student role is to react to instructions given by the director. This is evidenced by the numerous studies analyzing details of conductor behavior, the lack of research involving the role of the students, and the lack of student interaction in rehearsals.

Cooperative learning is a well-established educational strategy for improving achievement, social interaction, motivation, active participation in learning, and higher-order thinking (Battistich, Solomon, & Delucchi, 1993). This approach to teaching has not been widely adopted in performance-based classes at the high school level. There is only one known teacher resource and a limited number of research investigations using cooperative learning in secondary performance classes. Of those, few empirically measure the effect on performance.

Purpose Statement

The purpose of the present study is to investigate the effects of cooperative learning as a rehearsal technique on a high school band performance compared to a traditional rehearsal approach. The study was guided by the research question, to what

extent are cooperative rehearsal techniques effective as compared to traditional rehearsal techniques?

Research Hypothesis

The cooperative learning rehearsal group will receive higher scores from independent judges on their performance of a musical composition and warm-up exercise than a band rehearsed with traditional methods.

Additional Research Questions:

1. How do students self-assess their band performance when using the Cooperative Performance Assessment Tool in a cooperative setting?
2. What factors exist in the implementation of cooperative learning rehearsal strategies in high school band?

Chapter Three

Methodology

Introduction

The premise of the present study is based on the gap between the well-established educational practice of cooperative learning and current practices in high school performance-based classes. Cooperative learning is defined as a process that enables students to interact with one another to accomplish a shared or common goal. This investigation attempts to examine whether cooperative rehearsal techniques may have value for performing ensembles such as high school bands.

The present study is designed to investigate the effectiveness of cooperative learning as a rehearsal technique for improving high school band performance compared to traditional rehearsal techniques. These cooperative rehearsal activities involve students working together to improve ensemble performance with the director serving in a facilitative role. They are distinguishable from traditional rehearsal techniques in that the traditional strategies involve students reacting to instructions given by the director to improve ensemble performance. The following methodology has been developed to investigate the effect of cooperative rehearsal strategies on band performance.

Participants

Two intact bands from different high schools served as the treatment and control groups and were selected based on convenience sampling. Both were located in the same Kentucky Music Educators Association (KMEA) district, were approximately the same size, and performed the same level of concert festival music for the past three years. Convenience sampling was chosen for several reasons: (1) the dependent variable is

school ensemble performance, therefore existing school ensembles were needed; (2) the findings are most applicable to existing ensembles or future ensembles; (3) cooperative learning is intended to be used with intact classrooms; and (4) the researcher had a rapport with the directors, making access to their ensembles possible. Gall, Borg, & Gall (1996) define convenience sampling as “a sample that suits the purposes of the study and that is convenient” (p. 227). The preceding description of the conditions and reasons for choosing convenience sampling meet the requirements according to Gall, Borg, & Gall’s (1996) definition.

In order to select participant ensembles for the study, the researcher first contacted the KMEA office to acquire a list of KMEA Concert Festival Results for the past three years. It was important to find programs that had consistency in performance and directorship. The lists were filtered to show bands which were categorized as level III or IV, meaning they performed music that was on the KMEA Selective Music List for Bands (Kentucky Music Educators Association, 2012) as a grade III or grade IV out of six (I-VI) possible grade levels. These repertoire grade levels were chosen because they are in the middle of performance-level spectrum. Bands playing below a III and above a IV are less common in the state of Kentucky (Table 3.1). The lists were then filtered to identify bands that received ratings of I or II out of four (I-IV). The results from all three lists (2011, 2012, 2013) meeting the criteria were compiled and grouped according to similarities. These steps in the selection process were necessary to identify ensembles that were of approximately the same performance level.

Table 3.1
KMEA Concert Festival Repertoire Grade Frequency

Grade	2011	2012	2013
II	16	22	24
III	91	91	91
IV	88	81	83
V	19	21	24
VI	16	15	13

Directors from the identified schools that were close in proximity to the researcher were first contacted to determine their interest in participating in the study. The schools of those who replied affirmatively were then compared in terms of demographics, population, and state test scores using the “Commonwealth of Kentucky District Report Cards” for the 2012-2013 school year. These report cards provide information on the school districts, individual schools, their testing results, demographics, parental involvement, teacher qualifications, socioeconomic conditions, and other descriptive information (Kentucky Department of Education, 2013). Based on the data comparisons, two schools were identified as being similar. The directors of these school bands were contacted to formally request their participation in the study. Permission from the administrators and parents were acquired, as well as approval from the University of Kentucky Internal Review Board (Appendix A).

The director of one school expressed an interest in cooperative learning in band and had used group work occasionally with his students. Due to the drastic change in teaching practice the present study required of the director, the decision was made to assign that school as the cooperative learning treatment group. Therefore, school assignment to the treatment and control status was not randomized, but purposeful.

The two schools were located in a rural area of Kentucky approximately 30 minutes from one another. According to the Kentucky District Report Cards for the 2012 – 2013 school year, both schools are classified as Title I schools, which means they have a high percentage of low income children (Kentucky Department of Education, 2013). The schools are also listed as 1A schools for sports. Scores on the state assessment system were similar with the control school scoring 57.8 and the treatment school scoring 60.4. Graduation rates were also similar at 93.5% for the control and 94.1% for the treatment group. More than three quarters of the student populations were white with the second largest population being African American. The bands were of approximately the same size ranging between 35 and 37 students.

Research Design

The design used in the present study was a quasi-experimental non-equivalent control group pre-test post-test design (Campbell & Stanley, 1963) that occurred over a period of six weeks (Figure 3.1). Both the control group (Group A) and the treatment group (Group B) were pre-tested and post-tested on ensemble performance. The pre-test was intended to establish performance equivalence of the two bands rather than as a baseline measure for growth over time. Recordings of the pre-tests and post-tests were evaluated by four independent judges.

The treatment group participated in cooperative learning activities in preparation of a single musical selection. The control group experienced traditional rehearsal techniques to prepare the same musical selection. Both groups played and recorded a researcher-composed warm-up (Appendix B) prior to beginning any other rehearsal activities on the selected piece of music.

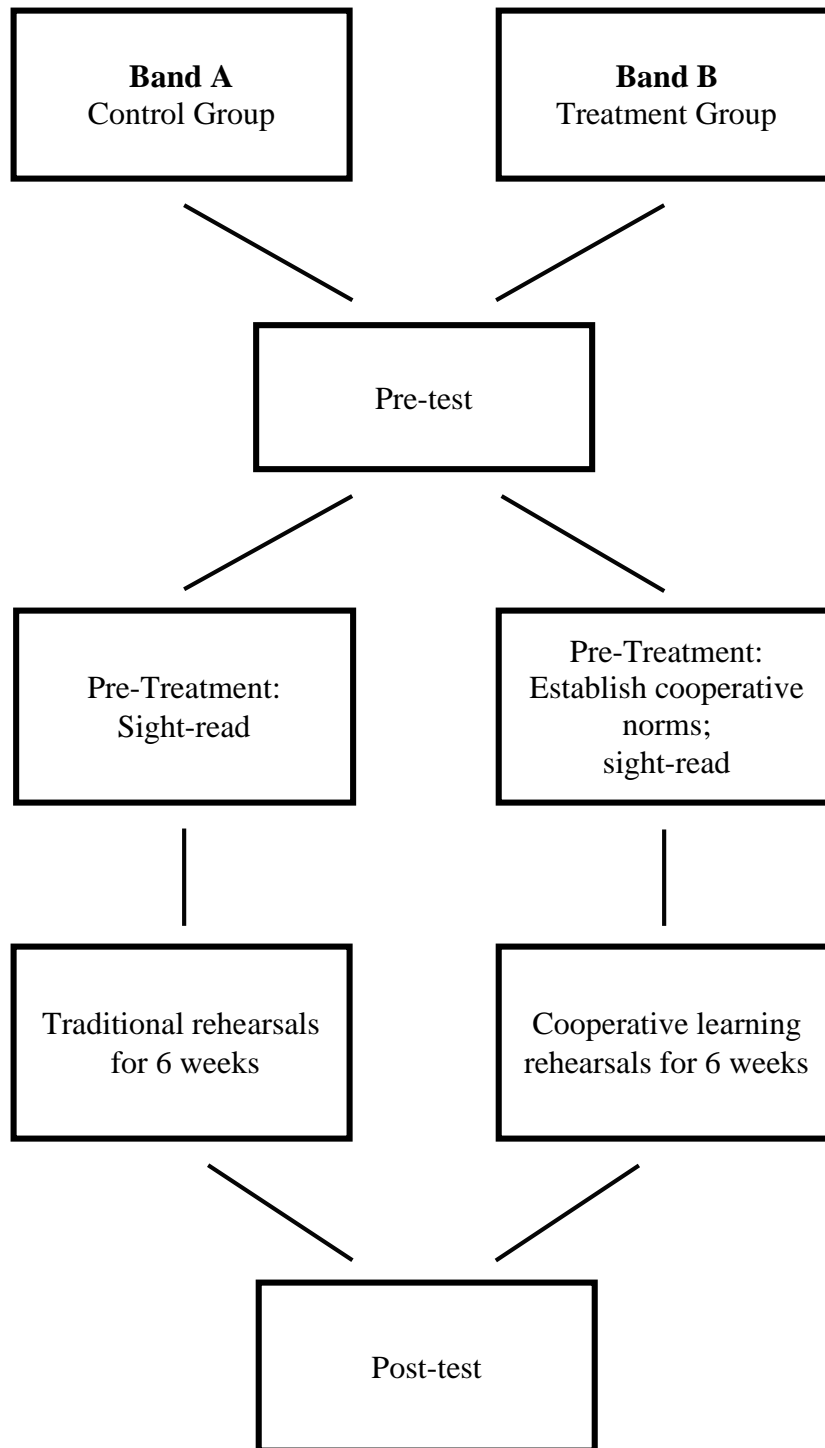


Figure 3.1. Model of Research Design

Additional data were gathered from both groups over the course of the study in order to provide insight into the rehearsal processes. Researchers and other scholarly writers often claim that the process in educational activities is as important, or more important, than the product (Bruner, 1977; Evensen & Hmelo, 2000; Johnson & Johnson, 2009; Snodgrass & Bevevino, 2000). The balance between process and product has been a recurring theme in music education philosophy (Reimer, 1970).

Variables

A single primary dependent variable – band performance – was selected in order to maintain a clear design and reduce confounding variables (Madsen & Madsen, 1970). The variable was measured using the Performance Evaluation Form (Appendix C).

The type of rehearsal technique served as the independent variable for this study. The treatment involved students participating in cooperative rehearsal activities that focused on improving ensemble performance while the control group participated in traditional teacher-centered rehearsal techniques to improve ensemble performance.

Instrumentation

Most high school bands in Kentucky are familiar with the evaluation form used by Kentucky Music Educators Association at yearly Concert Band Festivals, which is titled “Kentucky Music Educators Association Evaluator’s Comment Sheet–Band Events” (Kentucky Music Educators Association, n.d.). A copy of the form can be found in Appendix C. It is used at both the district level concert festivals and the state level festival. The dependent variable of this study is ensemble performance, therefore, it is logical and appropriate to use the form that is consistently used to evaluate band performances throughout the state. Because this form uses a global approach to

evaluation, which would result in only a single overall rating, modifications were needed to provide more detailed and quantitative data (Boyle & Radocy, 1987).

Measuring ensemble performance is extremely subjective, though steps can be made to increase objectivity (Boyle & Radocy, 1987). Two issues existed in the original configuration of the KMEA form for the purposes of this study. The first was the need for clarification and limitation of the performance elements being measured. Boyle & Radocy (1987) state that the number of categories should be between five and ten. An instrument that contains less than five categories is more likely to produce lower reliability while an instrument with more than ten makes it difficult to distinguish between the categories with overlap possibly occurring. The 19 categories listed on the KMEA form greatly exceeded that limit.

Research into factors affecting performance evaluations is quite extensive, with physical and non-musical attributes appearing frequently. Although results are mixed on the effects of audio versus audio-visual recordings of performances (Benson, 1996; Howard, 2012; Pope, 2012; Ryan & Costa-Giomi, 2004; Ryan, Wapnick, Lacaille, & Darrow, 2006; Siddell-Strebel, 2007; Wapnick, Darrow, Kovacs, & Dalrymple, 1997; Wapnick, Mazza, & Darrow, 2000), several specific non-musical attributes have been identified as affecting performance evaluations: gender (Lien & Humphreys, 2001), ethnicity (Elliott, 1995/1996; McCrary, 1993; VanWeelden, 2004), performer attractiveness (Ryan & Costa-Giomi, 2004; Siddell-Strebel, 2007), conductor appearance (VanWeelden, 2004), and school population (Bergee & Platt, 2003; Bergee & McWhirter, 2005). To reduce the possible influence of these factors on performance evaluations in the current study, the decision was made to use audio-only recordings of

performances and to remove the physical categories (Posture/Playing Position and Stage Presence) from the KMEA evaluation form.

The category of Choice of Music was eliminated since the participants were provided with the piece to perform. The remaining musical categories were compared to evaluation criteria used in other studies and can be seen in Appendix D (Bergee, 1992; Dirth, 2000; Ellsworth, 1985; Evans, 2012; Hewitt, 2002; Montemayor, Wiltshire, & Morrison, 2004; Worthy, 2003). Criteria were placed in the category most similar to those found on the KMEA form based on the descriptions and definitions given by the authors. If an evaluation element contained terms found among multiple categories, they were entered twice with repetitions placed in parentheses. Based on the comparison, KMEA items that had two or less matching criteria were removed or combined with another category. Style, Breath Support, and Control criteria were completely eliminated due to the lack of consistency among studies. The element of Blend from the Tone category was combined with Balance based on the descriptors and the combinations found in other studies. Individual and Ensemble Intonation were combined into a single element labeled Intonation since no other study separated the two in such a manner.

The most problematic criteria were Expression under the Interpretation category and Precision under the Technique category. In the comparison table (Appendix D), Expression first appears to be somewhat consistently used in other studies. However, a closer look at the specific terminology shows a wide range of possible characteristics that expression could encompass. The researcher chose to combine Phrasing with Expression into a single element of Phrasing/Expression under the Interpretation category. The element of Precision found on the KMEA form was quite vague with no supporting

description available to clarify. Therefore, the researcher chose to combine it with Rhythm into a single category of Rhythmic Precision under the Technique category.

Once the final categories were selected, operational definitions (Appendix C) were created to clarify each term. Creswell (2003) suggests that operational definitions increase the validity of the instrument and reliability among the judges. Attempting to operationally define Overall Effect proved extremely difficult. The decision was made to include the category in the final version of the form due to its repeated use in previous performance measures, but its results would be calculated separately from the other, more clearly defined categories. It was renamed Overall Performance to clarify purpose and meaning. This type of rating is a global approach to performance evaluation, as described by Boyle & Radocy (1987), in which the judge provides a more subjective and general reaction to the performance. This conflicts with the need for more objective measurement criteria when attempting to compare data results, but is an important component of standard practices in performance evaluation. To provide clarification for this item on the evaluation form, KMEA's rating system and descriptors of performance levels were included at the bottom of the form.

After defining and limiting the specific categories, a five-point verbal rating scale was added. Overall Performance, the global category, was aligned with KMEA's four-point numerical scale (I-IV) in which I is the highest and IV is the lowest rating. Linn & Miller (2005) maintain that a rating scale is useful for providing a common frame of reference for measuring performance on a limited number of well-defined categories with consistent verbal rating descriptors. The authors further recommend using between three to seven rating positions, the lesser amount being useful for more crude judgments and

the higher number for more discriminating measurement. The modified version of the KMEA form used for measuring band performance in the current study can be found in Appendix C titled Performance Evaluation Form (PEF).

Reliability. The Performance Evaluation Form was tested for reliability between 2 judges during a pilot study. A summary of the pilot can be found in Appendix E. The result of a Pearson product-moment correlation coefficient was a reliability rating of $r = .58$. In order to improve this reliability, a rubric was developed to clarify the verbal rating scale of poor, fair, average, good, and excellent (Appendix C). One of the recordings from the pilot study was burned onto an audio CD. A Performance Evaluation Form was completed by the researcher using the ratings and several comments from judges during the pilot study to create an anchor (Appendix C). Justifications of the ratings were provided in terms of the corresponding rubric. Judges were provided with the anchor recording, definition of terms, rubric, conductor score, and anchor Performance Evaluation Form prior to judging any study recordings (Appendix C). A brief training was held with each judge over the phone to discuss the anchor, the forms, and to answer any questions. The judges for the final study had either completed doctoral degrees in music education or were within one semester of completing their doctoral degree. Additionally, the judges were instrumentalists and had experience teaching band.

Procedures

Pretest. In order to establish that both groups were of equal performance ability, recordings from the schools' most recent state concert band festival performances were used as pre-test measures. Both schools performed grade three literature at the same district festival approximately a month before the study commenced. The recordings

were mailed to four judges as discussed in the preceding reliability section. Results were compiled (Table 4.1) and a chi-square goodness-of-fit test was calculated. No statistically significant difference was found between the treatment and control groups ($\chi^2_{(1)} = 1.84, p > .05$).

