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The impacts of peer assisted learning on rhythm counting in a middle school string orchestra classroom

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THE IMPACTS OF PEER ASSISTED LEARNING ON RHYTHM COUNTING IN A MIDDLE SCHOOL STRING ORCHESTRA CLASSROOM

by

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DEDICATION

To my wife, Chelsey, who has been, and will always be, my illustration of authentic servant leadership and Christ-centered love.

To my sons, Miles and Kai, who I hope to inspire to pursue their dreams and never give up when the fight gets tough.

ABSTRACT

This study addressed the topic of peer assisted learning, specifically ClassWide Peer Tutoring (CWPT), in a middle school string orchestra classroom. The purpose of the current study was to implement peer assisted learning into a middle school string orchestra classroom in order to determine the impacts of peer assisted learning versus teacher-directed instruction on middle school string orchestra students' abilities to notate correct rhythm counting. Over the course of four weeks, the researcher implemented two different instructional strategies, CWPT and teacher-directed instruction (TDI), into a sixth-, seventh-, and eighth-grade string orchestra classroom. Utilizing the difference between pretest and posttest scores, the researcher analyzed and compared the impacts of each strategy; the researcher also measured students' satisfaction of CWPT and TDI for learning to notate correct rhythm counting. Ultimately, the researcher concluded that there were no statistically significant differences in the impacts, or level of satisfaction, CWPT had on middle school string orchestra students' abilities to notate correct rhythm counting when compared to TDI. However, both instructional strategies increased students' scores from pretests to posttests, and students within each group reported equal satisfaction. Therefore, the researcher also concluded that CWPT is a tool that can be added to music educators' repertoire of teaching strategies as a supplemental strategy to traditional TDI.

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CHAPTER I

INTRODUCTION

A single light gleams on a solitary black chair and a music stand, each positioned precisely in the center of a large stage. The quaint performance hall is overflowing with a community of restless people, anxious for a break in the silence. It is early in the evening, and seven o'clock finally arrives. The already dim room becomes completely dark, and all eyes become fixated on the empty chair. Finally, a young man enters, holding a violin, a bow, and a few loose pieces of sheet music. He sits, positions himself and the music, and after a few short, nervous breaths, he begins to play. The first sound to exit the instrument is a rolled chord comprised of the notes D, B, and G. The tone is exceptional. The dynamic is a flawless forte. His posture is exemplary. The crowd is instantly amazed, evident by the stillness of the room and the wide eyes that followed the first chord. The violinist then continues playing the following notes in order: D, G, D, G, D, G, B, D, C, A, C, A, C, A, F#, A, D. Each note separated by one second of silence; each note, again, with brilliant tone, perfect dynamic control, and perfect articulation. However, the stillness of the crowd has reverted to restlessness and anxiousness. The young man visibly flustered, stands, bows, and then retreats to the solitude of backstage.

Without the correct knowledge of the components of rhythm, and the ability to demonstrate this knowledge, famous musical pieces such as Mozart's *Eine Kleine Nachtmusik* would be reduced to a performance of a long series of random notes ceasing

to ever develop into memorable melodies and rich harmonies. Wolfgang Amadeus Mozart composed the Violin 1 part of *Eine Kleine Nachtmusik* with the same notes as stated previously: a rolled chord comprised of the notes D, B, and G, and then the following notes in order: D, G, D, G, D, G, B, D, C, A, C, A, C, A, F#, A, D. The young violinist from the fictional story above was lacking the basic and most important component of music: rhythm (Bowers, 2007). The note and rest durations, the attention to the beat, the tempo at which it is performed, and other rhythmic concepts, are major factors to what brings *Eine Kleine Nachtmusik* to life.

In music education classrooms around the globe, music educators teach students the basics of note and rest values, steady beat, and tempo, and students are taught to count rhythms using syllables such as *one-and-two-and-three-and-four-and*. Although rhythm is the most important aspect of all music (Bowers, 2007), music educators continue to give more attention to group performances rather than individual learning; therefore, students are not retaining meaningful knowledge of rhythm. If "meaningful knowledge cannot simply be transmitted and absorbed" (Cobern et al., 2010, p. 82), why do many music educators continue to utilize teacher-directed instruction as the dominant strategy in the classroom?

Regarding education, Joubert once stated, "To teach is to learn twice over" (Joubert & Lyttelton, 1898, p. 163). If Joubert's statement stands true, those who have chosen a career path in education as teachers truly are experts in their fields. For many teachers, often times the same lesson, or a variation on a lesson, has been taught countless times; therefore, according to Joubert, the content of the lesson has been learned countless times over. Darrow, Gibbs, and Wedel (2005) stated, "no one learns more than

a teacher" (p. 15). Enabling a student to become a teacher would allow that student to learn a concept twice over. A logical step to increase music students' knowledge and retention of rhythm, in particular their abilities to notate correct rhythm counting, is to implement peer assisted learning.

Statement of the Problem

Rhythm is the essential and master element of all musical components (Bowers, 2007) and it is the central organizing structure of all music (Dalby, 2005; Tejada, Gil, & Perez, 2010; Thaut, Trimarchi, & Parsons, 2014). Rhythm is multifaceted and incorporates steady beat, pulse, note values, rest values, tempos, variations in time signature, and the frequency in which these musical elements change. Within each element of rhythm, students must learn multiple levels of understanding. For example, in the middle school grades six, seven, and eight, string orchestra students will learn whole, half, quarter, eighth, sixteenth, and dotted note and rest values. Additionally, these students will learn time signatures 4/4, 3/4, 2/4, 6/8, 3/8, and alla breve. As well as understanding the elements and terminology of rhythm, students in middle school learn to count an immense collection of rhythms throughout their study of method books and performance repertoires. However, Falter (2011) observed that many middle school string orchestra students had knowledge of note values, "but they had no practical sense of rhythm" (p. 28). Falter continued, "[middle school string orchestra students] thought the half note should be played on beat two because it lasted two beats" (p. 28).

Many sixth-, seventh-, and eighth-grade string orchestra students at a suburban middle school in eastern Kansas echo the observations of Falter (2011), and struggle with notating correct rhythm counting, even with a standard knowledge of note and rest

values. As students graduate from sixth to seventh grade, seventh to eighth grade, and eighth grade to high school, they are required to obtain a level of proficiency in rhythm counting skills because acquiring a level of proficiency in using standard notation to notate rhythms is a key component of the Kansas Model Curricular Standards for Music Standard 5, which involves reading and notating music (Kansas State Department of Education [KSDE], 2005). Benchmark 1 for the Intermediate Level, grades 5 – 8, for Standard 5 states: "The student reads whole, half, quarter, eighth, sixteenth, and dotted notes and rests in 2/4, 4/4, 6/8, 3/4, 3/8, and alla breve meter signatures" (KSDE, p. 70); and Benchmark 4 for Standard 5 states: "The student uses standard notation to record [notate] their musical ideas and the musical ideas of others" (p. 73). However, even with multiple Benchmarks and Intermediate Level Indicators designed through the Kansas Model Curricular Standards for Music, Bowers (2007) cited rhythm as the musical skill that is most lacking. Demonstrating correct rhythm counting is a difficult and complicated task because of the complexity of rhythm (Dalby, 2005).

If such an important and critical aspect of music continues to be the musical skill that is most lacking (Bowers, 2007), why is the attention of more music educators not focused on rhythm learning? It could be because in the music classroom, specifically instrumental performance groups, individual learning is often overlooked because of the importance of the finished product: the performance (Bazan, 2011; Scruggs, 2009a; Williams, 2007, 2011). The pressure put forth by parents, administrators, and the community to produce an entertaining and well-produced performance is overwhelming, and often causes the music educator to put more emphasis on the performance than individual learning. Williams (2007) stated that overlooking individual learning, in lieu

of a quality performance, as a measure of success would be unacceptable in any other academic setting, and when the performance is the main goal, there is no assurance that individual students are achieving success in music. Swislocki (2011) argued that although performances are an "excellent public celebration of a group's achievement" (p. 77), they do not measure music comprehension for individual students.

Williams (2011) stated that the standard method of instruction in music education classrooms has been teacher-directed instruction and Bazan (2011) asserted that instrumental music educators in particular continue to emphasize a teacher-centered atmosphere. According to Kratus (2007), a music educator constantly directing students through step-by-step processes is an approach that dominates many practices in the music classroom and ultimately results in a teacher-dependent musician. In the string orchestra classroom, a "master-apprentice model" (Webb, 2012b, p. 45) continues to control teaching and learning, which is due to the fact that students typically occupy set roles in modern education (Johnson, 2011b). When the teacher controls a majority of instruction, the amount of time students spend teaching or speaking with one another is limited (Andrews, 2013; Johnson, 2011b), and according to Andrews, the relationships within the classroom are typically hierarchical. Furthermore, in a teacher-directed music classroom, Allsup and Benedict (2008) indicated that teachers risk becoming more of a conductor than a music educator. When the teacher becomes more of a conductor and less of a music educator, Allsup and Benedict suggested asking the following question: "Where is the student located in this equation?" (p. 160). Thus, the student becomes a bystander in the learning process instead of an engaged participant in it.

Peer assisted learning strategies can increase student engagement, enhance individual learning, and further develop students' knowledge of the content (Ayvazo & Ward, 2010; Hawkins, Musti-Rao, Hughes, Berry, & McGuire, 2009; Johnson, 2011b; Lundblom & Woods, 2012; Neddenriep, Skinner, Wallace, & McCallum, 2009; Xu, Gelfer, Sileo, Filler, & Perkins, 2008). According to Grubbs (2009), peer tutoring, a form of peer assisted learning, could provide a low-cost solution to academic support while encouraging students to help others raise self-esteem and improve academic scores. Peer assisted learning in the music classroom is minimal, especially in the middle school string orchestra classroom. Although Scruggs (2009b) explored musical growth and independent learning outcomes of middle school string orchestra students during student-centered and learner-centered instruction, peer assisted learning research in the music classroom, especially the middle school grades, is minimal. Because of the complexity of rhythm, the importance of rhythm counting knowledge, and the lack of peer assisted learning opportunities in the middle school string orchestra classroom, the researcher chose to implement peer assisted learning into weekly lessons. Therefore, the purpose of the current study was to implement peer assisted learning into a middle school string orchestra classroom in order to determine the impacts of peer assisted learning versus teacher-directed instruction on middle school string orchestra students' abilities to notate correct rhythm counting.

Background

Peer assisted learning, abbreviated PAL, in the field of education is of ongoing interest in much of the current research. Peer assisted learning is "the acquisition of knowledge and skill through active helping and supporting among status equals or

matched companions" (Topping, 2005, p. 631) and can be traced back to ancient Rome and in the early practices of Judaism (Topping, 2001). Topping is a professor of Educational and Social Research and the Director of the Center for Paired Learning at the University of Dundee in Scotland. A review of the literature revealed that Topping has established himself as a central figure in the field of peer assisted learning and an important scholar (Webb, 2012b) in the field of peer teaching. Topping's publications include 21 books, 52 different chapters, and 172 peer-reviewed journal papers (LENA Research Foundation, 2014); many of his publications involve peer assisted learning or other variations of peer learning. According to Topping and Ehly (2001),

> PAL is characterized by: helpers consciously assisting others to learn, and in so doing, learning themselves; helping that is complementary to professional teaching, but that definitely do (*sic*) not surrogate professional teaching; helping that is structured to ensure gains for all participants in one or more domains; helping that is available to all on an equal opportunity basis, because all have something to give; and, helping that is carefully organized and monitored by professional teachers with an extended conception of their role. (pp. 113-114)

In addition to Topping's substantial research regarding PAL, as mentioned above, there have been numerous studies conducted to explore the benefits of various peer assisted learning strategies. A review of the literature revealed peer assisted learning research is active in many different areas of education, and continues to be a major topic of discussion in various content areas. Researchers have investigated PAL in reading (Calhoon, 2005; Potenza-Radis, 2010), writing (Gisbert & Font, 2008), science (Kroeger, Burton, & Preston, 2009), social studies (Scruggs, Mastropieri, & Marshak, 2012),

special education (Lingo, 2014), higher education (Colvin, 2007; Hammond, Bithell, Jones, & Bidgood, 2010), and medical school (Gandhi, Primalani, Raza, & Marlais, 2013). However, only a limited number of research studies have been conducted in the field of music education in order to determine the benefits of peer assisted learning in the music classroom (Johnson 2011b).

Johnson's (2011b) research was a pivotal first step into the benefits of peer assisted learning in a music classroom and also explored the effects on rhythm-reading achievement. According to Johnson, peer assisted learning, or what Johnson called peer-based learning, challenges students to create, share, and solve problems collaboratively; the teacher-led model of instruction limits peer-based learning. In an attempt to contribute to the field of music education research about peer-based instruction, Johnson conducted a two-week study aimed at exploring how peer-based instruction impacts rhythm-reading achievement. The study was completed at an urban high school in a major metropolitan city, and Johnson chose this particular high school because of its diverse population and status as one of only a few high schools in the nation with a standards-based curriculum. Out of 185 students enrolled in band and choir, 131 students participated in the study, 102 of whom were identified as *at risk* for success in school; they were further identified as being enrolled in the free or reduced lunch program, an additional, recognized indicator of the students who are *at risk*. Johnson randomly formed two groups of students, and each group was assigned to one of the two instructional formats: teacher-led instruction or peer-based instruction. Over the course of two weeks, each group met four times for 30 minutes each time. Eight pages of rhythmic instruction materials were adapted from Bellson and Breines's rhythm reading text entitled *Modern*

Reading Text in 4/4 (as cited in Johnson, 2011b), and were chosen for their focus on various groupings of eighth note and quarter note patterns. Two different rooms were used for instruction: Johnson monitored the peer-based instruction classroom for behavior, while the music teachers led instruction in the other classroom. At the conclusion of the two-week study, Johnson assessed the students using a multifaceted measurement tool to determine rhythmic counting ability. Johnson created the measurement tool for the sole purpose of the study and assessed two different concepts: rhythmic counting accuracy and overall counting ability. During assessment, students verbally counted 20 measures that mirrored instruction from the previous two weeks. The students were audio recorded, and two independent judges scored the results. In order to account for any bias, Johnson assigned a number to each student, and the judges were not provided with information regarding which students participated in each group. After analyzing the results of the study, Johnson determined that participants who engaged in peer-based instruction performed with higher accuracy, at a statistically significant level ($p < .001$), than the participants who engaged in teacher-led instruction. Out of a possible 121 points, rhythm-reading achievement mean scores for peer-based instructed choir students were 35.34 points higher than teacher-led instruction. Rhythm reading achievement mean scores for peer-based instructed band students were 10.97 points higher than teacher-led instruction. At the conclusion of Johnson's essential study, Johnson deemed the effects of peer-based instruction successful for rhythm-reading achievement with high school choir and band students.

One form of peer assisted learning is ClassWide Peer Tutoring, abbreviated CWPT. This technique was developed by Delquadri, Greenwood, and Stretton

(Greenwood, 1997) and has been used as an effective peer assisted learning strategy since the early 1980s. According to Greenwood, Delquadri, and Carta (1997), CWPT was first implemented by the Juniper Gardens Children's Project in Kansas City, Kansas. *Together We Can!*, the title of the CWPT instructional manual, was originally developed for the enhancement of teaching spelling, math, and reading (Greenwood et al., 1997). However, from the 1980s to the 2010s, researchers have investigated CWPT in subject areas such as science (Kamps et al. 2008), math (Hawkins et al., 2009), reading (Kamps et al., 2008; Neddenriep et al., 2009), spelling (Taylor & Alber, 2003), idiom comprehension (Lundblom & Woods, 2012), social studies (Kamps et al., 2008), and physical education (Ayvazo & Aljadeff-Abergel, 2014; Ayvazo & Ward, 2009, 2010). Additionally, researchers have explored the benefits of CWPT with students who have learning disabilities (Delquadri, Greenwood, Whorton, Carta, & Hall, 1986; Taylor & Alber, 2003), students who are deaf and hard of hearing (Herring-Harrison, Gardner, & Lovelace, 2007), students with emotional and behavioral disorders (Bowman-Perrott, 2009), and with students who are bilingual (Madrid, Canas, & Ortega-Medina, 2007). Furthermore, CWPT has been used in the research of on-task behavior (Richards, Heathfield, & Jenson, 2010) and as a research tool in the prevention of school failure (Greenwood & Delquadri, 1995).

Although researchers have conducted most of the investigations of CWPT in the elementary grades, two recent studies in the middle school grades are meaningful in the context of the current study. The first important study involved 975 middle school students in urban and suburban Kansas City metropolitan areas. Over a three-year period, Kamps et al. (2008) investigated the mean and variation in the fidelity of CWPT, whether

student behaviors were changed or improved with the implementation of peer tutoring, the mean and variation in effect sizes, and the differences in effect sizes in urban versus suburban classrooms. Kemps et al.'s purpose was to determine whether CWPT was superior to the traditional teacher-led design of instruction in the content areas of reading, social studies, and science. Through weekly quizzes, on-task data, and classroom observations, Kamps et al. concluded that CWPT resulted in positive change and improvements for reading and social studies, but not for science. Kamps et al. suggested future research should include additional content areas, smaller effect sizes, and more special education students.

The second important study involving middle school students included three reading classes of 71 sixth-grade students. Veerkamp, Kamps, and Cooper (2007) conducted a study with the purpose of contributing to research regarding CWPT and its effect on academic performance. Veerkamp et al. had two objectives: to examine the effects of CWPT on reading achievement and to evaluate the acceptability of the procedures of CWPT. Veerkamp et al. developed research questions for each objective that focused on the effects of CWPT versus traditional teacher-led instruction. Veerkamp et al. also developed a third condition known as CWPT plus lottery, which rewarded students for on-task behavior and quality tutoring. Veerkamp et al. collected data in the form of weekly pretests, written tests, posttests, and observations. The academic outcomes, as determined by Veerkamp et al., showed improvement in student performance in all three reading classes when CWPT and CWPT plus lottery were utilized instead of traditional teacher-led instruction.

Researchers have also suggested that peer assisted learning, such as CWPT, is a strategy with which many students report overall satisfaction (Lundblom & Woods, 2012; Taylor & Alber, 2003; Xu et al., 2008) and that a number of students actually prefer peer assisted learning to the traditional teacher-directed instruction (Sutherland & Snyder, 2007).

Research Questions

The following research questions and hypotheses guided the current study:

1. What are the impacts of peer assisted learning on middle school string orchestra students' abilities to notate correct rhythm counting, compared to teacher-directed instruction?

   H_1: There will be a difference in the impacts peer assisted learning has on middle school string orchestra students' abilities to notate correct rhythm counting when compared to teacher-directed instruction.

2. How are the impacts of peer assisted learning on string orchestra students' abilities to notate correct rhythm counting different for students in grades six, seven, and eight, compared to teacher-directed instruction?

   H_2: There will be a difference in the impacts peer assisted learning has on string orchestra students' abilities to notate correct rhythm counting for students in grades six, seven, and eight when compared to teacher-directed instruction.

3. How do middle school string orchestra students' levels of satisfaction towards learning correct rhythm counting differ between those students who receive

peer assisted learning and those students who receive teacher-directed instruction?

H_3: There will be a difference in middle school string orchestra students' levels of satisfaction towards learning correct rhythm counting between peer assisted learning and teacher-directed instruction.

Description of Terms

The following definitions are provided for consistency throughout the current study.

ClassWide Peer Tutoring. ClassWide Peer Tutoring, abbreviated CWPT, is an instructional strategy modeled on reciprocal peer tutoring and group reinforcement, and was developed to provide teachers with opportunities to individualize instruction while also providing students opportunities to be actively engaged during instruction (Greenwood, 1997; Greenwood et al., 1997).

Peer assisted learning. Peer assisted learning, abbreviated PAL, is "the development of knowledge and skill through explicit active helping and supporting among status equals or matched companions, with the deliberate intent to help others with their learning goals" (Topping & Ehly, 2001, p. 114). For the purposes of the current study, the term *peer assisted learning* can be replaced with any term referencing *peer assisted learning*, e.g., peer tutoring, peer-based instruction, peer teaching, and peer learning.

Posttest. A posttest is an evaluation of students' comprehension of the content, assessed after tutoring sessions (Greenwood et al., 1997).

Pretest. A pretest is an evaluation of students' comprehension of the content, assessed before tutoring sessions (Greenwood et al., 1997).

Reciprocal peer tutoring. Reciprocal peer tutoring, abbreviated RPT, is an instructional strategy that enables all students to function equally as both a tutor and a tutee (Dioso-Henson, 2012).

Rhythm. Rhythm is "a strong, regular, repeated pattern of movement or sound" (Rhythm, 2005, p. 1453), containing many elements such as steady beat, note and rest values, and time signature.

Satisfaction. Satisfaction is the "fulfillment of one's wishes, expectations, or needs" (Satisfaction, 2005, p. 1506).

String orchestra. A string orchestra is a collection of bowed string instruments (String Orchestra, 2005): violin, viola, cello, and double bass.

Teacher-directed instruction. Teacher-directed instruction, abbreviated TDI, is a teacher-centered instructional strategy (Bazan, 2011) where the teacher is the source of information through demonstration or lecturing. For the purposes of the current study, the term *teacher-directed instruction* can be replaced with any term referencing *teacher-directed instruction*, e.g., teacher-led and teacher-centered.

Tutor. A tutor is the student who acts as the teacher (Greenwood et al., 1997) and provides the instruction (Dioso-Henson, 2012).

Tutee. A tutee is the student who receives instruction from the tutor (Dioso-Henson, 2012; Greenwood et al., 1997).

Significance of the Study

The field of education is ever changing and it continues to move in the direction of finding ways to increase student engagement. Peer assisted learning strategies are becoming an important aspect of many subject areas. However, instrumental education

continues to build upon a foundation of teacher-directed instruction. A noticeable void is apparent in the area of peer assisted learning in music education, and according to Webb (2012b), it is specifically missing in string education research. An even closer examination of the research revealed another noticeable void in music education research regarding rhythm. Because rhythm is central to all music, rhythm should be central in the development and education of a musician (Tejada et al., 2010). Likewise, according to Dell (2010), "As string educators, we must find a way to strengthen the development of rhythmic abilities so that our students play with a steady beat and accurate rhythm" (p. 10). Simply put, the significance of the current study was to contribute to research in the development of rhythmic abilities through rhythm counting and satisfaction during the learning process.

The findings of the current study conducted by the researcher could contribute beneficial knowledge and understanding of peer assisted learning in the form of CWPT to both music education in particular and music education research in general. The knowledge attained by the researcher could impact the way in which middle school string orchestra students learn various other music concepts. Furthermore, the benefits of peer assisted learning on student learning in a middle school string orchestra classroom could have building-wide influences, and peer assisted learning could become widespread across other middle school string orchestra classrooms within the researcher's school district. Williams (2011) stated that the main goal in school should be student learning, and as asserted by Topping and Ehly (2001), CWPT is a positive intervention that is complementary to professional teaching, but not a replacement for professional teaching.

Finally, Kratus (2007) stated, "directors direct and teachers teach" (p. 46). An additional potential contribution from the researcher of the current study could be beneficial information regarding an important and practical strategy that could allow music educators to make the transition from music conductor to music educator (Allsup & Benedict, 2008).

Process to Accomplish

The researcher utilized two different instructional strategies throughout the current study: teacher-directed instruction, or TDI, and peer assisted learning in the form of CWPT. Although teaching and learning rhythm is a yearlong process, regardless of the grade level, the researcher conducted the study during the spring semester of 2016. The study took place during a specified four-week period focusing on middle school string orchestra students' abilities to notate correct rhythm counting.

Population

The data for the current study was collected during the spring semester of 2016. The population of the study consisted of all sixth-, seventh-, and eighth-grade students enrolled in orchestra at a suburban middle school in eastern Kansas during the 2015 – 2016 school year. In the spring semester of 2016, there were 143 students enrolled in all three grade levels; 60 students enrolled in sixth-grade orchestra, 48 students enrolled in seventh-grade orchestra, and 35 students enrolled in eighth-grade orchestra. Of these 143 students, 96 were female and 47 were male. However, one student withdrew from the study during the third week of data collection, leaving 142 students, 95 females and 47 males, as the total population; the withdrawn student was a sixth-grade female.

Sample

The researcher conducted the current study in a middle school setting; therefore, all students involved are under the age of 18 and considered minors according to federal law. According to Institutional Review Board (IRB) guidelines, parental consent was required in order for the students to participate in the study. Additionally, the students agreed to participate in the study. The sample included students from the larger population of those enrolled in orchestra. The researcher sent home a formal letter, following IRB guidelines, in order to receive parental consent through parents' or guardians' signatures. In addition to the formal letter, child assent was gained through student signature, and the researcher spoke with each student using age-appropriate language during class. It should be noted that because the current study took place in an educational setting utilizing curriculum-based standards, students whose parents declined their child's participation in the study, or whose parents chose not to respond, were automatically placed in the TDI instruction group. Furthermore, because testing curriculum-based concepts such as rhythm is a standard method of practice for the researcher, the data from the Rhythm Pretests and Rhythm Posttests pertaining to students in the TDI group were used in the current study. However, students without parental consent did not participate in the Satisfaction Survey. Only those students with parental consent and child assent were included in the CWPT group and participated in the Satisfaction Survey. Ultimately, 107 students returned the *Parental Consent Form* and *Child Assent Form* that the researcher sent home; 105 students agreed to participate in the study and two students declined to participate. Additionally, one student withdrew from the study during the third week of data collection, leaving 104 students who agreed

to participate in the study. Using purposive sampling, the researcher placed those students whose parents declined their child's participation in the study, or whose parents chose not to respond, into the TDI group. Then, in order to equally balance the two groups, the researcher used random assignment for those students who agreed to participate in the study by placing them into either the TDI group or the CWPT group. Additionally, only students in the TDI group with parental consent and child assent participated in the Satisfaction Survey.

Measures

The researcher of the current study utilized the following measures:

Rhythm Counting Pretest and Posttest (see Appendix A): a researcher-developed based on rhythms presented in *Essential Elements 2000 for Strings* (Allen, Gillespie, & Hayes, 2004), the adopted curriculum for orchestra in the researcher's school district. For the CWPT group, a *Tutoring Worksheet* and a *Tutoring Answers* page were used as the material to prepare for the Rhythm Counting Pretest and Posttest. The *Tutoring Worksheet* and *Tutoring Answer* page were designed partially to reflect the look of the *Tutoring Worksheet* presented in *Together We Can!* (Greenwood et al., 1997), the basis for CWPT in the current study.

Satisfaction Survey (see Appendix B): a researcher-developed survey used to determine the satisfaction level of TDI versus CWPT. The researcher utilized the Satisfaction Survey in the TDI group and the CWPT group in order to determine a difference in level of satisfaction. However, because the Satisfaction Survey was not a typical collection tool in the researcher's classroom, parental consent and child assent were obtained in order for the researcher to utilize the Satisfaction Survey; only those

who agreed to participate in the study were given the Satisfaction Survey. In an attempt to collect students' honest responses to the Satisfaction Survey, the researcher kept the survey anonymous. A 4-point Likert (1932) scale was used. The researcher asked students to fill in a circle that represented their response to a statement; the circles represented strongly disagree, disagree, agree, and strongly agree. One question on the Satisfaction Survey allowed the students to provide a written answer. Statements on the Satisfaction Survey included:

- I was prepared for the Rhythm Counting tests because I worked in class using peer tutoring.
- I was prepared for the Rhythm Counting tests because I worked as a group in class with my teacher.
- I liked learning to count rhythms using peer tutoring.
- I liked learning to count rhythms as a group in class with my teacher.

Procedure

The researcher of the current study sent a formal letter home to students' parents or guardians describing and outlining the current study. Attached to the formal letter, the researcher requested parental consent for their child to participate in the study and the researcher requested child assent within the same form. Students whose parents declined their child's participation in the study were automatically placed in the TDI group. Students whose parents agreed with their child's participation in the study were briefed by the researcher using age-appropriate language, and then placed in either the TDI group or CWPT group, in order to equally balance the two groups. During the four-week study, the researcher, using four different 10-question Rhythm Counting Pretests and four

identical corresponding 10-question Rhythm Counting Posttests, assessed all participants. The researcher gave the students a pretest prior to new material, and a posttest after new material; the questions were identical but were presented in a different order. Each group, TDI and CWPT, received 10 minutes of rhythm counting practice and instruction on new material for four consecutive days. The time frame and outline for the TDI group and the CWPT group are displayed in Figure 1 and Figure 2.

FEBRUARY 22	FEBRUARY 23	FEBRUARY 24	FEBRUARY 25	FEBRUARY 26
RC PRETEST #1 TDI	TDI	TDI	TDI	RC POSTTEST #1 RC PRETEST #2
FEBRUARY 29	MARCH 1	MARCH 2	MARCH 3	MARCH 4
TDI	TDI	TDI	TDI	RC POSTTEST #2 RC PRETEST #3
MARCH 7	MARCH 8	MARCH 9	MARCH 10	MARCH 11
TDI	TDI	TDI	TDI	RC POSTTEST #3 RC PRETEST #4
MARCH 14	MARCH 15	MARCH 16	MARCH 17	MARCH 18
SPRING BREAK	SPRING BREAK	SPRING BREAK	SPRING BREAK	SPRING BREAK
MARCH 21	MARCH 22	MARCH 23	MARCH 24	MARCH 25
NO SCHOOL	TDI	TDI	TDI	TDI RC POSTTEST #4 SS
MARCH 28				
TDI RC POSTTEST #4 SS				

Figure 1. The time frame for the TDI group.

FEBRUARY 22	FEBRUARY 23	FEBRUARY 24	FEBRUARY 25	FEBRUARY 26
RC PRETEST #1 INTRO CWPT	CWPT	CWPT	CWPT	RC POSTTEST #1 RC PRETEST #2
FEBRUARY 29	MARCH 1	MARCH 2	MARCH 3	MARCH 4
INTRO CWPT	CWPT	CWPT	CWPT	RC POSTTEST #2 RC PRETEST #3
MARCH 7	MARCH 8	MARCH 9	MARCH 10	MARCH 11
INTRO CWPT	CWPT	CWPT	CWPT	RC POSTTEST #3 RC PRETEST #4
MARCH 14	MARCH 15	MARCH 16	MARCH 17	MARCH 18
SPRING BREAK	SPRING BREAK	SPRING BREAK	SPRING BREAK	SPRING BREAK
MARCH 21	MARCH 22	MARCH 23	MARCH 24	MARCH 25
NO SCHOOL	INTRO CWPT	CWPT	CWPT	CWPT RC POSTTEST #4 SS
MARCH 28				
CWPT RC POSTTEST #4 SS				

Figure 2. The time frame for the CWPT group.

The major difference between the two groups was the delivery of the instruction and practice. The TDI group received from the researcher 10 minutes of instruction and practice in the form of lecturing with examples, and whole-class feedback. The researcher wrote out 10 rhythms, one at a time on the white board, and then called on students at random, or took volunteers, to notate the rhythm counting. Other students then had the opportunity to respond, agreeing or disagreeing, and to correct any mistakes.