Musical Stimuli. The piece selected for the study was chosen from KMEA's Selective List of Band Literature for Grade III (Kentucky Music Educators Association, 2012) since the participating bands performed music of that grade level at their past festivals. Three selections were identified by the researcher that contained a variety of styles. The participating band directors were asked about their familiarity with the pieces and whether they had performed them with a group either as a performer or conductor. The feedback narrowed the potential pieces to two. Jack Bullock's *Variants* (Bullock, 1984), published by Alfred Publishing Co., Inc. was ultimately selected. A warm-up exercise (Appendix B) was composed by the researcher and reflected similar musical characteristics to selected performance piece.

The treatment activities and materials developed by the researcher were based on existing cooperative learning theory and methods. They adhered to the cognitive elaboration theory on cooperative learning and included individual accountability and positive interdependence in their structures. Prior to the pilot study, electronic copies of these activities were emailed to two music educators with over ten years of teaching experience, graduate degrees, and who were familiar with and used cooperative learning activities extensively in their classrooms. The teachers were asked to review them for their conformity to cooperative learning methods and theories. Both confirmed that the activities constituted cooperative learning. Following the pilot study, only slight

modifications were made to the activities. The finalized materials can be found in Appendix F.

The study spanned a total of six weeks with an additional day for discussing the upcoming study with students, for setting up standards for student interaction with the treatment group, and for recording the initial sight-reading of the piece and warm-up. Both groups rehearsed the piece for 15-20 minutes two days a week on days of the directors' choosing. Due to unforeseen school events, directors had to occasionally modify the days on which the study activities occurred. Over the course of the study, both groups participated in a total of twelve rehearsals.

The treatment group engaged in cooperative learning activities throughout the six weeks. Detailed descriptions can be found in the next section; a general outline can be seen in Figure 3.2; and the instructions for the treatment director can be found Appendix G. The control group rehearsed using traditional teacher-centered methods with the teacher acting as the primary source for error detection, musical interpretation, and methods for improvement. The instructions to the control group director can be found in Appendix G.

All recordings and student work were collected at the conclusion of the study. The researcher listened to the audio recordings for clarity and edited out any extraneous sounds that were audible prior to, or following, the performances of the piece in order to reduce any potential external factors that could affect the judges' perceptions. All recordings were burnt onto discs in randomized orders to reduce a potential order effect. A 30-second clip of Eric Satie's *Gymnopedie* No. 1 was inserted between each piece to reduce the chance of the judges comparing the different performances. This musical

work was chosen because of its difference in instrumentation and style to the adjudicated pieces. Materials were sent to the judges, including a CD of the recordings to be rated, pre-coded copies of the Performance Evaluation Form, the corresponding rubric, a sheet containing operational definitions of the musical elements to be rated, the anchor materials, conductor scores, and an instruction letter (Appendix C). Once the judges completed all performance ratings, materials were mailed back to the researcher for data analysis.

Treatment

Figure 3.2 outlines the activities that occurred over the course of the six-week study for both the control and treatment groups. The instructions to each director can be found in Appendix G. Both groups participated in pre-treatment activities prior to the commencement of the study. This included a brief discussion of the study and why the students' assistance was needed. The treatment group participated in a discussion on cooperative learning, their experiences with it, and set expectations for their upcoming interactions. The discussion questions can be found in Appendix G. Both groups also sight-read the warm-up and the performance piece.

The cooperative rehearsal techniques were developed by the researcher from existing cooperative learning strategies and theories found in the literature and which met the criteria used by Igel (2010). In that meta-analysis of cooperative learning literature, Igel (2010) maintained that to be considered cooperative learning, strategies must include (1) positive interdependence and (2) individual accountability. The following activities met the criteria in that (1) each student was accountable for completing the written

activities and for performing the musical selections and (2) the activities were structured so that in order for the large ensemble to perform successfully, the sections and individuals must be successful in achieving their goals.

The overall design of the cooperative rehearsal techniques was a modified version of Group Investigation, which has been written about extensively by S. Sharan (Sharan, 1999; Sharan & Sharan 1992). Group Investigation has four essential components: investigation, interaction, interpretation, and intrinsic motivation (Sharan & Sharan, 1992). Students work together in small groups and coordinate between groups to investigate a specific topic. Students plan their investigation in a way that involves individual, partner, and group activities and allows students to work within their strengths and interests. During the process, the teacher serves as a guide for the social interactions and acquisition of academic skills (Sharan & Sharan, 1992). The adaptation of Group Investigation to the cooperative rehearsal was named Group Performance Preparation (GPP). A comparison chart of the two can be found in Appendix F. In the adaptation, the performance of the piece served as the topic of study. Students had to work together within their sections, with members of other sections that had similar or contrasting parts, and as a large-group to put the pieces together into a single performance. Students used the Cooperative Performance Assessment Tool (CPAT) (Appendix H) as a guide for fixing the various performance elements. The director served as the discussion facilitator and as a source for information and guidance. Though always present and actively monitoring, the director was not the central figure in the activities.

- Pre-Treatment -

Record sight-reading; establish interaction expectations with treatment group

- Control Group, Weeks 1 & 2 -

Days 1, 2, 3 & 4: Play warm-up; traditional teacher-directed rehearsal activities on *Variants*.

- Treatment Group, Weeks 1 & 2 -

Day 1: Play warm-up; discuss CPAT form; ACS cooperative activity; set goals.

Days 2: Play warm-up; cooperative sectionals; track progress.

Day 3: Play warm-up; play through *Variants*; discuss progress; cooperative sectionals; track progress; plan for full band rehearsal.

Day 4: Play warm-up; full band rehearsal; record *Variants*.

- Control Group, Weeks 3 & 4 -

Days 5, 6, 7 & 8: Play warm-up; traditional teacher-directed rehearsal activities on *Variants*.

- Treatment Group, Weeks 3 & 4 -

Day 5: Play warm-up; ACS cooperative activity; set goals; cooperative sectionals; track progress.

Days 6: Play warm-up; cooperative sectionals; track progress.

Day 7: Play warm-up; play through *Variants*; discuss progress; cooperative sectionals; track progress; plan for full band rehearsal.

Day 8: Play warm-up; full band rehearsal; record *Variants*.

- Control Group, Weeks 5 & 6 -

Days 9, 10, & 11: Play warm-up; traditional teacher-directed rehearsal activities on *Variants*.

Day 12: Play warm-up; traditional teacher-directed rehearsal activities on *Variants*; record *Variants* and warm-up.

- Treatment Group, Weeks 5 & 6 -

Day 9: Play warm-up; ACS cooperative activity with scores; set unified goals; large-group cooperative sectionals; track progress.

Days 10: Play warm-up; large-group cooperative sectionals; track progress.

Day 11: Play warm-up; play through *Variants*; discuss progress; large-group cooperative sectionals; focus group; track progress; plan for full band rehearsal.

Day 12: Play warm-up; focus group report; full band rehearsal; record *Variants* and warm-up.

- Post-Test -

Figure 3.2. Control and Treatment Activity Outline

To help students focus on listening and assessing their performance, Lyman's (1981) Think-Pair-Share strategy was modified and named Assess-Compare-Share (ACS). A comparison chart of the two strategies can be found in Appendix F. Think-Pair-Share involves students (1) thinking individually about a question or prompt, (2) discussing with a partner, and (3) sharing with the group (Sharon, 1999). The modifications for the musical ensemble involved students identifying performance aspects that needed improvement as they listen to a recording of their last performance and complete the CPAT, discussing ratings within their instrument section, and sharing the groups' findings with the class. The director acted as a resource throughout the individual listening by answering questions, clarifying instructions, and providing examples.

During the group discussions, the director had two main roles: (1) to guide or resolve social interactions and (2) to prompt groups for deeper analysis or synthesis. In the final stage of the activity, the director acted as a facilitator of the discussion, listening to the groups' findings and helping students make connections between the different instrument sections and within the piece. The Assess-Compare-Share activity was always followed by students in each instrumental section completing Part I of the Goals Progress and Rehearsal Preparation form (GPRP) which can be found in Appendix H. This required students to transfer their performance evaluations into goals for improvement.

The band director of the treatment group met with the researcher to be trained on the materials and methods. Materials were given to the director prior to each two-week cycle. Activities were modified as needed based on observations of the researcher and

discussions with the director. A reflection form titled Cooperative Rehearsal Teacher Reflection (Appendix H) was given to the director as a means to provide insight into the study activities from the director's point of view.

The following is a description of the activities that occurred on each treatment day over the course of the six week study.

Cycle I.

Day 1. After playing through the warm-up, the group engaged in their first Assess-Compare-Share activity. The director handed out the Collaborative Performance Assessment Tool (CPAT) and discussed the directions, clarified terminology, and answered questions. Students listened to the recording of their sight-reading of the performance piece (*Variants*) and assessed their instrument section's performance using the CPAT form. Upon completion, students discussed their findings with their instrument section and set section performance goals based on their assessments. These were written on Part I of the Goals, Progress, and Rehearsal Planning form (GPRP). Each group was asked to share their goals with the full-band. The band director's role was to lead the discussion and help students make connections among sections and parts.

Day 2. The rehearsal began with a run-through of the warm-up. Students immediately broke into sectionals to work on their goals. They were instructed to track their progress using Part II of the GPRP. Sections were also instructed to assign members to monitor different musical elements throughout the sectional and to select a leader. The director visited each group to monitor and assist when needed.

Day 3. The full-band played through the warm-up, performed a run-through of the performance piece, and had a brief discussion of their progress and goals. Students then broke into sectionals and continued working on their goals. The director visited

each group and helped as needed. Students were asked to complete Part III of the GPRP form and return them to the director. The results of the Part III were compiled into a list to guide the next full-band rehearsal.

Day 4. The rehearsal began with a run-through of the warm-up. The last day of the cycle was used for full-band rehearsal. The director used the results from Part III of the GPRP as a guide for what to work on with students. He engaged the group in student-centered discussions about progress, problematic elements, and musical decision making. At the end of the rehearsal, the group recorded a run-through of the performance piece.

Cycle II.

Day 5. The group played through the warm-up to begin the rehearsal. Afterwards, they engaged in an Assess-Compare-Share cooperative activity. Students received new copies of the CPAT form and were instructed to assess their section's performance on the recording. Advanced students or groups were instructed to listen across the ensemble, not just to their section. After the individual assessments, students were instructed to discuss their results with their section and to set performance goals for the next cycle on a new GPRP form. Each group shared their decisions with the full-band and the director facilitated the discussion. The remaining time was spent in cooperative sectionals working on the new goals. The director visited each group to provide help and prompt for deeper analysis.

Day 6. The warm-up was played and students were immediately dismissed into sectionals. They were instructed to keep track of their progress on Part II of the GPRP form. They also had to assign new roles to members of their section so that each person had a different role from last cycle. The director worked with sections as needed.

Day 7. The rehearsal began with the warm-up and was followed by a run-through of the performance piece. The director facilitated a discussion with the full-band on progress and musical elements that needed to be addressed. Students broke into sectionals and continued to work on their identified goals and any new goals that arose in the full-band discussion. They were asked to keep track of their progress on Part II of the GPRP. At the end of the rehearsal, each section was asked to complete Part III of the GPRP to help plan the next full-band rehearsal.

Day 8. After a run-through of the warm-up, the director facilitated the full-band rehearsal using the information compiled from Part III of the GPRP form. He facilitated student-centered rehearsal activities in which they continually assessed their own performance and that of other sections. Students were asked to make musical decisions throughout the rehearsal. At the end, the group's performance of the performance piece was recorded.

Cycle III.

Day 9. The group began the rehearsal by playing through the warm-up. The director handed out copies of the score for the piece and discussed how to follow it. (Permission to copy the score had been acquired from the publisher and can be seen in Appendix A.) Students were asked to follow the score as they completed a new Assess-Compare-Share activity. As students listened to the recording of their last performance of the piece, they followed along with the score and marked problematic areas they observed for the whole band. Afterwards, they individually completed new CPAT forms and discussed their results with their section. The full-band discussed their assessment observations and determined unified performance goals that were listed on new GPRP forms. They broke into two large groups for cooperative sectionals. One group consisted

of flutes, clarinets, trumpets, and mallets. The other group included alto and tenor saxophones, French horns, trombones, baritones, tubas, non-pitched percussion, and timpani. They had to assign one or two leaders for each group. The band director visited each group to help facilitate the rehearsals. The groups were asked to monitor their progress on Part II of the GPRP.

Day 10. After playing through the warm-up, students immediately broke into their large-group cooperative sectionals and began working on their goals. The director assigned four students with strong musical skills to be part of a focus group. They were asked to listen to the recording of the piece again and focus on larger musical concepts such as phrasing and dynamics and to prepare a report to give to the full ensemble. The director visited each cooperative sectional, as well as the focus group. Each section was asked to monitor their progress on Part II of the GPRP form.

Day 11. The group played through the warm-up and the piece at the beginning of the rehearsal. The focus group gave their report to the full ensemble, which was followed by a brief discussion about their assessment. Students broke into large-group cooperative sectionals to continue to work on their goals and the problematic areas identified by the focus group. The director monitored each sectional and provided guidance when needed. The groups were asked to track their progress on Part II of the GPRP and complete Part III in preparation for their last full-band rehearsal.

Day 12. The rehearsal began with the warm-up. The director facilitated the full-band rehearsal of the piece based on the results of the GPRP. Students were asked to continually assess their performance. The director prompted them to think about the performance as a whole, not just their section's performance and to focus on more

advanced performance issues such as dynamics and phrasing. At the end of the rehearsal, the group recorded a final run-through of the warm-up and the piece.

Summary

The methodology outlined in the current chapter was implemented in the spring of 2014 for six weeks in two Kentucky high schools. One school's band served as the control group and the other served as the treatment group. The results from the study can be found in Chapter Four. A discussion of the findings, implications, and suggestions for future research can be found in Chapter Five.

Chapter Four

Results

Introduction

The present study investigated the effects of cooperative learning rehearsal techniques on high school band performance compared to traditional band rehearsals over a six-week period. Post-test recordings were used to determine if differences existed between the treatment and control groups using individual element scores on the Performance Evaluation Form (PEF). In addition, the treatments group's student self-evaluations were analyzed and compared across three cycles of the Group Performance Preparation cooperative learning structure (GPP) (Appendix F) and between instrumental sections of the band. Qualitative data were gathered from student products, researcher observations, teacher reflections, and discussions with the treatment group teacher.

Research Hypothesis

The cooperative learning rehearsal group will receive higher scores from independent judges on their performance of a musical composition and warm-up exercise than a band rehearsed with traditional methods.

Null Hypothesis

There will be no statistically significant difference in scores between the cooperative rehearsal group and the traditional rehearsal group on their performance of a musical composition and a warm-up exercise.

Effectiveness of Cooperative Learning on Full-band Performance

The primary research question and hypothesis compared traditional rehearsal techniques to cooperative learning rehearsal techniques for effectiveness in improving full-band musical performance. Comparisons were made between the cooperative learning treatment group and the traditional rehearsal control group. Data collection and analysis procedures are described, and the results of the primary and *post hoc* analysis are reported.

Data Collection and Analysis. The Performance Evaluation Form (PEF) (Appendix C), scored by four independent judges, provided the data for the primary research question and hypothesis. The descriptive scale terminology (poor, fair, average, good, excellent) used for individual musical elements was converted to a corresponding numerical scale ranging from one to five.

Chi-Square Goodness-of-Fit. Non-parametric tests were chosen for analysis since the data were not normally distributed, as recommended by Corder & Foreman (2009). To test whether there were significant differences between the two groups, a chi-square goodness-of-fit test was selected. The ordinal scores from each musical element were assigned to a nominal category of High or Low. Ratings of one (poor), two (fair), and three (average) were categorized as Low, and ratings of four (good) and five (excellent) were categorized as high. Frequency counts were tallied for the High and Low categories and compared to equally-distributed expected frequencies for the treatment and control groups. The alpha level chosen for the study was $\alpha = .05$.

Inter-Observer Agreement. The pre-test and post-tests were analyzed for inter-observer agreement. The results from the four judges were compared in three different

combinations of AB, BC, and CD. Scores that were High|High and Low|Low were considered to be in agreement and scores that were either High|Low or Low|High were considered disagreements. Inter-judge reliability for the pre-test was .55 for the treatment group and .77 for the control group. The warm-up reliability scores were .88 for the treatment group and .70 for the control group. Finally, the reliability scores for the musical piece (*Variants* by Jack Bullock) were .74 for the treatment group and .96 for the control group. Inter-observer agreement scores were considered moderate to high.

Pretest. Recordings of the control and treatment groups' 2013 concert festival performances were evaluated by four independent judges to determine if statistically significant differences existed between the two groups prior to the study. The judges listened to recordings of the two groups and completed a Performance Evaluation Form (PEF) for each. Results of the pre-test scores and corresponding categorizations can be seen in Table 4.1. A chi-square test was used for data analysis to compare the pre-test scores of the two groups. No statistically significant difference was found ($\chi^2_{(1)} = 2.006, p > .05$). The results of the chi-square test can be found in Table 4.2

Post-Test Comparisons. The results of the judges' scores and their corresponding categorizations can be seen in Table 4.3 for the performance piece and in Table 4.4 for the warm-up exercise. Chi-square goodness-of-fit tests were calculated, using SPSS 20 (IBM Corp., 2011), between the treatment and control groups on each of the post-tests (Tables 4.5 and 4.6). Statistically significant differences were found between the two groups on the performance piece ($\chi^2_{(1)} = 50.625, p < .05$) and the warm-up ($\chi^2_{(1)} = 31.348, p < .05$). Based on these results, the null hypothesis was rejected and the research hypothesis was accepted.

Table 4.1
Pre-test Results

Performance Variables	Treatment Scores				Control Scores			
Tone Quality	3 (L)	3 (L)	4 (H)	5 (H)	3 (L)	3 (L)	3 (L)	3 (L)
Blend/Balance	2 (L)	2 (L)	4 (H)	4 (H)	3 (L)	3 (L)	4 (H)	4 (H)
Intonation	3 (L)	3 (L)	3 (L)	5 (H)	2 (L)	2 (L)	3 (L)	3 (L)
Phrasing/Expression	3 (L)	4 (H)	3 (L)	4 (H)	3 (L)	3 (L)	3 (L)	4 (H)
Dynamic Variation	4 (H)	4 (H)	5 (H)	4 (H)	4 (H)	4 (H)	4 (H)	5 (H)
Tempo	4 (H)	3 (L)	4 (H)	3 (L)	5 (H)	4 (H)	4 (H)	5 (H)
Note/Pitch Accuracy	5 (H)	3 (L)	4 (H)	4 (H)	3 (L)	3 (L)	3 (L)	4 (H)
Rhythmic Precision	4 (H)	4 (H)	4 (H)	4 (H)	4 (H)	3 (L)	3 (L)	5 (H)
Articulation	3 (L)	3 (L)	4 (H)	4 (H)	3 (L)	3 (L)	4 (H)	4 (H)

Note. H and L indicate High and Low category assignments for chi-square analyses.

Table 4.2
Chi-Square Comparison for the Pre-Test

Group	High	Low	Total	χ^2	<i>df</i>	<i>p</i>
Treatment	22	14	36	2.006	1	.238
Control	16	20	36			
Total	38	34	72			

Table 4.3
Post-Test Results for the Performance Piece

Performance Variables	Treatment Scores				Control Scores			
Tone Quality	4 (H)	4 (H)	4 (H)	5 (H)	2 (L)	1 (L)	2 (L)	2 (L)
Blend/Balance	3 (L)	4 (H)	3 (L)	5 (H)	1 (L)	1 (L)	2 (L)	4 (H)
Intonation	3 (L)	4 (H)	4 (H)	4 (H)	2 (L)	2 (L)	2 (L)	2 (L)
Phrasing/Expression	4 (H)	4 (H)	3 (L)	5 (H)	2 (L)	1 (L)	2 (L)	2 (L)
Dynamic Variation	4 (H)	5 (H)	5 (H)	5 (H)	2 (L)	1 (L)	3 (L)	3 (L)
Tempo	5 (H)	5 (H)	4 (H)	4 (H)	2 (L)	2 (L)	3 (L)	3 (L)
Note/Pitch Accuracy	4 (H)	5 (H)	4 (H)	5 (H)	2 (L)	1 (L)	3 (L)	3 (L)
Rhythmic Precision	4 (H)	5 (H)	4 (H)	5 (H)	2 (L)	1 (L)	2 (L)	3 (L)
Articulation	3 (L)	5 (H)	4 (H)	5 (H)	2 (L)	2 (L)	3 (L)	2 (L)

Note. H and L indicate High and Low category assignments for chi-square analyses.

Table 4.4
Post-Test Results for the Warm-Up

Performance Variables	Treatment Scores				Control Scores			
Tone Quality	4 (H)	4 (H)	4 (H)	5 (H)	3 (L)	2 (L)	3 (L)	3 (L)
Blend/Balance	4 (H)	5 (H)	4 (H)	5 (H)	3 (L)	2 (L)	3 (L)	4 (H)
Intonation	4 (H)	4 (H)	4 (H)	5 (H)	3 (L)	2 (L)	2 (L)	3 (L)
Phrasing/Expression	4 (H)	4 (H)	4 (H)	5 (H)	4 (H)	1 (L)	4 (H)	3 (L)
Dynamic Variation	5 (H)	3 (L)	4 (H)	3 (L)	2 (L)	1 (L)	3 (L)	2 (L)
Tempo	5 (H)	5 (H)	5 (H)	5 (H)	4 (H)	4 (H)	4 (H)	4 (H)
Note/Pitch Accuracy	5 (H)	4 (H)	5 (H)	5 (H)	2 (L)	2 (L)	4 (H)	2 (L)
Rhythmic Precision	5 (H)	5 (H)	5 (H)	5 (H)	4 (H)	3 (L)	5 (H)	4 (H)
Articulation	4 (H)	4 (H)	4 (H)	4 (H)	3 (L)	2 (L)	3 (L)	3 (L)

Note. H and L indicate High and Low category assignments for chi-square analyses.

Table 4.5
Chi-Square Comparison for the Performance Piece

Group	High	Low	Total	χ^2	<i>df</i>	<i>p</i>
Treatment	31	5	36	50.625	1	.001*
Control	1	35	36			
Total	32	40	72			

* indicates statistically significant difference at $\alpha = .05$.

Table 4.6
Chi-Square Comparison for the Warm-Up

Group	High	Low	Total	χ^2	<i>df</i>	<i>P</i>
Treatment	34	2	36	31.348	1	.001*
Control	11	25	36			
Total	45	27	72			

* indicates statistically significant difference at $\alpha = .05$.

Overall Performance Scores. The Performance Evaluation Form contained two separate rating systems: (1) individual musical element scores and (2) overall performance scores. The latter were reflective of the global system used in the Kentucky Music Educators Association concert festivals, in which I is the highest rating and IV is the lowest. Results from the overall performance scores can be seen in Table 4.7. The treatment group consistently scored high on both the performance piece (II, I, II, I) and the warm-up (I, II, II, I) while the control group scored low on those same tests (III, IV, IV, III and III, III, III, III, respectively).

Table 4.7
Overall Performance Scores Results

Performance Variables	Treatment Scores				Control Scores			
Pre-Test	II	II	II	II	II	II	II	II
Performance Piece	II	I	II	I	III	IV	IV	III
Warm-Up	I	II	II	I	III	III	III	III

Post Hoc Analysis. The degree of differences between the treatment and control groups was somewhat unexpected. Therefore, a *post hoc* analysis was performed to determine if there were statistically significant differences within each group. Each groups' pre-test recordings from a recent KMEA district concert festival were compared to their post-test of the performance piece (*Variants* by Jack Bullock). This allowed for

comparison of the groups to their own performance standard. Chi-square tests were used to determine if any significant difference existed within the groups. The treatment group comparison (Table 4.8) resulted in a statistically significant difference between the two tests ($\chi^2_{(1)} = 5.791, p < .05$) with the performance piece rating higher than the pre-test. The control group comparison (Table 4.9) resulted in a statistically significant lower score on the performance piece than the pre-test ($\chi^2_{(1)} = 17.326, p < .05$).

Table 4.8
Treatment Group Chi-Square Comparison of Pre-Test and Post-Test Scores

Test	High	Low	Total	χ^2	<i>df</i>	<i>p</i>
Pre-Test	22	14	36	5.791	1	.031*
Piece	31	5	36			
Total	53	19	72			

*indicates statistically significant difference at $\alpha=0.05$

Table 4.9
Control Group Chi-Square Comparison of Pre-Test and Post-Test Scores

Test	High	Low	Total	χ^2	<i>Df</i>	<i>p</i>
Pre-Test	16	20	36	17.326	1	.001*
Piece	1	35	36			
Total	17	55	72			

*indicates statistically significant difference at $\alpha=0.05$

Summary. The hypothesis that the cooperative learning rehearsal group would score higher than the traditional rehearsal group on band performance was accepted. The chi-square tests revealed that statistically significant differences existed between the groups on the performance piece and on the warm-up. Additionally, the *post hoc* within-group comparison indicated that statistically significant differences existed within the treatment and control groups. The treatment group scored higher on the performance piece than their pre-test festival performance, while the control group scored lower on the performance piece than their pre-test.

Student Self-Assessment of Their Performance

An additional research question concerned how students self-assess their band's performance. Students used the Cooperative Performance Assessment Tool (CPAT) (Appendix H) to assess full-band performance and their section's performance at three different points over the course of the six-week treatment. To answer this question, data were gathered and analyzed on five different factors: (1) student indication of problematic elements, (2) student written comments on performance, (3) length of problematic performance areas, (4) differences in self-assessment between instrumental sections, and (5) change in student self-assessment over time. Each factor will be addressed individually except the final one, which concerns change over time. It will be discussed within the context of the other factors.

Data Collection and Analysis. Information from the Cooperative Performance Assessment Tool (CPAT) served as the source for data on student performance self-evaluation. Data were collected on the musical elements in which students indicated as

problem areas, musical elements on which students commented, the length (in measures) of identified problem areas, and differences between instrumental sections.

Indicated Elements. The first student self-assessment factor concerned the musical elements in which students indicated as problematic. Table 4.10 shows the element frequency counts for each cooperative cycle. Figures 4.1, 4.2, and 4.3 display the frequency changes over time.

Table 4.10
Frequency of Student-Indicated Problematic Elements

	Cycle 1 (<i>n</i> =24)	Cycle 2 (<i>n</i> =20)	Cycle 3 (<i>n</i> =20)	Total (<i>n</i> =64)
Elements				
Rhythm	33	12	7	52
Pitches	14	12	14	40
Blend/Balance	7	17	12	36
Articulation	11	9	14	34
Intonation	10	10	9	29
Dynamics	7	8	13	28
Tone	5	7	9	21
Tempo	8	5	4	17
Phrasing	4	7	2	13
Not Specified	2	2	1	5
Total	101	89	85	275

Note. *n* represents the number of forms returned by students.

Rhythm had the highest frequency (52) of indication by students, but decreased over time (33, 12, 7). Pitches remained one of the most often indicated elements throughout all three cycles (14, 12, 14). The elements with the lowest overall frequencies were phrasing (13), tempo (17), and tone (21). Tone (5, 7, 9) and Dynamics (7, 8, 13) increased across the cycles while tempo (8, 5, 4) decreased. Articulation (11, 9, 14) spiked in the third cycle to one of the most indicated elements. Phrasing (4, 7, 2) increased in the second cycle, but returned to a low frequency in the third cycle. Blend/balance (7, 17, 12) and rhythm (33, 12, 7) saw the most drastic changes over the three cycles. Intonation had very little change over time (10, 10, 9), but had a moderate frequency of indications overall (29).

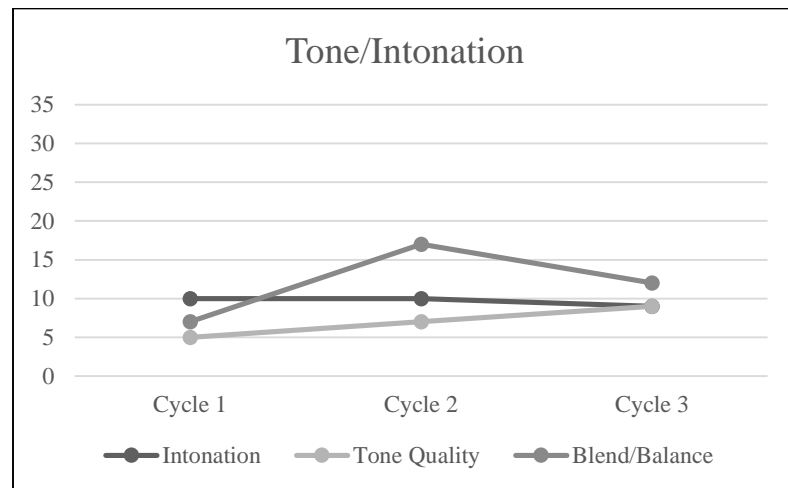


Figure 4.1. Element Frequency Comparisons in Tone/Intonation Category

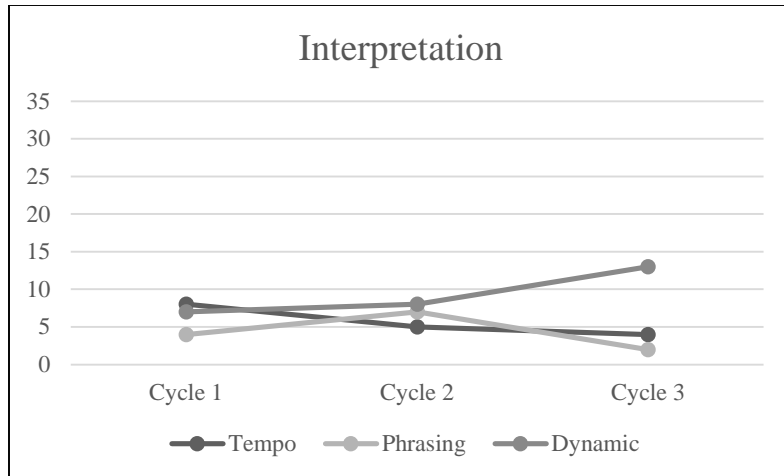


Figure 4.2. Element Frequency Comparisons in Interpretation Category

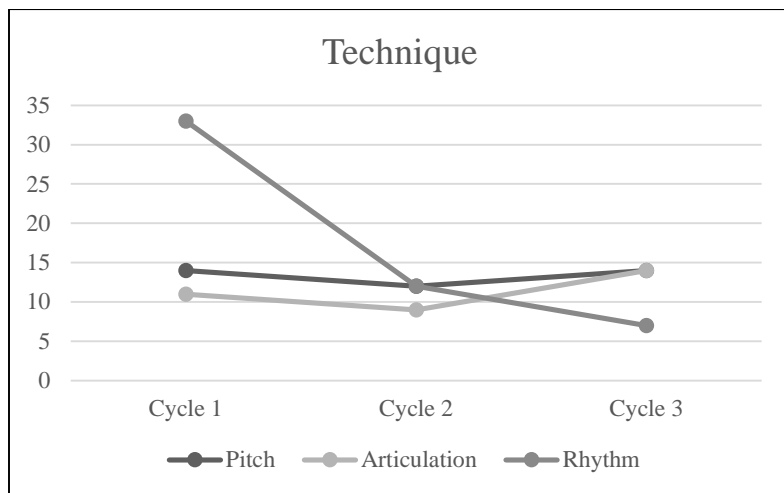


Figure 4.3. Element Frequency Comparisons in Technical Category

Comments on Performance. The second student self-assessment factor concerned the comments students made on the CPAT over the six-week treatment. Table 4.11 displays the frequency counts per cycle. Appendix I contains a complete list of the comments made by students. Rhythm (22) had the highest frequency of comments overall and in two of the three cycles, but had the most drastic decrease over the three cooperative cycles (14, 5, 3). Phrasing only had one comment in total over the three cycles. Tone also had a very low number of comments with a total of three and none in the third cycle. Pitches had the second highest number of comments (10) in the first cycle, but dropped drastically to two in the second cycle and increased to five in the third cycle. Tempo had a drastic drop after the first cycle (6, 1, 1). Blend/Balance (2, 3, 2) and Dynamics (4, 3, 4) had very little change over time. Overall, cycle one (46) had twice the number of comments than either of the other two cycles (23, 19).

Table 4.11
Frequency of Student Comments on Problematic Elements

Factor	Cycle 1 (n=24)	Cycle 2 (n=20)	Cycle 3 (n=20)	Total (n=64)
Elements				
Rhythm	14	5	3	22
Pitches	10	2	5	17
Intonation	6	5	1	12
Dynamics	4	3	4	11
Tempo	6	1	1	8
Blend/Balance	2	3	2	7
Articulation	1	3	3	7
Tone	2	1	0	3
Phrasing	1	0	0	1
Total	46	23	19	88

Note. n represents the number of forms returned by students.

Length of identified problem areas. The third student self-assessment factor concerned the length of identified problematic areas (in measures). During the initial self-assessment activity of each cooperative cycle, students were asked to identify the problematic element with the corresponding measures. Table 4.12 displays the results per cycle. A steady decrease in the length of identified problem areas over the course of the three cycles is evident (M = 10, M=8.54, M=7.77). Interestingly, the Mode of cycle three was $Mo = 1$, indicating that students identified individual measures as problematic rather than larger sections.

Table 4.12
Length of Identified Problem Areas in Measures

	<i>n</i>	Total # of Measures	Mean
Cycle 1	87	864	10
Cycle 2	76	649	8.54
Cycle 3	73	567	7.77

Note. *n* represents the total number of responses per cycle

Section Comparisons. The fourth factor concerned differences between instrument sections when assessing performance. Student CPAT forms were analyzed for frequency of indicated elements according to instrumental sections as determined by the band director (flutes, clarinets, trumpets, middle voices, low voices, and percussion). Table 4.13 displays the frequency of indications per element for each section.

Blend/Balance was one of the most often indicated elements for clarinets (11), trumpets (7), and middle voices (9). Rhythm indications were high in all sections. Phrasing had a low occurrence in all sections except clarinets (7). Low voices were the most concerned about notes (13), but middle voices (8) and clarinets (8) also had high indications. Tone remained relatively low for all sections, with flutes giving it the most attention (7).

Three sections did not address some elements at all over the course of the six-week study. Clarinets did not indicate tempo and trumpets did not indicate phrasing at any point. The percussion did not address many of the musical elements, including dynamics, articulation, blend/balance, and tempo.