The CWPT group received instruction in the form of reciprocal peer tutoring centered on the instructional manual for CWPT, *Together We Can!* Students were randomly split into pairs, and were given materials for a 10-minute peer-tutoring session; each student spent five minutes as the tutor and five minutes as the tutee. CWPT is designed as a classwide competition; therefore, each pair was also placed on one of two teams for the week. The materials during CWPT included: a *Tutoring Worksheet*, a

Tutoring Answer page, a *Tutoring Point Chart, and* a *Help!* sign (see Appendix C) for questions. The materials used during CWPT were designed partially to reflect the look of materials presented in *Together We Can!* (Greenwood et al., 1997).

Data Collection and Analysis

Research Question 1: What are the impacts of peer assisted learning on middle school string orchestra students' abilities to notate correct rhythm counting, compared to teacher-directed instruction? The researcher of the current study collected data based on the students' scores on the Rhythm Counting Pretests and Posttests. Using the Rhythm Counting Pretests and Posttests scores, the researcher analyzed the data using descriptive statistics and inferential statistics in the form of a *t*-test for independent samples; the researcher completed this process four different times, accounting for the four weeks of instruction. The variables for *t*-test for independent samples included the Rhythm Counting Pretests and Posttests scores, the TDI group, and the CWPT group. In order to show increases or decreases in rhythm counting abilities, the data was displayed by the researcher in the form of tables showing the increases or decreases in scores during CWPT and TDI. In order to answer Research Question 1, the researcher looked for trends and statistically significant differences and similarities in students' scores.

Research Question 2: How are the impacts of peer assisted learning on string orchestra students' abilities to notate correct rhythm counting different for students in grades six, seven, and eight, compared to teacher-directed instruction? The researcher of the current study collected data based on the students' scores on the researcher-developed Rhythm Counting Pretests and Posttests. Using the Rhythm Counting Pretests and Posttests scores, the researcher analyzed the data using descriptive statistics and

inferential statistics in the form of a 2 X 3 mixed factorial analysis of variance (ANOVA); the researcher completed this process four different times, accounting for the four weeks of instruction. After the initial 2 X 3 mixed factorial ANOVAs, the researcher utilized a Tukey post-hoc test on all data that revealed statistical significance, which provided a comparison between and among all of the individual cells of each 2 X 3 matrix. In order to answer Research Question 2, the researcher looked for trends and statistically significant differences and similarities in students' scores between each of the three grade levels.

Research Question 3: How do middle school string orchestra students' levels of satisfaction towards learning correct rhythm counting differ between those students who receive peer assisted learning and those students who receive teacher-directed instruction? The researcher of the current study collected data based on student responses to an anonymous Satisfaction Survey using a four-point Likert scale for seven items; one question allowed the student to provide a written answer. Using the responses collected from the Satisfaction Survey, the researcher analyzed the data using descriptive statistics and inferential statistics in the form of a *t*-test for independent samples in order to determine how satisfaction, or dissatisfaction, was different during TDI and CWPT. Additionally, the researcher performed content analysis on the responses to the written portion of the survey by looking for trends and popular word choices. The researcher displayed the data in the form of tables. In order to answer Research Question 3, the researcher looked for trends and statistically significant differences in the data results. Only students with parental consents and child assent were given the Satisfaction Survey;

therefore, the researcher only included data from students who agreed to participate in the study.

Summary

Existing research indicated that although rhythm is the central organizing structure of all music (Dalby, 2005; Tejada et al., 2010; Thaut et al., 2014), middle school string orchestra students continue to struggle with notating correct rhythm counting. Because peer assisted learning strategies can increase student engagement, enhance individual learning, and further develop students' knowledge of the content (Ayvazo & Ward, 2010; Hawkins et al., 2009; Johnson, 2011b; Lundblom & Woods, 2012; Neddenriep et al., 2009; Xu et al., 2008), the researcher of the current study chose CWPT as a peer assisted learning strategy to be implemented into weekly lessons centered on middle school string orchestra students' abilities to notate correct rhythm counting. In the following chapter, the researcher of the current study identified and analyzed a larger body of primary resources related to the current study.

CHAPTER II

REVIEW OF THE LITERATURE

Introduction

Educators across the country are adapting to the new generation of learners by modifying teaching that targets student-centered instruction. Educators are adjusting their teaching methods because various teaching strategies, such as peer assisted learning, have been researched and praised by many top educators. However, much of the literature on the traditional instrumental music classroom, like the middle school string orchestra classroom referenced in the current study, continues in the opposite direction: teacher-directed instruction. According to Allsup and Benedict (2008),

> Leadership, or in this tradition "directorship," is a highly prized commodity, favoring decisive action informed by extant intelligence . . . disagreements between teacher and learner are rarely allowed to surface . . . problems are seen as frustrating obstacles, impediments that get in the way of learning, and knowing something new is evaluated by the satisfactory conclusion of a completed work that is performed according to institutional standards. (pp. 157-158)

In this chapter, the researcher of the current study will identify, analyze, and explore primary resources that relate to the main components of the current study: traditional instrumental music classrooms, traditional rhythm counting teaching strategies, and peer assisted learning strategies, such as ClassWide Peer Tutoring, in and out of the music

classroom. The researcher of the current study will also discuss the limitations of peer assisted learning.

Traditional Instrumental Music Classroom

History of Music Education: From Colonial Times to the 1940s

Although the emphasis of the current study is on a middle school string orchestra classroom, an instrumental music classroom, it is essential to start with the beginning of music in American public schools: vocal music. Music in public schools began as an effort to improve singing in church, and in the early 1700s, singing schools were formed (Birge, 1937). According to Music (2008), the purpose of singing schools was to teach church members to read music, sing in rhythm with one another, and keep the pitch during the singing of psalms. Singing schools rapidly became popular and by the 1720s singing schools were a dominant feature in the social life of many Americans. However, singing schools, although the main source of America's music education at the time, were not an officially recognized curricular activity in the public schools.

Teaching of music, in addition to singing schools, had been encouraged in public schools for years; however, the official birth of music education in a public school setting did not occur until the year 1838 (Birge, 1937; Pemberton, 1988; Williams, 2007). According to Pemberton, during the 1837-1838 school year in the Boston Public Schools, church musician and composer Lowell Mason voluntarily taught vocal music as an experiment of music education in public schools. On August 14, 1838, Mason and the vocal students from Hawes School gave a public demonstration concert with several Boston School Committee members present; the performance proved that under the direction of a music teacher the students had learned music and could perform with

proficiency. Fourteen days later, on August 28, 1838, the Boston School Committee of the Boston Public Schools authorized the employing of a vocal music teacher, and Mason was officially hired (Birge, 1937; Pemberton, 1988). The hiring of Mason and the authorization from the Boston School Committee placed music in the public school curriculum (Birge, 1937; Low, 1933; Marshall, 1910) and music was then placed on an equal status with subjects like reading, grammar, and arithmetic (Birge, 1937; Winship, 1896, 1920).

The acceptance of music in the Boston Public Schools' curriculum subsequently led to the rest of the United States' public schools following Boston's lead and music education became a nationally recognized curriculum-based subject. As documented by Brown (1926), many major cities across the nation began to introduce music in the school immediately following Boston: Buffalo in 1843, Pittsburgh in 1844, Cincinnati in 1846, Chicago in 1848, Cleveland in 1851, San Francisco in 1851, St. Louis in 1852, New Haven in 1855, Providence in 1856, Salem in 1858, Baltimore in 1859, and Philadelphia in 1860. Ultimately, by 1850, music education in most cities and towns, large and small, across the United States was common (Johnson, 1893). Still, for the remainder of the 1800s, music education in public schools focused on vocal music and not instrumental music (Brown, 1926; Tuttle, 1997; Whitehill, 1969). Beginning in the late 1800s and early 1900s, instrumental music education in public schools commenced, and according to Humphreys (1989), the first documented public school instrumental music program was at Boston's Farm and Trade School in 1857. However, while vocal music steadily spread throughout public schools, and even with a few instrumental music classes, instrumental music growth was slow. Bell (1916) petitioned, "If our young people are to

learn to know music, they must be taught to make music . . . it is to instrumental music that we must look for much of the educative value of music study" (p. 441). Furthermore, Bell continued,

> If the public schools would now offer the pupils in the sixth, seventh and eighth grades the opportunity to learn to play some musical instruments, and would provide for more chamber music in the high school, we should make rapid strides in the realization of the educational value of music. (p. 441)

The call for instrumental music in public schools continued to grow throughout much of the early 1900s.

Instrumental music education began as an informal social activity (O'Connor, 1926), and according to Whitehill (1969), students who participated in instrumental music ensembles often met outside of the school hours. Often times, a teacher of another subject, who happened to know how to play an instrument, directed the students (Humphreys, 1989). In researching the history of American bands and orchestras, Humphreys revealed that in the early 1900s, school orchestras were far more numerous than school bands, and that "1900-1920 can properly be called the heyday of American public school orchestras" (Humphreys, p. 53). In addition to regular concerts, school orchestras were widely used throughout communities for graduation performances, school assemblies, and professional educator meetings (Whitehill, 1969).

During the 1910s and early 1920s, instrumental music educators began to be hired as full time staff members, particularly orchestra teachers because of the higher number of school orchestras. By the 1920s, schools around the country were teaching music appreciation and introducing instrumental music as a universal subject (Williams, 2011;

Winship, 1920). By the mid-1920s, top educators believed that instrumental music would someday be as standard as playground equipment (Instrumental Music in School, 1925) and the beginning of universal instrumental education was on the rise. According to Winship, the city of Oakland, California was the first city to make instrumental music a standard in all of the city's schools.

Although school orchestras dominated the instrumental music instruction in the early 1900s, by the mid-1920s, school bands began to intensify in numbers, and eventually, would become the more dominant means of instrumental music education. The rise in interest in school bands was in part due to the conclusion of World War I and the beginning of World War II (Fonder, 1990; Humphreys, 1989). According to Whitehill (1969), with the wars, there was a rise in patriotism, and military bands became popular, which increased the interest of school bands in citizens all across the nation. Whitehill mentioned numerous reasons about why band began to take over many of the responsibilities of the orchestra, such as graduations and assemblies. According to Whitehill, band was more mobile, had higher volumes of instruments, was more uniform and military-like than orchestra, and included much more patriotic music in the band repertoire. However, although school bands eventually outnumbered school orchestras, school orchestras continued to grow. Additionally, the growth of public school instrumental music programs saw the beginning of what can be known as the traditional instrumental music classroom.

Description: Traditional Instrumental Music Classroom

The arrangement of an instrumental music room clearly shows who is the leader and who directs most, if not all, of the instruction: chairs and stands in orderly rows all

facing “a throne for the monarch of the classroom” (Scruggs, 2009a, p. 54), the podium. The traditional instrumental music classroom is a large-ensemble design with well-ordered rows of students all reading and notating the same piece of music at the same time under the direction of a teacher (Williams, 2011). Furthermore, most of the time, the teacher “selects the music, makes all the artistic decisions regarding interpretation, and shapes the resulting performance through tightly managed rehearsals to match a preconceived notion of the piece, correcting errors along the way” (Kratus, 2007, p. 46).

According to Williams (2011), because the large-ensemble model was established during the early 1900s, it has become synonymous with music education in public schools to the point whereby music educators dare not stray from the standard. Thus, the traditional instrumental music classroom continues to be based upon the large-ensemble design (Heuser, 2011; Williams, 2011). Simply put, instrumental music educators continue to shadow the routines of instrumental music educators of the past (Rostvall & West, 2003) and in the orchestra classroom specifically, this means that a “master-apprentice model” (Webb, 2012b, p. 45) has become the standard.

Allsup and Benedict (2008) also confirmed that the large-ensemble design has been the customary practice since the early twentieth century. Furthermore, these authors stated that the teacher continues to be the epicenter of knowledge, instruction, and direction. Thus, students often become onlookers of learning instead of engaging members of the class. The traditional instrumental music classroom design seems to suggest that student-centered education is secondary to a good performance and that the music teacher is the most important person in the music classroom. In fact, Allsup and Benedict referenced a book by Lautzenheiser, entitled *The Essential Element to a*

Successful Band: The Teacher, The Conductor, The Director, The Leader, which suggested that education is but a small fraction of what music educators do. Although a teacher-centered way of thinking cannot be generalized to all music educators, a teacher-centered large-ensemble design is the traditional teaching philosophy in the instrumental music classroom.

Prior Research: Traditional Instrumental Music Classroom

An evident void is apparent in the research regarding the traditional instrumental music classroom. Triantafyllaki (2005) specified, "instrumental teachers and teaching – without which there would be considerably less music-making in our communities, if none at all – have surprisingly been this focus of a comparatively small number of studies" (p. 383). However, despite the limited amount of studies, a number of twenty-first century music educators are beginning to explore the different teaching strategies that are being utilized within a music classroom.

Curious about what strategies middle school band teachers utilized, Bazan (2011) conducted a study in 2007 with the purpose of determining teaching methods of middle school band teachers in northeastern Ohio. A two-stage, mixed methods design was used: stage 1 utilized questionnaires and surveys (quantitative data), and stage 2 utilized observations, videotaping, and interviews (qualitative data). During the first stage, Bazan collected demographic data and utilized the *Music Teaching Style Inventory* survey in order to determine which band directors implemented student-directed instruction most often. Over the course of 30 days, the researcher contacted 122 middle school band directors; 49 questionnaires and surveys were returned. Bazan analyzed the questionnaires and surveys, and invited three band directors to participate in the second

stage of the study. During the second stage, Bazan observed, videotaped, and interviewed the three directors during 15 rehearsals, five for each director. After analyzing the data from both stages, the researcher concluded that although the three band directors indicated a high tolerance for student-directed instruction, the traditional methods of teacher-directed instruction were still utilized most often.

Bazan's (2011) findings, along with those of Williams (2011), support the statements in the research that claim that the standard method of instruction in instrumental music education classrooms is teacher-directed instruction. Green (2012) conducted a qualitative and ethnographic study with the purpose of identifying particular learning styles and learning strategies that were present during instrumental music lessons. The researcher utilized the concept of learning to play by ear as the basis for the music lessons. Fifteen instrumental music students, ages 13 to 17, participated in the study. A total of 104 lessons were observed, and the researcher recorded audio during each lesson; all students took individual lessons, with the exception of two students who took lessons together at the same time. Throughout the study, the student-participants received six-to-eight researcher-led lessons. Green also utilized teacher interviews and student questionnaires. After coding and analyzing the data, Green provided a detailed list of learning styles and learning strategies that were present during instrumental music ear-training lessons, including impulsive, shot-in-the-dark, practical, theoretical, pitch-sense, and rhythm-sense.

Similar to Green (2012), Kai-Wen Cheng and Colin (2007) studied a string orchestra educator, in and out of the typical classroom, in order to examine how the teacher set goals and used different teaching strategies, what the characteristics of the

different teacher strategies were, whether or not the teacher reflected on the teaching strategies, and what string orchestra teaching disclosed about teacher and student relationships. The researchers observed one large group teaching session at school, four small group teaching sessions at school, two small private group teaching sessions at the string orchestra educator's home, and one individual teaching session at the teacher's home, as well as one extended interview with the string orchestra educator. After analyzing and processing the data, Kai-Wen Cheng and Colin reported that effective string orchestra teaching includes numerous interactive and overlapping features: motivation, flexibility, collaborative peer learning, and a student-centered environment. The researchers also noted that in the large group teaching sessions, where there was much diversity, a dependency on peer tutoring was present.

Twenty-first century classrooms include a diverse student population, and the music classroom is no different. Gerrity, Hourigan, and Horton (2013) conducted a study with the purpose of discovering beneficial teaching strategies and conditions for music teachers to implement when including students with special needs in the traditional music classroom. The researchers conducted the study at a large, Midwestern university one day a week for 10 consecutive weeks. The study focused on 16 children with special needs and six university students assigned as mentors. The researchers used a mixed-methods research design in order to determine music knowledge and skills learned throughout the 10-week study, and to investigate which teaching strategies were most effective. Gerrity et al. gathered quantitative data through pretests and posttests, which tested the students' knowledge of pitch and rhythm. The researchers collected qualitative data through interviews with all participants. After analyzing the data, the researchers determined that

the students gained musical knowledge with mentor implementation, and the preferred method of instruction included repetition and student choice. Gerrity et al. suggested that students with special needs should receive an adult advocate who would be present during music classes. The studies conducted by Gerrity et al., and Kai-Wen Cheng and Colin (2007) demonstrated the importance of transitioning from a teacher-directed classroom, the norm in a traditional music classroom, into a student-centered classroom. The study conducted by Gerrity et al. also involved an additional topic near absent in the music education research literature: rhythm.

Traditional Rhythm Counting Teaching

Teaching rhythm counting is in direct relationship with the history of music education. The purpose of singing schools in the 1700s was to teach church members to read music and keep the pitch during the singing of psalms, but a key component of singing schools was also to teach church members to sing in rhythm with one another (Music, 2008). As affirmed by Bowers (2007), rhythm is the "primitive essential of music" (p. 535), and it is fundamental to the structure of all music (Dalby, 2005; Tejada et al., 2010; Thaut, Trimarchi, & Parsons, 2014). Because of the importance of rhythm in music, Falter (2011) indicated that music educators have traditionally taught rhythm in various ways, for example, themed words such as *carrot* or rhythmic syllables such as *ta ti-ti* or *one-and-two-and-three-and-four-and*. According to Tejada et al., many music educators who have studied rhythm believe that a motor component is needed in the development of rhythm, for example, clapping hands, tapping feet, patting thighs, and physically replicating rhythm patterns.

Unfortunately, students often learn various rhythm counting methods throughout their tenure as music education students, which means that the transition from one method to the other can often be frustrating and confusing (Dalby, 2005; Falter, 2011; Strouse, 2007). Dalby, as well as Mixon (2008), pointed out that the consistency of methods for teaching rhythm is often different from building to building in most districts; however, it can often even differ in the same building and even the same music program when switching between grades. Again, inconsistency between building and programs can be frustrating for students. Furthermore, Cash (2011) indicated that many times the teaching of rhythm "is accomplished in ways that are dreadfully boring" (p. 52).

Prior Research and Traditional Approaches to Teaching Rhythm Counting

In the early days of music education, rhythm counting was something that was taught at students' homes apart from their instrument, rather than in the music classroom with an instrument in hand (Dell, 2010). Throughout the literature, rhythm counting approaches have changed over the course of music education history, and public school music teachers now include rhythm counting in their instruction. However, Dell stressed that students should still be taught rhythm apart from their instrument in order to be successful in internalizing a steady beat. In fact, according to Dell, "to ask students to learn performance technique simultaneously with reading and musical techniques is comparable to asking students to perform complex mathematical procedures while tap dancing" (p. 34). Dalby (2005) would agree with the previous statement, confirming that rhythm audiation, how it sounds, and mathematical rhythm thinking, how it is notated, are two separate thought processes in the brain.

Dell (2010) explained that students must be taught to feel the beat and they must be taught rhythm counting with the use of chanting and movement. Combining the two instructional strategies allows the students to feel the beat and also "the space between the beats" (Dell, p. 31). Dalby (2005) stated that allowing students to learn rhythm counting in collaboration with movement would allow them to identify patterns and the differences between various patterns. Continuing, Dalby stated that students benefit most from learning to use rhythmic syllables away from notation. For example, when learning to count four quarter notes, Dalby suggested using *du-de, du-de* in conjunction with patting thighs for each quarter note, which allows students to learn rhythm counting through syllables and movement. Furthermore, in agreement with Dell, patting thighs while counting out loud allows students to feel the beat and begin the process of internalizing the beat. Similar to the information provided by Dalby and Dell, Mixon (2008) also believed in the importance of students feeling the beat. While students learn various rhythms, Mixon stated that students should tap their heel while reading and counting rhythms in order to strengthen the steady beat; the heel tapping can also be done in conjunction with patting of the thighs.

In an attempt to help middle school students further understand rhythm counting, Falter (2011) developed the "Rhythm Color Worksheet" (p. 28) to aid in the visualization of rhythm. Working with the worksheet, students identify different types of notes, and then draw the notes and color in the duration of the note's value. Once the student completes the coloring, they then point to each note with a steady beat and say aloud *one-and-two-and,* and so on depending on how many beats per measure are needed. Falter's idea was that the worksheet would connect the visual, aural, and kinesthetic elements of

rhythm in order to help students with different learning styles. With the use of the worksheet, students "see precise visual rhythmic relationships, physically feel how subdivisions work within specific written rhythms, and hear the rhythms as they speak them" (Falter, p. 31).

In addition to the research regarding a motor component (Dell, 2010) and various in-person teaching strategies of rhythm counting, Smith (2009) conducted a study with the purpose of determining the effects of computer-assisted instruction on rhythm sight-reading skills in students with field-dependency and field-independency. At a suburban middle school in central Illinois, 120 instrumental music students were chosen by Smith to participate in the study. The researcher assigned half of the students to a control group, no computer-assisted instruction treatment, and half to an experimental group, computer-assisted instruction treatment. Prior to the study, Smith administered a Rhythm Performance Scale pretest, which measured the participants' ability to read and perform notated rhythms. For eight weeks, students in the control group remained in class during rehearsals, and the students in the experimental group left once a week for a half-hour to receive computer-assisted instruction. At the conclusion of the study, all 120 students completed the Rhythm Performance Scale posttest. After analyzing pretest and posttest data, Smith reported no evidence to support the notion that computer-assisted instruction caused any student to improve rhythm sight-reading skills at a superior rate. The researcher also noted that computer-assisted instruction was, however, an effective supplemental strategy.

With the integration of technology in many public school music classrooms around the nation, Smith (2009) showed how computers could assist in the learning of

rhythm counting. Dalby (2005), Mixon (2008), Dell (2010), and Falter (2011) also highlighted many of the traditional rhythm counting teaching methods and pointed out different techniques to improve rhythmic understanding. However, throughout the aforementioned methods for teaching rhythm counting, and the overall declaring of successful results with music students, rhythm counting is almost exclusively mentioned from a teacher-directed instruction point-of-view. In contrast to teacher-directed instruction, peer assisted learning could also help teachers successfully teach rhythm counting, and peer assisted learning could help rhythm counting be an approach that is not what Cash (2011) noted as "dreadfully boring" (p. 52).

Peer Assisted Learning

History of Peer Assisted Learning

The current study took place in a middle school setting and a peer assisted learning strategy, ClassWide Peer Tutoring, was used as an intervention. At the beginning of middle school, students are faced with major challenges: biological and cognitive changes, and a transition from elementary school that alters the organizational and peer structure of school (Johnson, Johnson, & Roseth, 2010). As Johnson et al. affirmed, many schools are deemphasizing competitive and individualistic work in favor of cooperative learning, and that "middle school is uniquely suited for peer learning" (p. 1). Peer assisted learning by design deemphasizes the competitive and individualistic work that many teachers try to avoid. Peer assisted learning, or PAL, is a general term for teaching strategies and models that involve active learning and intervention from the learners rather than from professional teachers (Jenkinson, Naughton, & Benson, 2014; Topping, 2001; Topping & Ehly, 2001). Simply put, PAL is defined as "the development

of knowledge and skill through explicit active helping and supporting among status equals or matched companions, with the deliberate intent to help others with their learning goals" (Toping & Ehly, p. 114). PAL incorporates many different strategies, such as peer tutoring, reciprocal peer tutoring, and ClassWide Peer Tutoring.

Strategies and models of PAL can be traced back to ancient Rome and in the first practices of Judaism (Krouse, Gerber, & Kauffman, 1981; Topping, 2001); even the ancient Greeks believed in the value of teaching one another (Johnson, 2011b; Webb, 2012b). PAL involves non-professional teachers from similar social groupings helping one another, and in return learning themselves, which is a practice that can be traced back in written records over the centuries (Topping, 2005). PAL, in some form such as peer tutoring or mentoring, was the standard method of practice until the middle of the eighteenth century when the grouping of students by chronological age became popular (Topping, 2001). In fact, before the grouping by chronological age, students in one-room schoolhouses, who were grouped together by a number of different ages, used cross-age tutoring frequently (Fuchs, Fuchs, Phillips, Hamlett, & Karns, 1995). In the late eighteenth and early nineteenth centuries, however, two educators by the names of Bell and Lancaster began the first universal use of PAL through peer tutoring, and the use of peer monitors and assistant peer monitors (Fuchs, Fuchs, Mathes, & Simmons, 1997; Topping, 2001).

In 1789, the East India Company hired Andrew Bell as the superintendent of the Madras Military Male Orphan Asylum. The institute, built for the children of fallen British soldiers, is where Bell began the use of peers as tutors for their fellow classmates (Rahmani, 2014). According to Rahmani and Sedra (2011), the East India Company,

although a flourishing and wealthy company, allotted limited funds to Bell for the hiring of teachers. In order to counter the increase in student numbers in the classrooms, Bell designed a system where students were paired into groups of tutors who instructed their peers; the tutors were monitored by older students serving as supervisors, who themselves reported to a small number of hired professional teachers (Fuchs et al., 1997; Rahmani, 2014; Topping, 2001). Because the system was founded by Bell in Madras, India, Bell (1808) self-described the system as "The Madras System of Education" (p. 1) and praised the system, stating, "the very moment you have nominated a boy a tutor, you have exalted him in his own eyes, and given him a character to support" (p. 21).

In 1798, Joseph Lancaster formed the outline of a monitoring system of education that would later become known as the "Lancasterian System" (Lancaster, 1821). In 1801, Lancaster established the Borough Road School for underprivileged boys in London, which adopted radical teaching methods like those of Bell's Madras System of Education (Fuchs et al., 1997; Llewellyn-Jones, R., 2007). According to Topping (2001), Lancaster designed a hierarchal system where advanced students served as monitors and assistant monitors to ensure that classmates were helping each other. Lancaster's system utilized a reward system in the form of rankings and prizes, which motivated students to succeed (Joseph Lancaster's System, 2014). Related to Bell's method, Lancaster created a school setting that could teach a multitude of students with a minimum number of professional teachers, creating a cost-efficient system of teaching, especially in low socioeconomic settings.

According to Salmon (1932) and Tschurenev (2008), Bell and Lancaster developed their methods independently of each other, and the two often fought (Joseph

Lancaster's System, 2014). In 1803, Lancaster openly thanked and praised Bell as an inventor, and Lancaster wrote of honoring Bell's contributions. After that account, however, Lancaster often rejected the fact that Bell influenced the Lancasterian System. In a self-titled chapter, *Joseph Lancaster's Own Glorious Bell*, Lancaster (1833) wrote, "NOTICE Is hereby given, that at a future time, the history of Dr. Bell and his claims will be duly examined, and justice fairly done him" (p. 42). Amid the accusations, denials, and arguments, Salmon pointed out that monitors and tutors were not an invention of either Bell or Lancaster, and in fact, both Bell and Lancaster borrowed from each other with and without acknowledgment. Nevertheless, today their systems are known collectively as the Bell-Lancaster Method or the Bell-Lancaster System (Topping, 2001), and the system designed by Bell and Lancaster has led to the development of numerous different forms of PAL since its inception (Fuchs et al., 1997).

As stated by Fuchs et al. (1997) and Topping (2001), by the late 1800s, teaching became professionalized and the desire for peer tutoring decreased. However, by the 1960s, partly because of large class sizes and the problems with under-achievement in many public schools, American educators began to regain their interest in peer tutoring. Krouse et al. (1981) stated that the rise of PAL, or what the authors termed child-mediated instruction, was also due to the fact that many educators believed there would one day be a teacher shortage, and providing teaching experience to children from a young age would be beneficial if they were to enter the teaching profession. Furthermore, Fuchs et al. explained that the rejuvenation of interest in peer tutoring was based on the idea that peer tutoring could provide individualized and concentrated instruction to underachieving students. The following section will explore a number of strategies that

are associated with PAL, and that are used by educators around the globe to provide individualized and concentrated instruction.

Strategies of Peer Assisted Learning

PAL strategies have been thoroughly researched throughout the literature, "with a substantive evidential basis for effectiveness in terms of raising achievement, fostering social and emotional gains, and often also developing transferable interpersonal skills" (Topping & Ehly, 2001, p. 114). Furthermore, Topping and Ehly continued by stating that PAL strategies are dynamic, vigorous, flexible, and effective, and are worthy of any educational repertoire. Furthermore, because peers are readily available in most classrooms, PAL makes it possible to engage an entire class simultaneously (Mathes et al., 2003).

For years, educators in all content areas have been researching and implementing various strategies to improve learning. Much of the research focuses on exploring the differences of teacher-directed instruction versus peer-assisted instruction by means of examining test or quiz scores, or other forms of quantitative data. However, over a seven-month period during the 2004-2005 school year, Potenza-Radis (2010) conducted a qualitative study in order to investigate how struggling third-grade readers experience peer-led literature discussions within guided reading groups. The researcher used a third-grade classroom in the midwest United States as a setting for the study. Five students identified as struggling readers, with no identified learning disability, were chosen by the researcher to participate. Throughout the seven-month research period, students received both teacher-led discussions and peer-led discussions. Potenza-Radis collected data through observations, field notes, audio and video recordings, questionnaires, student

interviews, and post-discussion teacher interviews. After analyzing the data, Potenza-Radis concluded that all five participants experienced peer-led discussions in a positive manner, and displayed both cognitive and social-emotional benefits. Additionally, Potenza-Radis presented five main findings: the struggling reader participants took on unique roles during peer-led discussions, were capable of engaging in peer-led discussions, gained independence during discussions, built relationships with peers, and understood the social and supportive nature of peer-led discussions.

In addition to exploring more qualitative data from PAL, researchers have also explored PAL strategies that utilize computers. For instance, in order to examine the effects of a computer-supported collaborative learning system, which Tsuei (2011) called Electronic Peer-Assisted Learning for Kids, the researcher conducted a study in a fourth-grade classroom comparing the system to face-to-face PAL. Throughout the study, Tsuei examined online peer interactions and the Electronic Peer-Assisted Learning for Kids' effects on self-concept and reading abilities. Fifty-six students from two classes participated in the study, which lasted eight weeks. The researcher used a quasi-experimental design and the two classes were randomly assigned to two groups: control (face-to-face PAL) and experimental (Electronic Peer-Assisted Learning for Kids). Both groups received two sessions per week of whole-class instruction, and one session of PAL (face-to-face or Electronic Peer-Assisted Learning for Kids). Tsuei used a reading comprehension pretest and posttest, and a Self-concept Scale for Children pretest and posttest. After analyzing the results, the researcher determined that students involved with Electronic Peer-Assisted Learning for Kids gained higher reading comprehension scores and showed higher overall self-concept scores. Additionally, Tsuei noted that the

higher results from the computer-supported collaborative learning system could have been because there was greater social acceptance of students in the online environment versus the face-to-face environment. Although, according to Tsuei, the research of computer-supported collaborative learning systems in a K-12 setting was limited, the results suggested the need for more research of PAL strategies in an online setting.

The research conducted by Tsuei (2011) indicated that PAL strategies are being employed in various ways, such as in an online setting; however, PAL strategies are most often implemented face-to-face, similar to the current study, and are defined using numerous terms (Gisbert & Font, 2008). Therefore, in the following sections, the researcher of the current study has defined different methods and the prior research regarding five specific PAL strategies: peer assessment, peer mentoring, peer tutoring, reciprocal peer tutoring, and the strategy used in the current study, ClassWide Peer Tutoring.

Peer Assessment

Description. Peer assessment can be described as peers measuring the level, value, or worth of learning outcomes by grading one another using relevant criteria and giving feedback for the benefit of all persons involved (Topping & Ehly, 2001; van den Berg, Admiraal, & Pilot, 2006). Peer assessment, when used properly, can be used in a number of different curricula, and deployed to fit the needs of the area of study (Bay, 2011). According to Bay, "one of the most preponderant objectives of peer assessment is the supply feedback to learners . . . and students are encouraged to observe their goals and improvements through peer and self-evaluations" (p. 911). Topping and Ehly stated that one of the benefits of peer assessment is the quick response from a peer, rather than

waiting for a feedback from a teacher. Furthermore, van den Berg et al. mentioned that peer assessment is a realistic task that can prepare students for future professional practices, like educators or editors.

Furthermore, Sivan (2000) suggested that there is more than one type of peer assessment; the two types Sivan discussed were intra-group peer assessment and inter-group peer assessment. Sivan explained that intra-group peer assessment is assessment within groups and group members assess the involvement of a peer to the group work. Sivan continued to explain that inter-group peer assessment is assessment between groups, where class members assess other groups' presentations.

Prior Research. Although the current study took place at a middle school, grades 6 through 8, much of the literature on peer assessment is in higher education settings or upper grades, grades 9 through 12. For example, at the conclusion of a *Measurement and Evaluation* course at a public university in Turkey, Bay (2011) conducted a study involving 56 prospective language arts teachers with the purpose of obtaining feedback about the effectiveness of peer assessment. Using the survey method, Bay utilized an open-ended questionnaire, in collaboration with personal interviews, to obtain data. After analyzing responses from the questionnaire and transcribing interviews, Bay sorted the results into three categories: positive aspects of peer assessment, negative aspects of peer assessment, and suggestions to improve peer assessment. Bay presented prospective teacher responses in relation to each of the three categories in various tables, which displayed responses to the questionnaire and interview questions, and the frequency of each response. Bay concluded that positive responses indicated an increase in learner

interaction, negative responses indicated the limited amount of time to assess peers, and the suggestions indicated the need for more time to assess peers.

Peer Mentoring

Description. Peer mentoring is a type of PAL that utilizes a more experienced student assisting a less experienced student (Colvin & Ashman, 2010); the most common and fastest growing form of peer mentoring is cross-age peer mentoring (Karcher, 2008). Often, peer mentoring utilizes school time where a mentor will meet with a mentee during lunch or immediately after school. According to Karcher, a prime example of cross-age peer mentoring outside of the typical classroom is the organization Big Brothers Big Sisters of America, which utilizes role modeling as its main focus. Similarly, within a school setting, peer mentoring utilizes role modeling and positive interactions.

Prior research. As a PAL strategy, peer mentoring can look differently from school district to school district and building to building. The structure of peer mentoring programs can even change once students reach the university level. At a large university in the western portion of the United States, Colvin and Ashman (2010) investigated peer mentor, instructor, and student perceptions of peer mentoring roles; what power and resistance existed in peer mentoring relationships; and peer mentor, instructor, and student experiences during peer mentoring. Through interviews, observations, and field notes with 20 mentors, 10 instructors, and 10 students, Colvin and Ashman were able to identify five roles of a peer mentor: connecting link, peer leader, student advocate, trusted friend, and learning coach. Colvin and Ashman concluded that both peer mentors and students benefited from the mentoring experience, citing reasons such as students

developing a better connection with others on campus, and students communicating an increase in content knowledge.

Peer Tutoring

Description. According to Heron, Villareal, Yao, Christianson, and Heron (2006), peer tutoring is the most organized and well researched PAL strategy; therefore, upon review of the literature on PAL strategies, peer tutoring is the most commonly used implementation strategy. Although peer tutoring has varying definitions (Grubbs, 2009), in much of the literature, peer tutoring involves students from a similar social group or of similar social standing educating one another, where one of the students has more expertise or knowledge of the subject matter than the other (Colvin, 2007). During peer tutoring, students often work in pairs or small learning groups on various instructional tasks (Dufrene et al., 2010). Simply put, Grubbs stated, "peer tutoring implies that teaching is not being completed by a professional" (p. 22). Furthermore, Grubbs indicated that academic requirements continue to increase while school funding continues to decrease; therefore, according to Dufrene et al., peer tutoring offers a low-cost student-mediated instructional strategy that has been proven to be an effective strategy for improving academic performance in various subject areas. Additionally, Giesecke, Cartledge, and Gardner (1993) reported that peer tutoring could be even more beneficial than reducing class sizes, which with less and less state funding in many states, could prove to be meaningful.

Additionally, peer tutoring has multiple benefits for both the tutor and the tutee. According to Darrow, Gibbs, and Wedel (2005), "Peer tutoring encourages tutors to stay on task, articulate the problem, and lead the tutee to the correct response – all of which

assist in their own comprehension of the material" (p. 15). Because of the smaller groupings that are typically used during peer tutoring sessions, the tutee has an increased amount of interactions with a teacher (tutor), which allows for more responding and questioning (Darrow et al., 2005). Okilwa and Shelby (2010) detailed their research regarding peer tutoring and students with disabilities in grades 6 through 12, that peer tutoring is beneficial in general and special education classrooms, and peer tutoring resulted in positive academic achievement.

Prior research. As with much of the literature on PAL, research on peer tutoring has suggested that peer tutoring is most commonly utilized in an elementary school setting, for example, elementary spelling (Delquadri, Greenwood, Stretton, & Hall, 1983). Research regarding peer tutoring in a middle school setting is limited, and according to Veerkamp, Kamps, and Cooper (2007), the lack of middle school research regarding peer tutoring may be due to the fact that middle school is often characterized by short class sessions with passing periods, where elementary school is centered on one teacher for an entire day. However, despite the possible obstacles, research continues to be conducted in order to show the benefits of peer tutoring in a middle school setting. Because the current study took place in a middle school classroom, the researcher of the current study has attempted to extract from the literature those studies that are relevant and those that include middle school students.

For instance, at a middle school in rural southeastern United States, Dufrene et al. (2010) conducted a study with the purpose of examining the impact of peer tutoring on reading fluency. Seven students in the sixth grade participated in the study; three students were tutors, and four students were tutees. In order to determine the effects of peer

tutoring, the researchers collected baseline data prior to peer tutoring implementation in order to determine tutees' average words correct per minute and average errors per minute while reading researcher-determined reading passages. During the peer tutoring sessions, the tutors were instructed to record the intervention as another form of data collection. At the conclusion of the study, Dufrene et al. compared the baseline data with peer tutoring implementation data. After analyzing the results, the researchers concluded that implementing a peer tutoring intervention increased words correct per minute for all four tutees, and errors per minute decreased for three out of the four tutees.

Likewise, McDuffie, Mastropieri, and Scruggs (2009) conducted a study for the purpose of examining the effects of peer tutoring on students with and without disabilities, the differences in achievement levels between co-taught and non-co-taught classrooms, and the value of peer tutoring in a co-taught situation. According to McDuffie et al., a co-taught classroom is where two educators deliver instruction to a group of students in the same space; co-taught classrooms can include station teaching, parallel teaching, team teaching, or one teacher and one teacher-assistant. McDuffie et al. conducted the study at a middle school located in a large metropolitan area, and 203 seventh-grade science students with and without disabilities participated. Eight classrooms were utilized for the study; four were co-taught and four were not co-taught. McDuffie et al. collected data through a pretest consisting of production and identification questions, five unit tests, a cumulative posttest consisting of production and identification questions, observations, and a survey. McDuffie et al. concluded that co-taught students outperformed non-co-taught students on identification questions in statistically significant ways.

Dufrene et al. (2010) and McDuffie et al. (2009) utilized same-age peer tutoring in their contributions to peer tutoring research; however, Lingo (2014) utilized cross-aged peer tutoring in a study that investigated the effectiveness of a reading fluency tutor program (Great Leaps Reading) at a middle school in Southeastern United States. Four sixth-grade students receiving daily special education services and four high school National Honor Society peer tutors participated in the study. Using baseline and intervention methods, Lingo collected data by instructing the tutors to record the number of words read and the number of errors that occurred during a one-minute timed passage reading by the tutees. Each reading passage was considered appropriate grade-level material for each of the four tutees. Additionally, Lingo collected data from tutee and tutor surveys regarding opinions of the program. After analyzing the data collected over the course of three months, Lingo determined that Great Leaps Reading was successful at increasing reading fluency in all four tutee participants. Furthermore, Lingo noted that both tutees and tutors reported positive reactions following peer tutoring sessions.

Gisbert and Font (2008) also conducted a study focusing on cross-age peer tutoring. The researchers conducted a study with 24 student-participants, with a mean age of 14, in order to test three hypotheses regarding fixed peer tutoring and reciprocal peer tutoring. The first hypothesis stated that all students in fixed peer tutoring and reciprocal tutoring would improve in linguistic competence of the Catalan language. The second hypothesis tested by Gisbert and Font stated that the student tutors would enhance self-concepts as a writer. The third hypothesis tested stated that all tutored students would be satisfied with peer help. The 24 students were enrolled in an optional secondary school course based on learning and teaching the Catalan language through peer tutoring. The

researchers used a pretest, posttest, and a writer self-concept questionnaire to test the first hypothesis and the second hypothesis, and a satisfaction questionnaire to test the third hypothesis. Gisbert and Font found that data received from the research methods confirmed the first and second hypotheses; however, the researchers concluded that data received from the satisfaction questionnaire did not show an increase in satisfaction by all students involved in fixed tutoring and reciprocal tutoring. Gisbert and Font concluded that although fixed tutoring and reciprocal tutoring each have separate advantages and disadvantages, the overall efficacy of peer tutoring is positive. Furthermore, Gisbert and Font agreed that possibly more important than same- or cross- age peer tutoring is the difference in skill knowledge between the tutor and tutee.

Dufrene et al. (2010), McDuffie et al. (2009), Lingo (2014), and Gisbert and Font (2008) provided evidence about the benefits of same-age and cross-age peer tutoring within a middle school setting, specifically in core subject areas like reading and science. Additionally, Dufrene et al., McDuffie et al., and Lingo provided further knowledge of the benefits of PAL when utilized with students with and without various disabilities, such as learning and behavior. Peer tutoring was researched in the areas of multicultural and multilingual classrooms because, as Allison and Rehm (2007) pointed out, middle school teachers around the United States are facing record increases in the number of students from numerous cultural and racial backgrounds.

With an awareness of the increase in diverse student populations, Allison and Rehm (2007) investigated effective teaching strategies for multicultural and multilingual middle school students in mainstream classrooms. In seven separate districts across a southeastern state in the United States, 16 middle school family and consumer sciences

teachers participated in the study. The districts chosen by the researchers represented culturally diverse populations and included rural and urban communities across the state. The researchers utilized a survey asking the 16 teachers to rate 10 classroom practices and instructional strategies that have been endorsed by educators as possibly effective with culturally diverse learners. The questionnaire included a 6-point rating scale ranging from "0 *(have not used)* to 5 *(very highly effective)*" (Allison & Rehm, p. 12). The researchers found that peer tutoring was ranked as the second most effective classroom practice and instructional strategy, next to the use of visuals. Allison and Rehm concluded peer tutoring is a successful strategy for teaching middle school learners from numerous cultural and racial backgrounds.

In addition to the research regarding same-age and cross-age peer tutoring benefits in a middle school setting (Allison & Rehm, 2007; Dufrene et al., 2010; Gisbert & Font, 2008; Lingo, 2014; McDuffie et al., 2009), peer tutoring has been investigated at the university level as well. At a school of medicine in a major European town, Gandhi, Primalani, Raza, and Marlais (2013) conducted an evaluation study examining the effectiveness of a peer-led review course for pediatrics students. The course was organized and designed by students to prepare classmates for a pediatrics placement exam. The researchers observed 140 students who attended the one-day course, which consisted of a review guide, a one-hour peer-led lecture, and small-group mock clinical examination scenarios. The researchers formulated a questionnaire designed to measure student readiness for exam and clinical practices, which was used before and after the course, and a questionnaire to rate the course design and structure. Additionally, Gandhi et al. asked the peer tutors to respond to a questionnaire regarding their ability to peer

lead. The researchers found that the peer-led review course had a positive effect on student readiness for the pediatric placement exam and clinical experiences. The researchers also found that the peer tutors noted an increase in teaching ability and clinical knowledge for themselves.

Because peer tutoring has been highly praised by researchers in the literature at the primary, secondary, and university levels, several educators have explored methods to examine or improve already established peer tutoring programs. For instance, Coenen (2002) evaluated and assessed a middle school that implemented a school wide peer tutoring program utilizing gifted students as peer tutors to classmates. Coenen examined the peer tutoring program, specifically investigating how the gifted students participated in the peer tutoring program, and whether or not the program was effective and beneficial. When the program was designed by a committee at the middle school, specific components were initially addressed in order to design an effective peer tutoring program: for example, a needs assessment, a list of goals and objectives, the selection and training of staff, and a guideline for evaluation and assessment. The committee decided to utilize gifted student volunteers because of their advanced intellectual ability and leadership qualities. At the conclusion of the school year, Coenen administered a questionnaire in which the gifted student peer tutors were asked to respond to a series of questions: for instance, "How has the peer-tutoring program helped prepare you for the future?" (Coenen, p. 54). In response to the previous question, one student responded, "To be more patient and know that all kids aren't as fast as others" (Coenen, p. 54). After analyzing all student responses, and parents', teachers', and administrators' comments,

Coenen determined that the peer tutoring program was in fact effective and beneficial to all peer tutors, and also the students who were tutored.

Similar to Coenen (2002), from 2003 to 2005, Hammond, Bithell, Jones, and Bidgood (2010) conducted an action research study in a first year undergraduate university course, examining the effectiveness of a same-year PAL teaching scheme. Over a three-year period, the researchers collected data by observing PAL sessions and interviewing students. The researchers designed a questionnaire that allowed students to evaluate the PAL scheme on a 5-point scale (1–strongly disagree to 5–strongly agree). The researchers performed the same methods of evaluation after each year of PAL implementation, and made modifications to the PAL scheme each year in order to increase the efficacy of PAL. Over the course of three years, a total of 90 students completed the questionnaire out of 117 total students in attendance at PAL sessions. Hammond et al. concluded that students favored the social aspects of PAL sessions, and these authors through interviews and questionnaires recorded an increase in the understanding of subject matter.

In addition to Coenen (2002) and Hammond et al. (2010), Grubbs (2009) conducted an action research study with the intent of discovering how effective the peer tutoring program was at addressing the needs of students at the researcher's middle school, how to increase participation from the student body, and what improvements were needed within the peer tutoring program. During a spring semester, Grubbs distributed a 5-item survey to 20 teachers. The survey included items such as, "How beneficial do you believe [the peer tutoring program] has been for your students" and "What could the [counselors] do to make [the peer tutoring program] be more useful"

(Grubbs, p. 29). Fifteen teachers responded to the survey and indicated that the peer tutoring program was "somewhat helpful" (Grubbs, p. 30), and that most of their students attended the peer tutoring program for help with organization. Additionally, 25 students completed a 6-item survey regarding the peer tutoring program. Grubbs found that peer tutoring was "somewhat helpful" (p. 31) and that most students attended to receive help with math. Ultimately, Grubbs concluded that the peer tutoring program was somewhat effective and supported among teachers; however, changes were needed to increase the benefit of peer tutoring to the students entering the peer tutoring program.

Reciprocal Peer Tutoring

Description. Designed in 1984 (Dioso-Henson, 2012; Pigott, Fantuzzo, & Clement, 1986), reciprocal peer tutoring is a type of PAL where groups of two or more students each act as both the tutor and the tutee (Dioso-Henson, 2012; Malone & McLaughlin, 1997). According to Dioso-Henson and Grubbs (2009), during reciprocal peer tutoring, students are equally a tutor, the providers of instruction, and a tutee, the receivers of instruction.

Prior research. In two middle school science classes in a large suburban middle school in a Midwestern city, 28 students participated in a study conducted by Kroeger, Burton, and Preston (2009) that examined the effectiveness of the PAL strategy reciprocal peer tutoring, specifically same-age reciprocal peer tutoring, as an intervention for students who had difficulties understanding science textbooks. The researchers, with the aid of two science teachers and a graduate assistant helper, implemented a single-subject withdrawal design (A-B-A-B) in order to measure student performance during baseline (A–no intervention) and intervention (B – same-age reciprocal peer tutoring).

Over the course of one school year, the researchers assigned each student a partner based on science comprehension level: the highest comprehending students worked with the lowest comprehending students. In order to test for an increase in student comprehension of science text, Kroeger et al. used the Cloze Procedure, a science assessment tool recommended by the two participating science teachers. After analyzing the results from baseline and intervention data, the researchers determined that same-age reciprocal peer tutoring was successful in increasing student knowledge and comprehension of science textbooks.

Rittschof and Griffin (2001) investigated the effectiveness of reciprocal peer tutoring and students' understandings of course material, feelings of self-efficacy, and levels of test anxiety. Over the course of one semester, 197 college-level student participants, 100 undergraduate and 97 graduate, were assigned to one of three groups: control, meaning no reciprocal peer tutoring, in-class reciprocal peer tutoring, and out-of-class reciprocal peer tutoring. In order to test the effects of reciprocal peer tutoring against the control, a pretest and posttest were administered by the researchers to test for students' content knowledge. Rittschof and Griffin tested self-efficacy and test anxiety with the use of a researcher-designed self-efficacy and test anxiety scale. The researchers gathered data about student reflections of reciprocal peer tutoring using a post-experiment questionnaire. The researchers concluded there were no statistically significant differences in students' understandings of course material, feelings of self-efficacy, or levels of test anxiety in all three groups of students. However, most students responded positively to reciprocal peer tutoring and highlighted several categories that were beneficial, including peer assistance and content application.

Malone and McLaughlin (1997) conducted a study that examined the effects of reciprocal peer tutoring on seventh- and eighth-grade student vocabulary quiz performance. The researchers tested the method against the traditional teacher-directed instruction. Thirty-two students, 20 seventh-grade students and 12 eighth-grade students, from a typical classroom in a Catholic Parochial School in the Pacific Northwest participated in the study. When one grade was receiving teacher-directed instruction, the other grade was participating in reciprocal peer tutoring; the sessions lasted for 20 minutes and Malone and McLaughlin utilized the two approaches throughout the entire school year. In order to train the students in reciprocal peer tutoring, the researchers initially spent 20 minutes explaining the rationale, procedures, and conditions that the students would be using, followed by a 10-minute practice session where students used role-playing. After the initial introduction, the students only needed a brief reminder from the researchers each time they participated in reciprocal peer tutoring sessions. After seven weeks of implementation, the researchers analyzed data from vocabulary quizzes and concluded that reciprocal peer tutoring was effective in increasing quiz scores. Malone and McLaughlin noted that 10 minutes of reciprocal peer tutoring would have been adequate. "After 10 min[utes], the students exhibited high levels of off-task behavior, indicating that they had finished studying" (Malone & McLaughlin, p. 35). Overall, the researchers stated that reciprocal peer tutoring was easy to implement, required no monetary cost, and that monitoring students' responses during reciprocal peer tutoring was easier than during traditional teacher-directed instruction.

In a self-contained classroom for students with emotional or behavioral disorders, Sutherland and Snyder (2007) conducted a study involving four students in order to

determine the effects of reciprocal peer tutoring on reading fluency and classroom behavior. The researchers used a multiple-baseline-across-subjects design to examine the effects of reciprocal peer tutoring as compared to baseline, or no intervention, data. Over an 11-week timeframe, a researcher-trained teacher observed student behavior and collected weekly curriculum-based measurements in order to test for reading fluency. The researcher-trained teacher taught the four students to self-graph words correct per minute and errors per minute during weekly curriculum-based measurements. At the conclusion of the study, the researchers administered a student satisfaction survey. After analyzing the data, Sutherland and Snyder concluded that reciprocal peer tutoring decreased disruptive behavior and increased reading fluency. The researchers also noted that students preferred reciprocal peer tutoring to typical instruction.

ClassWide Peer Tutoring

Description. With its roots in Bell's peer tutoring system from the late 1700s (Fuchs et al., 1997), ClassWide Peer Tutoring, or CWPT, is an evidence-based PAL strategy that addresses the calls in the educational field for "adequate, individualised [*sic*], efficient, empirically based and student-centered education" (Ayvazo & Aljadeff-Abergel, 2014, p. 77). CWPT was developed in 1983 at the Juniper Gardens Children Project in Kansas City, Kansas (Dioso-Henson, 2012; Delquadri, Greenwood, Whorton, Carta, & Hall, 1986). According to Ayvazo and Aljadeff-Abergel, CWPT is economical because during CWPT, an entire class participates in teaching and learning. Additionally, everyone receives feedback, according to Haydon, Macsuga-Gage, Simonsen, and Hawkins (2012). Because teachers cannot be everywhere in a classroom at once, teachers often struggle with providing feedback to all students; feedback, then, is often directed to

the entire group of students instead of toward each individual student (Ayvazo & Ward, 2009). CWPT allows for quick feedback to all students.

CWPT uses a reciprocal peer tutoring format which, as stated previously, allows a student to serve both as tutor and tutee in the same classwide tutoring session (Bowman-Perrott, 2009; Darrow, Gibbs, and Wedel, 2005; Delquadri et al., 1986; Greenwood, Delquadri, & Hall, 1989). Moreover, Tsuei (2011) stated, "when applied class-wide, the [PAL] strategy has the benefit of one-to-one instruction, which simultaneously involves all of the students in peer tutoring" (p. 217). Regarding the instructional and student benefits of CWPT, Bowman-Perrott (2009) stated that CWPT "provides one-on-one instruction, students learn to teach and be taught, opportunities are built in for error correction, positive social interactions between students are encouraged that may not otherwise occur, and social and academic goals can be addressed simultaneously" (p. 260). Additionally, according to Bowman-Perrott, students are actively engaged and numerous opportunities to respond are provided, resulting in high rates of academic responding. The findings and statements made by Bowman-Perrott are echoes of the original intentions behind the reasons to implement CWPT. Furthermore, Greenwood (1997), a co-developer of CWPT, stated that CWPT simultaneously addresses academic and social skills, is inclusive to all students with and without disabilities, and improves academic outcomes that parents, schools, and policy makers classify as important.

One of the components of CWPT, although not always utilized in the research, is a competition factor, where students are divided into two competing teams throughout the CWPT process. At the beginning of the week, students are divided into tutoring pairs, and each pair is then assigned to one of two teams that will compete against each other

(Greenwood, Terry, Arreaga-Mayer, & Finney, 1992). CWPT sessions are timed; therefore, throughout the tutoring sessions tutors award points when a tutee correctly responds to a task presented by the tutor. Points are awarded for tasks such as spelling a word correctly, solving a math problem, or in the contexts of the current study, a student's ability to notate correct rhythm counting. The total points for each team are then compared at the conclusion of CWPT sessions. As outlined in the manual for CWPT, *Together We Can!*, Greenwood, Delquadri, and Carta (1997) recommended the teaching of "Good Sports" (p. 20), which outlines student behaviors for winning and losing: for example, praising winners for their accomplishments, no teasing the losing team, and no complaining about losing.

Prior research. In the early stages of CWPT development, Greenwood et al. (1984) studied the effects of peer-mediated instruction, what the researchers simply called classwide peer tutoring with no official abbreviation or capitalization, versus teacher-mediated instruction. The researchers defined teacher-mediated instruction as the use of teacher-student discussions, paper/pencil worksheets, and media; the researchers defined classwide peer tutoring as the use of peer-mediation through entire-group involvement, and paper/pencil worksheets for practice. Greenwood et al. measured achievement outcomes by using direct observation, weekly subject matter tests, and standardized achievement tests. Five teachers and 128 students in grades 3 through 6 participated in the study. By analyzing data from all measures, Greenwood et al. concluded that the peer tutoring strategy, classwide peer tutoring, produced superior weekly achievement improvements when compared to teacher-mediated instruction. Immediately following the research conducted by Greenwood et al. beginning in 1984,

Greenwood et al. (1989) conducted a longitudinal study lasting four years to examine two items: the effects of CWPT on academic achievements of low-socioeconomic status students and high-socioeconomic status students from grades 1 through 4, and the CWPT implementation process. After four years of data collection by the researchers, Greenwood et al. determined that CWPT produced beneficial changes in classroom environment, student behavior procedures, and student academic achievement.

Over a five-week period involving four students in the seventh grade, Lundblom and Woods (2012) conducted a study that investigated: if the implementation of CWPT created an increase in idiom comprehension, if the students and teachers implemented CWPT with fidelity, and if students and teachers were satisfied with the use of CWPT. The researchers used a multiple baseline design across three sets of idioms in order to compare comprehension levels before and after CWPT. CWPT sessions occurred three days per week throughout the five-week study, and lasted 20 minutes of a 50-minute intensive reading class period. Throughout the study, Lundblom and Woods collected baseline and CWPT implementation data by recording the number of correct student responses to three sets of 10 idioms, 30 in total. Additionally, the researchers administered a questionnaire to all participants; the questionnaire related to the overall satisfaction level of CWPT, CWPT program specifics, and peer relations. Lundblom and Woods concluded that CWPT increased idiom comprehension and that participants were satisfied with CWPT.

In a third-grade elementary classroom in a low-income area of a southwestern city, 16 Spanish/English speaking students participated in a study conducted by Madrid, Canas, and Ortega-Medina (2007). The purpose of the study was to compare the effects

of three different instructional interventions: competitive team peer tutoring, cooperative team peer tutoring, and teacher-led instruction. Over 15 weeks, the participants received each intervention five times. The researchers collected data through pretests and posttests of 150 spelling words, which equaled 10 spelling words for each week of intervention. Madrid et al. found that both peer tutoring interventions reported higher test scores than teacher-led instruction. The researchers therefore concluded that cooperative team peer tutoring was the most effective, as proven by pretest and posttest score analysis. Considering the nature of the students, Spanish/English speakers, the researchers explained the benefits of cooperative-type interventions as a successful and positive teaching strategy for Hispanic bilingual students.

Ayvazo and Ward (2010) conducted a study examining the effects of CWPT as an inclusive strategy for students with Autism. Ayvazo and Ward conducted the study in a kindergarten physical education class at a K-8 charter school in the Midwest. Sixteen students participated in the study; six of these students were diagnosed with Autism. Over the course of 26 physical education lessons, Ayvazo and Ward collected data by observing and tracking two variables: engagement level and student learning. The researchers used an A-B-A-B single-subject withdrawal design; the A phase was the baseline conditions, teacher-led instruction, and the B phase was the intervention conditions, CWPT. The researchers, through daily performance charts which showed daily engagement with the lesson and improvement from prior lessons, recorded data for each variable. Ayvazo and Ward found that CWPT was a successful strategy to use to increase student engagement in students with Autism; however, the researchers discovered limited findings for the increase of student learning.

Neddenriep, Skinner, Wallace, and McCallum (2009) conducted a two-experiment study to determine if CWPT would increase oral reading fluency, reading comprehension, and reading rates. Four students in the sixth grade, two separate students for each experiment, participated in the study conducted by the researchers. Through an alternate treatment design based on a non-tutored control condition and CWPT condition, Neddenriep et al. collected data for two weeks by recording the number of words correct per minute and errors per minute, a 10-question comprehension interview, and session observations. The researchers determined that the implementation of CWPT increased oral reading fluency, reading comprehension, and reading rates for all students involved in the study.

In 10 social studies classes of 157 total students, Scruggs, Mastropieri, and Marshak (2012) conducted a study to investigate the differences of traditional teacher-led instruction and CWPT. Over the course of 18 weeks, the researchers randomly assigned five of the 10 social studies classes to traditional teacher-led instruction and five to an experimental instruction, CWPT. Prior to the study, Scruggs et al. administered a pretest to gain baseline data. During the study, teacher presentations were identical for both instructional conditions; however, independent work time during traditional instruction was replaced with CWPT during experimental instruction. The researchers collected posttest data at the conclusion of the study and reported that the experimental treatment was more effective in content-knowledge gains. In addition, Scruggs et al., through informal interviews, reported overall positive feedback from students who participated in CWPT.

In a first-grade classroom at a public elementary in Mississippi, Taylor and Alber (2003) conducted a study researching the effects of a CWPT intervention on the number of words spelled correctly on weekly spelling tests. Over the course of 26 weeks, four students with learning disabilities participated in the ABAB-reversal-design study. The researchers collected data from weekly spelling dictation pretests and posttests. During baseline conditions (A), the students received typical teacher-led instruction during spelling lessons. During CWPT (B), the students met with a partner and practiced spelling words, giving and receiving immediate feedback through the session. At the conclusion of the study, the researchers collected data from student and teacher surveys regarding CWPT. Taylor and Alber reported that CWPT increased spelling achievement in all four participants, and teacher/student surveys indicated a positive response to CWPT implementation. Additionally, the researchers stated that CWPT was a positive approach for the classroom inclusion of students with learning disabilities.

Xu et al. (2008) conducted a study involving English-language learners and "primary English speakers" (p. 617), or PES, in order to determine whether an increase in social interaction would occur after CWPT was implemented and if CWPT had a different effect on social interactions for English-language learners and PES students. The researchers' main purpose was to examine the effects of CWPT on English-language learner students as compared to PES students. Seven students from class 1, English-language learners, and seven students from class 2, PES, participated in the study. Xu et al. used a single-subject withdrawal design (ABA) in order to compare the effects of CWPT. The researcher-trained teacher implemented typical teacher-led lessons (A) and CWPT lessons (B) throughout the study, while Xu et al. videotaped and observed

classrooms. The researchers collected data on the social interaction of students that took place immediately following lesson types. Xu et al. also distributed teacher and student satisfaction surveys after the completion of the study. After analyzing the results, Xu et al. concluded that both English-language learner students and PES students showed increases in positive social behaviors; however, the effects of CWPT on social interaction was more obvious in English-language learner students.

Rafdal et al. (2011) conducted a study examining the effects of Kindergarten Peer-Assisted Learning Strategies, a supplemental CWPT program, on students with disabilities. The researchers conducted the study in order to determine whether participation in Kindergarten Peer-Assisted Learning Strategies improved reading skills for students with individualized education programs and if different levels of Kindergarten Peer-Assisted Learning Strategies teacher support affected student outcomes. Over a two-year period, 89 students from 47 classrooms participated in the study. The researchers assigned 21 students to a control group, no intervention, 34 students to Kindergarten Peer-Assisted Learning Strategies Level 1, and 34 students to Kindergarten Peer-Assisted Learning Strategies Level 2; Kindergarten Peer-Assisted Learning Strategies Level 1 teachers received a one-day workshop and Kindergarten Peer-Assisted Learning Strategies Level 2 teachers received a one-day workshop plus three additional support lessons throughout the school year. Teacher-led and Kindergarten Peer-Assisted Learning Strategies sessions were centered on reading skills such as alphabetic and oral reading measures. The researchers utilized a pretest and a posttest to determine reading skill gains. Rafdal et al. concluded that Kindergarten Peer-Assisted Learning Strategies, a CWPT program, improved reading skills more than

teacher-led instruction; however, there was no difference in improvement gains for the different levels of support.