Table 4.13
Frequency of Indicated Elements by Section

Elements	Flutes (n=12)	Clarinets (n=15)	Trumpets (n=10)	Middle Voices (n=11)	Low Voices (n=12)	Perc. (n=4)
Notes/Pitches	5	8	5	8	13	1
Rhythm	9	9	7	8	9	5
Dynamics	4	9	2	9	4	0
Articulation	10	8	4	7	5	0
Intonation	4	7	6	4	6	1
Phrasing	1	7	0	1	2	2
Blend/Balance	4	11	7	9	6	0
Tempo	6	0	2	2	7	0
Tone	7	4	3	4	2	1
Not Specified	0	0	1	0	0	3

Note. *n* represents the number of forms returned by students.

Summary. The secondary research question concerned how students self-assess their performance. In order to better understand the results, each element will be summarized individually, taking all data into consideration.

Rhythm. The frequency data show that students gave the most attention to rhythm in their indications of problematic elements and in the number of comments made. The frequency of these indications and comments decreased over the three cycles. Rhythm indications were relatively high among all instrument sections.

Pitches. The number of indications of pitches remained high overall and across the three cycles. The frequency of comments was high in the first cycle but varied across the subsequent cycles. The low voices section focused more on pitches than any other section.

Blend/Balance. The combined performance element of blend/balance had the third highest number of indications overall, but spiked in the second cycle. Comments on blend/balance were only of moderate frequency. The flutes, clarinets, trumpets, and middle voices indicated blend/balance the most when compared to their other indicated elements.

Tone. The indications for tone were of a moderate frequency but demonstrated a slight increase across the three cycles. However, the comments regarding tone were low overall and decreased across the cycles. Flutes indicated tone the most out of all of the sections.

Dynamics. The frequency of indications and comments for dynamics were moderate. A slight increase occurred in the number of indications over the three cycles.

The middle voices indicated dynamics the most out of all of the sections. It was also one of their highest indicated elements.

Intonation. The moderate number of indications for intonation demonstrated very little change across the three cycles. The frequency of comments regarding intonation declined to only one occurrence in the third cycle. The trumpets had the highest proportion of intonation indications compared with other instrument sections. However, it was only their third highest indicated element.

Articulation. Overall, articulation had a moderate number of indications and comments, but the number of indications spiked in the third cycle to tie with pitches as the highest indicated element. Articulation was indicated the most by the flute section and it was one of their highest indicated elements.

Tempo. The frequency of indications for tempo was low, but the frequency of comments was moderate. Most of the comments concerning tempo were made in the first cycle. The flutes and low voices sections had the highest number of indications for tempo compared with the other sections. Clarinets and percussion did not make any indications for tempo.

Phrasing. The element that had the lowest frequency of indications and comments was phrasing. The number of indications increased in the second cycle but returned to a low frequency in the third cycle. The percussion and clarinet sections indicated phrasing the most out of all the sections. The trumpets did not indicate phrasing at all in their assessments.

Factors for Implementing Cooperative Learning in High School Band

The final research question concerned factors that arose in the implementation of cooperative learning rehearsal techniques in high school band. To answer this qualitative question, several data sources were used for triangulation to ensure reliability. Data were gathered from student CPAT forms, researcher observation notes, written teacher reflections, and notes from discussions between the researcher and the teacher. Results have been categorized into three themes that evolved from the coding and analysis of the data. Those themes are: (1) developing assessment skill, (2) student engagement, and (3) activity structure.

Developing Assessment Skills.

Initial skill levels. Many students struggled with assessing their own performance at the beginning of the study. In his reflections, the director wrote that the goals set by students “ranged from very specific phrase or phrases, to very large chunks (as much as 60 measure chunks).” He continued to say, “from our discussion, I realize that it is hard for these kids to isolate a single problem to fix.” The CPAT results from cycle one show that the average length of identified problem areas was $M=10$ and that some students used non-musical terminology to describe problems (e.g., “consistency”). The researcher observed that weaker sections (flutes, clarinets, and percussion) especially struggled with identifying and correcting problems. During a cooperative sectional in the first cycle, the clarinets were able to identify a problem area but struggled with problem-solving. In a full-band rehearsal, a flute player identified a problem area to the director but had difficulty using musical terminology. The flautist described the song section as “not making sense.”

Not all students struggled with self-assessment. Three trumpet players and a tenor saxophonist appeared to have greater skill in identifying and solving musical problems. In cooperative sectionals, the trumpets addressed multiple performance areas at once (e.g., articulation and dynamics) and used a variety of approaches to fix problems. They also engaged in assessing sections other than their own and asked the researcher for a copy of the score during the first cycle so they could follow along. The tenor saxophonist was very specific in identifying problem areas on the CPAT and gave comments on what was wrong, such as “key signature.” This student took on an early leadership role in cooperative sectionals by helping students identify and fix problems. The researcher observed this student leading the middle voices through rhythmic clapping to help them work on a syncopated section.

These conflicting records of student self-assessment abilities demonstrate the degree of variance that was found in this high school band. Although some students initially had difficulty self-assessing, the director and researcher observed a noticeable difference in progress during the first cycle. The director reflected that students “certainly focused on things that need improvement” and that “much progress was made.”

Progression of skill levels. Cycles two and three revealed an increasing ability to self-assess in students with moderate and advanced assessment skills. The data from the CPAT reveal that the length of identified problem areas continued to get shorter over the three cycles. The director reflected that students worked on specific sections of the piece in cooperative sectionals. During a large-group sectional consisting of low and middle voices, the researcher observed students working on the advanced musical concepts such

as articulation attack and release, dynamic contrast, and rhythmic precision. Many students contributed to the group by identifying problems and proposing ways to fix it. During full-band rehearsal, the researcher observed students identifying specific dynamic issues and problems in blend/balance. The director reflected that this approach to rehearsals had the potential to “have a major effect on their practice habits.”

The sections and students who were weak at the beginning of the study continued to struggle. During a large-group cooperative sectional with flutes, clarinets, and trumpets in cycle three, the director spent much of the time assisting the flutes and clarinets. The researcher observed that those two sections had not made as much progress as the more advanced trumpet section. However, all students appeared to be involved in the large sectional helping the weaker players. The trumpets used their copies of the score to follow the flute and clarinet parts and to help identify problems.

Advanced musical concepts. In his reflection, the director attempted to explain the difficulty students had with isolating performance problems by saying that “they are used to seeing the big picture.” Other sources of data do not support this statement, however. The CPAT results revealed that students focused much more on rhythm and notes in their self-assessments throughout the study. More advanced concepts, such as phrasing and tempo, were the least addressed. Dynamics and tone were also less frequently addressed than other elements. The only exception to this observation was the attention to blend/balance, which was considerably high overall. Furthermore, the focus group that was asked to assess the overall band performance focused on very minute issues with individual students and sections rather than the overall ensemble and larger performance issues.

Percussion. Multiple data sources revealed that the percussion section struggled with self-assessing performance. Early in the study, the director reflected that the percussion needed more guidance and help. The researcher observed this as well. No percussionist voluntarily participated in the full-band discussions, only when the director asked them specifically. The CPAT data revealed that percussion had difficulty with terminology. They had the highest number of unspecified comments, meaning the terms could not be classified as a musical concept. The term “consistency” was used multiple times on the CPAT. Several percussionists did not return their CPATs over the course of the study.

Student Engagement. An important theme that arose throughout the study was the degree of student engagement with the cooperative activities. This engagement manifested in three distinct ways: discussion, attention, and leadership. As with self-assessment abilities, a great amount of variance was found among students and sections.

Discussion. The full-band discussions in cycle one revealed students being somewhat reluctant to engage with the director about performance assessment. However, over the course of the six-week study, students became more comfortable offering comments voluntarily. Students throughout the ensemble were identifying problem areas to the entire group. Even one of the weaker sections brought up a problem area that “doesn’t make sense.” In the large-group cooperative sectionals in cycle three, the students were actively engaged in identifying problem areas and offering suggestions on how to fix it. The researcher observed a low and middle voices large-group cooperative sectional in which each section knew their parts and appeared to have approached fixing them in their own way. They started making connections with other instrument parts.

They were able to focus on more advanced concepts because they had fixed the more fundamental problems in previous cooperative sectionals.

The dialogue in individual cooperative sectionals varied among groups and throughout the cycles. The trumpets quickly started discussing the results of their individual self-assessments and worked together to address problems throughout the study. The percussion mostly practiced their individual parts and did not engage in much dialogue. The flute and clarinet sections generally alternated between practicing individually and playing through parts together, but did not engage in much meaningful discussion. During the first cycle, middle voices (alto saxophones and horns) functioned much like the flutes and clarinets with a lot of individual practice. In the next two cycles, that section engaged in more discussion about problem areas and how to correct them. The low voices included the strong tenor saxophonist who planned on becoming a band director and functioned as the leader of the group during most cooperative sectionals. However, the students in that section actively engaged with one another throughout their practice sessions. During one of their sectionals, the baritone player struggled with a dissonant section and voiced the need for help and the desire to practice together until correct. Overall, the director reflected that the groups worked well together and focused on problem areas.

Attention. Not all students engaged in the cooperative rehearsal activities through discussion. The researcher observed students engaging through their attention level in full-band and sectionals. On multiple occasions, students would practice problematic areas of their music when there was available time. The researcher observed numerous students' copies of the piece (*Variants*) with tremendous amounts of writing. There were

circles around difficult parts, notations above and below parts, and hand written dynamic markings. On the CPAT forms, some students made insightful comments but did not volunteer their ideas in class.

Developing Leadership. Sections had to assign different roles to members of the group during each cycle. The section leader often served as the leader during the first cycle. The researcher observed the middle voices struggle during one of the first cooperative sectionals when their section leader was absent. They were unsure of what to do and pointed that out to the researcher. In that sectional, students mostly practiced independently with some group practice. By the third cycle, the members of that same section were actively engaged in a large-group sectional identifying problem areas and offering solutions. Over the course of the study, it appears that they developed more confidence in their own opinion to the point of taking on some leadership roles.

While observing one of the early trumpet sectionals, one of the trumpet players asked the researcher how the articulation of a certain part of the song should go. He played two versions of it and awaited the answer. The researcher responded by saying that they could decide as a section which way they wanted to perform it. The four players discussed it and decided upon the version they liked best. Although three of the trumpet players were leaders in the band, they appeared to lack the confidence or freedom to make musical decisions. After the initial interaction with the researcher, the trumpets players continued to engage in making interpretive decisions over the course of the study.

Activity Structure. Structure is often referenced in research in cooperative learning strategies as being of great importance to the success of an activity (Igel, 2010;

Johnson & Johnson, 2009; Sharan, 1980; Slavin, 1996). This developed as a theme throughout the course of the present study. The factors that played the largest role were time, the director's role, and the forms used to guide the activities.

Time. The methodology of the study was developed to isolate the variables as much as possible so the control and treatment group could be compared with confidence that they were equal. Both groups were asked to participate in the study twice a week for 15-20 minutes each time. That time frame was taken from a study by Goolsby (1996) that indicated the average amount of rehearsal time spent on a single work was 29-33% of a single rehearsal. This limitation on time appeared to be a difficult factor for both the treatment and control groups. The control group director mentioned the short amount of time to the researcher and within the context of the video-taped rehearsals. The treatment director reflected on the time constraints regularly throughout the study. Specifically, he stated that it was difficult to address intonation in that time frame, that students were limited in how much they accomplish in sectionals, and that the short time frame affected their momentum. The researcher also observed the effects of the limited time in rehearsals. Moving into sectionals was somewhat time consuming and the self-assessments at the beginning of each cycle lasted at least half of the allotted daily time.

Director role. Another common topic among the literature on cooperative learning is the changing role of the teacher. In the present study, the director served more as a guide for students in their self-assessments, sectionals, and full-band rehearsals. In his reflections, he noted sections that needed extra guidance and help. During full-band rehearsals, the director used a variety of student-centered practices that guided them through the musical decision making process. Instead of telling a section how to play a

part, he would have them play it two different ways and let the other band students make the decisions. He would also have the band listen to a section play a certain part and identify the problem. Questioning was used consistently, and the director spoke about the importance of making musical decisions.

Forms. The use of the forms in band was immediately raised as a factor in the study. During a conversation with the director after the first day, he mentioned that the students were resistant to filling out the forms. Over the course of the six weeks, not all forms were returned to the teacher and researcher. The reasons for this were not apparent. However, students were not given grades for their forms, which could have impacted the return rate and their completeness.

Summary. The results from the qualitative data demonstrate a great deal of variance among the ensemble. Differences existed between the various instrument sections and within those sections in their ability to self-assess performance, attend to more advanced musical concepts, and in how they engaged in the cooperative learning activities. Time, the role of the band director, and the use of the forms became important concerns in the structure of the cooperative learning activities.

Conclusion

The results of the present study showed that the cooperative learning rehearsal techniques had a positive and statistically significant effect on full-band performance, which led to the acceptance of the research hypothesis. Data on student self-assessment indicate that students focused primarily on rhythm, pitches, and blend/balance; the length of identified problem areas decreased over time; and differences existed between

instrument sections. The qualitative data revealed that a great amount of variance in student assessment ability existed within the ensemble and that progress was made over the course of the six weeks; that students engaged in the cooperative activities in different ways; and that specific concerns existed in the implementation of the cooperative learning rehearsal techniques.

Chapter Five

Discussion

Introduction

The purpose of the present study was to investigate the effectiveness of cooperative learning rehearsal techniques on high school band performance compared to traditional rehearsal methods. A quasi-experimental non-equivalent pre-test post-test control group design was used to compare the treatment and the control groups over a period of six weeks. The treatment group participated in three cycles of cooperative learning activities that utilized student self-assessment of performance to guide interactions between students and the director. The control group participated in traditional band rehearsal activities in which the director was the primary source for error detection, problem-solving, and musical interpretation. Data were also gathered on how students self-assessed their performance, as well as qualitative themes that arose over the course of the study. This chapter discusses the results of the study within the context of existing literature, qualitative findings, implications for music education, and recommendations for future research.

Effect on Performance

The primary research question and hypothesis that guided the present study concerned the effect of cooperative learning rehearsal methods on full-band performance compared to traditional rehearsal techniques. The hypothesis that the cooperative learning rehearsal group would score higher than the traditional rehearsal group was accepted. The treatment group scored higher than the control group on the performance piece ($\chi^2_{(1)} = 58.38, p < .05$) and the warm-up ($\chi^2_{(1)} = 38.39, p < .05$) to a statistically

significant degree. Furthermore, the treatment group scored statistically significantly higher on both the performance piece ($\chi^2_{(1)} = 5.591, p < .05$) and the warm-up ($\chi^2_{(1)} = 11.25, p < .05$) than their pre-test, while the control group scored statistically significantly lower on the performance piece ($\chi^2_{(1)} = 23.309, p < .05$) and the warm-up ($\chi^2_{(1)} = 9.804, p < .05$) than their pre-test.

The differences between the pre-test and post-test scores of the treatment group were somewhat surprising in this study. The pre-test measure was a recording of a festival piece the group spent months preparing while spending only six weeks with limited rehearsal time (15-20 minutes twice a week) to prepare the study piece. The statistically significant differences go beyond the considered possibilities by the researcher when developing the study. Several factors could have contributed to the differences in the pre-test and post-test scores. Each will be discussed in detail and in context of the qualitative results and existing literature.

Engagement. The treatment group's rehearsal time on the performance piece engaged all sections at the same time. In traditional band rehearsals, directors often spend much time working with specific instrument sections while other sections have periods of inactivity. The cooperative structures used in the study allowed all sections to work on areas that needed improvement for the entire allotted rehearsal time. As a *post hoc* analysis to help explain the unexpected differences between groups, the researcher analyzed the control group's video-taped rehearsals. The majority of the rehearsal activities were devoted to working with individual sections (62%) on very isolated parts of the piece. The rest of the band appeared attentive, but were not actively engaged in music making, assessment, or problem-solving. Djordjevic (2007) found that students

involved in musical cooperative learning activities engaged in more discussions and had more equal participation among group members. Similar results were found in studies by Branker (2010), Cornacchio (2008), and Hunter (2006). Possibly, cooperative activities were a more efficient use of rehearsal time than traditional rehearsal methods and allowed students to maintain engagement throughout the rehearsal.

Ongoing Performance Evaluation. The cooperative strategies designed for the study utilized self-assessment as the guide for rehearsals. Students were asked to individually assess performance, engage in conversations with their peers and the director, to work together to solve problems, and to identify new problem areas. They were mentally engaged in listening, analyzing, evaluating, and problem-solving throughout the cooperative sectionals and rehearsals. Miell & Littleton (2007) similarly found that cooperative learning allowed students to engage in “a process within and through which they continually construct, negotiate, and re-negotiated a shared understanding of their sound” (p. 47). It is arguable that this level of engagement does not occur in traditional rehearsal activities in which the primary source for assessment is the director and students merely respond to directions given to them about their performance. Cavitt (2003) found that band directors spend 53% of rehearsal time on teacher talk and less than 1% in student talk. Although Miles (1993) reported that band directors rate comprehensive musicianship as being highly important, Blocher et al. (1997) found that band directors only engage in conceptual teaching 3% of the time, if at all. This shows a distinct lack of cognitive engagement in the music making process, especially with more advanced musical concepts.