In a fifth-grade math classroom at an urban charter school in the Midwestern United States, Hawkins et al. (2009) conducted a study to determine whether CWPT procedures with a randomized reward system could improve multiplication fact fluency. Twenty-six students participated in the study; however, only 11 had parental consent for data collection purposes. The researchers collected baseline data through multiplication fact probes. Students had one minute to complete 48 one-digit by one-digit multiplication facts, and the researchers analyzed digits correct per minute. Over the course of 15 weeks, Hawkins et al. analyzed scores from teacher-led sessions and CWPT sessions, and found that digits correct per minute increased with the implementation of CWPT. Additionally, the researchers reported that a randomized reward system was beneficial in the success of CWPT.

Over the course of 31 weeks, Calhoon (2005) conducted a study in order to determine whether the implementation of Linguistic Skills Training and Peer Assisted Learning Strategies, a program based on CWPT, would increase reading comprehension, and whether Linguistic Skills Training and Peer Assisted Learning Strategies could be implemented in special education classrooms. The purpose of the research was to determine the effects of Linguistic Skills Training and PALS on middle school students with reading disabilities. Four teachers and 38 students, representing two middle schools in the southwest United States, participated in the study. Calhoon randomly chose two teachers to implement Linguistic Skills Training and Peer Assisted Learning Strategies, and two teachers to remain constant, no peer-mediated interventions. Using a pretest and

a posttest to measure various reading concepts, such as letter-word identification and reading fluency, Calhoon found that the implementation of Linguistic Skills Training and Peer Assisted Learning Strategies resulted in statistically significant improvements.

Peer Assisted Learning in the Music Classroom

It is evident by the exploration of the literature that PAL strategies are effective in various classroom settings (Bay, 2011; Colvin & Ashman, 2010; Greenwood et al., 1989; McDuffie et al., 2009; Rittschof & Griffin, 2001; Tsuei, 2011), and according to music educators and researchers Jellison, Brown, and Draper (2015), "Some of the most influential and effective teachers of children are other children – siblings, school friends, and older children" (p. 18). However, although several PAL strategies have been researched in the music classroom, the literature is rather limited when compared to other subject areas. According to Blair (2009), researchers and practitioners in the field of education have affirmed the importance of student-centered classrooms and the importance of collaborative learning.

Speaking about a typical general music classroom, Blair (2009) also stated that many musical activities are the result of decisions that were made by the teacher, and while students are often engaged in making music, there was little space for thinking musically. Additionally, Blair specified, "We certainly do not want to create clones of ourselves or to have our students depend on us for every musical idea" (p. 45). Allowing space for students to think musically relies on student-centered spaces, which can be enhanced through PAL. Furthermore, Sheldon (2001) and Darrow (2008) indicated that peer tutoring could be a beneficial strategy to implement in a music classroom because of the additional support it can give the music teacher.

Sheldon (2001) discussed the benefits that PAL could have in a music classroom, specifically cross-age peer tutoring. According to Sheldon, PAL elevates volunteerism, increases positive attitudes, improves social skills and social interactions, develops cognitive skills, and enables understanding between students who may not typically understand each other. Additionally, Sheldon asserted that higher-performing students develop an increased level of respect and tolerance for lower-performing students. Similarly, Hunter (2006) also spoke of the benefits of PAL in the music classroom at the university level. Hunter continued to discuss that PAL in music education engages students as active contributors, enhances the learning experience, supports a collaborative environment, "encourages questioning, discussion and debate" (p. 78), and develops skills that carry over into the students' professional lives. The observations brought forth by Hunter regarding PAL in a music classroom are in direct relationship with what top educators have researched, examined, and discussed regarding PAL in numerous other classroom settings.

Additionally, and noteworthy in the contexts of the current study, Webb (2012b) explored the use of peer tutoring in the string orchestra classroom, and cited that PAL has benefits to both the student providing the tutoring and the student receiving the assistance. In reference to the students providing the instruction, Webb stated that peer tutoring has multiple cognitive benefits and could help strengthen already learned string techniques, improve social skills, and promote reflective learning. The students receiving the instruction, according to Webb, could benefit from a more informal teaching setting from someone who may be less intimidating.

However, as affirmed by Webb (2012b) and Jellison et al. (2015), the literature on PAL in the music classroom is limited. As previously mentioned in Chapter I, Johnson's (2011b) research was a pivotal first step in the research on the benefits of PAL in a music classroom. Still, in the contexts of the current study, studies focusing on PAL are "virtually nonexistent in string education" (Webb, p. 45) and the research regarding CWPT in the music classroom is nearly absent (Darrow et al., 2005). Because the practice of music is largely focused on the performance (Bazan, 2011; Darrow et al., 2005; Heuser, 2011; Scruggs, 2009a; Williams, 2007, 2011), the literature suggests that few music educators are employing PAL strategies. According to Heuser, the literature also suggests that many music educators are wedded deep in the traditional large-ensemble design, which does not appeal to a broader range of learners, and many are not willing to stray from tradition. However, according to Kratus (2007), music educators can embrace the future of differentiating instruction while still holding true to one of the main functions of music education: the preservation of music education's rich past, full of traditions and valued practices.

"By giving individual students and peers the opportunity to solve musical problems, the traditional teacher-centered power structure of the typical ensemble rehearsal is redefined" (Johnson, 2011a, p. 49). A review of the literature revealed that although few, there are music educators who are opposing the traditional notion of teaching music and who are exploring various methods, e.g., PAL, to increase the learning experience of different types of students. While the literature is scarce with examples of PAL in the music classroom, there is evidence of PAL strategies being utilized by music educators.

Prior Research: Peer Assisted Learning in the Music Classroom

In a groundbreaking study, Alexander and Dorow (1983) stated the following: "While some studies have focused on social behaviors and others on academic improvement, no peer tutoring studies have been published in music education" (p. 34). The research conducted by Alexander and Dorow suggested that the year 1983 was a fundamental first step for the inclusion of PAL in the music classroom. Involving 54 elementary public school band students from three separate fourth grade classrooms from three separate schools, Alexander and Dorow conducted a two-experiment study in order to determine whether peer tutoring had an effect on instrumental music performance when compared to regular band classroom instruction utilizing teacher-directed instruction. For both experiments, the researchers used a pretest and posttest design, and students were instructed by the researchers to perform certain musical exercises. These exercises were recorded on audiotape. Two independent observers listened to the taped performances in order to ensure consistency in scores. Additionally, within the peer tutoring groups, Alexander and Dorow divided the students into approval and disapproval error correction teaching techniques. Students utilizing the approval technique complimented tutees for correct behaviors, such as good posture, lip position, or good tone, and ignored incorrect behavior, such as bad posture, lip position, or good tone. Students utilizing the disapproval technique were to correct incorrect behaviors and not praise correct behaviors.

In the first experiment, Alexander and Dorow (1983) reported no major differences in the pretest scores between each group; however, posttest scores for all students involved in a peer tutored group, both approval and disapproval, were

considerably higher than the regular band classroom instruction. In the second experiment, the researchers controlled several factors that may have skewed the results in the first experiment: pretest and posttest level of difficulty increased between the two tests, a metronome was used to ensure identical tempos, the length of the tutoring session was increased to 35 minutes instead of 30 minutes, and the experiment lasted six weeks instead of five weeks. In experiment two, Alexander and Dorow reported that there was again no difference in pretest scores between each group; however, posttest scores for all students involved in a peer tutored group were considerably higher than the teacher-directed instructed group, and the students involved in the approval technique group scored even higher than students involved in the disapproval technique group. Alexander and Dorow specified the benefits of peer tutoring for both the tutor and the tutee, and although both peer tutored groups showed increased learning, the researchers concluded that approval techniques could be more effective than disapproval techniques.

In the contexts of the current study, Darrow et al. (2005) conducted a study examining the effects of CWPT on music learning in an elementary general music classroom consisting of 104 fifth-grade students from two separate elementary schools. Students who participated in the study were assigned as either a tutor or tutee during two separate stages; if they were a tutor in stage one, they were a tutee in stage two. During stage one, tutors instructed tutees on flat key signatures, and during stage two, tutors instructed tutees on sharp key signatures. As a pretest measure, Darrow et al. assessed all students on both flat and sharp key signatures prior to CWPT implementation. At the completion of stage one, the researchers tested all students on flat key signatures, and the completion of stage two, the researchers tested all students on sharp key signatures. As a

posttest measure, when both stages were complete, the researchers again assessed all students on both flat and sharp key signatures. Although Darrow et al. did not compare CWPT to a traditional teacher-directed method found in most music classrooms, the researchers determined that after analyzing the pretest and posttest data, CWPT was effective in teaching flat and sharp key signatures, that children are capable of teaching musical concepts, and that children are capable of learning while teaching. Additionally, Darrow et al. reported that over 70 of the 104 students who participated in CWPT stated they were satisfied with CWPT because it gave them the opportunity to help classmates. Those who stated they did not like the CWPT sessions stated that it was the learning of key signatures that was boring, not necessarily the CWPT aspect.

As previously mentioned, the research of PAL in a music classroom setting is uncommon. However, researchers at the university level have begun to research the effects of PAL integration. For instance, Jones and King (2009) utilized the PAL strategy peer tutoring in an undergraduate music studio recording class, examining how effective peer tutoring was as a form of learning. Twelve students total, nine first-year students and three third-year students, participated in the study. The researchers divided the 12 students into three groups: low-ability level, medium-ability level, and high-ability level. Each group had three first-year students of the groups' named ability, tutees, and one advanced third-year student, tutor. Jones and King assigned the three groups the same two tasks: complete a live studio drum recording in one hour and complete a mixing of the live studio recording in one hour. Throughout the peer tutoring session, the researchers video recorded the interactions and transcribed the dialogue verbatim at the conclusion of the session. The researchers also distributed questionnaires to all

participants and utilized focus-group discussions to gather experience reactions. Jones and King found that peer tutoring was effective as a learning strategy in a music studio recording class, and reported that the tutees felt the peer tutoring sessions helped increase their understanding of the concepts and that working with a peer tutor felt more relaxed than working within a typical classroom. Additionally, Jones and King found that the tutors benefited from peer tutoring because they were forced to think of diverse ways of explaining concepts when tutees had not grasped them the first time.

In addition to the few studies about how PAL can increase understanding and knowledge in a music classroom, Heuser (2011) investigated a middle school band program that opposed the traditional notion of teaching music by forming an outreach program for homeless youth. Through a PAL strategy, peer teaching, middle school students taught instrumental music lessons to same-aged peers at a homeless shelter. Through the use of field notes, observations, interviews, and student-reflections, the researcher determined that middle school band students had developed a greater level of respect and politeness, and older band members had grown a support system to nurture the musical growth of younger band members. Although descriptions associated with PAL often do not include discussion about affective outcomes such as respect, politeness, and nurturing, the research provided by Heuser showed how PAL could also benefit students beyond the academics.

Limitations of Peer Assisted Learning

Although the research is generally positive in terms of PAL as an effective teaching strategy, some researchers have indicated areas of concern. For instance, Bay (2011) reported overall positive results of peer assessment; however, Bay also mentioned

that peer assessment has had reports from students that it is preferable when a teacher instead of peers completes the assessment because students often prefer teacher feedback. Additionally, Colvin (2007) stated, "it is apparent that the use of peer tutors is not something that can be grafted onto a standard classroom configuration with automatic success" (p. 178) because at times, peer tutor and tutee relationships can include misunderstandings and power struggles.

Educators have also studied the difference in student responses in the presence and absence of a teacher during various teacher-led and peer-led sessions. For example, during the spring of 2007, Hulan (2010) conducted a qualitative observational study involving 24 third-grade students that examined student responses during student-led reading sessions, and the difference in responses in the presence and absence of the teacher. The teacher involved in the study created three different reading groups: one populated by students on grade level, one populated by students one year below grade level reading, and one populated by students two years below grade level reading. Hulan collected data for each group over a 10-week period through observations, field notes, audio recordings, and surveys. After coding 653 student responses and audio recordings, Hulan found that teacher-led and student-led discussions each had advantages and disadvantages; however, each form of discussion gave the students an opportunity to practice and discuss the text. Hulan noted that during teacher-led instruction, students responded to questions with a higher level of cognitively demanding responses, as opposed to lower-level responses during student-led discussions.

Similarly, over the course of 20 middle school choir rehearsals, with 88 student-participants and two choral directors, Freer (2008) conducted a study investigating the

relationship between teacher language use and student classroom experience. Freer collected data through video recordings of rehearsals, teacher interviews, observations of student behaviors, field notes, and 381 student-completed exit slips. Freer determined that when a choral director conducted rehearsal with language that matched students' developmental comprehension, known as scaffolding language, students answered more questions, explored musical options, and searched for different approaches to musical problems. Freer also noted that students responded with higher ratings for challenge, skill level, and positive experience when the director used scaffolding language. Additionally, the researcher found that when choral directors used non-scaffolding language, students were limited in their opportunities to make decisions and interact with musical content. The research provided by Freer is noteworthy because PAL relies on student-led learning, and as Freer reported, students may possibly respond with higher-level thinking when an educator teaches the material.

Conclusion

In the early 2000s, music education researcher Triantafyllaki (2005) called upon music educators to increase the research of instrumental music education in order to improve the practice and reflection about teacher-pupil interactions. Although Triantafyllaki did not specifically mention PAL, several doctoral students have sought to increase instrumental music research on PAL in the hopes of benefiting the field of music education. Scruggs (2009b) focused on a middle school string orchestra classroom, Webb (2012a) on high school string orchestra students tutoring middle school string orchestra students, and Johnson (2013) on a middle school band classroom. All three doctoral researchers' studies were based upon learner-centered environments and praised PAL as

a beneficial and noteworthy teaching tool for all music educators. The contributions to instrumental music education research provided by Scruggs, Webb, and Johnson in their separate studies are noteworthy in the context of the current study. All three of these scholars demonstrated role model behaviors within the instrumental music education realm because of their desire to examine instructional strategies in a music classroom setting with the purpose of increasing student learning.

Additionally, although the current study is not researching the effects of PAL in a homeless shelter, Heuser (2011) mentioned that implementing educational programs that diverge from the established large-ensemble model is often met with pressure from colleagues to return to traditional norms. According to Heuser, "Individuals who successfully embrace alternative visions of music education can be seen as a threat to those who are resistant to any changes in long-established practices" (p. 303). The previous statement can be seen as a challenge, and because PAL strategies have been demonstrated as successful in multiple subject areas (Bay, 2011; Colvin & Ashman, 2010; Lingo, 2014; Lundblom & Woods, 2012; Okilwa & Shelby, 2010), including music education (Alexander & Dorow, 1983; Darrow et al., 2005; Goodrich, 2007; Heuser; Jones & King, 2009), the need for more research regarding PAL in the instrumental music classroom is necessary.

Furthermore, according to Scruggs (2009a), peer tutoring in a string orchestra classroom allows the students to be actively engaged and gives the students "more to do than to sit, bored, through repeated rehearsals that are mainly designed for those who cannot play the music" (p. 58). PAL in a middle school string orchestra classroom could be the answer to the "dreadfully boring" (Cash, 2011, p. 52) techniques that many times

accompany the teaching of rhythm counting. Furthermore, "a truly active encounter, one in which there is concern and care between parties, often finds teacher and learner in a horizontal space" (Allsup & Benedict, 2008, p. 166), a space away from orderly rows and podiums, and in a space that embraces PAL.

Summary

Through exploring the literature, the researcher of the current study has revealed the importance of examining peer assisted learning, specifically ClassWide Peer Tutoring, in a middle school string orchestra classroom. Similar to Scruggs (2009b), Webb (2012a), and Johnson (2013), the researcher of the current study has also answered the call of Triantafyllaki (2005) to increase the research of instrumental music education in order to seek ways to improve the practice and reflecting on teacher-pupil interactions. Through the inspiration of many different music educators who are breaking traditional instrumental music classroom practices, the researcher of the current study has embraced the future of differentiating instruction while still holding true to the preservation of music education's rich past, full of traditions and valued practices (Kratus, 2007). By implementing peer assisted learning into a middle school string orchestra classroom, the researcher explored the impacts of peer assisted learning versus teacher-directed instruction on middle school string orchestra students' abilities to notate correct rhythm counting. In the following chapter, the researcher of the current study presents the quantitative and qualitative methods that were used to answer the three research questions that were presented in Chapter I.

CHAPTER III

METHODOLOGY

Introduction

A central and vital component of a research study is the purpose statement; the purpose statement is what drives a study and serves as inspiration and the vision of a study. The purpose of the current study was to implement peer assisted learning into a middle school string orchestra classroom in order to determine the impacts of peer assisted learning versus teacher-directed instruction on middle school string orchestra students' abilities to notate correct rhythm counting. In the previous chapter, in order to develop and further understand the impacts of teacher-directed instruction and peer assisted learning, the researcher identified, analyzed, and explored primary resources that related to the main components of the current study. According to Salkind (2012), "High quality research can be replicated [and] is doable" (p. 3); therefore, in this chapter, the researcher will discuss the framework and methodology that was used in the process to answer the research questions and hypotheses initially presented in Chapter I. The following research questions and hypotheses guided the current study:

1. What are the impacts of peer assisted learning on middle school string orchestra students' abilities to notate correct rhythm counting, compared to teacher-directed instruction?

H_1: There will be a difference in the impacts peer assisted learning has on middle school string orchestra students' abilities to notate correct rhythm counting when compared to teacher-directed instruction.

2. How are the impacts of peer assisted learning on string orchestra students' abilities to notate correct rhythm counting different for students in grades six, seven, and eight, compared to teacher-directed instruction?

   H_2: There will be a difference in the impacts peer assisted learning has on string orchestra students' abilities to notate correct rhythm counting for students in grades six, seven, and eight when compared to teacher-directed instruction.

3. How do middle school string orchestra students' levels of satisfaction towards learning correct rhythm counting differ between those students who receive peer assisted learning and those students who receive teacher-directed instruction?

   H_3: There will be a difference in middle school string orchestra students' levels of satisfaction towards learning correct rhythm counting between peer assisted learning and teacher-directed instruction.

Research Design

The researcher designed the current study as a true experimental research method, meaning "participants are assigned to groups" (Salkind, 2012, p. 14). In the case of the current study, the researcher utilized two different groups: TDI and CWPT. Because the standard method of instruction in music education classrooms has continuously been teacher-directed instruction (Williams, 2011), the researcher of the current study chose

peer assisted learning in the form of CWPT as the opposite instructional strategy to teacher-directed instruction. Peer assisted learning strategies, such as CWPT, have been thoroughly researched throughout the literature, "with a substantive evidential basis for effectiveness in terms of raising achievement, fostering social and emotional gains, and often also developing transferable interpersonal skills" (Topping & Ehly, 2001, p. 114).

Furthermore, the current study was designed as a quantitative study. Through consistency and standardization, a detailed procedure was developed in order for the research to be reproduced (Robson, 2011). According to Mills (2007), "quantitative research focuses on controlling a small number of variables to determine cause-effect relationship and/or strengths of those relationships" (p. 4). In order to answer the three research questions that guided the current study, the researcher utilized the following measures, which along with assigned groups and student grade level, are the dependent variables used throughout the study:

- *Rhythm Counting Pretest* and *Rhythm Counting Posttest* (see Appendix A): researcher-developed based on rhythms presented in *Essential Elements 2000 for Strings* (Allen, Gillespie, & Hayes, 2004), the adopted curriculum for orchestra in the researcher's school district.
- *Satisfaction Survey* (see Appendix B): a researcher-developed survey used to determine the satisfaction level of teacher-directed instruction versus CWPT.

Additionally, the researcher designed a small qualitative component in the form of an open-ended question at the end of the Satisfaction Survey. Although the current study is not a true mixed-methods study, the researcher combined quantitative and qualitative methods in order to increase understanding more than would be possible using each

method alone (Gay, Mills, & Airasian, 2012). Furthermore, the researcher wanted to gain deeper insight into middle school string orchestra students' levels of satisfaction toward learning correct rhythm counting by analyzing students' responses in their own words.

The researcher conducted the study in the spring semester of 2016 during a specified four-week period: Monday, February 22, 2016 to Friday, March 25, 2016. It should be noted that during the week of Monday, March 14, 2016 to Monday, March 21, 2016, the researcher and all students were on spring break; therefore, because school was not in session, no data were collected. Additionally, all sixth-grade students were absent on Friday, March 25, 2016 because of a field trip that was beyond the control of the researcher; therefore, all sixth-grade participants completed the study upon their return to class on Monday, March 28, 2016.

Population

The participants in the current study were from a suburban middle school in eastern Kansas; the middle school enrollment at the time of the study consisted of 763 students. The demographics of the middle school were as follows: 80%, or 608, of the students were Caucasian, 4%, or 34, of the students were African American, 6%, or 44, of the students were Hispanic, 5%, or 39, of the students were Asian, 1%, or four, of the students were American Indian or Alaska Native, one of the students was Native Hawaiian or other, and 4%, or 33, of the students identified themselves as being members of two or more of the classification system categories. Additionally, 8%, or 62, students in the middle school qualified for the free or reduced lunch program: 3%, or 25, of the students qualified for reduced lunch and 5 %, or 37, of the students qualified for free lunch.

The population of the current study consisted of all sixth-, seventh-, and eighth-grade students, ages 11 to 14, enrolled in orchestra at a suburban middle school in eastern Kansas during the 2015 – 2016 school year. In the spring semester of 2016, there were 143 students enrolled in all three grade levels; 60 students enrolled in sixth-grade orchestra, 48 students enrolled in seventh-grade orchestra, and 35 students enrolled in eighth-grade orchestra. The demographics were as follows: 68%, or 97, of the students were Caucasian, 8%, or 11, of the students were African American, 6%, or nine, of the students were Hispanic, 10%, or 15, of the students were Asian, 1%, or one, of the students was American Indian or Alaska Native, and 7%, or 10, of the students identified themselves as being members of two or more of the classification system. Of the 143 students, 67%, or 96, were female and 33%, or 47, were male.

The sample included students from the larger population of those enrolled in orchestra; however, because the researcher conducted the current study in a middle school setting, all students involved were under the age of 18 and therefore considered minors according to federal law. According to Institutional Review Board (IRB) guidelines, parental consent was required in order for the students to participate in the study and the students agreed to participate in the study through child assent. Ultimately, 75%, or 107 students returned the *Parental Consent Form* and *Child Assent Form* that the researcher sent home; 105 students agreed to participate in the study and two students declined to participate. Additionally, one student withdrew from the study during the third week of data collection; this student's pretest and posttest scores for the first two weeks were removed by the researcher from all data and were not included in the final results. Furthermore, for the remainder of the methodology description, the total

population and sample will be reflected by the number 142, not 143, because the withdrawn student's data was stricken from all records by the researcher.

Because a large number of students agreed to participate in the study, the researcher used purposive sampling and placed those students whose parents declined their child's participation in the study, or whose parents chose not to respond, into the TDI group. Then, in order to equally balance the two groups, the researcher used random assignment for those students who agreed to participate in the study by placing them into either the TDI group or the CWPT group. Additionally, only students in the TDI group with parental consent and child assent participated in the Satisfaction Survey. The total number of students in the TDI group was 71; 48 were female and 23 were male, and the total number of students in the CWPT group was 71; 47 were female and 24 were male. Students in the TDI group with parental consent and child assent participated in the Satisfaction Survey. Therefore, the total sample size for the Rhythm Counting Pretest and Posttest data was $N = 142$ and the total sample size for the Satisfaction Survey data was $N = 104$.

Data Collection

In order to proceed with data collection, the researcher was required to obtain IRB approval from the researcher's university. Additionally, the school district where the study took place requested a *Research Application Request-Internal* form be filled out for additional approval. Each of the aforementioned approval forms were obtained and completed by the researcher, and both the university and school district granted approval and permission in the spring semester of 2015. Therefore, in the spring semester of 2016, the researcher began the initial steps of data collection.

With IRB and school district approval, the preliminary step to data collection included the gaining of parental consent and child assent. In early February of 2016, the researcher of the current study sent home a formal letter along with printed copies of the *Parental Consent Form* and *Child Assent Form* with each of the 143 students enrolled in orchestra. Additionally, the researcher emailed all parents and guardians a digital copy of the *Parental Consent Form* and *Child Assent Form*. Parental consent was gained through parents' or guardians' signatures and child assent was gained through students' signatures. Moreover, the researcher spoke with each student using age-appropriate language during class to ensure understanding of the study components and confidentiality, and also to remind them they may withdraw from the study at any time. Because the study began on Monday, February 22, 2016, the researcher requested all forms be returned on Friday, February 19, 2016; in total, 107 forms were returned by this date.

Using the information from each student's *Parental Consent Form* and *Child Assent Form* that the students returned, the weekend of February 20, 2016, the researcher split each grade level into one of two groups: TDI or CWPT. Thirty-seven students were automatically placed in TDI because they either declined participation or did not return the necessary forms required to participate. Then, in order to equally balance the two groups, the researcher used random assignment for those students who agreed to participate in the study by placing them into either the TDI group or the CWPT group. The breakdown of the TDI and CWPT groups is displayed in Table 1.

Table 1

TDI and CWPT Group Breakdown by Grade Level

Grade	TDI	CWPT	Total
6	28	31	59[a]
7	24	24	48
8	19	16	35
Total	71	71	142[a]

Note. [a] number reflects the subtraction of one student who withdrew from the study Furthermore, within each CWPT group, the researcher randomly assigned each student a partner for the week and they were placed on one of two teams: *Team Mozart* or *Team Beethoven*.

On Monday, February 22, 2016, before students arrived at school, the researcher set up the classroom into three specific sections: one for TDI, one for CWPT, and one for regular class instruction following TDI and CWPT sessions. In one section of the classroom, the researcher designated the white board in the front of the classroom as the location for TDI; there were no chairs used in this setup and students sat on the floor facing the white board. In another section of the classroom, the researcher set up 16 chairs and eight music stands, and designated this portion of the classroom as the location for CWPT; each music stand contained a *Tutoring Point Chart* (see Appendix C) and a *Help!* sign (see Appendix C). Within the CWPT section of the classroom, the researcher labeled three trays for CWPT materials, one for each grade level. The trays included all materials students needed for the week: *Tutoring Worksheet* (see Appendix C) and *Tutoring Answers* (see Appendix C). Within the CWPT section, the researcher placed a

Team Point Chart (see Appendix C) for each grade level on the walls of the classroom, broken down by the two teams in each class period: three hours of grade six, two hours of grade seven, and one hour of grade eight. In total, 12 charts were placed on the walls of the classroom by the researcher; for example, first period had a *Team Point Chart: Team Mozart* and a *Team Point Chart: Team Beethoven*. Also, the researcher placed a *Good Sport*s poster (see Appendix C) on the wall in the middle of the CWPT section, in order to encourage good sportsmanship with the team point competition aspect. All materials—*Tutoring Worksheet*, *Tutoring Answer*s, *Tutoring Point Chart*, *Team Point Chart*, and *Good Sports*—were designed partly to reflect the look of the materials presented in *Together We Can!* (Greenwood et al., 1997), the basis for CWPT in the current study. The third and final section of the classroom was utilized by the researcher and the students during regular class instruction following TDI and CWPT sessions; this time was not associated with the current study.

After the setup of the classroom, the researcher began the data collection process, and the main portion of the study commenced on Monday, February 22, 2016 at the beginning of each class period. Students in all three grade levels, regardless of group designation, received and completed Rhythm Counting Pretest #1; the researcher customized each pretest for each grade level and the difficulty of the pretest was reflected by the grade level. Each of the 10 questions for all three grade levels on Rhythm Counting Pretest #1 were based on rhythms presented in *Essential Elements 2000 for Strings* (Allen, Gillespie, & Hayes, 2004), the adopted curriculum for orchestra in the researcher's school district. Each of the 10 questions for all three grade levels included four measures of a rhythm to be notated, for a grand total of 40 measures on Rhythm

Counting Pretest #1; therefore, Rhythm Counting Pretest #1 had a total possible score of 40 points, one point for every measure. Each student had 10 minutes to complete Rhythm Counting Pretest #1. Following student completion of Rhythm Counting Pretest #1, on the same day, the researcher announced for students to move to their designated sections of the classroom: TDI or CWPT.

For four consecutive days, students participating in TDI received from the researcher 10 minutes of rhythm counting practice and instruction on the exact same material presented in Rhythm Counting Pretest #1. During this time, the researcher wrote out the 10 rhythms one at a time on the white board, and then called on students at random, or took volunteers, to notate the rhythm counting. Other students then had the opportunity to disagree and correct any mistakes, or could agree and the researcher would discuss why the answer was correct. If students disagreed or did not fully understand the material, the researcher explained in detail the correct answer and appropriate notation. Over the course of the four days, the researcher repeated the same process multiple times for all 10 rhythms.

For four consecutive days, students participating in CWPT spent 15 minutes in a peer-tutoring session. Each student spent five minutes as the tutor and five minutes as the tutee; five minutes were dedicated to gathering materials, team point recording, and putting away of materials. During CWPT, the student who was the tutee spent five minutes notating rhythms on the *Tutoring Worksheet*; the worksheets and point charts were laminated, in order to be utilized for an entire week, and students used Vis-à-Vis markers to notate the rhythms. The rhythms were the exact same material presented in Rhythm Counting Pretest #1. The other student in each pair served as the tutor and used

the *Tutoring Answers* sheet to check for correct and incorrect notations. At the end of five minutes, the students switched roles and the process was repeated by the pair; each student spending five minutes as the tutee and five minutes as the tutor. Because CWPT is designed as a classwide completion, the tutee was awarded two points for a correct response and one point for an incorrect response that they corrected after the tutor explained the correct response. These points were recorded by the tutor on the *Tutoring Point Chart*, and would ultimately be added to the corresponding *Team Point Chart* for their class period and team at the end of each day. At the conclusion of the week, the team from each class period with the greatest amount of points earned and received a reward.

After four consecutive days of either TDI or CWPT, the students in all three grade levels, regardless of group designation, received and completed Rhythm Counting Posttest #1; the questions were identical to Rhythm Counting Pretest #1, and all material used throughout the week during TDI and CWPT, except in a different order. Therefore, Rhythm Counting Posttest #1 had a total possible score of 40 points, one point for each measure. Each student had 10 minutes to complete Rhythm Counting Posttest #1. Students in all three grade levels, regardless of group designation, then received and completed Rhythm Counting Pretest #2. Rhythm Counting Pretest #2, and all subsequent pretests, contained new and different four-measure rhythms than the week prior.

On Monday, February 29, 2016, before students arrived at school, the researcher again set up the classroom into the three specific sections. Additionally, the researcher replaced all CWPT materials in the designated trays with the new material for the week. Students participating in TDI previously, remained in TDI; however, the researcher

randomly assigned students participating in CWPT new partners and teams for the week. As with the preceding week, for four consecutive days, students participated in either TDI or CWPT. Each week mirrored the preceding week: pretest, TDI or CWPT sessions, posttest. The process explained in the previous paragraphs regarding the step-by-step details was then repeated for a third time beginning on Monday, March 7, 2016, and then for the fourth time beginning on Tuesday, March 22, 2016. During the time period of Monday, March 14, 2016 to Monday, March 22, 2016, the students and the researcher were not in school because the researcher's district was on spring break and no class sessions were held district-wide.