The director initially believed that students had difficulty with the self-assessment activity due to normally focusing on the bigger picture. The researcher did not believe this was an accurate explanation of the problem based on the findings of the study. The view students have in traditional rehearsals may be very myopic, lack connections across the ensemble, and may not engage them in higher-order musical thinking. Studies by Wiggins (1999/2000) and Meill & Littleton (2007) found that cooperative learning led to a shared understanding among group members. Over the course of the study, students focused on their own parts, as well as their part in relation to other sections and the band instead of solely on the written notes.

Feedback is an important factor in performance-based music classes (Carpenter, 1986; McPherson & Zimmerman, 2002; Yarbrough & Price, 1989). McPherson & Zimmerman (2002) stated that it helps students become self-regulated musicians. Yarbrough & Price (1989) maintained that immediate and relative feedback are essential to the learning process in music. Early in the present study, the director reflected that this process had potential to have tremendous impact on student practice habits. These cycles of self-assessment and continual engagement with other students and the teacher allowed the students to give and receive immediate and ongoing feedback about their performance. Wiggins (1999/2000) found similar results regarding ongoing feedback within cooperative learning groups. Djordjevic (2007) found that students involved in cooperative learning in music become more aware of their own sound and focused on problem-solving. This contrasts traditional rehearsals in which much time is spent working with specific instrument sections while other students sit passively and where the director serves as the source for assessment and problem-solving. The feedback that

is given in traditional rehearsals may not always relate to all sections and students within the ensemble. Engaging in ongoing performance evaluation through cooperative learning could be a useful tool in helping students develop self-regulated practice skills.

Transfer. The statistically significant differences between the treatment and control groups' post-tests suggest that the learning which occurred over the course of the study had a transfer effect in subsequent activities. A study by Barry (1990) found that practice structures were effective for learning to correct performance errors. Although the warm-up was much easier than the musical selection, it had similar rhythmic and articulation patterns. For the treatment group, student engagement in the assessment and problem-solving activities may have led to the transfer of learning from the performance piece to the warm-up. While the treatment group had a statistically significant difference in favor of the warm-up compared to the pre-test, the control group scored lower on the warm-up than on the pre-test to a statistically significant degree. This demonstrates that transfer does not necessarily occur from sitting passively in a rehearsal. The active physical and mental engagement of applying musical concepts may make the difference in the transfer of musical learning.

Student Self-Assessment

The present study also investigated how students self-assessed their performance over the course of the six-week treatment. The data gathered from the student self-assessments on the CPAT form are descriptive in nature and neither reflects self-assessment achievement nor improvement. However, the data demonstrate differences among students and change over time. The performance elements students focused on in self-assessment were analyzed according to indications, comments, length of musical

segments, differences among instrument sections, and change over time. These results may have been greatly affected by the piece of music selected and the musical parts each section had within the piece. One of the features of the piece was its use of syncopated rhythm. This could account for the high incidence of rhythm as an element of focus for students. The clarinets indicated phrasing more often than other sections, which could be due to their part having more melodic lines. However, the flutes had similar lines and rarely indicated phrasing as a problematic area. Therefore, the assessment results must be taken into consideration in a broader scope and in conjunction with the qualitative results and existing research literature.

The results of the self-assessments on the Cooperative Performance Assessment Tools (CPAT) and qualitative data revealed that a great deal of variance existed in student ability to self-assess performance and to fix musical problems. Comparisons that best illustrate the degree of variance were the differences between the trumpet section, the flute and clarinet sections, and the percussion section. The trumpets appeared to have no difficulty in self-assessing their own performance and began using the score early in the study to assist them with deeper analysis of the full-band's performance. In their first cooperative sectional, they worked on musical decision making rather than lower-level fundamentals. The flute and clarinet sections struggled with either identifying musical problems or finding ways to solve problems. The percussion section had exceptional difficulty with self-assessment using musical terminology throughout the study. They mostly worked individually and needed much teacher guidance. It is important to clarify that the difficulty the percussion experienced was not a result of the treatment. These

activities merely revealed the lack of understanding that already existed within the group and raises questions about what students actually learn in traditional band rehearsals.

The CPAT data show that change in student self-assessment occurred over the course of the six-week study. The length of identified problem areas decreased steadily in each cooperative cycle. Changes occurred in some of the identified elements across cycles. Attention to rhythm decreased drastically, which could be due to performance improvement of that element. There were spikes in frequency for the performance elements of blend/balance, phrasing, and articulation. Steady increases occurred in dynamics and tone indications over the three cycles. This change over time may indicate that: student self-assessment progressed over the course of the study, some variance was due to improvements in performance, and that students were able to focus on different elements based on the quality of the performance.

Research on self-assessment in cooperative settings supports the findings that students can have difficulty in assessing their performance (Blom & Poole, 2004), but opportunities to engage with other students can aid students in developing better self-assessment skills (Bergee & Cecconi-Roberts, 2002; Daniel, 2004; Pulman, 2009). Pulman (2009) found that students developed a better sense of their playing ability and became more aware of their areas of weakness. Studies by Bergee & Cecconi-Roberts (2002) and Daniel (2004) found improvements in self-assessment ability over time. Studies outside of music have found that the results of cooperative learning may not always be immediate (Hsiung, 2012; Whicker, Bol, & Nunney, 1997). The six weeks allotted in the present study allowed for some development of musical analysis and

assessment to occur for many students, especially those of advanced and moderate skill. Students who struggled may have needed more time and guidance to develop these skills.

The CPAT results showed that students mostly focused on fundamental performance concepts such as rhythm and notes. They gave the least attention to performance elements that may require more advanced musical skills such as tone quality, tempo, and phrasing. Tempo, as a concept, is fairly straight-forward; however, it may require a more trained ear to identify slight fluctuations. Although band directors may value a comprehensive musicianship approach to rehearsals (Miles, 1993), they typically focus on lower-level musical concepts in traditional rehearsals (Carpenter, 19686; Goolsby, 1999; Menchaca, 1988). An investigation into the use of conceptual teaching in band rehearsals by Blocher et al. (1997) found that band directors only spent 32 seconds of a 20 minute rehearsal period on conceptual teaching. Yarbrough & Price (1989) also found that band directors provided little musical information in rehearsals. These findings support the *post hoc* analysis of the control group's video-taped rehearsals in which 32% of the rehearsal activities were devoted to rhythm, 15% to notes, 13% to articulation, and 8% to dynamics. Less than 3% of the activities were devoted to tempo, tone, and blend/balance each. Phrasing was only addressed once over the six weeks. Twenty three percent of ensemble playing activities were of unspecified focus.

Students in the treatment group were able to focus on fundamental concepts throughout the study and to delve into some more advanced musical concepts as the study progressed. Accomplishing this through cooperative learning activities with a positive effect on performance could enable the band director to focus on more advanced concepts such as intonation and phrasing during full-band rehearsals. It could allow for conceptual

teaching and emphasis on comprehensive musicianship rather than fundamentals and individual instrument sections.

Considerations for Implementing Cooperative Learning

The final research question posed for the present study concerned the factors that arose when implementing cooperative rehearsal strategies into high school band. The activities presented in the study were a change from typical rehearsal techniques in high school band. Therefore, it was necessary to develop an understanding of the potential issues that may arise in their implementation. Three areas were identified as especially important in the implementation of the activities developed for this study: time, director role, and individual accountability.

Research on the use of rehearsal time shows that directors spend approximately 29-33% of the rehearsal time on a single musical selection (Goolsby, 1996). That same amount of time proved difficult for the cooperative rehearsal activities in the present study. Although performance results were positive at the end of the study, the director identified the short time frame as being a challenge throughout the study. The researcher also observed the difficulty posed by the time constraints. Moving into and out of the cooperative sectionals reduced how much of the allotted 15-20 minutes the students were engaged in actual rehearsal. The director reported that it affected student momentum, meaning that they would have to stop in the middle of a productive session because the arbitrarily determined time had elapsed. The time constraints were also identified by the control director as problematic. Although research may describe the average rehearsal time spent on one musical selection, it is possible that it varies greatly from school to school, director to director, type of musical selection, the performance elements being

addressed, and the stage of preparation of the piece. Duke's (1999/2000) rehearsal frames emphasize that completion of the musical objectives should indicate the end of a rehearsal frame and be used to determine effectiveness. Abruptly ending in the middle of a rehearsal conflicts with this idea.

Using cooperative activities such as these may require an adjustment in the use of rehearsal time. According to Goolsby (1996), directors spend an average of 20.6% of rehearsal time on warm-ups, 28.9% on the first musical selection, and 32.5% on the second musical selection. When implementing a cooperative learning activity in band, the director may have to devote a larger portion of the rehearsal to the activity to get the most benefit from it. However, it is possible that the number of rehearsals needed for the cooperative learning activities could be lesser. The treatment group was able to successfully prepare the piece of music in six weeks by only rehearsing it twice a week.

The result of the director's role being an important factor in the present study is of no surprise. Throughout cooperative learning literature, the changing role of the teacher is consistently identified and discussed (Igel, 2010; Johnson & Johnson, 2009; Sharan, 1980; Slavin, 1999; Stepka, 1999). Some unique aspects arose due to the unique nature of the performance-based class. Upon realization that the students had difficulty self-assessing their performance and making musical decisions, the director adapted his use of full-band time to include more guidance in assessing problems and how to make decisions. He consistently engaged students across the ensemble in listening, deciding upon the problem, and choosing which interpretation they preferred. Early in the study, the director recognized that different sections needed different degrees of guidance. The

physical environment was also identified by the director as needing consideration in order to help facilitate the cooperative rehearsals.

Research into cooperative learning in music has consistently discussed the teacher's role in the activities (Goodrich, 2007; Holsberg, 2009). Studies by Bergee & Ceconni-Roberts (2002) and Daniel (2004) concluded that more teacher role was needed to help students develop the musical skills needed for self-assessment. Allsup (2002, 2003) labeled the teacher's role as that of facilitator, and Brown (2012) reported that the cooperative activities resulted in more of a partnership between teacher and students. This is somewhat contradictory to the research in traditional band settings that focus on the minute details of director behavior such as verbal and non-verbal communication (Blocher et al, 1997), procedures (Carpenter, 1986), intensity (Freeman, 2011), and modeling (Carpenter, 1986).

Implementing cooperative learning activities into high school band may require an adjustment for the director. Instead of identifying problem areas to students and leading them through activities to fix them, the director may have to guide students through the process. The director may have to develop stronger questioning skills and conceptual teaching strategies. Directors may also need to help students develop musical decision making and interpretive skills, as well as empower them to make those decisions. Adjustments may be needed based on the skill level of the students or section. Advanced students may need more challenging activities while students with less developed skills may need more teacher intervention.

The use of the forms to provide structure and individual accountability to the study activities met with some student resistance early in the first cycle according to the

director. However, the results of the individual CPATs demonstrated the varying ability in student self-assessment skills. It is difficult to know the cause of the fluctuating return rate of the CPAT forms throughout the study. Several factors could have affected it such as student attendance, forgetting, or not doing the assignment. These forms were not tied to student grades due to previously established grading criteria. Including self-assessments in grades may improve the return rate and the amount of student effort on the tasks. Although students may have resisted the use of the forms, they were necessary to provide structure to the activities and to aid students in focusing on musical concepts.

Russell & Austin (2010) found that 60% of grades in band are given for non-achievement based factors such as attendance. Burrack (2002) advocates grading on comprehensive musicianship concepts such as listening, higher-order thinking skills, and problem-solving. The present study provides a structure that can help band directors develop graded activities which focus on musical concepts rather than grading on non-musical criteria.

Conclusion

The results of the present study cannot be generalized beyond the two groups that participated in the experiment. However, this study presents a starting point for quantitative research into the effectiveness of cooperative learning on ensemble performance. While qualitative studies are highly valuable to music education, many ensemble directors are primarily concerned with performance outcomes. If a strategy has not been shown to have a positive effect on performance, it is unlikely directors will give them much consideration. The results of this study indicated a large positive effect for cooperative learning on band performance. Further research is needed with larger and

randomized samples. Investigating the effect of these types of cooperative learning activities on individual student achievement may also prove valuable.

Calls for change in the band paradigm abound in research and scholarly literature (Allsup & Benedict, 2008; Brown, 2012; Cangro, 2004; DiNatale & Russell, 1995; Dirth, 2000; Djordjevic, 2007; Holsberg, 2009; Inzenga, 1999). Allsup & Benedict (2008) described the traditional band paradigm as valuing competitiveness, efficiency, pragmatism, and exceptionalism. Most existing research, educational materials, and rehearsal strategies in band exemplify these values. Nothing is innately wrong with this traditional value system. However, these values and the subsequent practices have been built on the assumption that they can only be accomplished with the band director as the central figure for all musical knowledge, assessment, and problem-solving. It is assumed that because students are actively engaging in playing an instrument, they are cognitively engaging in the process of music making and learning. Research appears to support the effectiveness of certain rehearsal strategies, but the studies have all been based on the same assumptions which center on the director's process rather than student processes. The present study was conducted with the assumption that students can construct musical understanding in performance by engaging in the process itself with one another.

The new National Core Music Standards that were published in June 2014, after the conceptualization of the present study, reflect many of the concepts and philosophies inherent in the activities developed for the treatment group in the present study. The standards focus on processes rather than outcomes, and each standard includes process components (National Coalition for Core Arts Standards, 2014). For performance, the process components are: select, analyze, interpret, rehearse, refine, and present. The

Model Cornerstone Assessment states that “Students will document their ability to: ... develop rehearsal plans, rehearse, evaluate, and refine selected music over time” (National Coalition for Core Arts Standards, 2013, p. 1). The present study provides a structure with which this standard could be achieved in a way that enhances performance.

Appendices

Appendix A

Letters



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EXEMPTION CERTIFICATION

MEMO: Karen Compton
Education
307 Village Drive
Elizabethtown, KY 42701
PI phone #: (502)303-4497

FROM: Institutional Review Board
c/o Office of Research Integrity

SUBJECT: Exemption Certification for Protocol No. 14-0276-X4B

DATE: April 15, 2014

On April 14, 2014, it was determined that your project entitled, *An Investigation of Effectiveness of Cooperative Learning as a Rehearsal Technique for Improving High School Band Performance*, meets federal criteria to qualify as an exempt study.

Because the study has been certified as exempt, you will not be required to complete continuation or final review reports. However, it is your responsibility to notify the IRB prior to making any changes to the study. Please note that changes made to an exempt protocol may disqualify it from exempt status and may require an expedited or full review.

The Office of Research Integrity will hold your exemption application for six years. Before the end of the sixth year, you will be notified that your file will be closed and the application destroyed. If your project is still ongoing, you will need to contact the Office of Research Integrity upon receipt of that letter and follow the instructions for completing a new exemption application. It is, therefore, important that you keep your address current with the Office of Research Integrity.

For information describing investigator responsibilities after obtaining IRB approval, download and read the document "PI Guidance to Responsibilities, Qualifications, Records and Documentation of Human Subjects Research" from the Office of Research Integrity's Guidance and Policy Documents web page [<http://www.research.uky.edu/ori/human/guidance/htm#PIresp>]. Additional information regarding IRB review, federal regulations, and institutional policies may be found through ORI's web site [<http://www.research.uky.edu/ori/>]. If you have questions, need additional information, or would like a paper copy of the above mentioned document, contact the Office of Research Integrity at (859) 257-9428.

Reprint Authorization Letter

April 24, 2014

Karen Renae Compton
Email: renae.compton@am.dodea.edu

Re: Variants (SC8402) – Photocopy

Dear Karen,

This agreement constitutes our permission to you to produce forty-five (45) copies of the above referenced out of Publication for research purposes only. It is our understanding that copies will be used exclusively as part of your dissertation for a PhD in Music Education at the University of Kentucky. Any copies made must include the copyright information found at the bottom of the first page of music. All copies should be collected and destroyed following the six week study. This permission is granted to you at no charge.

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Sincerely,

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Appendix B

Warm-Up Exercise

Score

Warm-Up for Variants

Karen Renae Compton

The score is for a 4/4 piece in B-flat major. It features a woodwind section with Flute, Oboe, Bassoon, Clarinet in B \flat , Bass Clarinet, Alto Sax, Tenor Sax, Baritone Sax, Trumpet in B \flat , Horn in F, and Trombone. The brass section includes Baritone (T.C.), Euphonium, and Tuba. The percussion section consists of Snare Drum and Bass Drum. The woodwinds and brass play a melodic line starting on a half note B \flat in the first measure, followed by eighth notes. The Snare Drum plays a steady eighth-note pattern, and the Bass Drum plays a pattern of eighth notes with accents on the 2nd, 3rd, 4th, and 5th measures. Dynamics include *p* and *cresc.* throughout the piece.

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Appendix C
Measurement Materials

Performance Evaluation Form

Judge: _____

Recording: _____

Performance Evaluation Form

TONE AND INTONATION

Tone Quality
Comments:

Poor Fair Average Good Excellent

Blend/Balance
Comments:

Poor Fair Average Good Excellent

Intonation
Comments:

Poor Fair Average Good Excellent

INTERPRETATION

Phrasing/Expression
Comments:

Poor Fair Average Good Excellent

Dynamic Variation
Comments:

Poor Fair Average Good Excellent

Tempo
Comments:

Poor Fair Average Good Excellent

TECHNIQUE

Note/Pitch Accuracy
Comments:

Poor Fair Average Good Excellent

Rhythmic Precision
Comments:

Poor Fair Average Good Excellent

Articulation
Comments:

Poor Fair Average Good Excellent

OVERALL PERFORMANCE

I

II

III

IV

Comments:

I DISTINGUISHED Represents a superior performance. All basic elements performed on an exceptional artistic level with a nearly flawless performance and technical presentation.