On Friday, March 25, 2016, after the four weeks of TDI and CWPT had concluded, the researcher distributed the Satisfaction Survey to the TDI and the CWPT group; as previously mentioned, sixth-grade students completed the Satisfaction Survey on Monday, March 28, 2016, due to a field trip on March 25, 2016. In both TDI and CWPT, only those who agreed to participate in the study were given the Satisfaction Survey. In an attempt to collect students' honest responses to the Satisfaction Survey, the researcher kept the survey anonymous, and although no space was provided for students to write their names, the researcher reminded all students that the Satisfaction Survey should not include their names.

Analytical Methods

Remaining true to the purpose of the current study—to determine the impacts of peer assisted learning versus teacher-directed instruction on middle school string orchestra students' abilities to notate correct rhythm counting—the researcher compared TDI and CWPT utilizing various analytical methods to interpret and explore the impacts.

Throughout the analytical process, the researcher used descriptive and inferential statistics. For each question, the researcher utilized various data collection types and variables. The two groups, TDI and CWPT, and each grade level were classified as nominal data because the groups were "categorical in nature" (Salkind, 2012, p. 111); the categories in this case were random assignment to either the CWPT group or the TDI group, and each student's grade level. The Rhythm Counting Pretests and Rhythm Counting Posttests were classified as ratio data because, "the ratio level of measurement is characterized by the presence of an absolute zero on the scale" (Salkind, pp. 108-109); the scale in this case was a score of 0 – 40 on the tests. The Satisfaction Survey was classified as interval data because although it was similar to the characteristics of ratio data, interval data lacks the presence of an absolute zero. Figure 3 displays the independent variables (IV), dependent variables (DV), and the data type of each variable, for each research question, and Figure 4 displays the statistical analysis used for each research question (RQ).

RQ	IV	Data Type	DV	Data Type
1	TDI	Nominal	Rhythm Counting Pretest and Posttest Difference	Ratio
	CWPT	Nominal		Ratio
2	TDI	Nominal	Rhythm Counting Pretest and Posttest Difference	Ratio
	CWPT	Nominal		Ratio
	Grade Level (6, 7, 8)	Nominal		
3	TDI	Nominal	Satisfaction Survey	Interval
	CWPT	Nominal		

Figure 3. The variables and data types used for each research question

RQ	Statistical Analysis
1	*t*-Test for Independent Samples
2	2 X 3 Mixed Factorial ANOVA
3	*t*-Test for Independent Samples Content Analysis

Figure 4. The statistical analysis used for each research question.

For Research Question 1, the researcher of the current study collected data based on the students' scores on the Rhythm Counting Pretests and Rhythm Counting Posttests. Using the difference between Rhythm Counting Pretests scores and Rhythm Counting Posttests scores, the researcher analyzed the data using descriptive statistics and inferential statistics in the form of a *t*-test for independent samples; the researcher completed this process four different times, accounting for the four weeks of instruction. The researcher chose a *t*-test for independent samples as the analytical method because according to Yockey (2011), a *t*-test for independent samples is appropriate "when the means of two independent groups are compared on a continuous dependent variable of interest" (p. 71).

For Research Question 2, the researcher of the current study collected data based on the students' scores on the Rhythm Counting Pretests and Rhythm Counting Posttests. However, in contrast to Research Question 1, the researcher compared the difference between Rhythm Counting Pretests scores and Rhythm Counting Posttests scores across the grade levels. The researcher analyzed the data using descriptive statistics and inferential statistics in the form of a 2 X 3 mixed factorial analysis of variance (ANOVA); the researcher completed this process four different times, accounting for the

four weeks of instruction. The researcher chose an ANOVA as the analytical method because, similar to a *t*-test, an ANOVA compares means. However, Research Question 2 compares the means of more than two groups, as opposed to only two groups in a *t*-test; therefore, an ANOVA was appropriate (Salkind, 2014). A Tukey post-hoc test was completed on all data that revealed statistical significance, which provided a comparison between and among all of the individual cells of each 2 X 3 matrix.

For Research Question 3, the researcher collected data based on student responses to an anonymous Satisfaction Survey using a four-point Likert scale; one question allowed the student to provide a written answer. Using the total score from each Satisfaction Survey (range = 7 – 28), the researcher analyzed the data using descriptive statistics and inferential statistics in the form of a *t*-test for independent samples. The researcher chose a *t*-test for independent samples as the analytical method because according to Yockey (2011), a *t*-test for independent samples is appropriate "when the means of two independent groups are compared on a continuous dependent variable of interest" (p. 71). Additionally, the researcher performed content analysis on the responses to the written portion of the survey by looking for trends and themes.

Limitations

According to Salkind (2012), "Almost everywhere you look in experimental research there are variables that can potentially confound study results" (p. 240). Likewise, in the current study, there were potential confounding variables that could have possibly existed. First, the number of musical instruments that a student knew how to play could have possibly skewed the results because the student may have been advanced at rhythm counting from other instruments. Similarly, the number of years a student had

been playing an instrument was a possible limitation; the student may have already excelled in the rhythm counting expectation level for his or her grade level.

A third limitation was that gender representation was unequal within the groups. Of the 142 students who participated in the current study, 33%, or 47 were male, as opposed to the 67%, or 95 females who participated in the study. A fourth limitation was logistics. In the researcher's school district, iPads were distributed to all middle school students across the entire district in the first month of the school year, which caused time delays due to deployment, implementation, and ongoing maintenance of a new teaching and learning tool.

A final limitation of the current study involved calendar issues. Because of circumstances beyond the control of the researcher, there was a one-week break in the middle of the current study for all participants. Additionally, a field trip caused all sixth-grade participants to receive an additional weekend break.

Although it is difficult to resolve the aforementioned confounding variables, recognizing and controlling potential confounding variables helps to "maximize internal validity" (Leedy & Ormrod, 2013, p. 228). The researcher will address these limitations of the current study in Chapter IV along with recommendations on how to control or account for various confounding variables.

Summary

Robson (2011) stated the purpose of research is "to explore, to describe, and/or to explain" (p. 39). In exploring new methods and strategies, researchers are able to discover information and build upon existing methods. Then, a researcher is able to describe and explain their findings to colleagues or in published literature, creating an

environment of lifelong learning and teaching. The current chapter has described the step-by-step process the researcher took in order to explore, describe, and explain the possible impacts of teacher-directed instruction versus peer assisted learning. In the following chapter, the researcher will present the findings of the study, along with conclusions, implications, and recommendations.

CHAPTER IV

FINDINGS AND CONCLUSIONS

Introduction

As noted from the inception of the current study, many sixth-, seventh-, and eighth-grade string orchestra students at a suburban middle school in eastern Kansas struggle with notating correct rhythm counting. The struggle is present despite the fact that rhythm is the central organizing structure of all music (Dalby, 2005; Tejada, Gil, & Perez, 2010; Thaut, Trimarchi, & Parsons, 2014), and according to Bowers (2007), it is the essential and master element of all musical components. Therefore, the researcher designed and executed the current study with the purpose to implement peer assisted learning into a middle school string orchestra classroom in order to determine the impacts of peer assisted learning versus teacher-directed instruction on middle school string orchestra students' abilities to notate correct rhythm counting.

In Chapter II of the current study, the researcher identified and examined primary resources that related to the main components of the current study in order to further understand the impacts of teacher-directed instruction and peer assisted learning. In the previous chapter, the researcher described the step-by-step process taken in order to explore the possible impacts. In this final chapter, the researcher will present and interpret the findings of the study, along with conclusions, implications, and

recommendations for future studies. The results of the following research questions and hypotheses will be discussed in detail in this chapter:

1. What are the impacts of peer assisted learning on middle school string orchestra students' abilities to notate correct rhythm counting, compared to teacher-directed instruction?

   H_1: There will be a difference in the impacts peer assisted learning has on middle school string orchestra students' abilities to notate correct rhythm counting when compared to teacher-directed instruction.

2. How are the impacts of peer assisted learning on string orchestra students' abilities to notate correct rhythm counting different for students in grades six, seven, and eight, compared to teacher-directed instruction?

   H_2: There will be a difference in the impacts peer assisted learning has on string orchestra students' abilities to notate correct rhythm counting for students in grades six, seven, and eight when compared to teacher-directed instruction.

3. How do middle school string orchestra students' levels of satisfaction towards learning correct rhythm counting differ between those students who receive peer assisted learning and those students who receive teacher-directed instruction?

   H_3: There will be a difference in middle school string orchestra students' levels of satisfaction towards learning correct rhythm counting between peer assisted learning and teacher-directed instruction.

Findings

Rhythm Counting Pretests and Posttests

In order to report accurately about the impacts of teacher-directed instruction (TDI) and peer assisted learning, the scores of the Rhythm Counting Pretest and Rhythm Counting Posttest must first be presented and discussed. The Rhythm Counting Pretest and Rhythm Counting Posttest scores, more specifically, the difference in scores between the two tests for each of the four weeks, served as the dependent variables for both Research Question 1 and Research Question 2. Throughout the four-week study, the researcher used four different 10-question Rhythm Counting Pretests and four identical corresponding 10-question Rhythm Counting Posttests to assess all participants. Prior to new material, the researcher gave the students the pretest. After the new material was presented, either through TDI or peer assisted learning, in the form of ClassWide Peer Tutoring (CWPT), the researcher gave the students a posttest. In Appendix D, the researcher has provided a complete list of all Rhythm Counting Pretest and Posttest scores, broken down by grade level, for all 142 participants.

During the four-week study, the researcher collected, graded, and analyzed 568 Rhythm Counting Pretests and 568 Rhythm Counting Posttests; one pretest and one posttest per student per week for four weeks. Research Question 2 addresses each grade level in more detail regarding the two instructional strategies; this information will be discussed in a later section. However, Table 2 displays the complete descriptive statistics for Rhythm Counting Pretests and Rhythm Counting Posttests relative to each grade level, without regard to instructional strategy. For each grade level, the maximum possible score on both tests was 40 points; 40 measures at one point per measure.

Table 2

Descriptive Statistics of Rhythm Counting (RC) Pretest and Posttest Scores by Grade Level for each Week

Grade		RC PRE 1	RC POST 1	RC PRE 2	RC POST 2	RC PRE 3	RC POST 3	RC PRE 4	RC POST 4
6 (n = 59)	*M*	27.085	39.492	34.848	39.220	35.153	37.763	33.153	38.525
	SD	18.100	1.558	8.713	2.018	7.922	5.110	6.853	3.087
	Minimum	0.000	32.000	8.000	27.000	5.000	18.000	6.000	26.000
	Maximum	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000
	Range	40.000	8.000	32.000	13.000	35.000	22.000	34.000	14.000
7 (n = 48)	*M*	20.042	36.813	34.979	37.667	29.208	36.208	28.833	35.646
	SD	17.248	7.269	9.911	6.701	10.587	7.170	7.410	6.340
	Minimum	0.000	6.000	2.000	3.000	1.000	7.000	5.000	12.000
	Maximum	40.000	40.000	40.000	40.000	40.000	40.000	39.000	40.000
	Range	40.000	34.000	38.000	37.000	39.000	33.000	34.000	28.000
8 (n = 35)	*M*	21.229	33.886	32.057	35.086	29.457	34.771	27.943	33.857
	SD	17.436	12.237	12.979	11.299	10.419	9.855	12.105	9.571
	Minimum	0.000	0.000	0.000	1.000	2.000	4.000	0.000	4.000
	Maximum	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000
	Range	40.000	40.000	40.000	39.000	38.000	36.000	40.000	36.000

After analyzing the results, the researcher determined that for sixth grade during week one, the mean of Rhythm Counting Pretest #1 was 27.085 (*SD* = 18.100), the mean of Rhythm Counting Posttest #1 was 39.492 (*SD* = 1.558), the minimum score increased from 0 to 32, and the maximum score remained the same at 40. During week two, the mean of Rhythm Counting Pretest #2 was 34.848 (*SD* = 8.713), the mean of Rhythm Counting Posttest #2 was 39.220 (*SD* = 2.018), the minimum score increased from 8 to 27, and the maximum score remained the same at 40. During week three, the mean of Rhythm Counting Pretest #3 was 35.153 (*SD* = 7.922), the mean of Rhythm Counting Posttest #3 was 37.763 (*SD* = 5.110), the minimum score increased from 5 to 18, and the maximum score remained the same at 40. During week four, the mean of Rhythm Counting Pretest #4 was 33.153 (*SD* = 6.853), the mean of Rhythm Counting Posttest #4 was 38.525 (*SD* = 3.087), the minimum score increased from 6 to 26, and the maximum score remained the same at 40.

After analyzing the results, the researcher determined that for seventh grade during week one, the mean of Rhythm Counting Pretest #1 was 20.042 (*SD* = 17.248), the mean of Rhythm Counting Posttest #1 was 36.813 (*SD* = 7.269), the minimum score increased from 0 to 6, and the maximum score remained the same at 40. During week two, the mean of Rhythm Counting Pretest #2 was 34.979 (*SD* = 9.911), the mean of Rhythm Counting Posttest #2 was 37.667 (*SD* = 6.701), the minimum score increased from 2 to 3, and the maximum score remained the same at 40. During week three, the mean of Rhythm Counting Pretest #3 was 29.208 (*SD* = 10.587), the mean of Rhythm Counting Posttest #3 was 36.208 (*SD* = 7.170), the minimum score increased from 1 to 7, and the maximum score remained the same at 40. During week four, the mean of Rhythm

Counting Pretest #4 was 28.833 (*SD* = 7.410), the mean of Rhythm Counting Posttest #4 was 35.646 (*SD* = 6.340), the minimum score increased from 5 to 12, and the maximum score increased from 39 to 40.

After analyzing the results, the researcher determined that for eighth grade during week one, the mean of Rhythm Counting Pretest #1 was 21.229 (*SD* = 17.436), the mean of Rhythm Counting Posttest #1 was 33.886 (*SD* = 12.237), the minimum score remained the same at 0, and the maximum score remained the same at 40. During week two, the mean of Rhythm Counting Pretest #2 was 32.057 (*SD* = 12.979), the mean of Rhythm Counting Posttest #2 was 35.086 (*SD* = 11.299), the minimum score increased from 0 to 1, and the maximum score remained the same at 40. During week three, the mean of Rhythm Counting Pretest #3 was 29.457 (*SD* = 10.419), the mean of Rhythm Counting Posttest #3 was 34.771 (*SD* = 9.855), the minimum score increased from 2 to 4, and the maximum score remained the same at 40. During week four, the mean of Rhythm Counting Pretest #4 was 27.943 (*SD* = 12.105), the mean of Rhythm Counting Posttest #4 was 33.857 (*SD* = 9.571), the minimum score increased from 0 to 4, and the maximum score remained the same at 40.

Research Questions

Research Question 1: What are the impacts of peer assisted learning on middle school string orchestra students' abilities to notate correct rhythm counting, compared to teacher-directed instruction? To answer Research Question 1, the researcher of the current study used the difference between Rhythm Counting Pretests scores and Rhythm Counting Posttests scores, and the researcher analyzed the data using descriptive statistics and inferential statistics in the form of a *t*-test for independent samples. The researcher

completed this process four different times, accounting for each of the four weeks of instruction.

After analyzing the results of the *t*-test for independent samples for week one, the researcher found that there was no statistically significant difference in the impact that TDI (M = 15.563, SD = 15.795) had on middle school string orchestra students' abilities to notate correct rhythm counting when compared to CWPT (M = 12.324, SD = 16.308), t (140) = 1.202, $p > .05$, d = 0.202. After analyzing the results of the *t*-test for independent samples for week two, the researcher found that there was no statistically significant difference in the impact that TDI (M = 3.394, SD = 6.804) had on middle school string orchestra students' abilities to notate correct rhythm counting when compared to CWPT (M = 3.549, SD = 7.228), t (140) = -.132, $p > .05$, d = -0.022. After analyzing the results of the *t*-test for independent samples for week three, the researcher found that there was no statistically significant difference in the impact that TDI (M = 5.451, SD = 6.716) had on middle school string orchestra students' abilities to notate correct rhythm counting when compared to CWPT (M = 4.070, SD = 5.276), t (140) = 1.362, $p > .05$, d = 0.229. After analyzing the results of the *t*-test for independent samples for week four, the researcher found that there was no statistically significant difference in the impact that TDI (M = 5.986, SD = 6.060) had on middle school string orchestra students' abilities to notate correct rhythm counting when compared to CWPT (M = 6.000, SD = 6.120), t (140) = -.014, $p > .05$, d = -0.002. Furthermore, because there were no statistically significant differences between each weekly set of compared scores, Hypothesis 1 was rejected. Table 3 displays the complete results, including the exact *p*-values, of each *t*-test for independent samples the researcher analyzed for TDI and CWPT.

Table 3

Weeks 1 – 4 Results of t-Test for Independent Samples Comparing Pretest and Posttest Difference in Scores for each Instructional Strategy

	Instructional Strategy				
Dependent Variable	TDI	CWPT	*t*	*df*	Sig. (2-tailed)
Difference in Scores Week 1	15.563 (15.795)	12.324 (16.308)	1.202	140	.231
Difference in Scores Week 2	3.394 (6.804)	3.549 (7.228)	-.132	140	.896
Difference in Scores Week 3	5.451 (6.716)	4.070 (5.276)	1.362	140	.175
Difference in Scores Week 4	5.986 (6.060)	6.000 (6.120)	-.014	140	.989

Note. Standard deviations appear in parentheses.

$p < .05$

Research Question 2: How are the impacts of peer assisted learning on string orchestra students' abilities to notate correct rhythm counting different for students in grades six, seven, and eight, compared to teacher-directed instruction? To answer Research Question 2, the researcher compared the difference between Rhythm Counting Pretests scores and Rhythm Counting Posttests scores across the grade levels, and the researcher analyzed the data using descriptive statistics and inferential statistics in the form of a 2 X 3 mixed factorial analysis of variance (ANOVA). The researcher completed this process four different times, accounting for each of the four weeks of instruction.

After analyzing the results of the 2 X 3 mixed factorial ANOVA for week one, the researcher found that there was no statistically significant difference in the impact that peer assisted learning had on string orchestra students' abilities to notate correct rhythm counting for students in grades six, seven, and eight when compared to TDI, F (2, 141) = 2.224, $p > .05$, partial $\eta 2 = .032$. Therefore, because there were no statistically significant differences in scores across the grade levels for week one, Hypothesis 2 was rejected. Table 4 displays the complete descriptive statistics for Rhythm Counting Pretests and Rhythm Counting Posttests relative to each grade level and instructional strategy for week one. Table 5 displays the complete results, including the exact p-value, for the 2 X 3 mixed factorial ANOVA for week one.

Table 4

Week 1 Descriptive Statistics of Pretest and Posttest Difference in Scores for each Instructional Strategy by Grade Level

Grade	Group	*M*	*SD*	*N*
6	TDI	16.536	18.568	28
	CWPT	7.774	15.244	31
	Total	12.407	17.460	59
7	TDI	16.750	14.241	24
	CWPT	16.792	16.736	24
	Total	16.771	15.372	48
8	TDI	11.158	12.864	19
	CWPT	14.438	16.350	16
	Total	12.657	14.432	35
Total	TDI	15.563	15.795	71
	CWPT	12.324	16.308	71
	Total	13.944	16.079	142

Table 5

Week 1 Results of 2 X 3 Mixed Factorial ANOVA Comparing Pretest and Posttest Difference in Scores for each Instructional Strategy across Grade Levels

Source	*df*	*MS*	*F*	Sig.	Partial η^2
Grade	2	262.088	1.037	.357	.015
Group	1	155.672	.616	.434	.005
Grade / Group	2	562.060	2.224	.112	.032
Error	136	252.760			
Total	142				
Corrected Total	141				

After analyzing the results of the 2 X 3 mixed factorial ANOVA for week two, the researcher found that there was no statistically significant difference in the impact that peer assisted learning had on string orchestra students' abilities to notate correct rhythm counting for students in grades six, seven, and eight when compared to TDI, F (2, 141) = 1.536, $p > .05$, partial $\eta 2 = .022$. Therefore, because there were no statistically significant differences in scores across the grade levels for week two, Hypothesis 2 was rejected. Table 6 displays the complete descriptive statistics for Rhythm Counting Pretests and Rhythm Counting Posttests relative to each grade level and instructional strategy for week two. Table 7 displays the complete results, including the exact *p*-value, for the 2 X 3 mixed factorial ANOVA for week two.

Table 6

Week 2 Descriptive Statistics of Pretest and Posttest Difference in Scores for each Instructional Strategy by Grade Level

Grade	Group	*M*	*SD*	*N*
6	TDI	3.071	5.987	28
	CWPT	5.548	9.154	31
	Total	4.373	7.847	59
7	TDI	3.750	8.619	24
	CWPT	1.625	2.337	24
	Total	2.688	6.339	48
8	TDI	3.421	5.571	19
	CWPT	2.563	7.257	16
	Total	3.029	6.313	35
Total	TDI	3.394	6.804	71
	CWPT	3.549	7.228	71
	Total	3.472	6.995	142

Table 7

Week 2 Results of 2 X 3 Mixed Factorial ANOVA Comparing Pretest and Posttest Difference in Scores for each Instructional Strategy across Grade Levels

Source	*df*	*MS*	*F*	Sig.	Partial η^2
Grade	2	39.345	.803	.450	.012
Group	1	.963	.020	.889	.000
Grade / Group	2	75.255	1.536	.219	.022
Error	136	49.002			
Total	142				
Corrected Total	141				

After analyzing the results of the 2 X 3 mixed factorial ANOVA for week three, the researcher found that there was no statistically significant difference in the impact that peer assisted learning had on string orchestra students' abilities to notate correct rhythm counting for students in grades six, seven, and eight when compared to TDI, F (2, 141) = .242, $p > .05$, partial $\eta 2 = .004$. Therefore, because there were no statistically significant differences in scores across the grade levels for week three, Hypothesis 2 was rejected. Table 8 displays the complete descriptive statistics for Rhythm Counting Pretests and Rhythm Counting Posttests relative to each grade level and instructional strategy for week three. Table 9 displays the complete results, including the exact *p*-value, for the 2 X 3 mixed factorial ANOVA for week three.

Table 8

Week 3 Descriptive Statistics of Pretest and Posttest Difference in Scores for each Instructional Strategy by Grade Level

Grade	Group	*M*	*SD*	*N*
6	TDI	3.143	6.964	28
	CWPT	2.129	3.201	31
	Total	2.610	5.305	59
7	TDI	8.083	6.846	24
	CWPT	5.917	6.652	24
	Total	7.000	6.767	48
8	TDI	5.526	5.026	19
	CWPT	5.063	5.221	16
	Total	5.314	5.046	35
Total	TDI	5.451	6.716	71
	CWPT	4.070	5.276	71
	Total	4.761	6.058	142

Table 9

Week 3 Results of 2 X 3 Mixed Factorial ANOVA Comparing Pretest and Posttest Difference in Scores for each Instructional Strategy across Grade Levels

Source	*df*	*MS*	*F*	Sig.	Partial η^2
Grade	2	258.128	7.671	.001	.101
Group	1	49.847	1.481	.226	.011
Grade / Group	2	8.129	0.242	.786	.004
Error	136	33.649			
Total	142				
Corrected Total	141				

After analyzing the results of the 2 X 3 mixed factorial ANOVA for week four, the researcher found that there was no statistically significant difference in the impact that peer assisted learning had on string orchestra students' abilities to notate correct rhythm counting for students in grades six, seven, and eight when compared to TDI, F (2, 141) = 1.384, $p > .05$, partial $\eta 2 = .020$. Therefore, because there were no statistically significant differences in scores across the grade levels for week four, Hypothesis 2 was rejected. Table 10 displays the complete descriptive statistics for Rhythm Counting Pretests and Rhythm Counting Posttests relative to each grade level and instructional strategy for week four. Table 11 displays the complete results, including the exact *p*-value, for the 2 X 3 mixed factorial ANOVA for week four.

Table 10

Week 4 Descriptive Statistics of Pretest and Posttest Difference in Scores for each Instructional Strategy by Grade Level

Grade	Group	*M*	*SD*	*N*
6	TDI	5.607	4.557	28
	CWPT	5.161	5.447	31
	Total	5.373	5.007	59
7	TDI	7.542	6.607	24
	CWPT	6.083	4.898	24
	Total	6.813	5.800	48
8	TDI	4.579	7.097	19
	CWPT	7.500	8.649	16
	Total	5.914	7.864	35
Total	TDI	5.986	6.060	71
	CWPT	6.000	6.120	71
	Total	5.993	6.069	142

Table 11

Week 4 Results of 2 X 3 Mixed Factorial ANOVA Comparing Pretest and Posttest Difference in Scores for each Instructional Strategy across Grade Levels

Source	*df*	*MS*	*F*	Sig.	Partial η^2
Grade	2	26.968	.728	.485	.011
Group	1	3.881	.105	.747	.001
Grade / Group	2	51.254	1.384	.254	.020
Error	136	37.024			
Total	142				
Corrected Total	141				

Research Question 3: How do middle school string orchestra students' levels of satisfaction towards learning correct rhythm counting differ between those students who receive peer assisted learning and those students who receive teacher-directed instruction? To answer Research Question 3, the researcher of the current study used the difference between Satisfaction Survey scores for TDI and CWPT, and the researcher analyzed the data using descriptive statistics and inferential statistics in the form of a *t*-test for independent samples. After analyzing the results of the *t*-test for independent samples, the researcher found that there was no statistically significant difference in the level of satisfaction between the TDI group (M = 21.667, SD = 2.496) and the CWPT group (M = 22.042, SD = 3.262), t (102) = -.586, $p > .05$, d = -0.129. Furthermore, because there were no statistically significant differences between the scores, Hypothesis 3 was rejected. Table 12 displays the complete results, including the exact *p*-value, of the *t*-test for independent samples the researcher analyzed for the Satisfaction Surveys from the TDI group and CWPT group.

Table 12

Results of t-Test for Independent Samples Comparing Satisfaction Survey Scores for each Instructional Strategy

	Instructional Strategy				
Dependent Variable	TDI	CWPT	*t*	*df*	Sig. (2-tailed)
Satisfaction Survey Scores	21.667 (2.496)	22.042 (3.262)	-.586	102	.559

Note. Standard deviations appear in parentheses.

$p < .05$

In addition to the *t*-test for independent samples, the researcher performed content analysis on the responses to the written portion of the survey by looking for themes and related repeating responses. Out of the 33 students in the TDI group who took the Satisfaction Survey, there were two main themes that emerged (see Table 13): Teacher versus Student Knowledge and Classmate Example. On multiple occasions, students responded that they preferred having a teacher present to answer questions, explain things in detail, and/or help with any further questions. Students also stated that the teacher knew what he or she was talking about as opposed to a student who may not always know the correct answer. Additionally, on multiple occasions, students responded that they found it helpful to have classmates work rhythms out on the board as an example; this technique allowed students to learn from other students' mistakes.

Table 13

Content Analysis of Students' Responses to Open-ended Question on Satisfaction Survey for Students Who Received TDI (n = 33)

Themes	# of Occurrences	Related Repeating Responses
Teacher versus Student Knowledge	12	If you mess up, the teacher is there to help you.
		The teacher can explain things better and more thoroughly than a student.
		The teacher can answer any and all questions more frequently.
		If you need more help, the teacher can help you.
		When the teacher is present, it is easier to know it is right than guessing with a partner.
		Students may not always know the correct answer.
		The teacher knew what they were talking about.
Classmate Example	6	You can learn from other classmates' mistakes.
		When you see multiple classmates participate, you get multiple examples.
		It is helpful when I see other classmates write out a rhythm.

Out of the 71 students in the CWPT group who took the Satisfaction Survey, there were three main themes that emerged (see Table 14): Fun and Interactive, Less Stressful

and More Comfortable, and Sidetracking. On multiple occasions, students responded that CWPT was fun, enjoyable, interactive, and not boring. Students enjoyed being independent and interactive with other classmates. Students also stated that they felt more comfortable working with peers rather than in front of an entire class and the teacher. Students reported that often they were scared to raise their hand or ask questions out of the fear of being wrong; however, with a peer, they felt more comfortable hearing they were wrong or asking a question. Additionally, although the minority response, 10 students responded with phrases referring to sidetracking, distracting, or wishing they were taught by a teacher. Students stated that if they received a bad partner or a slacker, they did not actually learn anything, and that everyone around them just talked.

Table 14

Content Analysis of Students' Responses to Open-ended Question on Satisfaction Survey for Students Who Received CWPT (n = 71)

Themes	# of Occurrences	Related Repeating Responses
Fun and Interactive	24	It gave you the chance to interact with other classmates.
		You get to be with your friends, which makes learning more fun.
		It is fun and not boring.
		You get to know more of your classmates.
		It is fun to be independent.
		Instead of just sitting there doing nothing, we are actively doing something.
Less Stressful and More Comfortable	14	I don't like raising my hand in front of the class.
		It is easier to talk to someone who thinks like me.
		I am scared to ask questions in front of a class because I am afraid to be wrong.
		I felt more comfortable learning with a classmate.
Sidetracking	10	If you got a bad partner or a slacker, you did not learn anything and it was distracting.
		Everyone around me just talked.

Conclusions

Research Question 1 was designed to support the purpose of the current study: to determine the impacts of peer assisted learning versus teacher-directed instruction on middle school string orchestra students' abilities to notate correct rhythm counting. Additionally, Research Question 1 was designed as a response to a noticeable void that is apparent in the area of peer assisted learning in music education, specifically in string education research (Webb, 2012b). After the implementation of a four-week study on TDI and CWPT, and after analyzing the data associated with Research Question 1, the researcher concluded that peer assisted learning had the same impact on student learning as TDI. Furthermore, the researcher concluded from analyzing the Rhythm Counting Pretest and Rhythm Counting Posttest scores that there was no statistically significant difference between the two instructional strategies when it came to middle school string orchestra students' abilities to notate correct rhythm counting. Additionally, the researcher concluded that the results of Research Question 1 do not support the findings of Johnson (2011b)—a key early study that explored the benefits of peer assisted learning in a music classroom—who found a statistically significant difference between students who participated in peer assisted learning when compared to TDI.

Research Question 2 was designed to support the purpose of the current study and to deepen the analysis brought forth through Research Question 1. After analyzing the data associated with Research Question 2, and with the support of the data from the Rhythm Counting Pretests and Posttests initially presented in the analysis of Research Question 1, the researcher concluded that peer assisted learning had the same impact on student learning as TDI for students in grade six, seven, and eight. When it came to

middle school string orchestra students' abilities to notate correct rhythm counting, there were no statistically significant differences among grade levels, regardless of instructional strategy.

Research Question 3 was designed to determine the difference of middle school string orchestra students' levels of satisfaction towards learning correct rhythm counting between those students who receive peer assisted learning and those students who receive teacher-directed instruction. After analyzing the data associated with Research Question 3, the researcher concluded that there was no statistically significant difference in students' satisfaction levels for students who received CWPT and those students who received TDI. However, because both instructional strategies reported equal satisfaction and from analyzing the small qualitative component—an open-ended question at the end of the Satisfaction Survey—the researcher concluded that both TDI and CWPT can be considered useful teaching strategies. The results of Research Question 3 were supported by the research conducted by Webb (2012b), who explored the use of peer tutoring in the string orchestra classroom. Webb concluded that students receiving the instruction could benefit from a more informal teaching setting from someone who may be less intimidating. Additionally, the results of Research Question 3 were supported by the research conducted by Bay (2011), who reported that peer assessment, a form of peer assisted learning, has had accounts from students that students often prefer teacher feedback.

Implications and Recommendations

As the title of the current study suggests, the researcher sought to determine the impacts of peer assisted learning on rhythm counting in a middle school string orchestra

classroom. Throughout the analytical process and presentation of data in the current study, the researcher ultimately determined that there were no statistically significant differences in the impacts or satisfaction levels of peer assisted learning when compared to TDI. For music educators hoping to find strategies to increase student learning, the researcher cannot say with certainty that CWPT is the superior strategy. However, because both instructional strategies, TDI and CWPT, were proven to increase students' scores from the Rhythm Counting Pretest to the Rhythm Counting Posttest, the researcher can say with certainty that CWPT is a useful tool for music educators. This statement is supported by Sheldon (2001) and Darrow (2008), who both indicated that peer tutoring could be a beneficial strategy to implement in a music classroom because of the additional support it can give the music teacher. However, as supported by the results of the current study, TDI is an equally beneficial strategy to implement in a music classroom. The implications for music educators would be that CWPT is a tool that can be added to a teachers' repertoire of teaching strategies as a supplemental strategy to traditional TDI.

Additionally, the researcher stated that the primary significance of the current study was to contribute to research in the development of rhythmic abilities through rhythm counting and satisfaction during the learning process. Because CWPT and TDI were both found to be beneficial in the development of rhythmic abilities, supported by an increase in Rhythm Counting test scores, the researcher can state with certainty that CWPT and TDI are valuable strategies that can be used to increase rhythmic abilities; the current study found the benefits of both TDI and peer assisted learning.

As stated throughout the current study, the research regarding CWPT in the music classroom is nearly absent (Darrow et al., 2005) and studies focusing on peer assisted learning are "virtually nonexistent in string education" (Webb, p. 45). Therefore, the researcher recommends that future research continue in the area of peer assisted learning in the music classroom, and specifically in the context of the current study, the string orchestra classroom. Additionally, in the current study, there were potentially confounding variables that could have possibly existed; these were initially addressed in Chapter III.

For example, the number of musical instruments that a student knew how to play or the number of years a student had been playing an instrument could have possibly skewed the results. These students may have been advanced at rhythm counting from other instruments and may have already excelled in the rhythm counting expectation level for his or her grade level. For future studies, the researcher recommends limiting the participants of the study to those who are novices on an instrument. This restriction would limit the population and sample to those students in grade six, and possibly beginners in other grades; however, the restriction of students would account for this limitation.

Additionally, gender representation was unequal within the groups of the current study. Of the 142 students who participated in the current study, 33%, or 47 were male, as opposed to the 67%, or 95 females who participated in the study. The researcher recommends future research that accounts for gender representation by using an equal number of females and males as participants. Using an equal representation of females

and males would allow future researchers to report on the impacts of peer assisted learning and TDI based upon gender.

An additional limitation was logistics. In the researcher's school district, iPads were newly distributed to all middle school students across the entire district in the first month of the school year, which caused time delays due to deployment, implementation, and ongoing maintenance of a new teaching and learning tool. This limitation presents two opportunities for future research. The first, although it was impossible with the current study, the researcher recommends that future researchers implement new strategies at the beginning of the school year as opposed to the middle of a school year. The standard method of instruction in music education classrooms has been teacher-directed instruction (Williams, 2011) and as affirmed by Bazan (2011), instrumental music educators in particular continue to emphasize a teacher-centered atmosphere; therefore, it may take time for music students to adjust to a different teaching style. The beginning of the year may be a better time for experimental classroom strategies. The second, in the context of the current limitation, the researcher recommends future research that utilizes the iPad, or similar technology. All materials utilized in the current study were physical paper copies; future research could report on the impacts of technology on rhythm counting, teaching strategies, and students' levels of satisfaction in learning to notate rhythm counting.

A final limitation of the current study involved calendar issues. Because of circumstances beyond the control of the researcher, there was a one-week break in the middle of the current study for all participants. Additionally, a field trip caused all sixth-grade participants to receive an additional weekend break. The researcher recommends

that future studies utilize a complete four-week window without breaks. Although educational calendars are ever-changing, attempting to control the timeframe to a period with no breaks would further reduce the "variables that can potentially confound study results" (Salkind, 2012, p. 240).

The aforementioned recommendations, and all preceding information regarding findings and conclusions, are intended to serve as a continued answer to the call of Triantafyllaki (2005), which is to increase the research of instrumental music education in order to seek ways to improve the practice and reflection about teacher-pupil interactions. Music educators, including the researcher of the current study, are continuing to examine traditional instrumental music classroom practices seeking improvement. By implementing peer assisted learning, in the form of CWPT, into a middle school string orchestra classroom, the researcher investigated the impacts of peer assisted learning versus teacher-directed instruction on middle school string orchestra students' abilities to notate correct rhythm counting. The significance of the study, if nothing else, is the fact that the researcher embraced a change in traditional instrumental music education. Just as Scruggs (2009b), Webb (2012a), and Johnson (2013) served as inspiration, the researcher hopes to inspire others to make the transition from music conductor to music educator (Allsup & Benedict, 2008) by researching alternate teaching strategies.

REFERENCES

Alexander, L., & Dorow, L. G. (1983). Peer tutoring effects on the music performance of tutors and tutees in beginning band classes. *Journal of Research in Music Education*, *31*(1), 33-47. http://dx.doi.org/10.2307/3345108

Allen, M., Gillespie, R., & Hayes, R. T. (2004). *Essential elements 2000 for strings* (Vols. 1-3). Milwaukee, WI: Hal Leonard Corporation.

Allison, B. N., & Rehm, M. L. (2007). Effective teaching strategies for middle school learners in multicultural, multilingual classrooms. *Middle School Journal*, *39*(2), 12-18. http://dx.doi.org/10.1080/00940771.2007.11461619

Allsup, R. E., & Benedict, C. (2008). The problems of band: An inquiry into the future of instrumental music education. *Philosophy of Music Education Review*, *16*(2), 156-173. http://dx.doi.org/10.2979/PME.2008.16.2.156

Andrews, K. (2013). Standing "on our own two feet": A comparison of teacher-directed and group learning in an extra-curricular instrumental group. *British Journal of Music Education*, *30*(1), 125-148. http://dx.doi.org/10.1017/S0265051712000460

Ayvazo, S., & Aljadeff-Abergel, E. (2014). Classwide peer tutoring for elementary and high school students at risk: Listening to students' voices. *Support for Learning*, *29*(1), 76-92. http://dx.doi.org/10.1111/1467-9604.12047

Ayvazo, S., & Ward, P. P. (2010). Assessment of classwide peer tutoring for students with autism as an inclusion strategy in physical education. *Palaestra*, *25*(1), 5-7.

Bay, E. (2011). The opinions of prospective teachers about peer assessment. *University of Gaziantep Journal of Social Sciences*, *10*(2), 909-925.

Bazan, D. (2011). The use of student-directed instruction by middle school band teachers. *Bulletin of the Council for Research in Music Education*, (189), 23-56. http://dx.doi.org/10.5406/bulcouresmusedu.189.0023

Bell, A. (1808). *The Madras school, or elements of tuition: comprising the analysis of an experiment in education made at the male asylum, Madras; with its facts, proofs, and illustrations*. London: J. Murray, Cadell and Davies, Rivingtons, Hatchard, and Archibald Constable.

Bell, J. C. (1916). Editorial: Music in the curriculum. *Journal of Educational Psychology, 7*(7), 440-441. http://dx.doi.org/10.1037/h0067018

Birge, E. B. (1937). *History of public school music in the United States*. Philadelphia, PA: Oliver Ditson Company.

Blair, D. V. (2009). Stepping aside: Teaching in a student-centered music classroom. *Music Educators Journal*, *95*(3), 42-45. http://dx.doi.org/10.1177/0027432108330760

Bowers, T. A. (2007). Rhythm and its position in the hierarchy of a teacher's values. *Journal of Singing*, *63*(5), 531-536.

Bowman-Perrott, L. (2009). Classwide peer tutoring: An effective strategy for students with emotional and behavioral disorders. *Intervention in School & Clinic*, *44*(5), 259-267. http://dx.doi.org/10.1177/1053451208330898

Brown, A. E. (1926). Music today and yesterday. *Journal of Education, 103*(24), 663-664.

Calhoon, M. (2005). Effects of a peer-mediated phonological skill and reading comprehension program on reading skill acquisition for middle school students with reading disabilities. *Journal of Learning Disabilities*, *38*(5), 424-433. http://dx.doi.org/10.1177/00222194050380050501

Cash, C. D. (2011). The music is in the rhythm. *Clavier Companion*, *3*(2), 52.

Cobern, W. W., Schuster, D., Adams, B., Applegate, B., Skjold, B., Undreiu, A., . . . Gobert, J. D. (2010). Experimental comparison of inquiry and direct instruction in science. *Research in Science & Technological Education*, *28*(1), 81-96. http://dx.doi.org/10.1080/02635140903513599

Coenen, M. E. (2002). Using gifted students as peer tutors: An effective and beneficial approach. *Gifted Today*, *25*(1), 48-55.

Colvin, J. W. (2007). Peer tutoring and social dynamics in higher education. *Mentoring & Tutoring: Partnership in Learning*, *15*(2), 165-181. http://dx.doi.org/10.1080/13611260601086345

Colvin, J. W., & Ashman, M. (2010). Roles, risks, and benefits of peer mentoring relationships in higher education. *Mentoring & Tutoring: Partnership in Learning*, *18*(2), 121-134. http://dx.doi.org/10.1080/13611261003678879

Dalby, B. (2005). Toward an effective pedagogy for teaching rhythm: Gordon and beyond. *Music Educators Journal*, *92*(1), 54-60. http://dx.doi.org/10.2307/3400228

Darrow, A. (2008). Adaptations in the classroom. *General Music Today*, *21*(3), 32-34. http://dx.doi.org/10.1177/1048371308317089

Darrow, A., Gibbs, P., & Wedel, S. (2005). Use of classwide peer tutoring in the general music classroom. *UPDATE: Applications of Research in Music Education, 24*(1), 15-26.

Dell, C. (2010). Strings got rhythm. *Music Educators Journal, 96*(3), 31-34. http://dx.doi.org/10.1177/0027432109355635

Delquadri, J., Greenwood, C. R., Whorton, D., Carta, J. J., & Hall, R. V. (1986). Classwide peer tutoring. *Exceptional Children, 52*(6), 535-542.

Delquadri, J. C., Greenwood, C. R., Stretton. L., & Hall, R. V. (1983). The peer tutoring game: A classroom procedure for increasing opportunity to respond and spelling performance. *Education and Treatment of Children, 6*(3), 225-239.

Dioso-Henson, L. (2012). The effect of reciprocal peer tutoring and non-reciprocal peer tutoring on the performance of students in college physics. *Research in Education, 87*(1), 34-49. http://dx.doi.org/10.7227/RIE.87.1.3

Dufrene, B., Reisener, C., Olmi, D. D., Zoder-Martell, K., McNutt, M., & Horn, D. (2010). Peer tutoring for reading fluency as a feasible and effective alternative in response to intervention systems. *Journal of Behavioral Education, 19*(3), 239-256. http://dx.doi.org/10.1007/s10864-010-9111-8

Gay, L. R., Mills, G. E., & Airasian, P. (2012). *Educational research: Competencies for analysis and application* (10th ed.). Boston, MA: Pearson.

Falter, H. E. (2011). The new beat spectrum. *Teaching Music, 19*(3), 28-31.

Fonder, M. (1990). Discover your band or orchestra's roots. *Music Educators Journal, 77*(1), 40. http://dx.doi.org/10.2307/3397794

Freer, P. K. (2008). Teacher instructional language and student experience in middle school choral rehearsals. *Music Education Research, 10*(1), 107-124. http://dx.doi.org/10.1080/14613800701871538

Fuchs, D., Fuchs, L. S., Mathes, P. G., & Simmons, D. C. (1997). Peer-assisted learning strategies: Making classrooms more responsive to diversity. *American Educational Research Journal, 34*(1), 174-206. http://dx.doi.org/10.2307/1163346

Fuchs, L. S., Fuchs, D., Phillips, N. B., Hamlett, C. L., & Karns, K. (1995). Acquisition and transfer effects of classwide peer-assisted learning strategies in mathematics for students with varying learning histories. *School Psychology Review, 24*(4), 604-620.

Gandhi, A., Primalani, N., Raza, S., & Marlais, M. (2013). A model for peer-assisted learning in paediatrics. *Clinical Teacher, 10*(5), 291-295. http://dx.doi.org/10.1111/tct.12031

Gerrity, K. W., Hourigan, R. M., & Horton, P. W. (2013). Conditions that facilitate music learning among students with special needs: A mixed-methods inquiry. *Journal of Research in Music Education, 61*(2), 144-159. http://dx.doi.org/10.1177/0022429413485428

Giesecke, D., Cartledge, G., & Gardner, R. (1993). Low-achieving students as successful cross-age tutors. *Preventing School Failure, 37*(3), 34-43. http://dx.doi.org/10.1080/1045988X.1993.9944608

Gisbert, D., & Font, C. (2008). The impact of peer tutoring on the improvement of linguistic competence, self-concept as a writer and pedagogical satisfaction. *School Psychology International, 29*(4), 481-499. http://dx.doi.org/10.1177/0143034308096437

Green, L. (2012). Musical "learning styles" and "learning strategies" in the instrumental lesson: Some emergent finding from a pilot study. *Psychology of Music, 40*(1), 42-65. http://dx.doi.org/10.1177/0305735610385510

Greenwood, C. (1997). ClassWide peer tutoring. *Behavior and Social Issues, 7*(1), 53-57. http://dx.doi.org/10.5210/bsi.v7i1.299

Greenwood, C. R., & Delquadri, J. (1995). Classwide peer tutoring and the prevention of school failure. *Preventing School Failure: Alternative Education for Children and Youth, 39*(4), 21. http://dx.doi.org/10.1080/1045988X.1995.9944638

Greenwood, C. R., Delquadri, J. C., & Carta, J. J. (1997). *Together we can! ClassWide peer tutoring to improve basic academic skills.* Longmont, CO: Sopris West.

Greenwood, C. R., Delquadri, J. C., & Hall, R. V. (1989). Longitudinal effects of classwide peer tutoring. *Journal of Educational Psychology, 81*(3), 371-383. http://dx.doi.org/10.1037/0022-0663.81.3.371

Greenwood, C. R., Dinwiddie, G., Terry, B., Wade, L., Stanley, S. O., Thibadeau, S., & Delquadri, J. C. (1984). Teacher- versus peer-mediated instruction: An ecobehavioral analysis of achievement outcomes. *Journal of Applied Behavior Analysis, 17*(4), 521-538. http://dx.doi.org/10.1901/jaba.1984.17-521

Greenwood, C. R., Terry, B., Arreaga-Mayer, C., & Finney, R. (1992). The classwide peer tutoring program: Implementation factors moderating students' achievement. *Journal of Applied Behavior Analysis*, *25*(1), 101-116. http://dx.doi.org/10.1901/jaba.1992.25-101

Grubbs, N. (2009). The effects of the peer tutoring program: An action research study of the effectiveness of the peer tutoring program at one suburban middle school. *Georgia School Counselors Association Journal*, *16*(1), 21-31.

Hammond, J. A., Bithell, C. P., Jones, L., & Bidgood, P. (2010). A first year experience of student-directed peer-assisted learning. *Active Learning in Higher Education*, *11*(3), 201-212. http://dx.doi.org/10.1177/1469787410379683

Hawkins, R., Musti-Rao, S., Hughes, C., Berry, L., & McGuire, S. (2009). Applying a randomized interdependent group contingency component to classwide peer tutoring for multiplication fact fluency. *Journal of Behavioral Education*, *18*(4), 300-318. http://dx.doi.org/10.1007/s10864-009-9093-6

Haydon, T., Macsuga-Gage, A. S., Simonsen, B., & Hawkins, R. (2012). Opportunities to Respond: A key component of effective instruction. *Beyond Behavior*, *22*(1), 1-12.

Heron, T. E., Villareal, D. M., Yao, M., Christianson, R. J., & Heron, K. M. (2006). Peer tutoring systems: Applications in classroom and specialized environments. *Reading & Writing Quarterly*, *22*(1), 27-45. http://dx.doi.org/10.1080/10573560500203517

Herring-Harrison, T. J., Gardner, R., & Lovelace, T. S. (2007). Adapting peer tutoring for learners who are deaf or hard of hearing. *Intervention in School & Clinic*, *43*(2), 82-87. http://dx.doi.org/10.1177/10534512070430020801

Heuser, F. (2011). Ensemble-based instrumental music instruction: Dead-end tradition or opportunity for socially enlightened teaching. *Music Education Research*, *13*(3), 293-305. http://dx.doi.org/10.1080/14613808.2011.603043 http://dx.doi.org/10.1111/j.1467-8535.2009.01006.x

Hulan, N. (2010). What the students will say while the teacher is away: An investigation into student-led and teacher-led discussion within guided reading groups. *Literacy Teaching and Learning*, *14*(1-2), 41-64.

Humphreys, J. T. (1989). An overview of American public school bands and orchestras before World War II. *Bulletin of the Council for Research in Music Education*, *101*(1), 50-60.

Hunter, D. (2006). Assessing collaborative learning. *British Journal of Music Education*, *23*(1), 75-89. http://dx.doi.org/10.1017/S0265051705006753

Instrumental music in school. (1925). *Journal of Education*, *101*(18), 501.

Jellison, J., Brown, L., & Draper, E. (2015). Peer-assisted learning and interactions in inclusive music classrooms: Benefits, research, and applications. *General Music Today*, *28*(3), 18-22. http://dx.doi.org/10.1177/1048371314565456

Jenkinson, K. A., Naughton, G., & Benson, A. C. (2014). Peer-assisted learning in school physical education, sport and physical activity programmes: a systematic review. *Physical Education & Sport Pedagogy*, *19*(3), 253-277. http://dx.doi.org/10.1080/17408989.2012.754004

Johnson, D. W., Johnson, R. T., & Roseth, C. (2010). Cooperative Learning in middle schools: Interrelationship of relationships and achievement. *Middle Grades Research Journal*, *5*(1), 1-18.

Johnson, E. (2011a). Developing listening skills through peer interaction. *Music Educators Journal, 98*(2), 49-54. http://dx.doi.org/10.1177/0027432111423440

Johnson, E. (2011b). The effect of peer-based instruction on rhythm reading achievement. *Contributions to Music Education, 38*(2), 43-60.

Johnson, E. A. (2013). *The effect of symmetrical and asymmetrical peer-assisted structures on music achievement and learner engagement in the secondary large ensemble* (Doctoral dissertation). Available from ProQuest Dissertations & Theses. (Order No. 3561981)

Johnson, J. C. (1893). History of the introduction of the study of music into the common schools of America. *Journal of Education, 38*(25), 412.

Jones, C., & King, A. (2009). Peer learning in the music studio. *Journal of Music, Technology & Education, 2*(1), 55-70. http://dx.doi.org/10.1386/jmte.2.1.55/1

Joseph Lancaster's system. (2014). *Wordsworth Circle, 45*(3), 274-277.

Joubert, J., & Lyttelton, K. (1898). *Joubert: A selection from his thoughts*. New York: Dodd, Mead and Company. Retrieved from https://archive.org/details/joubertaselecti00lyttgoog

Kai-Wen Cheng, E., & Colin, D. (2007). An investigation into effective string teaching in a variety of learning contexts: a single case study. *British Journal of Music Education*, *24*(2), 191-205. http://dx.doi.org/10.1017/S0265051707007413

Kamps, D. M., Greenwood, C., Arreaga-Mayer, C., Veerkamp, M., Utley, C., Tapia, Y., . . . Bannister, H. (2008). The efficacy of classwide peer tutoring in middle schools. *Education & Treatment of Children, 31*(2), 119-152. http://dx.doi.org/10.1353/etc.0.0017

Kansas State Department of Education. (2005). *Kansas model curricular standards for music.* Retrieved from http://www.ksde.org/Portals/0/CSAS/Content%20Area%20%28F-L%29/Fine%20Arts%20%28Dance,%20Theater,%20Music,%20Visual%20Arts%29/famusicstd.pdf

Karcher, M. J. (2008). The cross-age mentoring program: A developmental intervention for promoting students' connectedness across grade levels. *Professional School Counseling, 12*(2), 137-143. http://dx.doi.org/10.5330/PSC.n.2010-12.137

Kratus, J. (2007). Music education at the tipping point. *Music Educators Journal, 94*(2), 42-48. http://dx.doi.org/10.1177/002743210709400209

Kratus, J. (2007). Music education at the tipping point. *Music Educators Journal, 94*(2), 42-48. http://dx.doi.org/10.1177/002743210709400209

Kroeger, S. D., Burton, C., & Preston, C. (2009). Integrating evidence-based practices in middle science reading. *Teaching Exceptional Children, 41*(3), 6-15.

Krouse, J., Gerber, M. M., & Kauffman, J. M. (1981). Peer tutoring: Procedures, promises, and unresolved issues. *Exceptional Education Quarterly: Peer Relations of Exceptional Children and Youth, 1*(4), 107-115.

Lancaster, J. (1803). *Improvements in education, as it respects the industrious classes of the community: Containing, a short account of its present state, hints towards its improvement, and a detail of some practical experiments conducive to that end*. London: Darton and Harvey.

Lancaster, J. (1821). *Lancasterian system of education, with improvements*. Baltimore, MD: Lancasterian Institute.

Lancaster, J. (1833). *Epitome of some of the chief events and transactions in the life of Joseph Lancaster, containing an account of the rise and progress of the Lancasterian system of education; and the authors future prospects of usefulness to mankind; written by himself, and published to promote the education of his family*. New-Haven, CT: Baldwin & Peck.

Leedy, P. D., & Ormrod, J. E. (2013). *Practical research: Planning and design* (10th ed.). Upper Saddle River, NJ: Pearson.

LENA Research Foundation. (2014). *Keith J. Topping, PhD*. Retrieved from http://www.lenafoundation.org/keith-j-topping-phd/

Likert, R. (1932). A technique for the measurement of attitudes. *Archives of Psychology*, 140, 1–55.

Lingo, A. (2014). Tutoring middle school students with disabilities by high school students: Effects on oral reading fluency. *Education & Treatment of Children*, *37*(1), 53-76. http://dx.doi.org/10.1353/etc.2014.0005

Llewellyn-Jones, R. (2007). The boys from Malagasey. *History Today, 57*(1), 52-57.

Low, H. B. (1933). What is the field of school music? *Peabody Bulletin*, *30*(1-2), 18-20.

Lundblom, E. G., & Woods, J. J. (2012). Working in the classroom: Improving idiom comprehension through classwide peer tutoring. *Communication Disorders Quarterly, 33*(4), 202-219. http://dx.doi.org/10.1177/1525740111404927

Madrid, L., Canas, M., & Ortega-Medina, M. (2007). Effects of team competition versus team cooperation in classwide peer tutoring. *Journal of Educational Research, 100*(3), 155-160. http://dx.doi.org/10.3200/JOER.100.3.155-160

Malone, R. A., & McLaughlin, T. F. (1997). The effects of reciprocal peer tutoring with a group contingency on quiz performance in vocabulary with seventh- and eighth-grade students. *Behavioral Interventions, 12*(1), 27-40. http://dx.doi.org/10.1002/(SICI)1099-078X(199701)12:1%3C27::AID-BIN165%3E3.3.CO;2-B

Marshall, L. B. (1910). Success of public school music. *Journal of Education, 72*(1), 14-15.

Mathes, P. G., Torgesen, J. K., Clancy-Menchetti, J., Santi, K., Nicholas, K., Robinson, C., & Grek, M. (2003). A comparison of teacher-directed versus peer-assisted instruction to struggling first-grade readers. *Elementary School Journal*, *103*(5), 459. http://dx.doi.org/10.1086/499735

McDuffie, K. A., Mastropieri, M. A., & Scruggs, T. E. (2009). Differential effects of peer tutoring in co-taught and non-co-taught classes: Results for content learning and student-teacher interactions. *Exceptional Children, 75*(4), 493-510. http://dx.doi.org/10.1177/001440290907500406

Mills, G. E. (2007). *Action research: A guide for the teacher researcher* (3rd ed.). Upper Saddle River, NJ: Pearson.

Mixon, K. (2008). Rhythm reading. *Instrumentalist, 62*(12), 36-38.

Music, D. W. (2008). The singing school, the Oxford movement, and the church choir in America. *Choral Journal, 48/49*(12/1), 32-39.

Neddenriep, C. E., Skinner, C. H., Wallace, M. A., & McCallum, E. (2009). Classwide peer tutoring: Two experiments investigating the generalized relationship between increased oral reading fluency and reading comprehension. *Journal of Applied School Psychology, 25*(3), 244-269. http://dx.doi.org/10.1080/15377900802487185

O'Connor, H. N. (1926). Instrumental music in the public schools. *Journal of Education, 104*(13), 322-324.

Okilwa, N. A., & Shelby, L. (2010). The effects of peer tutoring on academic performance of students with disabilities in grades 6 through 12: A synthesis of the literature. *Remedial and Special Education, 31*(6), 450-463. http://dx.doi.org/10.1177/0741932509355991

Pemberton, C. A. (1988). Critical days for music in American schools. *Journal of Research in Music Education, 36*(2), 69-82. http://dx.doi.org/10.2307/3345241

Pigott, H. E., Fantuzzo, J. W., & Clement, P. W. (1986). The effects of reciprocal peer tutoring and group contingencies on the academic performance of elementary school children. *Journal of Applied Behavior Analysis, 19*(1), 93-98. http://dx.doi.org/10.1901/jaba.1986.19-93

Potenza-Radis, C. L. (2010). A study examining how struggling third grade readers, as members of a guided reading group, experience peer-led literature discussions. *College Reading Association Yearbook, (31),* 61-80.

Rafdal, B. H., McMaster, K. L., McConnell, S. R., Fuchs, D., & Fuchs, L. S. (2011). The effectiveness of kindergarten peer-assisted learning strategies for students with disabilities. *Exceptional Children, 77*(3), 299-316. http://dx.doi.org/10.1177/001440291107700303

Rahmani, S. (2014). Dirty humanities: Lessons from the "experiment in education" at the Madras orphan asylum. *English Studies in Canada, 40*(2/3), 25-30. http://dx.doi.org/10.1353/esc.2014.0033

Rhythm. (2005). In *The new Oxford American dictionary* (2nd ed.). New York, NY: Oxford University Press.

Richards, L. C., Heathfield, L., & Jenson, W. R. (2010). A classwide peer-modeling intervention package to increase on-task behavior. *Psychology in the Schools, 47*(6), 551-566. http://dx.doi.org/10.1002/pits.20490

Rittschof, K. A., & Griffin, B. W. (2001). Reciprocal peer tutoring: Re-examining the value of a co-operative learning technique to college student and instructors. *Educational Psychology, 21*(3), 313-331. http://dx.doi.org/10.1080/01443410120065504

Robson, C. (2011). *Real world research* (3rd ed.). Chichester, England: Wiley.

Rostvall, A., & West, T. (2003). Analysis of interaction and learning in instrumental teaching. *Music Education Research, 5*(3), 213-226. http://dx.doi.org/10.1080/1461380032000126319

Salkind, N. J. (2012). *Exploring research* (8th ed.). Upper Saddle River, NJ: Pearson.

Salkind, N. J. (2014). *Statistics for people who (think they) hate statistics* (5th ed.). Thousand Oaks, CA. Sage.

Salmon, D. (Ed.). (1932). *The practical parts of Lancaster's improvements and Bell's experiment*. London: Cambridge University Press.

Satisfaction. (2005). In *The new Oxford American dictionary* (2nd ed.). New York, NY: Oxford University Press.

Scruggs, B. B. (2009a). Constructivist practices to increase student engagement in the orchestra classroom. *Music Educators Journal, 95*(4), 53-59. http://dx.doi.org/10.1177/0027432109335468

Scruggs, B. B. (2009b). *Learning outcomes in two divergent middle school string orchestra classroom environments: A comparison of a learner-centered and a teacher-centered approach* (Doctoral dissertation). Available from ProQuest Dissertations & Theses. (Order No. 3371516)

Scruggs, T. E., Mastropieri, M. A., & Marshak, L. (2012). Peer-mediated instruction in inclusive secondary social studies learning: Direct and indirect learning effects. *Learning Disabilities Research & Practice, 27*(1), 12-20. http://dx.doi.org/10.1111/j.1540-5826.2011.00346.x

Sedra, P. (2011). Exposure to the eyes of God: Monitorial schools and Evangelicals in early nineteenth-century England. *Paedagogica Historica, 47*(3), 263-281. http://dx.doi.org/00309231003625562

Sheldon, D. A. (2001). Peer and cross-age tutoring in music. *Music Educators Journal, 87*(6), 33-38. http://dx.doi.org/10.2307/3399690

Sivan, A. (2000). The implementation of peer assessment: An action research approach. *Assessment in Education: Principles, Policy & Practice, 7*(2), 193-213. http://dx.doi.org/10.1080/713613328

Smith, K. H. (2009). The effect of computer-assisted instruction and field independence on the development of rhythm sight-reading skills of middle school instrumental students. *International Journal of Music Education, 27*(1), 59-68. http://dx.doi.org/10.1177/0255761408099064

String orchestra. (2005). In *The new Oxford American dictionary* (2nd ed.). New York, NY: Oxford University Press.

Strouse, L. H. (2007). Improving rhythm reading in middle school band. *Teaching Music, 14*(5), 34-38.

Sutherland, K. S., & Snyder, A. (2007). Effects of reciprocal peer tutoring and self-graphing on reading fluency and classroom behavior of middle school students with emotional or behavioral disorders. *Journal of Emotional & Behavioral Disorders, 15*(2), 103-118. http://dx.doi.org/10.1177/10634266070150020101

Swislocki, J. P. (2011). Promoting music literacy through individual performance assessments. *Triad, 79*(2), 77-80.

Taylor, L. K., & Alber, S. R. (2003). The effects of classwide peer tutoring on the spelling achievement of first graders with learning disabilities. *Behavior Analyst Today, 4*(2), 183-201. http://dx.doi.org/10.1037/h0100113

Tejada, J., Gil, M. P., & Perez, R. G. (2010). Tactus: Didactic design and implementation of a pedagogically sound-based rhythm-training computer program. *Journal of Music, Technology & Education, 3*(2/3), 155-165. http://dx.doi.org/10.1386/jmte.3.2-3.155_1

Thaut, M. H., Trimarchi, P. D., & Parsons, L. M. (2014). Human brain basis of musical rhythm perception: Common and distinct neural substrates for meter, tempo, and pattern. *Brain Sciences, 4*(2), 428-452. http://dx.doi.org/10.3390/brainsci4020428

Topping, K. J. (2001). *Peer assisted learning: A practical guide for teachers.* Cambridge, MA: Brookline Books.