II PROFICIENT Represents an excellent performance that is outstanding in some respects. All basic elements performed on an adequate artistic level with limited, but noticeable and obvious, performance and technical inconsistencies.

III APPRENTICE Represents a good performance, but not outstanding. Areas within one or more of the basic elements are noticeably inconsistent and inadequate.

IV NOVICE Represents a below average performance. Several areas within two or more basic elements are inadequately demonstrated, with several obvious technical inconsistencies.

KMEA Evaluator's Comment Sheet

KENTUCKY MUSIC EDUCATORS ASSOCIATION EVALUATOR'S COMMENT SHEET – BAND EVENTS

Time of appearance: Event number: Event:
Class: Division: Director:
School: Director:

Comments must deal with fundamental principles and be constructive. Minor details may be marked on the music.

TONE

 Quality
 Breath support and control
 Blend
 Balance (section)
 (ensemble)

INTONATION

 Individual
 Ensemble

INTERPRETATION

 Tempo
 Phrasing
 Expression
 Style
 Dynamic Variation

TECHNIQUE

 Note Accuracy
 Articulation
 Precision
 Rhythm
 Posture/Playing Position

OTHER FACTORS

 Overall effect
 Choice of music
 Stage presence

CIRCLE RATING OF THIS PERFORMANCE:

- I DISTINGUISHED** Represents a superior performance. All basic elements performed on an exceptional artistic level with a nearly flawless performance and technical presentation.
- II PROFICIENT** Represents an excellent performance that is outstanding in some respects. All basic elements performed on an adequate artistic level with limited, but noticeable and obvious, performance and technical inconsistencies.
- III APPRENTICE** Represents a good performance, but not outstanding. Areas within one or more of the basic elements are noticeably inconsistent and inadequate.
- IV NOVICE** Represents a below average performance. Several areas within two or more basic elements are inadequately demonstrated, with several obvious technical inconsistencies.

_____ **COMMENTS ONLY**

Decisions of the evaluators shall be final

Evaluator's statement substantiating rating (include suggestions for improvement use back if necessary)

EVALUATOR'S SIGNATURE

Operational Definitions for Performance Assessment

Tone Quality: The overall quality of instrumental and ensemble sound (e.g., maturity, airiness, support).

Blend/Balance: The overall unity of sound and appropriate emphasis of musical lines in relation to their function in the piece (e.g., melody, countermelody, harmonic foundation)

Intonation: The overall ability of the ensemble members to play in tune with one another; the sharpness and flatness of pitches.

Phrasing/Expression: The overall interpretation and execution of expressive elements resulting in an appropriate degree of musical effect and representative style (e.g., phrasing through interpreted dynamics; interpreted articulation).

Dynamic Variation: The execution of indicated dynamic markings with appropriate levels of contrast.

Tempo: The overall execution of the indicated tempo markings in the musical score.

Note Accuracy: The ensemble's overall performance of correct written pitches (e.g., correct fingerings or slide positions).

Rhythmic Precision: The overall correctness and unity in the performance of written rhythms.

Articulation: The overall execution of the way in which notes are attacked, sustained, and released; the execution of indicated articulation markings.

Anchor

Judge: Anchor

Recording: 01

Performance Evaluation Form

TONE AND INTONATION

Tone Quality Poor Fair Average Good Excellent
 Comments:
 - Noticeable inaccuracies in trumpets and clarinets in some sections of the song.
 - Tone is not consistently characteristic of high school grade level III and for the piece.
 - Extended lapses in trumpet tone for some sections of the piece.

Blend/Balance Poor Fair Average Good Excellent
 Comments:
 - Noticeable imbalances between woodwinds and brass in some sections of the song.
 - Blend/balance are sometimes consistent with high school grade level III and for the piece, but not always.
 - Although lapses are corrected quickly, they occur frequently.

Intonation Poor Fair Average Good Excellent
 Comments:
 - Noticeable intonation issues in some sections of the song and within some instrument sections.
 - Intonation is not consistently characteristic of high school grade level III.
 - Lapses occur in slower sections for extended periods of time.

INTERPRETATION

Phrasing/Expression Poor Fair Average Good Excellent
 Comments:
 - Noticeable lack of phrasing and expression in lyrical sections.
 - The lack occurring in certain sections of the piece make it not consistently characteristic of high school grade level III and the piece.
 - Lapses are extended in certain sections of the piece.

Dynamic Variation Poor Fair Average Good Excellent
 Comments:
 - Consistent performance of the indicated dynamic markings with enough contrast to easily be perceived.
 - Dynamics are characteristic of high school grade level III and of the song.
 - Minor lapses occur occasionally, but are quickly recovered.

Tempo Poor Fair Average Good Excellent
 Comments:
 - Noticeable tempo fluctuations at 27.
 - Performance of tempo was not consistently characteristic of high school grade level III and the song.
 - One extended lapse in tempo that was not quickly corrected.

TECHNIQUE

Note/Pitch Accuracy Poor Fair Average Good Excellent
 Comments:
 - Consistent wrong notes in trumpets and sometimes in clarinets.
 - Note accuracy is occasionally characteristic with high school grade level III, mostly in the A melody while contrasting sections of the song consistently have wrong notes.
 - Lapses are recurring and for extended periods of time.

Rhythmic Precision Poor Fair Average Good Excellent
 Comments:
 - Performance of rhythms is consistently accurate.
 - Rhythmic precision is characteristic of high school grade level III and of the piece.
 - Minor lapses occur somewhat frequently, but are quickly recovered.

Articulation Poor Fair Average Good Excellent
 Comments:
 - Indicated articulation markings are played consistently accurate.
 - Some instruments and instrument sections do not execute articulations at a characteristic level for high school grade level III, but the overall articulation is appropriate. (Some of the issues are more due to tone quality than articulation.)
 - Lapses occur in certain instrument sections frequently.

OVERALL PERFORMANCE I II III IV

Comments:
 Reasons for II rating:
 - Mistakes/problem areas are limited to certain instruments and instrument sections, not the entire band.
 - Many performance elements are performed with "adequate artistic level."
 Reasons not a I rating:
 - Too many mistakes/problem areas that detract from the performance.
 - Lack of higher level musicianship skills that keep performance from being on an "exceptional artistic level."
 Reasons not a III rating:
 - Although some performance elements are inconsistent at times for certain instruments/sections, it is in indicative of the entire band.
 - Mistakes are not to the degree of "inadequate."

I DISTINGUISHED Represents a superior performance. All basic elements performed on an exceptional artistic level with a nearly flawless performance and technical presentation.

II PROFICIENT Represents an excellent performance that is outstanding in some respects. All basic elements performed on an adequate artistic level with limited, but noticeable and obvious, performance and technical inconsistencies.

III APPRENTICE Represents a good performance, but not outstanding. Areas within one or more of the basic elements are noticeably inconsistent and inadequate.

IV NOVICE Represents a below average performance. Several areas within two or more basic elements are inadequately demonstrated, with several obvious technical inconsistencies.

Rubric

Rubric for Performance Evaluation Form

Evaluation Criteria	Excellent	Good	Average	Fair	Poor
<p>Accuracy</p> <p>Characteristic</p> <p>Degree of mistakes</p>	<p>Performance is consistently accurate and characteristic of the skill level and musical selection; minor infrequent lapses are immediately recovered.</p>	<p>Performance is consistently accurate and characteristic of the skill level and musical selection; somewhat frequent minor lapses are quickly recovered.</p>	<p>Performance contains noticeable inaccuracies and is not consistently characteristic of the skill level and musical selection; frequent or extended lapses are not corrected quickly.</p>	<p>Performance contains consistent inaccuracies and is only occasionally characteristic of the skill level and musical selection; lapses are recurring and extended.</p>	<p>Performance contains inaccuracies throughout and is uncharacteristic of the skill level and musical selection; lapses are to such a degree that they greatly affect the performance.</p>

Judge Instructions for Pre-Test and Post-Tests

Dear Judge,

Thank you for your assistance with my study. Enclosed are the needed materials for the first phase of adjudication. Instructions for this process are below. Please feel free to contact me with any questions.

Before judging the recordings, I will need to speak with you in a brief phone call to review the anchor materials and forms. Please familiarize yourself with the Performance Evaluation Form, Definitions of Terminology, and Rubric. Before our phone conversation, please listen to the anchor recording and look over the corresponding adjudication sheet.

After our call, please evaluate the recordings of Creed by Himes and Joy Revisited by Tichelli. You may listen to each recording as many times as needed to make an accurate assessment, but please try to give each recording equal attention. Feel free to refer to the anchor as needed.

Form Instructions:

- The Performance Evaluation Form is similar to KMEA's form, but uses a rating scale for each element as well as an overall rating.
 - o For the Overall Performance rating, please do not try to "average" the individual element ratings into a final rating. Use the separate rating descriptions found at the bottom of the form.
 - o Please rate each individual element, leaving none blank. Use the rubric to assist you in assigning the ratings.
 - o Comments would be greatly appreciated when possible.

Recordings:

- The CD contains two recordings of pieces to be evaluated. You will hear a brief excerpt from Satie's *Gymnopedie No. 1* between the pieces to give you a break from evaluating. Please do not skip over this recording.
- When evaluating each recording, please do so as though it were at a District-Level KMEA Concert Festival with the expected performance standards.
 - o You may listen to the recordings as many times as needed.

- Please pause the CD after each piece to complete the form.
- Please try not to compare the recordings to one another, but treat them as isolated performances.

When you have completed the evaluations, you can either scan the evaluation forms into email or return them in the stamped return envelope. Please return only the completed evaluation forms. The anchor and other evaluation materials should be kept for the second set of evaluations.

Thank you again for your assistance.

Sincerely,

Rena Compton

Dear Judge,

Thank you for your assistance with my study. Enclosed are the materials to be evaluated in the same manner as the previous set of materials. There are two recordings of a piece called *Variants* and two recordings of a Warm-up. Please evaluate each recording on its own merits and attempt to avoid comparing them to one another.

Thank you again for your assistance. Please feel free to contact me with any questions.

Sincerely,

Rena Compton

Equipment List

2 Tascam DR-05 Linear PCM Recorders

2 Samsung HMX-F90 HD Camcorders

2 Sets music for *Variants* by Jack Bullock

Appendix D

Comparison of Music Assessment Terminology

Comparison of Music Assessment Terminology

KMEA	Evans, 2012	Hewitt 2002	Mantemayor, et al 2004	Sagen, 1978	Worthy, 2003	Dirth, 2000	Ellsworth, 1985	Bergee, 1992
Tone: Quality		Tone		Tone Quality	Intonation/ Tone	Tone: Quality Interpretation: Vibrato	Tone Quality	Tone
Tone: Breath support and control						Tone: Control/ Focus; Breath Support; Projection		
Tone: Blend							Balance and Blend	
Tone Balance	Matching/ Ensemble		Balance				(Balance and Blend)	
Intonation: Individual; Ensemble	Pitch/ Intonation		Tuning (Intonation)	Intonation	(Intonation/ Tone)	Intonation: Tonality	Intonation	Intonation
Interpretation: Tempo	Pulse/ Vertical Alignment	Tempo			Tempo	Interpretation: Tempo		
Interpretation: Phrasing						Interpretation: Phrasing	Phrasing	
Interpretation: Expression				Musical Interpretation		Interpretation: Artistry	Style: Expression, Dynamics, Nuances, Articulation, Vibrato	Interpretation/ Musical Effect
Interpretation: Style						Interpretation: Style		
Interpretation: Dynamic Variation			Articulation/ Dynamics		Dynamics	Interpretation: Dynamics	Dynamics	
Technique: Note Accuracy	Correct notes/ rhythms	Melodic Accuracy	Notes/ Rhythms	Technical Accuracy	Pitch Accuracy			
Technique: Articulation		Technique/Articulation	(Articulation/ Dynamics)		Articulation	Technique: Articulation; Flexibility Technique: Flexibility	(Style: Expr, Dyn., Nuances, Art., Vibrato)	Technique (Articulation)
Technique: Precision						Technique: Facility		
Technique: Rhythm	(Correct notes/rhythm)	Rhythmic Accuracy	(Notes/ Rhythms)	Rhythmic Accuracy	Rhythm Accuracy		Rhythmic Quality	
Other Factors: Overall Effect	Overall Concept	Overall Performance		General Music Effect				

Appendix E
Pilot Study Summary

Pilot Study Summary

Overview

The purpose of this pilot study was to investigate the effects of cooperative learning rehearsal activities on ensemble performance in high school band compared with traditional rehearsal techniques. Participants (N=37) were band students who attended a high school on a military base in Kentucky. They were enrolled in one of two sections of band with mixed ability levels. One section of band was randomly assigned as the treatment group and the other section served as the control group. The treatment group participated in cooperative learning activities geared toward improving ensemble performance and the control group engaged in traditional rehearsal activities over a period of two weeks. Study activities were conducted on Mondays, Tuesdays, Wednesdays, and Fridays with an additional day for pre-treatment activities.

The study used a quasi-experimental non-equivalent post-test control group design (Campbell & Stanley, 1963). The treatment activities involved students assessing their ensemble performance, working together to identify areas that needed to be improved, and working together to reach student identified performance goals. Both groups were post-tested at the end of the two weeks through recordings of their performances. Recordings, Performance Evaluation Forms (PEF), operational definitions, copies of the scores, and an instruction letter were mailed to independent judges for evaluation. The completed adjudication sheets were tested for reliability using Pearson product-moment coefficient and resulted in a reliability of $r=.58$.

The treatment group used two activity forms in their cooperative activities – the Band and Section Performance Assessment (BSPA) and the Goals, Progress, and

Rehearsal Planning form (GPRP). Descriptive data were compiled from the two forms to provide insight into the performance elements students attended to the most and the least.

Results

Table 1 shows the results of the post-test scores. The data are presented as averaged judge ratings for each element on the Performance Evaluation Form. The table includes ratings for the warm-up and *Pieces of Eight* for both groups. The treatment group scored higher than, or the same as, the control group in all elements except for Tone Quality, Blend/Balance, and Note Accuracy on *Pieces of Eight*.

Table 1. *Post-Test Ratings on Performance Evaluation Form.*

	Warm-Up		<i>Pieces of Eight</i>	
	Treatment	Control	Treatment	Control
Tone Quality	3	2	2.5	3
Blend/Balance	3	2.5	2.5	3
Intonation	2.5	2	2.5	2.5
Phrasing/Expression	2.5	2.5	3	2
Dynamic Variation	2.5	2.5	3.5	2
Tempo	3.5	2.5	3	2.5
Note Accuracy	3	2.5	2	2.5
Rhythmic Precision	2.5	2.5	3.5	2.5
Articulation	2	2.5	2	2
Overall Performance	2.5	1.75	2.75	2

On the BSPA form, student element ratings and overall ratings reflected a misunderstanding between the two rating systems (fair/poor/average/good/excellent and I-IV). Students who scored the individual elements high sometimes scored the overall performance ratings correspondingly low and vice versa. Therefore, the results of the overall performance ratings were discarded.

Tables 2 and 3 show the frequency counts of student ratings on the BSPA each week, as well as the corresponding percentage of students. Student agreement on ratings increased between the first and second evaluation sessions in four categories. During the first session, the highest degree of agreement was found for tempo with 53% of student agreement. In the second assessment student agreement was at 60% for the elements of tone, intonation, blend/balance, and rhythmic precision. Between the two weeks, student agreement increased on tone from 40% to 60%, blend/balance from 40% to 60%, rhythmic accuracy from 33% to 60%, and note accuracy from 27% to 40%. The only decline in agreement was found in tempo from 53% to 40%.

Table 2. *Frequency and Percentage of Student Self-Assessment Ratings – Week 1*

<i>n</i> =15	Poor	Fair	Average	Good	Excellent	N/A or Blank
Tone	3 (20%)	6 (40%)	3 (20%)	1 (6%)	0	2 (13%)
Intonation	6 (40%)	4 (27%)	2 (13%)	0	0	3 (20%)
Blend/ Balance	4 (27%)	6 (40%)	3 (20%)	0	1 (6%)	1 (6%)
Phrasing/Expression	1 (6%)	6 (40%)	1 (6%)	1 (6%)	0	6 (40%)
Dynamics	2 (13%)	6 (40%)	3 (20%)	1 (6%)	0	3 (20%)
Tempo	0	3 (20%)	8 (53%)	2 (13%)	1 (6%)	1 (6%)
Rhythmic Precision	0	5 (33%)	5 (33%)	1 (6%)	2 (13%)	2 (13%)
Pitch Accuracy	4 (27%)	2 (13%)	4 (27%)	2 (13%)	0	3 (20%)
Articulation	3 (20%)	4 (27%)	5 (33%)	1 (6%)	0	2 (13%)

Table 3. *Frequency and Percentage of Student Self-Assessment Ratings – Week 2*

<i>n</i> =15	Poor	Fair	Average	Good	Excellent	N/A or Blank
Tone	0	1 (6%)	4 (27%)	9 (60%)	0	2 (13%)
Intonation	0	2 (13%)	3 (20%)	2 (13%)	0	9 (60%)
Blend/ Balance	0	2 (13%)	9 (60%)	3 (20%)	1 (6%)	1 (6%)
Phrasing/ Expression	1 (6%)	3 (20%)	4 (27%)	0	2 (13%)	6 (40%)
Dynamics	0	3 (20%)	5 (33%)	4 (27%)	1 (6%)	3 (20%)
Tempo	0	0	6 (40%)	6 (40%)	3 (20%)	1 (6%)
Rhythmic Precision	0	0	5 (33%)	9 (60%)	1 (6%)	1 (6%)
Pitch Accuracy	0	1 (6%)	5 (33%)	6 (40%)	0	4 (27%)
Articulation	0	4 (27%)	3 (20%)	3 (20%)	2 (13%)	4 (27%)

Discussion and Suggested Modifications

Differences were found between the two groups in the post-test performance recordings demonstrating that the treatment was effective in increasing ensemble performance. With an extended time frame for the study, it is possible that additional differences could be found in individual performance elements. Suggestions for modifications to the study design are outlined.

1. Increase the time frame to six or eight weeks and reduce the number of days for study activities to two per week. The pilot study had a more compact schedule which resulted in student fatigue. Additionally, two weeks did not allow enough time for ensembles to make marked improvement. A complete study would need to be longer and less compact. With this change, the collaborative cycle would span two weeks rather than one.
2. Use two separate sites, both of which are not connected to the researcher to reduce the chance of bias. The site should have larger class sizes because the cooperative activities were more challenging to implement with such small classes and limited instrumentation.
3. A pretest should be included to compare the performance ability of the two participant groups to ensure they are no statistically significant differences. This would change the research design to a quasi-experimental pretest posttest non-equivalent control group design (Campbell & Stanley, 1963).
4. Use a different musical selection for the study. Although *Pieces of Eight* was on KMEA's list as being a grade three, it was too easy. It also had a high degree of repetition and the students quickly became bored with it. The three proposed new

selection possibilities are *A Walk in the Morning Sun* by Pierre La Plante, *Variants* by Jack Bullock, and *On the American River* by Alan Silva. The final piece would be determined by director and student experience with them.

5. Another warm-up should also be written to accompany the new piece. It needs to include more interpretive elements. One of the judges commented that it was difficult to judge the warm-up due to limited markings.
6. The Band and Section Performance Assessment form should be cut from the study design. It was difficult for the students to use when listening to the music. Some of the ratings indicated a lack of either understanding or effort from the students. In order to collect data from students, a modified assessment form should be used.
7. The Goals, Progress, and Rehearsal Planning form should be modified in several ways. Students were not always specific in their responses possibly due to time constraints.
8. To increase reliability on the assessment form, several methodological changes should be considered.
 - a. Judges with advanced degrees in music education should be used. One of the judges gave blanket ratings to all of the categories. This judge was very experienced with KMEA adjudication methods which use a global approach. The second judge gave much more varied ratings and detailed comments. Although this judge was also familiar with KMEA's approach, he also holds a doctoral degree in music education. It is believed that he

better understood the purpose of the format and what was needed for an empirical study.

- b. Training should be provided for each judge. This would consist of a phone call or in-person meeting with each judge to discuss the form, definitions, and the performance standards.
- c. Allow the judges to listen to the recordings twice. On the instruction sheet, the judges were asked to listen only once to imitate a festival rating. However, the goal is to get accurate and detailed ratings.

9. Due to the time constraints needed in order to control for the amount of rehearsal time used by each group, several treatment factors were affected and need to be adjusted.

- a. The discussion elements that occur during full ensemble rehearsals should be limited. Students are so used to not talking during rehearsals that trying to get feedback was difficult. In place of the ongoing questioning, short small-group discussion activities focused on specific musical elements should replace them.
- b. Instead of encouraging students to combine sections to work on specific performance elements, pre-determined groups should be assigned by the teacher.

10. In order to keep track of activities and issues, a reflection sheet should be given to the director of the treatment group. The form should ask the director for information on the activities that occurred during the rehearsal and ask for reflection on those rehearsals

11. All rehearsals for each group should be videotaped. This will allow the researcher to verify time and activities. It will also offer a source for qualitative information to be collected.
12. The researcher should be present during at least one treatment rehearsal per week for the length of the study. This will allow for observation of the activities in case modifications or help is needed for future activities.

Appendix F

Cooperative Structures Comparison Charts

Group Investigation and Group Performance Preparation

Group Investigation (GI) (Sharan, 1992)	Group Performance Preparation (GPP)
<p>Goals:</p> <ul style="list-style-type: none"> - Content acquisition 	<p>Goals:</p> <ul style="list-style-type: none"> - Performance preparation - Content elaboration and application
<p>Structure: Fixed</p> <ul style="list-style-type: none"> - Occurs once. - For an extended period of time depending on the content. - Resulting in a summative presentation of knowledge. 	<p>Structure: Cyclical</p> <ul style="list-style-type: none"> - Recurring - Each cycle is of a moderate length of time (1-2 weeks). - Builds upon the previous cycle of GPP. - Cycles end in group performance of a piece of music.
<p>Stages:</p> <ol style="list-style-type: none"> 1. Determine sub-topics and groups 2. Plan investigation 3. Carry out investigation 4. Plan presentation 5. Make presentation 6. Evaluate 	<p>Stages:</p> <ol style="list-style-type: none"> 1. Assess performance 2. Set goals for improvement and groups/sections 3. Rehearse in sections and flexible groupings 4. Determine full rehearsal goals 5. Full rehearsal with ongoing student evaluation and feedback 6. Record performance for evaluation
<p>Teacher Roles:</p> <ul style="list-style-type: none"> - Lead discussions - Provide initial material - Coordinate organization of investigation - Help formulate realistic plans - Help maintain cooperative norms - Help locate appropriate resources - Meet with steering committee - Evaluate understanding and knowledge 	<p>Teacher Roles:</p> <ul style="list-style-type: none"> - Facilitate full ensemble discussions - Provide materials - Conduct pieces - Coordinate investigation activities - Help with section rehearsals when needed - Help maintain cooperative norms - Serve as resource

Student Roles: <ul style="list-style-type: none">- Generate and sort questions of interest- Choose groups and assign roles- Plan investigation- Choose and locate sources/resources- Integrate and summarize findings- Plan and carry out presentations- Give feedback on presentations	Student roles: <ul style="list-style-type: none">- Evaluate section and full ensemble performance- Determine performance goals- Work together to improve performance- Determine mixed groupings- Make musical decisions on interpretation
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Think-Pair-Share and Assess-Compare-Share

Think-Pair-Share (Lyman, 1981)	Assess-Compare-Share (A-C-S)
Goals: <ul style="list-style-type: none"> - Social skill development - Content elaboration 	Goals: <ul style="list-style-type: none"> - Performance assessment - Content elaboration - Music listening skill development
Structure: Fixed <ul style="list-style-type: none"> - Occurs once - For a short period of time within context of other class activities. - Results in a class-wide discussion 	Structure: Fixed <ul style="list-style-type: none"> - Occurs once - For a moderate length of time - Results in class-wide discussion of ensemble performance.
Stages: <ul style="list-style-type: none"> - “Think” about a teacher-assigned prompt - “Pair” with a classmate to discuss thoughts on the prompt - “Share” results of discussion with class 	Stages: <ul style="list-style-type: none"> - “Assess” recording of performance - “Compare” evaluations in like-instrument sections - “Share” results with full ensemble
Teacher Roles: <ul style="list-style-type: none"> - Provide prompt - Organize activity - Help maintain cooperative norms - Facilitate discussion - Help students make connections 	Teacher Roles: <ul style="list-style-type: none"> - Facilitate activity and performance playback - Help maintain cooperative norms - Facilitate discussion - Help students make musical connections
Student Roles: <ul style="list-style-type: none"> - Think independently about prompt - Interact with partner and whole class according to cooperative norms - Discuss prompt using appropriate techniques such as clarification, paraphrasing, and listening 	Student Roles: <ul style="list-style-type: none"> - Listen critically to performance - Assess performance according to evaluation form - Discuss and compare performance evaluations and identify areas of success and needed improvement - Interact with classmates according to cooperative norms.

Appendix G
Study Instructions

Treatment Group Instruction Overview

Rehearsals

- Rehearse *Variants* twice a week for 15-20 minutes for 6 weeks (total of 12 rehearsals).
 - **Schedule.** Choose two days that are not back-to-back to do the study rehearsals (Monday and Thursday are recommended, but can be changed based on your needs).
 - **Warm-Up.** Please play through the warm-up right before rehearsing *Variants* each time. It is important not to “practice” the warm-up, just run through it regardless of what happens (unless you need to restart).
 - **Rehearsal.** Please rehearse *Variants* using the activities outlined on subsequent pages.
 - **Video-recording.** Please turn on the camera before starting the warm-up and the rehearsal of *Variants*.
 - **Visit.** I’ll visit once a week just to observe in order to make modifications to the next cycle’s activities.

Recordings

- **Bi-Weekly.** At the end of the last rehearsal every two weeks, please record the band’s performance of *Variants* only using the Zoom Recorder.
- **Final.** At the end of the final rehearsal for the study please record both the warm-up and *Variants*.

Other information

- **Home Practice.** Have students include *Variants* in their regular home practice, but don’t place any special emphasis on it. They should just treat it as any other piece.
- Please don’t be concerned with how ready the piece is when time for the final recording. It is possible that 12 rehearsals is not enough time to get the piece fully prepared for a performance.

Schedule Overview

Pre-Study

- Record sight-reading of warm-up
- Record sight-reading of *Variants*
- Establish cooperative norms

Cycle I

Day 1. Warm-up; assess previous performance; practice.

Day 2. Section practice; track goal accomplishment.

Day 3. Section and combined section practice; track goal accomplishment; identify areas for full-band rehearsal.

Day 4. Full-band rehearsal; recording.

Cycle II

Day 1. Warm-up; assess previous performance; establish goals; practice.

Day 2. Section and combined section practice; track goal accomplishment.

Day 3. Section and combined section practice; track goal accomplishment; identify areas for full-band rehearsal.

Day 4. Full-band rehearsal; recording.

Cycle III

Day 1. Warm-up; assess previous performance using the score; establish goals; practice.

Day 2. Combined section practice; focus group meeting; track goal accomplishment.

Day 3. Focus group report; combined section practice; track goal accomplishment; identify areas for full-band rehearsal.

Day 4. Full-band rehearsal; final recording (warm-up and *Variants*).

Establishing Student Interaction Expectations

Questions posed to students:

- How many of you have participated in group work in high school?
- Would someone like to share their experience whether good or bad?
- Has anyone had the opposite experience (good/bad)?

Instructions to students:

- In groups of two or three, discuss your experiences with group work and make two lists – one with the factors that made your experiences good and one with factors that made your experiences bad.
- We are going to go around the room and share one good and one bad factor from each group and write them on the board. If your group had something similar, one person from your group should raise their hand.
- Looking at our final lists, what expectations of one another can we agree upon? I need one volunteer to write them down as we decide.

CYCLE I
Weeks 1 and 2

Week 1

Day 1:

- **Video-recording.** Start video recorder.
- **Warm-up.** Play through the warm-up
- **Assessment Tool.** Hand out the “Collaborative Performance Assessment Tool” to students and go over the instructions. Be sure to clarify any musical terminology (see attached definitions sheet).
- **Assess Recording.** Play the recording of the group’s sight-reading of *Variants* and ask students to listen and assess their **section’s performance** and complete the CPAT form. (You may want to have them mark on their music first instead of using the form, then transfer that information to the form.)
- **Discuss and set goals.** Once they have individually done steps 1 and 2 on the CPAT, ask them to talk with their fellow section members about what they think needs to be worked on first. As they are discussing it, give each section a “**Goals, Progress, and Rehearsal Planning**” and ask them to fill in Part I.
 - If you have only 1 student in some sections, ask them to get with the most similar section.
- **Share.** Have each section quickly identify their highest priority for practice to the full-band. If there are any connections that can be made between sections, please help to point that out (i.e. similar rhythmic problems, a specific section that was especially troublesome).
- **Practice.** If there is time left, let students break into sections (or combined sections) to start working towards their goals.
- **Hand in worksheets.** Please have students turn in all forms to you.
- **Reflection.** At the end of the rehearsal, please complete the reflection for that day.

Day 2

- **Video-recording.** Start video recorder.
- **Warm-up.** Have the whole band play through the warm-up.
- **Goals sheet.** Hand out the goals sheet to sections. Instruct sections to complete Part II at the end of their sectional and to hold on to it until the next rehearsal (unless you think they will lose it).
- **Sectionals.** Have students break into sectionals. Instruct them to work together to fix problems and that the section leader should not dominate the practice session. They should assign each member to be in charge of different elements (rhythm, pitch, dynamics, articulation, tempo, etc.).
- **Facilitate.** As the groups work together, visit each group to listen to their progress and answer any questions they may have.
 - **Percussion.** The percussion may need some help getting started since they have so many different parts. Depending on their identified goals, they may need to first work with whomever is on the same part.
 - **Help.** Be careful not to “run” a sectional if a group is having difficulty. Help guide them on what to work on and ways to fix it, but let them implement those strategies.
- **Progress.** Have sections complete the day’s progress on the GPRP form.
- **Full-band.** Depending on how the sectionals are going, you may or may not want to have the full-band play the piece.
- **Reflection.** At the end of the rehearsal, please complete the reflection for that day.

Week 2

Day 3

- **Video-recording.** Start video recorder.
- **Warm-up.** Have the whole band play through the warm-up.
- **Run-through.** Have the band play through the piece, listening for their section's performance on their identified goals.
- **Discuss.** Have them briefly discuss their performance, what was better, and what needs to be worked on.
- **Sectionals.** Have them break into sectionals and continue working on their goals. If you notice that any two sections are working on the same part, ask them to work together. You can also pre-assign groups to work together (depending on progress).
- **Facilitate.** Check on sections for progress and to see if they need help or guidance. You may need to instruct them to work with another section if you see they are working on the same part as another group.
- **Progress and Planning.** Have sections complete the day's progress on the GPRP form and fill out part III. Have students turn the GPRPs in.
- **Reflection.** At the end of the rehearsal, please complete the reflection for that day.

Before next rehearsal. Compile their identified areas to work on in full-band rehearsal.

Day 4.

- **Video-recording.** Start video recorder.
- **Warm-up.** Have the whole band play through the warm-up.
- **Full-band rehearsal.** Work on the areas students identified as needing work in full-band. Ask for student feedback on their performance. Prompt them for deeper musical thought (articulation, dynamics, etc.).
- **Record.** Record a run-through of the piece at the end of the rehearsal.

CYCLE II

Weeks 3 and 4

Week 3

Day 1:

- **Video-recording.** Start video recorder.
- **Warm-up.** Play through the warm-up
- **Assessment Tool.** Hand out a new copy of the “Collaborative Performance Assessment Tool” (CPAT) to students.
- **Assess Recording.** Play the recording of the group’s last performance of Variants and ask students to listen and assess their **section’s performance** and complete the CPAT form. (You may want to have them mark on their music first instead of using the form, then transfer that information to the form.)
 - **Advanced groups.** Any groups that are more advanced (trumpets and low brass) can be instructed to listen to each other’s performance in relation to their own so they can work together in sectionals.
- **Discuss and set goals.** Once they have individually done steps 1 and 2 on the CPAT, ask them to talk with their fellow section members about what they think needs to be worked on first. As they are discussing it, give each section a new “**Goals, Progress, and Rehearsal Planning**” and ask them to fill in Part I.
 - If you have only 1 student in some sections, ask them to get with the most similar section.
- **Share.** Have each section quickly identify their highest priority for practice to the full-band. If there are any connections that can be made between sections, please help to point that out (i.e. similar rhythmic problems, a specific section that was especially troublesome).
- **Practice.** If there is time left, let students break into sections (or combined sections) to start working towards their goals.
- **Hand in worksheets.** Please have students turn in all forms to you.
- **Reflection.** At the end of the rehearsal, please complete the reflection for that day.

Day 2:

- **Video-recording.** Start video recorder.
- **Warm-up.** Have the whole band play through the warm-up.
- **Goals sheet.** Hand out the goals sheet to sections. Instruct sections to complete Part II at the end of their sectional and to hold on to it until the next rehearsal (unless you think they will lose it).
- **Sectionals.** Have students break into sectionals. Instruct them to work together to fix problems. They should assign each member to be in charge of different elements (rhythm, pitch, dynamics, articulation, tempo, etc.).
 - **Advanced groups.** You may want to have the more advanced sections work together (trumpets, low brass).
- **Facilitate.** As the groups work together, visit each group to listen to their progress and answer any questions they may have.
 - **Help.** Be careful not to “run” a sectional if a group is having difficulty. Help guide them on what to work on and ways to fix it, but let them implement those strategies.
- **Progress.** Have sections complete the day’s progress on the GPRP form.
- **Full-band.** Depending on how the sectionals are going, you may or may not want to have the full-band play the piece.
- **Reflection.** At the end of the rehearsal, please complete the reflection for that day.

Week 4

Day 3:

- **Video-recording.** Start video recorder.
- **Warm-up.** Have the whole band play through the warm-up.
- **Run-through.** Have the band play through the piece, listening for their section's performance on their identified goals or to listen for new areas to address.
 - **Advanced players.** You may want to have some of your more advanced players sit out and listen to the performance and give some feedback to their sections and the group.
- **Discuss.** Have them briefly discuss their performance, what was better, and what needs to be worked on.
- **Sectionals.** Have them break into sectionals and continue working on their goals. If you notice that any two sections are working on the same part, ask them to work together. You can also pre-assign groups to work together (depending on progress).
- **Facilitate.** Check on sections for progress and to see if they need help or guidance. You may need to instruct them to work with another section if you see they are working on the same part as another group.
- **Progress and Planning.** Have sections complete the day's progress on the Goals form and fill out part III. Have students turn the Goals form in.
- **Reflection.** At the end of the rehearsal, please complete the reflection for that day.

Before next rehearsal. Compile their identified areas to work on in full-band rehearsal.

Day 4:

- **Video-recording.** Start video recorder.
- **Warm-up.** Have the whole band play through the warm-up.
- **Full-band rehearsal.** Work on the areas students identified as needing work in full-band. Ask for student feedback on their performance. Prompt them for deeper musical thought (articulation, dynamics, etc.).
- **Record.** Record a run-through of the piece at the end of the rehearsal.

CYCLE III

Weeks 5 and 6

Week 5

Day 1: There may not be much practice time on this first day due to having to discuss the score, have a large-group discussion, and assign groups.

- **Video-recording.** Start video recorder.
- **Warm-up.** Play through the warm-up
- **Assessment Tool.** Hand out a new copy of the “Collaborative Performance Assessment Tool” (CPAT) to students.
- **Score.** Hand out a copy of the score to all students and briefly discuss how to read it.
- **Assess Recording.** Students should focus on the overall band performance when assessing the performance. Encourage them to focus on bigger picture concepts like articulation, phrasing, and dynamics (assuming basic notes and rhythms are accurate).
- **Goals Sheet.** Hand out the goals sheet (1 per section).
- **Discuss.** Facilitate a short discussion on what students think needs work in the overall performance. Sections should complete the goals sheet based on the large-group discussion.
- **Combined Groups.** Have the students move to combined group rehearsals to work on identified problem areas. They should assign 1-2 leaders to facilitate the practice session.
 - Trumpets, flutes, clarinets (not bass clarinet), mallets
 - Low winds, middle winds, non-pitched percussion, timpani
- **Reflection.** At the end of the rehearsal, please complete the reflection for that day.

Day 2:

- **Video-recording.** Start video recorder.
- **Warm-up.** Have the whole band play through the warm-up.
- **Combined groups.** Have students break into their combined group sectionals and work on their identified goals.
- **Focus group.** Assign 4-5 of your strongest players to be members of a focus group. They will listen to the recording again (or multiple times) and do a deeper analysis of the performance, by looking at bigger picture concepts (phrasing, articulation, dynamics, intonation). This group should prepare a “report” (list of items to be addressed) to give to the whole band during the next rehearsal.
- **Facilitate.** As the groups work together, visit each group to listen to their progress and answer any questions they may have.
- **Progress.** Have sections complete the day’s progress on the GPRP form.
- **Full-band** Depending on how the sectionals are going, you may or may not want to have the full-band play the piece.
- **Reflection.** At the end of the rehearsal, please complete the reflection for that day.

Week 4

Day 3:

- **Video-recording.** Start video recorder.
- **Warm-up.** Have the whole band play through the warm-up.
- **Focus group report.** Allow the focus group to give their report to the band.
- **Run-through.** Have the band play through the piece, listening to the overall band's performance and trying to fix the items the focus group identified.
- **Discuss.** Have them briefly discuss what still needs to be worked on in relation to the focus group's identified areas.
- **Combined group practice.** Have them break into combined group sectionals and continue working on their goals or the areas identified after the run through.
- **Facilitate.** Check on sections for progress and to see if they need help or guidance. You may need to instruct them to work with another section if you see they are working on the same part as another group.
- **Progress and Planning.** Have sections complete the day's progress on the Goals form and fill out part III. Have students turn the Goals form in.
- **Reflection.** At the end of the rehearsal, please complete the reflection for that day.

Before next rehearsal. Compile their identified areas to work on in full-band rehearsal

Day 4:

- **Video-recording.** Start video recorder.
- **Warm-up.** Have the whole band play through the warm-up.
- **Full-band rehearsal.** Work on the areas students identified as needing work in full-band. Ask for student feedback on their performance. Prompt them for deeper musical thought (articulation, dynamics, etc.).
- **Record.** Record a final run-through of the warm-up and *Variants* at the end of the rehearsal.

Control Group

Instruction for Pre-Study Activities

1. Record sight-reading of *Warm-up* and *Variants*
 - Please give out the music to the *Warm-up* and to *Variants*.
 - Give students 2 minutes to look over the warm-up without playing it (similar to festival sight-reading procedures) then record the sight-reading with the Zoom Recorder.
 - Give students 5 minutes to look over *Variants* without playing it (similar to festival sight-reading procedures) then record the sight-reading with the Zoom Recorder.

Control Group

Study Instructions

Rehearsals

- Rehearse *Variants* twice a week for 15-20 minutes for 6 weeks (total of 12 rehearsals).
 - **Schedule.** Choose two days that are not back-to-back to do the study rehearsals (Monday and Thursday are recommended, but can be changed based on your needs).
 - **Warm-Up.** Please play through the warm-up before rehearsing *Variants* each time. It is important not to “practice” the warm-up, just run through it regardless of what happens (unless you need to restart).
 - **Rehearsal.** Please rehearse *Variants* using your normal rehearsal activities as though you were preparing it for your concert.
 - **Video-recording.** Please turn on the camera before starting the warm-up and the rehearsal of *Variants*.

Final Recording

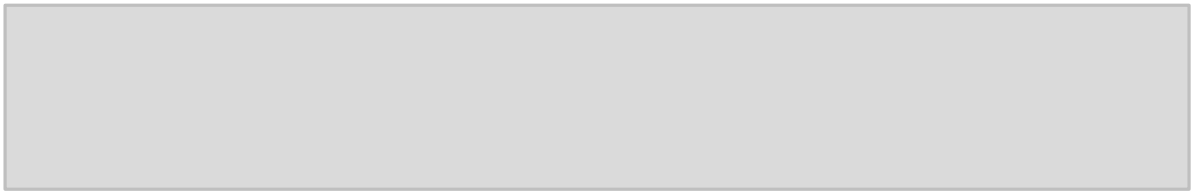
- At the end of the last rehearsal, please record the band’s performance of both the *Warm-up* and *Variants* using the Zoom Recorder.

Other information

- **Home Practice.** Have students include *Variants* in their regular home practice, but don’t place any special emphasis on it. They should just treat it as any other piece.
- Please don’t be concerned with how ready the piece is when time for the final recording. It is possible that 12 rehearsals is not enough time to get the piece fully prepared for a performance.

Appendix H
Treatment Forms

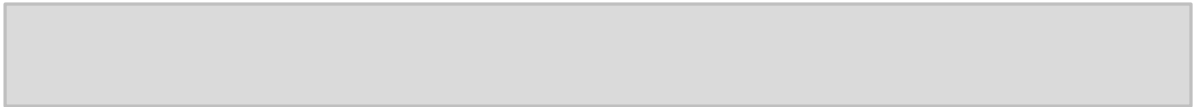
Cooperative Performance Assessment Tool



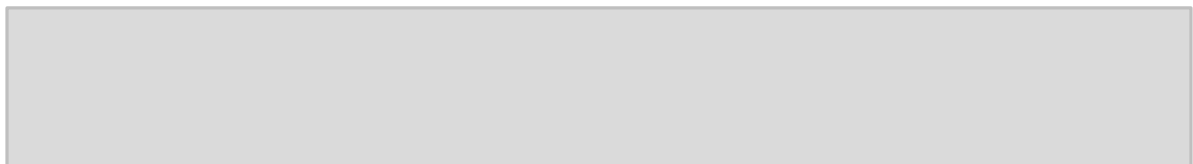
Pitch
Articulation
Intonation

Rhythm
Tempo
Phrasing

Dynamics
Tone Quality
Blend/Balance



1. Measures: _____ Element/Problem: _____
2. Measures: _____ Element/Problem: _____
3. Measures: _____ Element/Problem: _____
4. Measures: _____ Element/Problem: _____



Goals, Progress, and Rehearsal Planning

PART I – GOALS

Directions: Based on your section’s discussion of your performance, identify the most important goals for improvement. Elements to consider are: pitch, rhythm, dynamics, articulation, intonation, phrasing, tone quality, blend/balance, and tempo. Be as specific as possible.

5. Measures: _____ Element/Problem: _____
6. Measures: _____ Element/Problem: _____
7. Measures: _____ Element/Problem: _____
8. Measures: _____ Element/Problem: _____

PART II – PROGRESS

Directions: Each day that you work in groups to fix performance issues, summarize what you accomplished and how.

Which goal(s) did you work on today?	1	2	3	4	Other: _____
Circle the phrase that best describes your progress toward the goal(s)?					
We <u>all</u> accomplished 1 goal	Some of us accomplished 1 goal	We need help			
We <u>all</u> accomplished 2 goals	Some of us accomplished 2 goals	We accomplished more than 2 goals			
Which goal(s) did you work on today?	1	2	3	4	Other: _____
Circle the phrase that best describes your progress toward the goal(s)?					
We <u>all</u> accomplished 1 goal	Some of us accomplished 1 goal	We need help			
We <u>all</u> accomplished 2 goals	Some of us accomplished 2 goals	We accomplished more than 2 goals			

PART III – REHEARSAL PLANNING

Directions: In the space below, list the items needing to be worked on during full-band rehearsal. Provide the measure numbers, musical elements, other instruments (if any), and priority (**H**igh, **M**edium, **L**ow). Elements to consider are: pitch, rhythm, dynamics, articulation, intonation, phrasing, tone quality, blend/balance, and tempo. Fill out the information completely and provide any other important information in the comments section.

Measures: _____ Element: _____ Instruments: _____ Priority: _____

Measures: _____ Element: _____ Instruments: _____ Priority: _____

Measures: _____ Element: _____ Instruments: _____ Priority: _____

Measures: _____ Element: _____ Instruments: _____ Priority: _____

Comments:

Cooperative Rehearsal Teacher Reflection

<input type="text"/>
Date: _____ Start Time: _____ End Time: _____
Summary of activities:

Reflections:

<input type="text"/>
Date: _____ Start Time: _____ End Time: _____
Summary of activities:

Reflections:



Date: _____ **Start Time:** _____ **End Time:** _____

Summary of activities:

Reflections:



Date: _____ **Start Time:** _____ **End Time:** _____

Summary of activities:

Reflections:

Appendix I

Student Self-Assessment Comments

Student Self-Assessment Comments

Notes on student comments:

1. Written restatements of an element were eliminated from list.
2. Written instrument indications with no relation to an element were eliminated from list.
3. Brackets indicate the element referenced based on other information on the form when not explicitly stated by student.

Cycle 1 Student Comments

"Accidentals"

"Syncopate rhythm"

"Rhythm in tubas"

"The low brass, mostly trombones are having trouble centering right on the pitch."

"We in general miss accidentals."

"Pitch and tempo were way off"

"Low brass did not exist"

"No one was together on 8th notes."

"Drug behind"

"Notes-dissonance not letting it (*illegible*)"

"Wherever tubas come in towards the end drug with runs."

"Entrances were not together, slowed down greatly in important spots, didn't stay together towards the end."

"Pitch - we sound horrible missed a lot of notes."

"Was not heard"

"We dragged"

"Sounded ratchet"

"I felt at time we blend/balance well and not so great at others."

"Held an unimaginable lack of ability to follow the presented rhythms of the piece."

"Didn't stay with rhythm so it led to other problems."

"Trumpets were consistent" [Dynamics]

"Keep up with tempo"

"Look at the rhythm closely"

"There was no blending. It was always some playing loud and others soft."

"Weak"

"Not the right tempo"

"Bad rhythm"

"Never change dynamics."

"Awful rhythm"

"Awful rhythm"

"Rhythm was awful"

"Where there's a crescendo/decrescendo"
"No contrast at all"
"Did not hear pitch"
"Went sharp"
"Not centered"
"Not centered"
"Did not hear the pitch very well at all."
"Very very very very bad" [Rhythm]
"At some times it was not together and other times it was not existent." [Intonation]
"Many of the rhythms in the woodwind runs in their piece caused our section to come in at different times and not play together."
"The phrases were off, make sure play louder so we can be heard better."
"It was at some points non-existent and when it was there we were not together on it." [Intonation]
"As a band we needed to grow and shrink when dynamics say to. Also, when it says to come in as forte come in forte."
"Tone Quality on low notes"
"Articulation on accents"
"Pitch - REALLY need to read key signature."
"We weren't together with the accents."
"Ugly" [Pitches]
"Together"

Cycle 2 Comments

"Dynamics - suddenly"
"Pitch - what are the notes?"
"Styles don't match"
"Watch the accents"
"The styles do not match between sections. It does not flow well between parts." [Articulation]
"Specific points there are random spikes of speeding up or slowing down."
"Stick out in some parts of music not blending into band."
"Blending"
"Brass" [Dynamics]
"Balance"
"Not all hits together"
"The rhythm needs to stay constant"
"Consistency"
"Not in tune"
"Not together"
"Flutes aren't connecting"
"Need to tune"
"Specifically 25-" [Blend/balance]
"Intonation seemed to be a bad problem for us."
"Pitch was wrong"

"Bad rhythm"

"Measures 49-67 has improved but tone quality needs work."

"Badly blended"

"No notice, we were (all band) off, didn't know what to play."

Cycle 3 Comments

"Good blend"

"Dynamic kontras"

"Take advantage of the loudness"

"Style/Breathing"

"The styles still don't match. Sometimes we are dip from LB, sometimes it's dip within section."

"Clutter problems"

"Pitch was way off"

"Can't hear part"

"Sloppy Notes"

"Last note not together"

"Beginning notes weren't together, tempos weren't the same."

"Wrong Notes"

"Need to play right notes"

"Pitch was way off"

"Pitch went down"

"Just notes"

"Quiet (not confident)"

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Yarbrough, C., & Price, H. E. (1989). Sequential patterns of instruction in music.

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VITA

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EDUCATION

- 2008-2014** University of Kentucky, Lexington, KY
Orff Certification: Level III, Curriculum
- 2005-2006** University of California - San Diego, San Diego, CA
CLAD Certification
- 2000-2002** University of Cincinnati, College-Conservatory of Music, Cincinnati, OH
M.A. in Music Education
Orff Certification: Levels I and II
- 1993-1997** Morehead State University, Morehead, KY
B.A. in Music Education

PROFESSIONAL POSITIONS HELD

- 2011-2014** **Music Teacher, Grades 9-12**
Fort Knox High School, Fort Knox, KY
- 2008-2011** **Instructor – “Teaching Music in Elementary Grades”**
University of Kentucky, Lexington, KY
- 2009** **Instructor – “General Music Methods II”**
University of Kentucky, Lexington, KY
- 2004-2007** **Instrumental Music Teacher, Grades 4-5**
Moreland School District, San Jose, CA
- 2007-2008** **Choral and Instrumental Music Teacher, Grades 6-8**
Moreland School District, San Jose, CA
- 2004** **Instructor/Career Placement Coordinator**
Central Coast College, Salinas, CA
- 2002-2003** **Choir and General Music Teacher, Grades 6-8**
Wilmington Middle School, Wilmington, OH
- 2000-2001** **Graduate Assistant**
University of Cincinnati, College-Conservatory of Music, Cincinnati, OH
- 1997-2000** **Music Teacher, Grades K-12**
Eminence Independent Schools, Eminence, KY
- 1998-2000** **Minister of Music**
Campbellsburg Christian Church, Campbellsburg, KY
- 1993-2008** **Private Music Instructor**
Self-Employed

RESEARCH

- Compton, K. R. (2008). *Preference of African Music Selections for Education: A Comparison of Traditional, Popular, and Crossover Selections*. Unpublished manuscript.
- Compton, K. R. (2009). *The Effect of a Graphic Organizer on Rhythm Writing Accuracy: A Case Study*. Unpublished manuscript.
- Compton, K. R. (2009). *Elementary Education Majors' Intentions of Integrating Music into Their Classrooms*. Unpublished manuscript.
- Compton, K. R. (2010). *Assessing Musical and Pedagogical Competence through Portfolios in a Music Methods Course*. Unpublished manuscript.
- Compton, K. R. (2010). *The Effect of Two Strategies on an Individual Student's Practice Time*. Unpublished manuscript.
- Compton, K. R. (2011). *The Effect of a Cyclical Reflection on Elementary Education Majors' Reflective Writing of Music Teaching*. Unpublished manuscript.

AWARDS

- 2000-2002** Graduate Scholarship, University of Cincinnati
- 1993-1997** Scholarship, Morehead State University
- 1997** Morehead State University Leadership Award
- 1997** Outstanding College Honor Award
- 1997** Sigma Alpha Iota Sword of Honor
- 1997** Sigma Alpha Iota Award
- 1993** Kevin Lane Everidge Award

MEMBERSHIPS AND OFFICES

Music Educators National Conference

- CMENC Kentucky State Treasurer (1994-1997)
Morehead State University Chapter President (1996-1997)
University of Cincinnati Chapter Advisor (2000-2002)

American Orff-Schulwerk Association

Sigma Alpha Iota

- Morehead State University Chapter President (1996-1997)
Morehead State University Chapter Vice President of Membership (1995-1996)

Music Teachers National Association

- Morehead State University Chapter President (1995-1997)

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