Topping, K. J. (2005). Trends in peer learning. *Educational Psychology, 25*(6), 631-645. http://dx.doi.org/10.1080/01443410500345172

Topping, K. J., & Ehly, S. W. (2001). Peer assisted learning: A framework for consultation. *Journal of Educational & Psychological Consultation, 12*(2), 113-132. http://dx.doi.org/10.1207/S1532768XJEPC1202_03

Triantafyllaki, A. (2005). A call for more instrumental music teaching research. *Music Education Research*, *7*(3), 383-387. http://dx.doi.org/10.1080/14613800500280535

Tschurenev, J. (2008). Diffusing useful knowledge: The monitorial system of education in Madras, London and Bengal, 1789-1840. *Paedagogica Historica, 44*(3), 245-264. http://dx.doi.org/10.1080/00309230802041526

Tsuei, M. (2011). Development of a peer-assisted learning strategy in computer-supported collaborative learning environments for elementary school students. *British Journal of Educational Technology, 42*(2), 214-232.

Tuttle, H. S. (1997). *Weldon Covington and the development of instrumental music in the Austin, Texas, public schools* (Doctoral dissertation). Available from ProQuest Dissertations & Theses. (Order No. 9825113)

van den Berg, I., Admiraal, W., & Pilot, A. (2006). Design principles and outcomes of peer assessment in higher education. *Studies in Higher Education, 31*(3), 341-356. http://dx.doi.org/10.1080/03075070600680836

Veerkamp, M., Kamps, D. M., & Cooper, L. (2007). The effects of classwide peer tutoring on the reading achievement of urban middle school students. *Education & Treatment of Children, 30*(2), 21-51. http://dx.doi.org/10.1353/etc.2007.0010

Webb, R. S. (2012a). *Construction of musical understandings: An exploration of peer tutoring in the school orchestra program* (Doctoral dissertation). Available from ProQuest Dissertations & Theses. (Order No. 3527642)

Webb, R. S. (2012b). Peer tutoring in your orchestra program. *American String Teacher, 62*(3), 44-49.

Whitehill, C. D. (1969). Sociological conditions which contributed to the growth of the school band movement in the United States. *Journal of Research in Music Education, 17*(2), 179-192. http://dx.doi.org/10.2307/3344324

Williams, D. A. (2007). What are music educators doing and how well are we doing it? *Music Educators Journal, 94*(1), 18-23. http://dx.doi.org/10.1177/002743210709400105

Williams, D. A. (2011). The elephant in the room. *Music Educators Journal, 98*(1), 51-57. http://dx.doi.org/10.1177/0027432111415538

Winship, A. E. (1896). Music in schools. *Journal of Education, 44*(4), 77-78.

Winship, A. E. (Ed.). (1920). Instrumental music in schools. *Journal of Education, 92*(16), 440.

Xu, Y., Gelfer, J. I., Sileo, N., Filler, J., & Perkins, P. G. (2008). Effects of peer tutoring on young children's social interactions. *Early Child Development & Care*, *178*(6), 617-635. http://dx.doi.org/10.1080/03004430600857485

Yockey, R. D. (2011). *SPSS Demystified: A step-by-step guide to successful data analysis* (2nd ed.). Boston, MA: Prentice Hall.

Appendix A

Examples of Rhythm Counting Pretests and Rhythm Counting Posttests

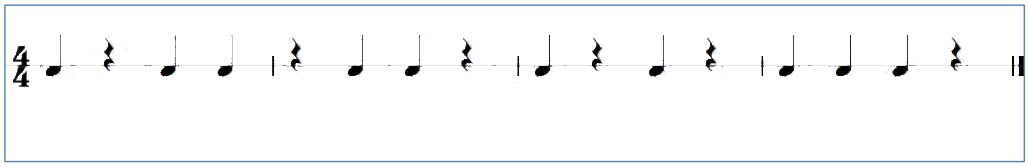
RHYTHM COUNTING PRETEST

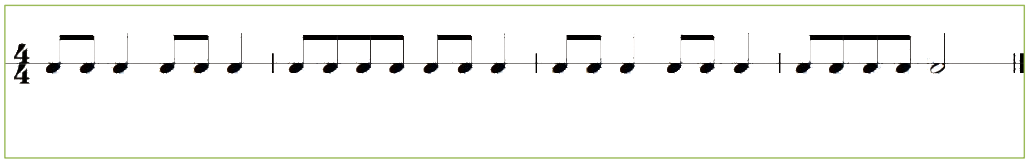
WEEK 1: 6TH GRADE

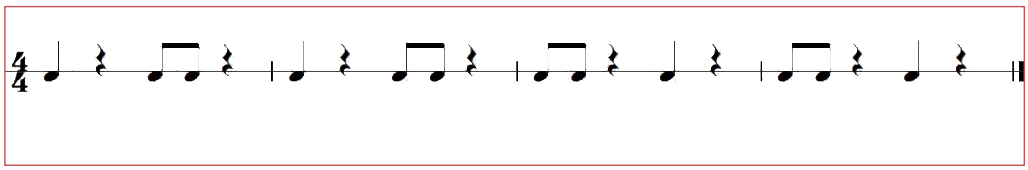
STUDENT: _____ DATE: _____

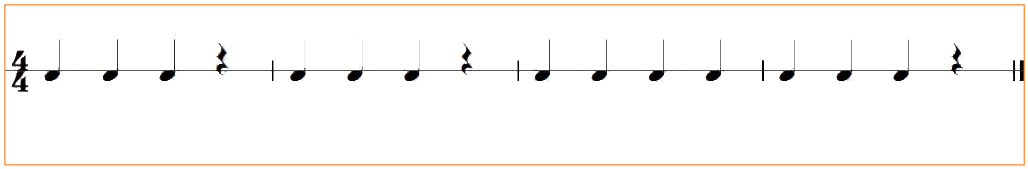
DIRECTIONS:

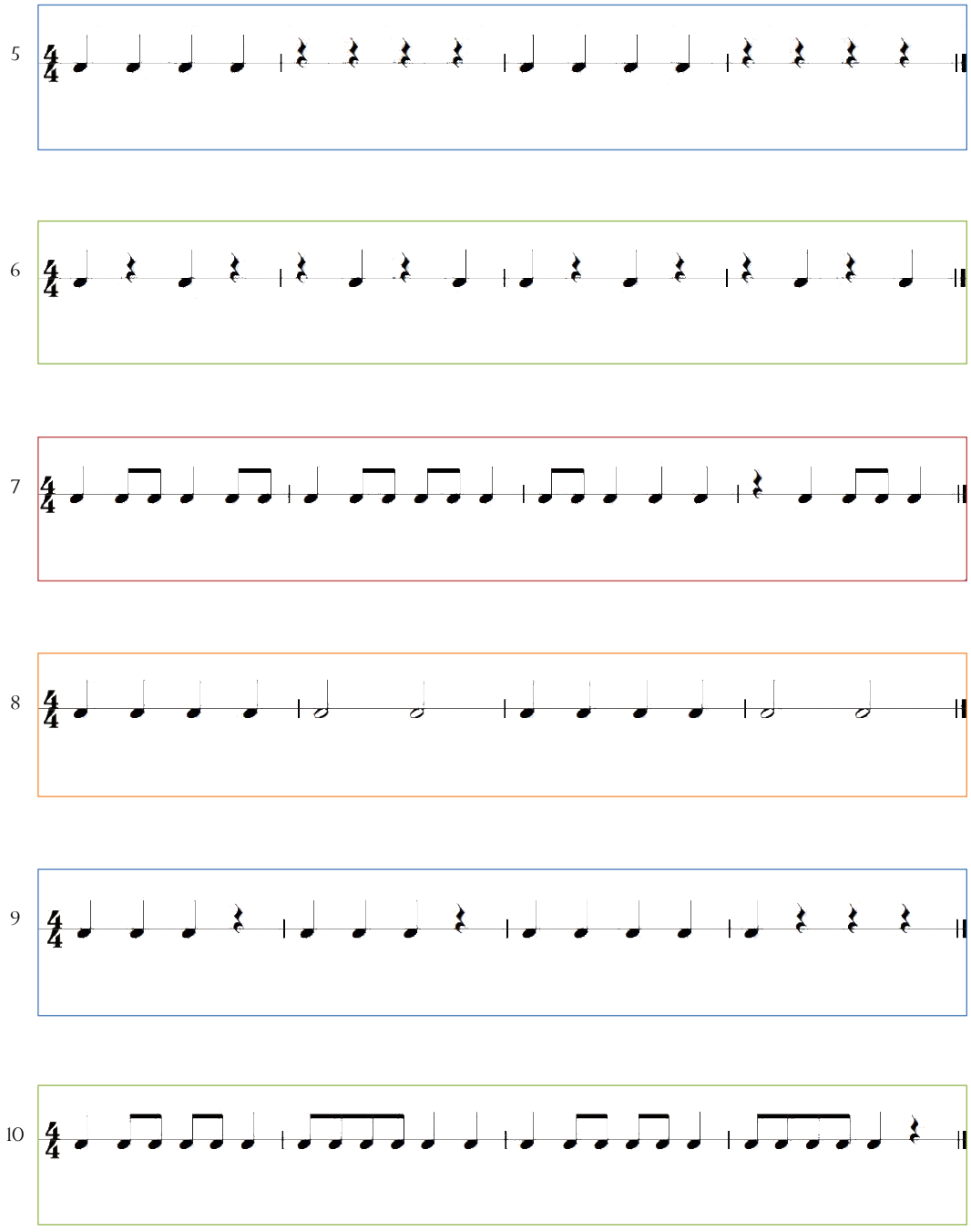
1. YOU WILL HAVE 10 MINUTES TO COMPLETE ALL RHYTHMS BELOW
2. FOR EACH RHYTHM, NOTATE THE CORRECT COUNTING
3. USE ALL OF THE FOLLOWING COUNTS: **1 + 2 + 3 + 4 +**
4. IF YOU FINISH BEFORE THE 10 MINUTES, WAIT PATIENTLY FOR MR. KUSEK TO COLLECT

1 

2 

3 

4 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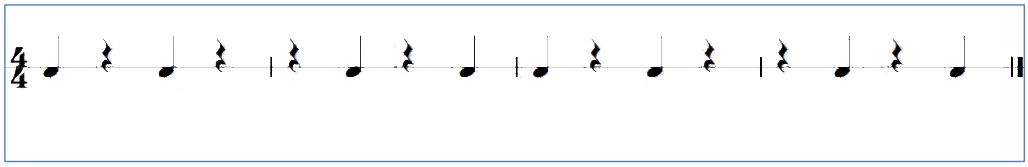
RHYTHM COUNTING POSTTEST

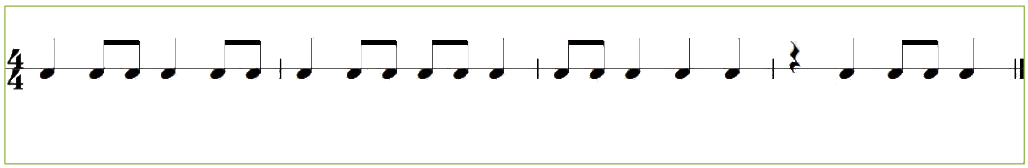
WEEK 1: 6TH GRADE

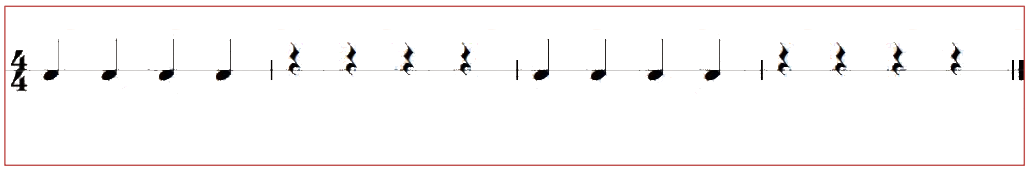
STUDENT: _____ DATE: _____

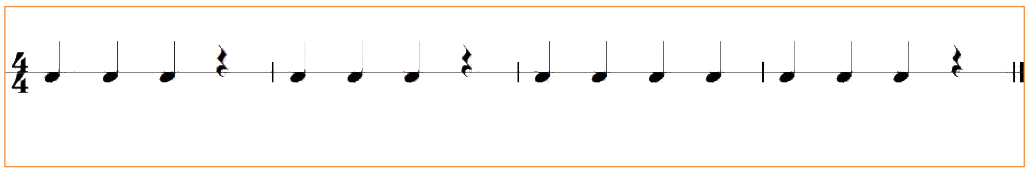
DIRECTIONS:

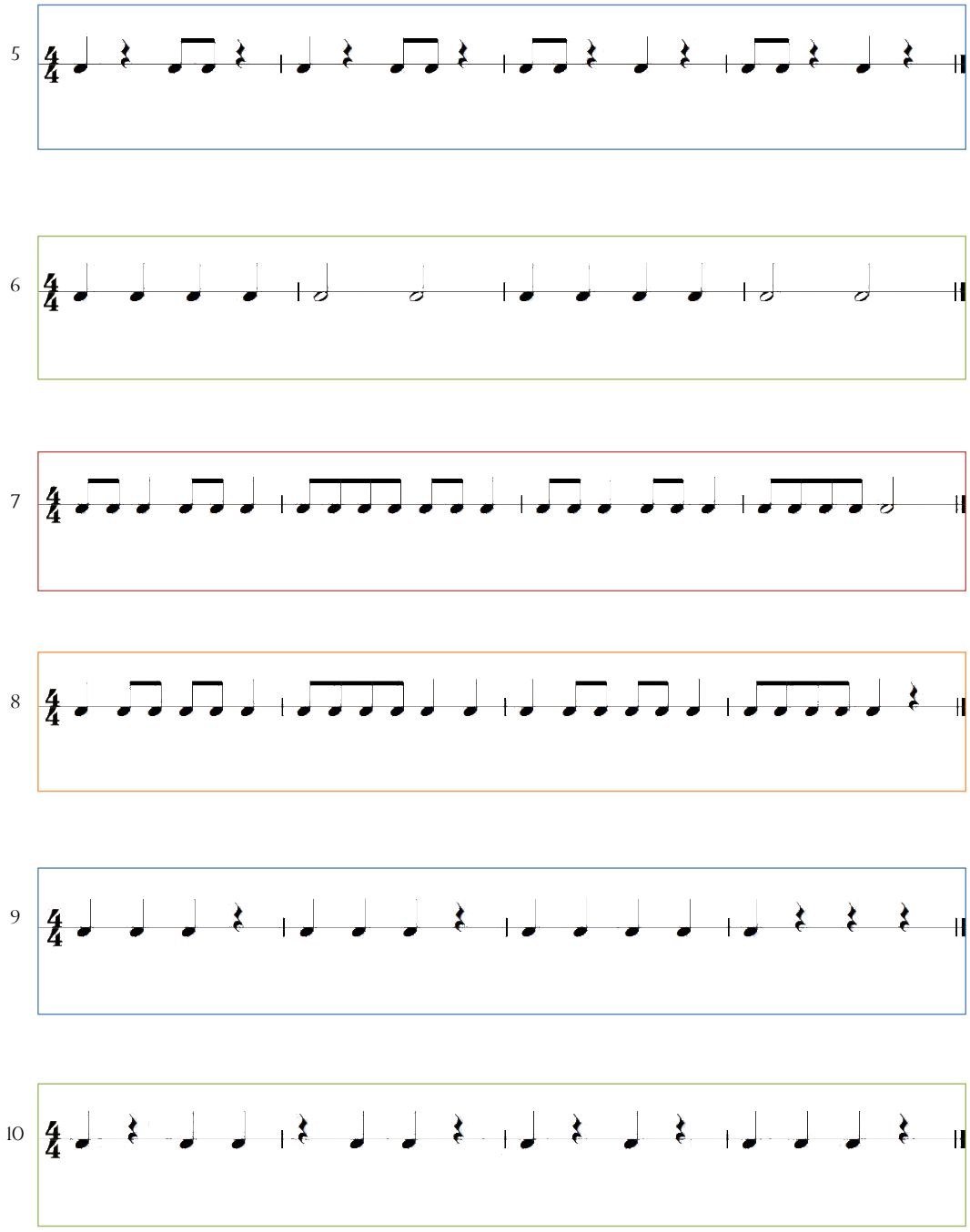
1. YOU WILL HAVE 10 MINUTES TO COMPLETE ALL RHYTHMS BELOW
2. FOR EACH RHYTHM, NOTATE THE CORRECT COUNTING
3. USE ALL OF THE FOLLOWING COUNTS: **1 + 2 + 3 + 4 +**
4. IF YOU FINISH BEFORE THE 10 MINUTES, WAIT PATIENTLY FOR MR. KUSEK TO COLLECT

1 

2 

3 

4 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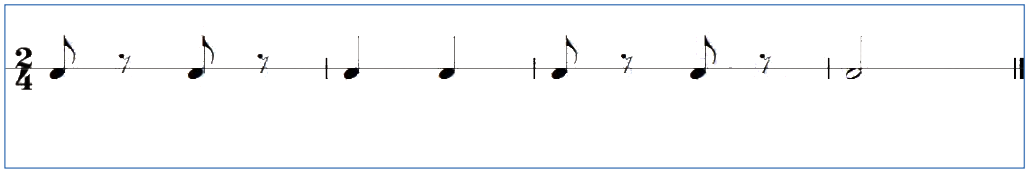
RHYTHM COUNTING PRETEST

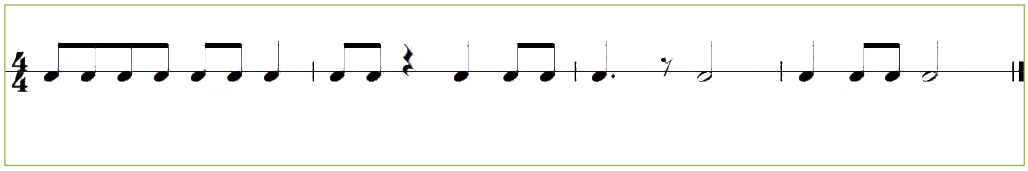
WEEK 1: 7TH GRADE

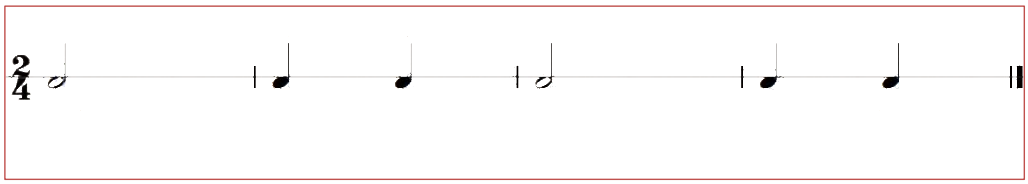
STUDENT: _____ DATE: _____

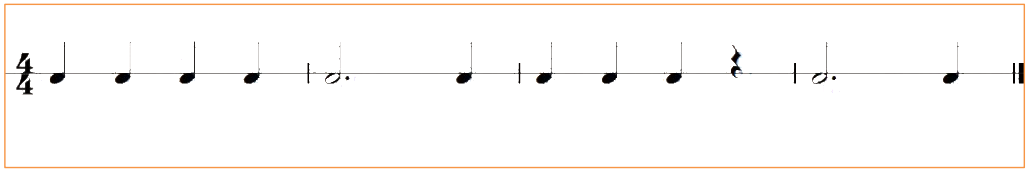
DIRECTIONS:

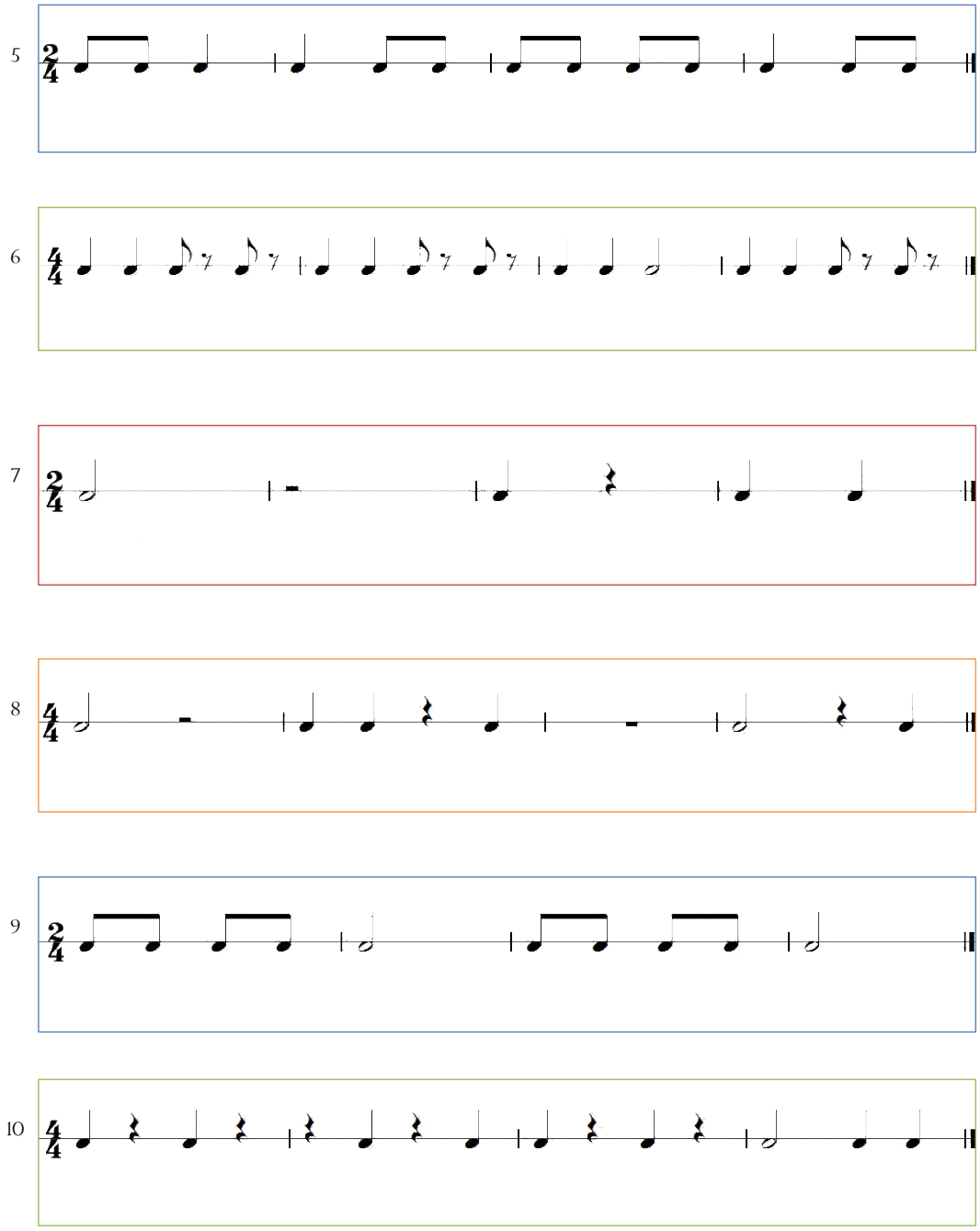
1. YOU WILL HAVE 10 MINUTES TO COMPLETE ALL RHYTHMS BELOW
2. FOR EACH RHYTHM, NOTATE THE CORRECT COUNTING
3. USE ALL OF THE FOLLOWING COUNTS: **1 + 2 + 3 + 4 +**
4. IF YOU FINISH BEFORE THE 10 MINUTES, WAIT PATIENTLY FOR MR. KUSEK TO COLLECT

1 

2 

3 

4 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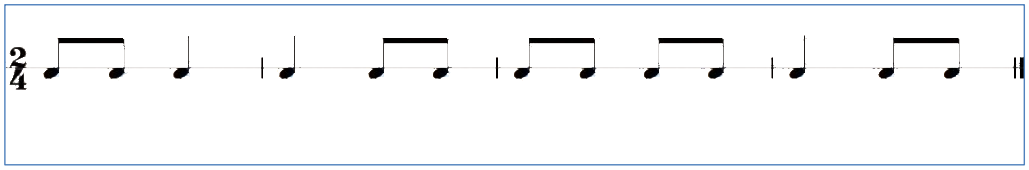
RHYTHM COUNTING POSTTEST

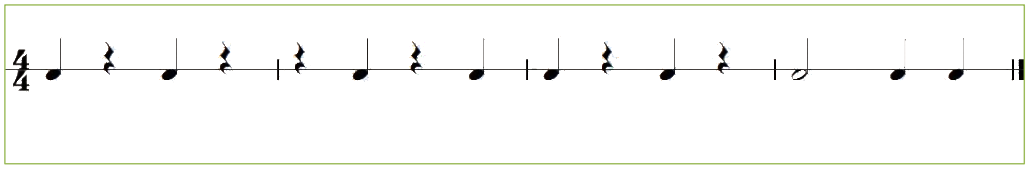
WEEK 1: 7TH GRADE

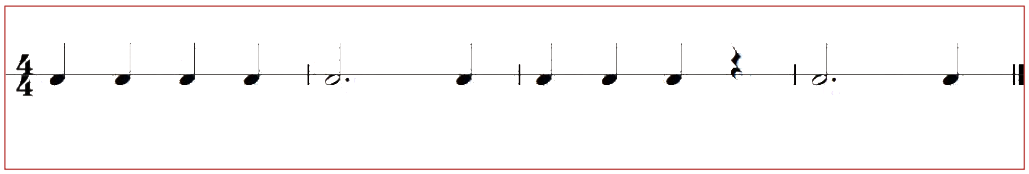
STUDENT: _____ DATE: _____

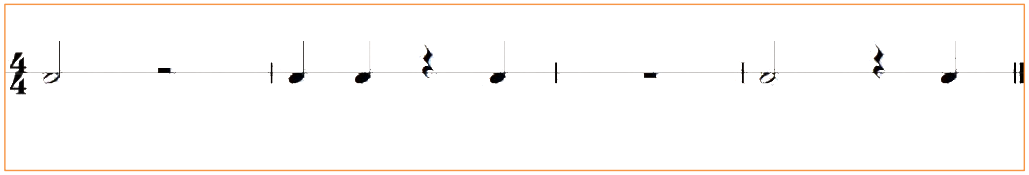
DIRECTIONS:

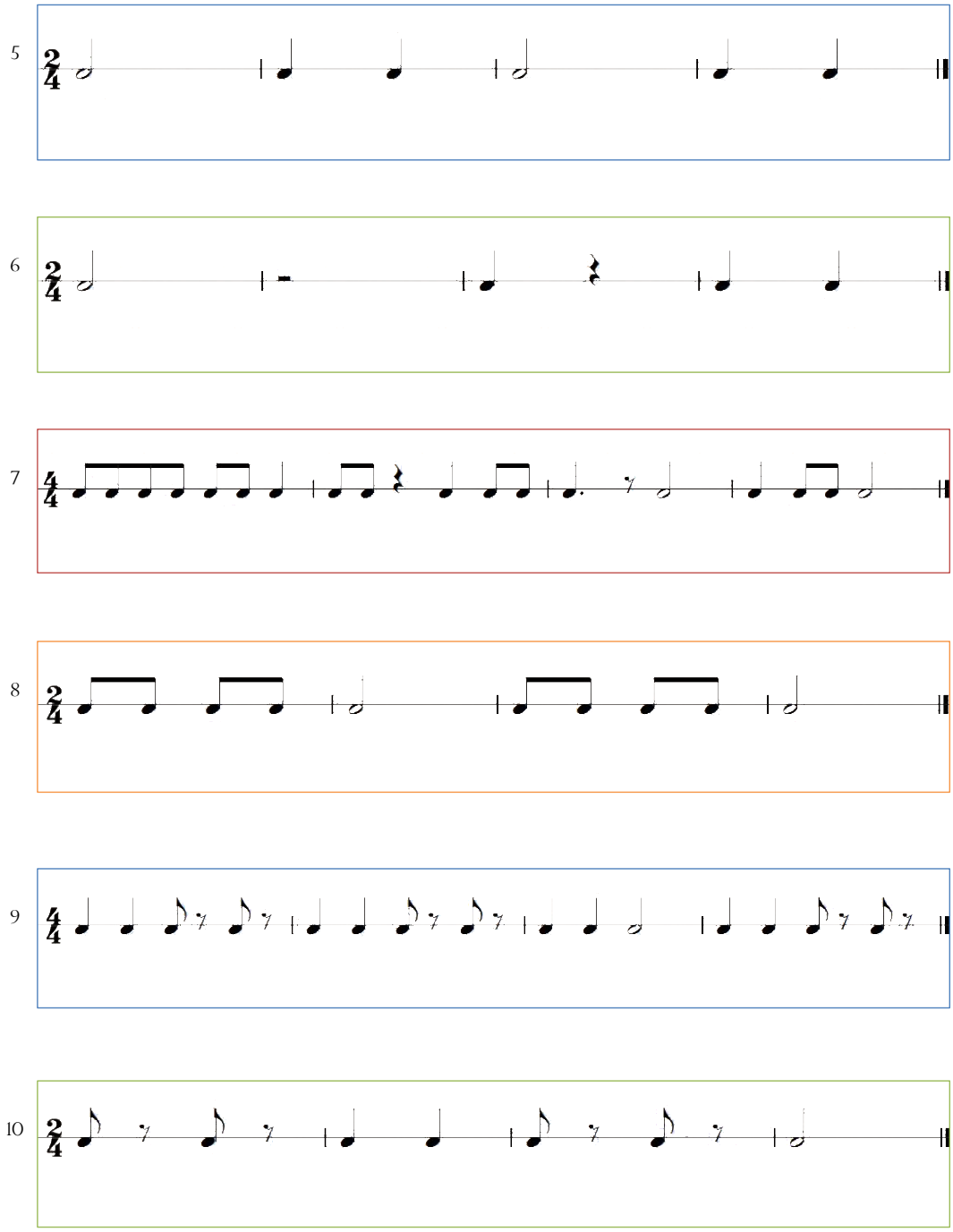
1. YOU WILL HAVE 10 MINUTES TO COMPLETE ALL RHYTHMS BELOW
2. FOR EACH RHYTHM, NOTATE THE CORRECT COUNTING
3. USE ALL OF THE FOLLOWING COUNTS: **1 + 2 + 3 + 4 +**
4. IF YOU FINISH BEFORE THE 10 MINUTES, WAIT PATIENTLY FOR MR. KUSEK TO COLLECT

1 

2 

3 

4 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RHYTHM COUNTING PRETEST

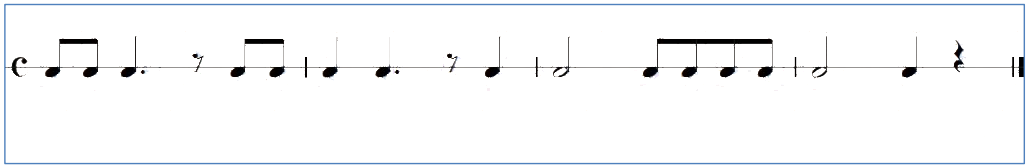
WEEK 1: 8TH GRADE

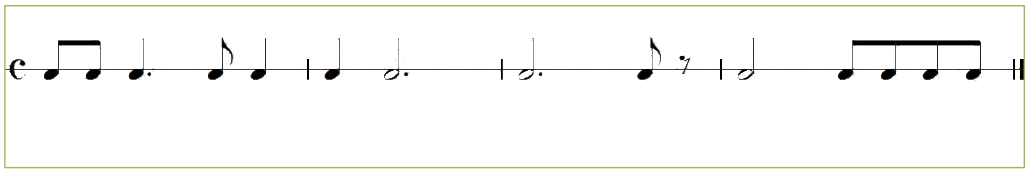
STUDENT: _____ DATE: _____

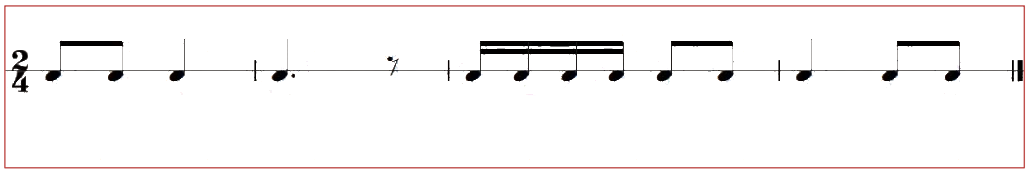
DIRECTIONS:

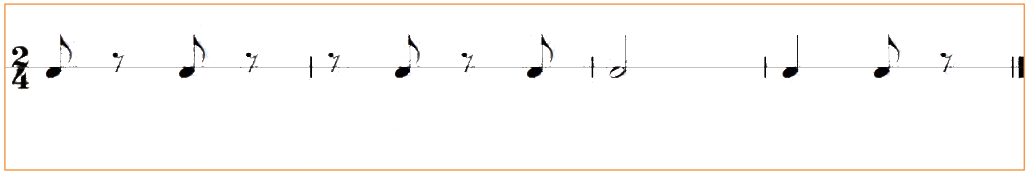
1. YOU WILL HAVE 10 MINUTES TO COMPLETE ALL RHYTHMS BELOW
2. FOR EACH RHYTHM, NOTATE THE CORRECT COUNTING
3. USE ALL OF THE FOLLOWING COUNTS: **1 + 2 + 3 + 4 +**

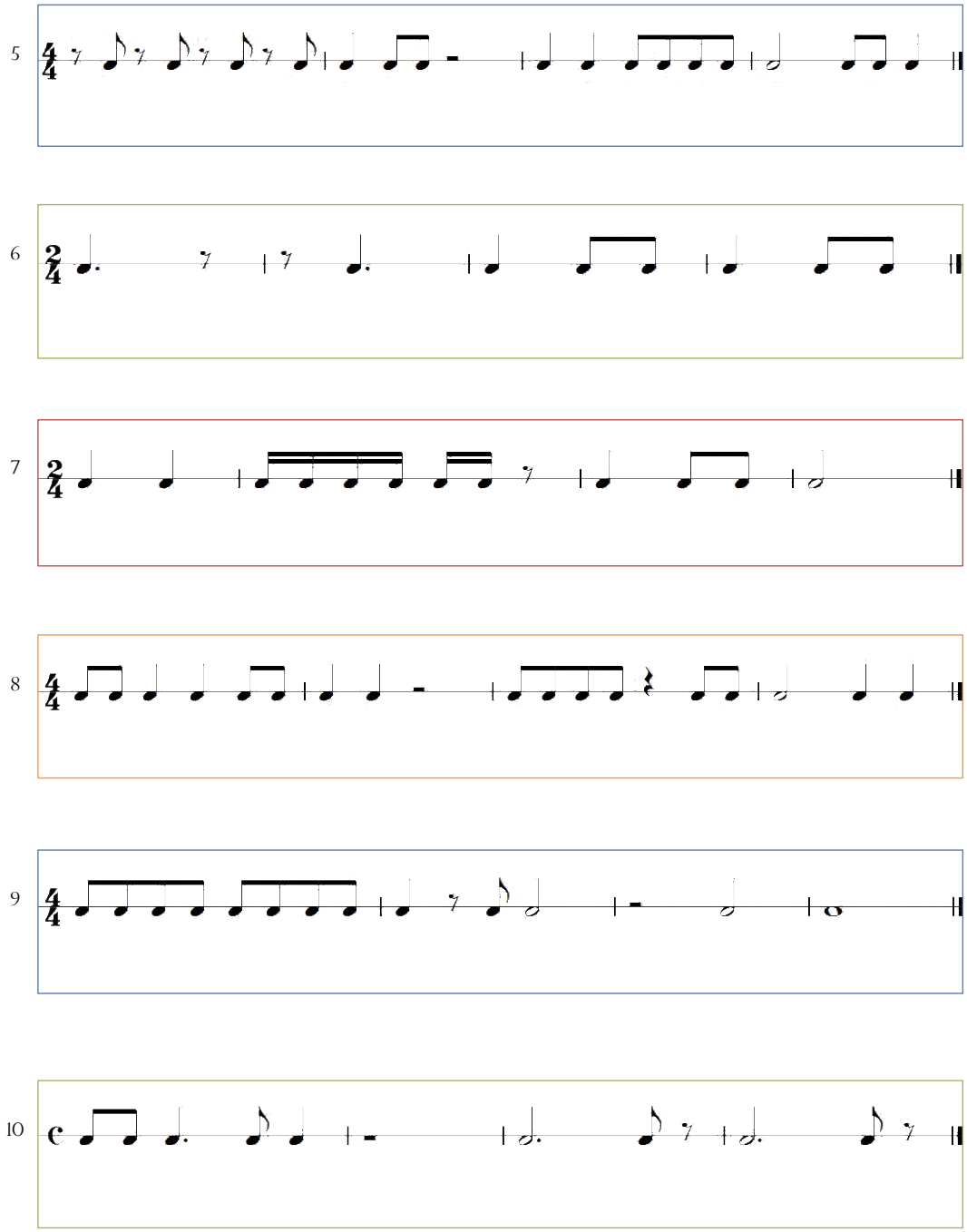
   COUNTS FOR RHYTHMS WITH 16TH NOTES: **1 e + a# 2 e + a 3 e + a 4 e# + a**
4. IF YOU FINISH BEFORE THE 10 MINUTES, WAIT PATIENTLY FOR MR. KUSEK TO COLLECT

1 

2 

3 

4 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RHYTHM COUNTING POSTTEST

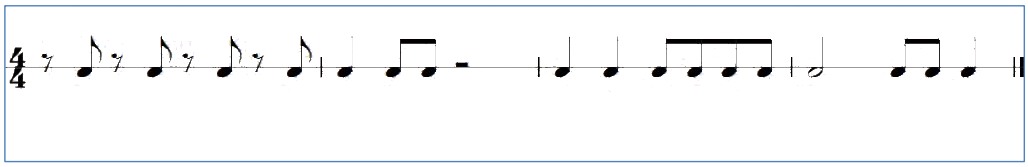
WEEK 1: 8TH GRADE

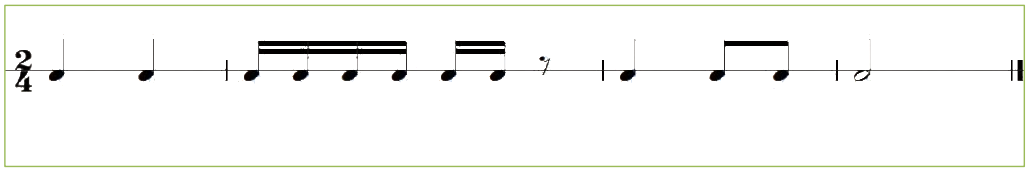
STUDENT: _____ DATE: _____

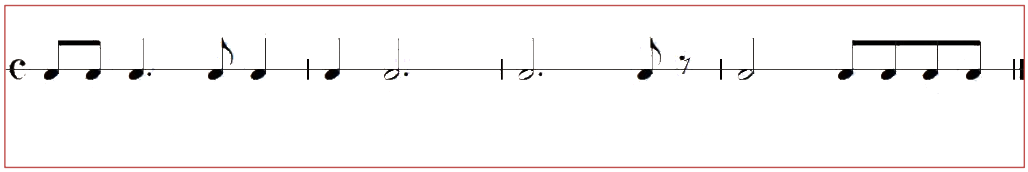
DIRECTIONS:

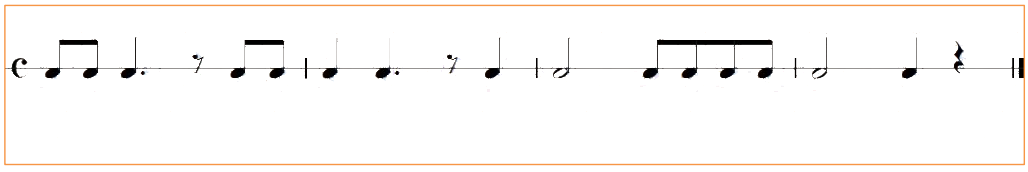
1. YOU WILL HAVE 10 MINUTES TO COMPLETE ALL RHYTHMS BELOW
2. FOR EACH RHYTHM, NOTATE THE CORRECT COUNTING
3. USE ALL OF THE FOLLOWING COUNTS: **1 + 2 + 3 + 4 +**

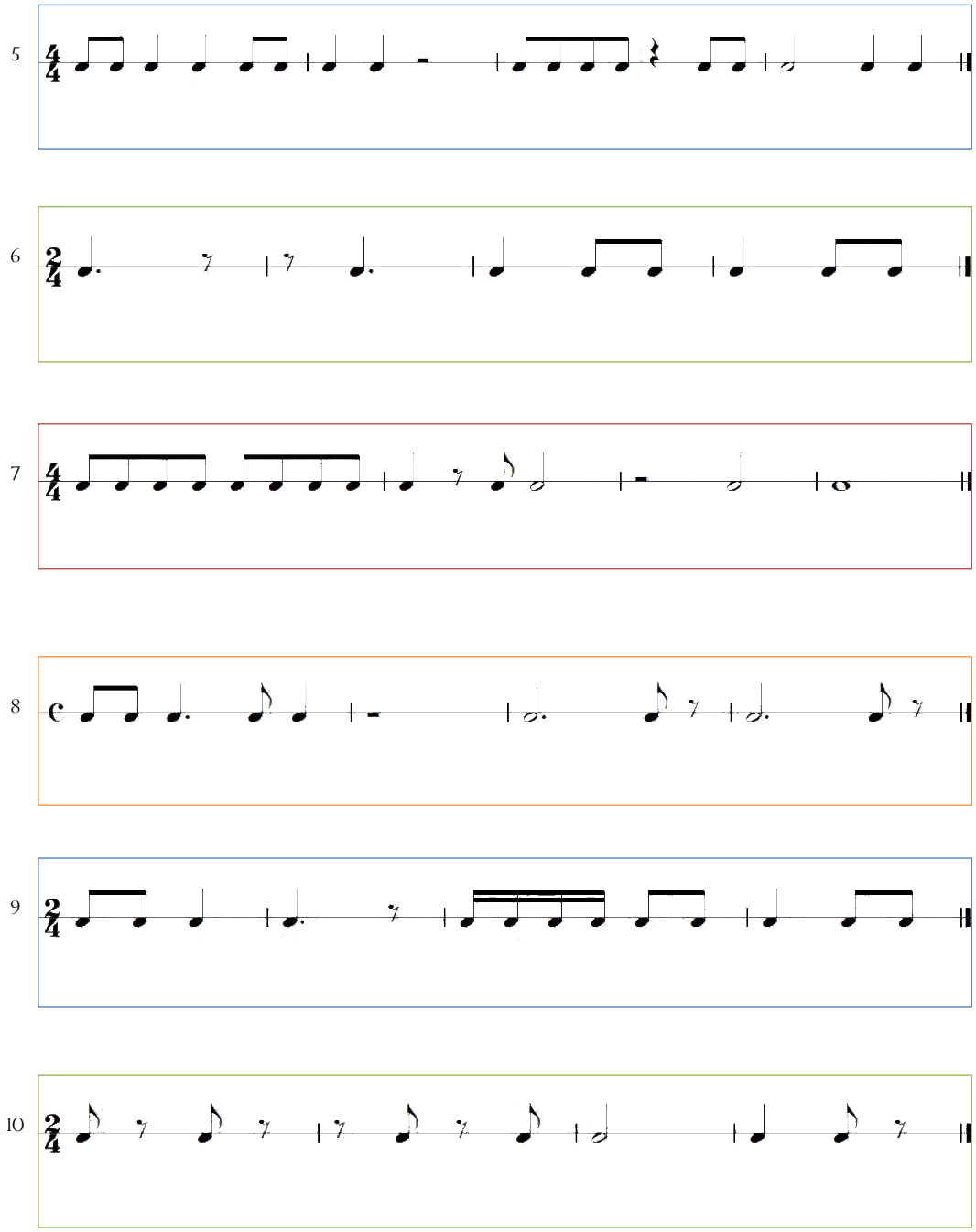
   COUNTS FOR RHYTHMS WITH 16TH NOTES: **1 e + a# 2 e + a 3 e + a 4 e# + a**
4. IF YOU FINISH BEFORE THE 10 MINUTES, WAIT PATIENTLY FOR MR. KUSEK TO COLLECT

1 

2 

3 

4 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Appendix B

Satisfaction Surveys

SATISFACTION SURVEY

STRONGLY DISAGREE

DISAGREE

AGREE

STRONGLY AGREE

1. I LIKED LEARNING TO COUNT RHYTHMS AS A GROUP IN CLASS WITH MY TEACHER.	○	○	○	○
2. WHEN LEARNING TO COUNT RHYTHMS AS A GROUP IN CLASS WITH MY TEACHER, I GAVE 100% EFFORT IN ORDER TO PREPARE FOR THE RHYTHM COUNTING TESTS.	○	○	○	○
3. I WAS PREPARED FOR THE RHYTHM COUNTING TESTS BECAUSE I WORKED AS A GROUP IN CLASS WITH MY TEACHER.	○	○	○	○
4. I CAN COUNT RHYTHMS BETTER NOW BECAUSE I WORKED AS A GROUP IN CLASS WITH MY TEACHER.	○	○	○	○
5. I WISH WE HAD SPENT MORE TIME LEARNING TO COUNT RHYTHMS AS A GROUP IN CLASS WITH MY TEACHER.	○	○	○	○
6. I WOULD RATHER LEARN TO COUNT RHYTHMS IN CLASS USING A DIFFERENT METHOD.	○	○	○	○
7A. WHEN LEARNING TO COUNT RHYTHMS IN THE FUTURE, I WOULD RECOMMEND WORKING AS A GROUP IN CLASS WITH MY TEACHER.	○	○	○	○

7B. WHY OR WHY NOT WOULD YOU RECOMMEND LEARNING TO COUNT RHYTHMS AS A GROUP IN CLASS WITH YOUR TEACHER? USE THE SPACE BELOW TO WRITE YOUR ANSWER.

"TOGETHER WE CAN!"

SATISFACTION SURVEY

	STRONGLY DISAGREE	DISAGREE	AGREE	STRONGLY AGREE
1. I LIKED LEARNING TO COUNT RHYTHMS USING PEER TUTORING.	○	○	○	○
2. WHEN LEARNING TO COUNT RHYTHMS IN CLASS USING PEER TUTORING, I GAVE 100% EFFORT IN ORDER TO PREPARE FOR THE RHYTHM COUNTING TESTS.	○	○	○	○
3. I WAS PREPARED FOR THE RHYTHM COUNTING TESTS BECAUSE I WORKED IN CLASS USING PEER TUTORING.	○	○	○	○
4. I CAN COUNT RHYTHMS BETTER NOW BECAUSE I WORKED IN CLASS USING PEER TUTORING.	○	○	○	○
5. I WISH WE HAD SPENT MORE TIME LEARNING TO COUNT RHYTHMS IN CLASS USING PEER TUTORING.	○	○	○	○
6. I WOULD RATHER LEARN TO COUNT RHYTHMS AS A GROUP IN CLASS WITH MY TEACHER.	○	○	○	○
7A. WHEN LEARNING TO COUNT RHYTHMS IN THE FUTURE, I WOULD RECOMMEND WORKING IN CLASS USING PEER TUTORING.	○	○	○	○

7B. WHY OR WHY NOT WOULD YOU RECOMMEND LEARNING TO COUNT RHYTHMS IN CLASS USING PEER TUTORING? USE THE SPACE BELOW TO WRITE YOUR ANSWER.

Appendix C

Examples of CWPT Materials

"TOGETHER WE CAN!"

TUTORING ANSWERS

WEEK 1: 6TH GRADE

DIRECTIONS:

1. YOUR PARTNER WILL HAVE 5 MINUTES TO COMPLETE AS MANY RHYTHMS AS THEY CAN
2. FOR EACH RHYTHM, YOUR PARTNER WILL NOTATE THE CORRECT COUNTING
3. YOUR PARTNER SHOULD USE ALL OF THE FOLLOWING COUNTS: **1 + 2 + 3 + 4 +**
4. IF YOUR PARTNER MAKES A MISTAKE: CORRECT THEM USING THE ANSWER KEY AND INSTRUCT THEM TO USE THE CORRECTION LINE TO RE-DO RHYTHM (AWARD 1 POINT)

   IF YOUR PARTNER DOES NOT MAKE A MISTAKE: PRAISE THEM FOR A JOB WELL DONE AND INSTRUCT THEM TO CONTINUE TO THE NEXT RHYTHM (AWARD 2 POINTS)
5. REPEAT STEPS 2 – 4 FOR EACH RHYTHM
6. IF YOUR PARTNER FINISHES BEFORE THE 5 MINUTES, CLAP EACH RHYTHM WITH THEM

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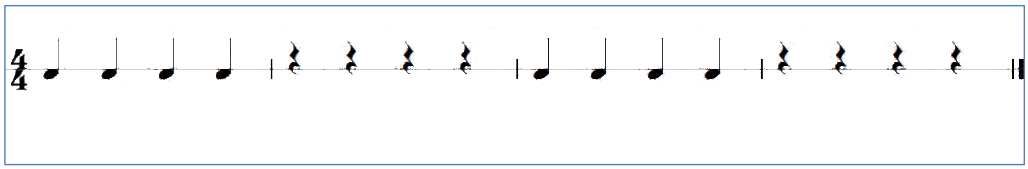

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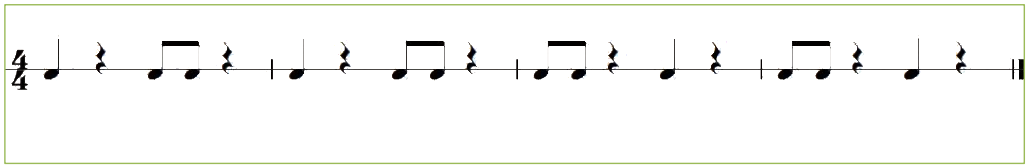

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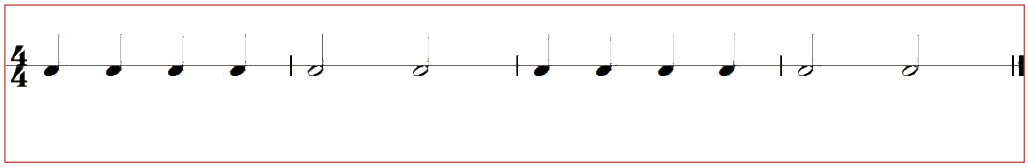

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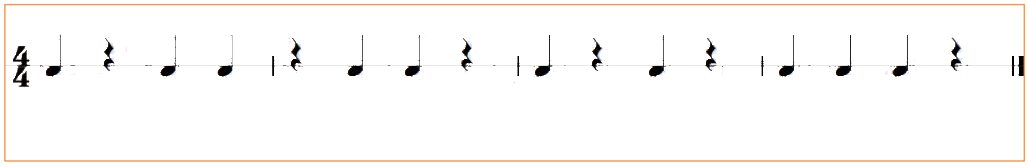

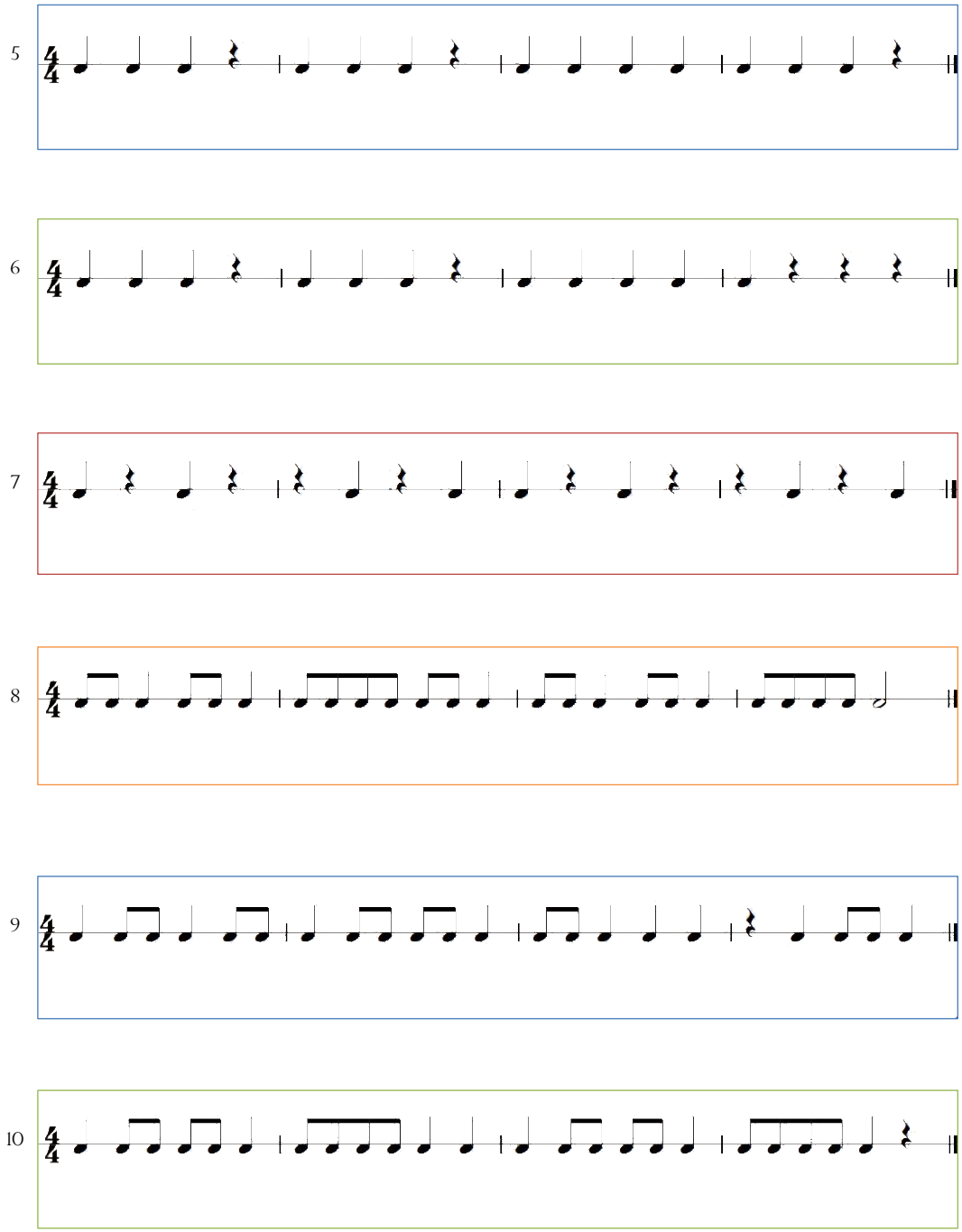
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"TOGETHER WE CAN!"

TUTORING WORKSHEET

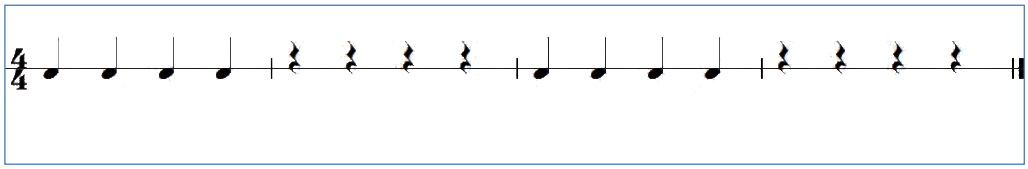
WEEK 1: 6TH GRADE

DIRECTIONS:

1. YOU WILL HAVE 5 MINUTES TO COMPLETE AS MANY RHYTHMS AS YOU CAN
2. FOR EACH RHYTHM, NOTATE THE CORRECT COUNTING
3. USE ALL OF THE FOLLOWING COUNTS: **1 + 2 + 3 + 4 +**
4. YOUR PARTNER WILL CORRECT ANY MISTAKES
5. IF YOU MAKE A MISTAKE: USE THE CORRECTION LINE TO RE-DO THE RHYTHM

   IF YOU DO NOT MAKE A MISTAKE: CONTINUE TO THE NEXT RHYTHM
6. REPEAT STEPS 2 – 5 FOR EACH RHYTHM
7. IF YOU FINISH BEFORE THE 5 MINUTES, CLAP EACH RHYTHM

1



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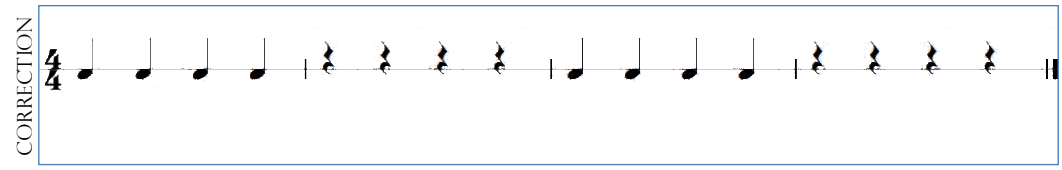

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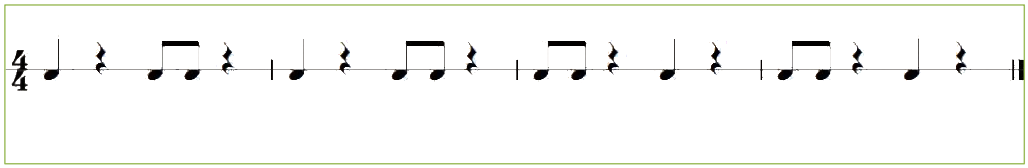

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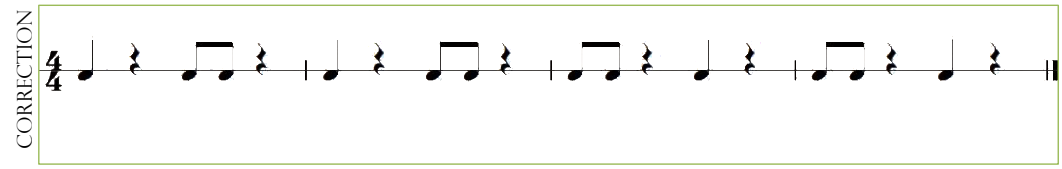

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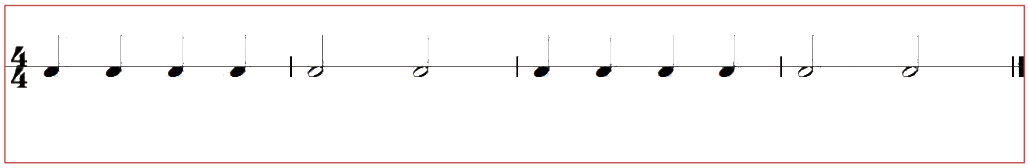

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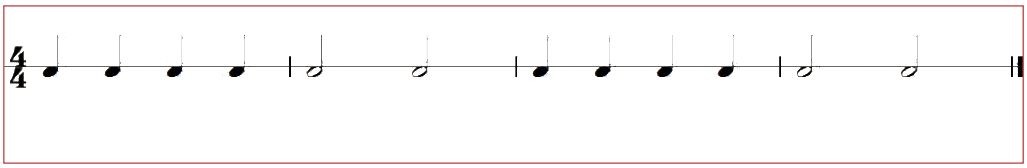

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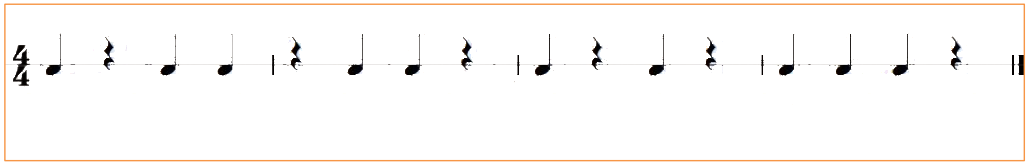

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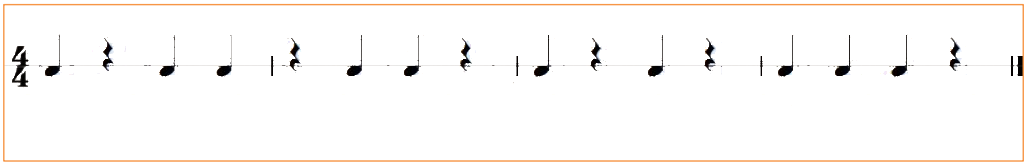

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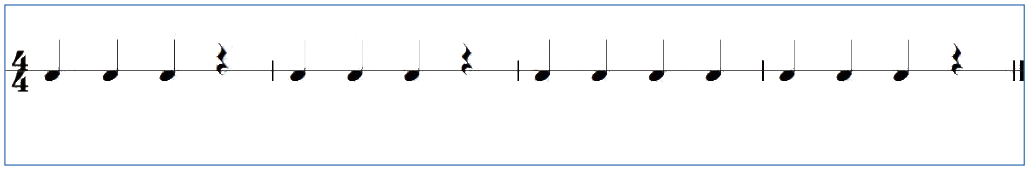

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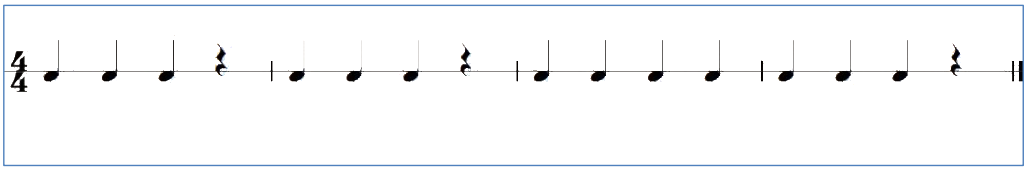

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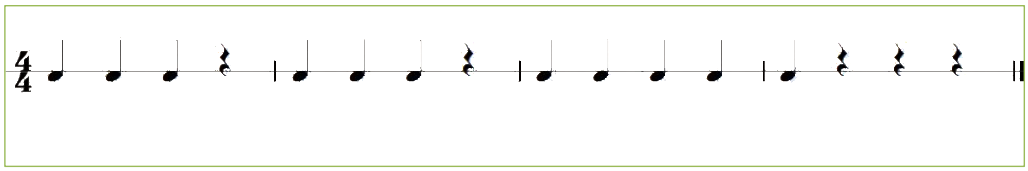

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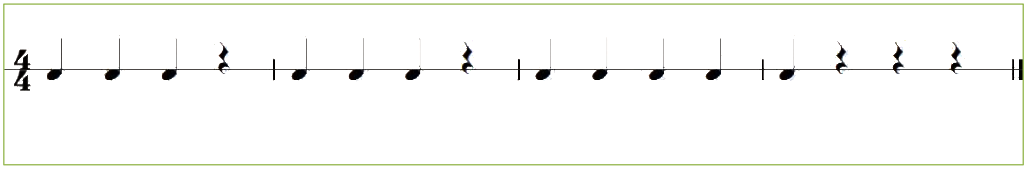

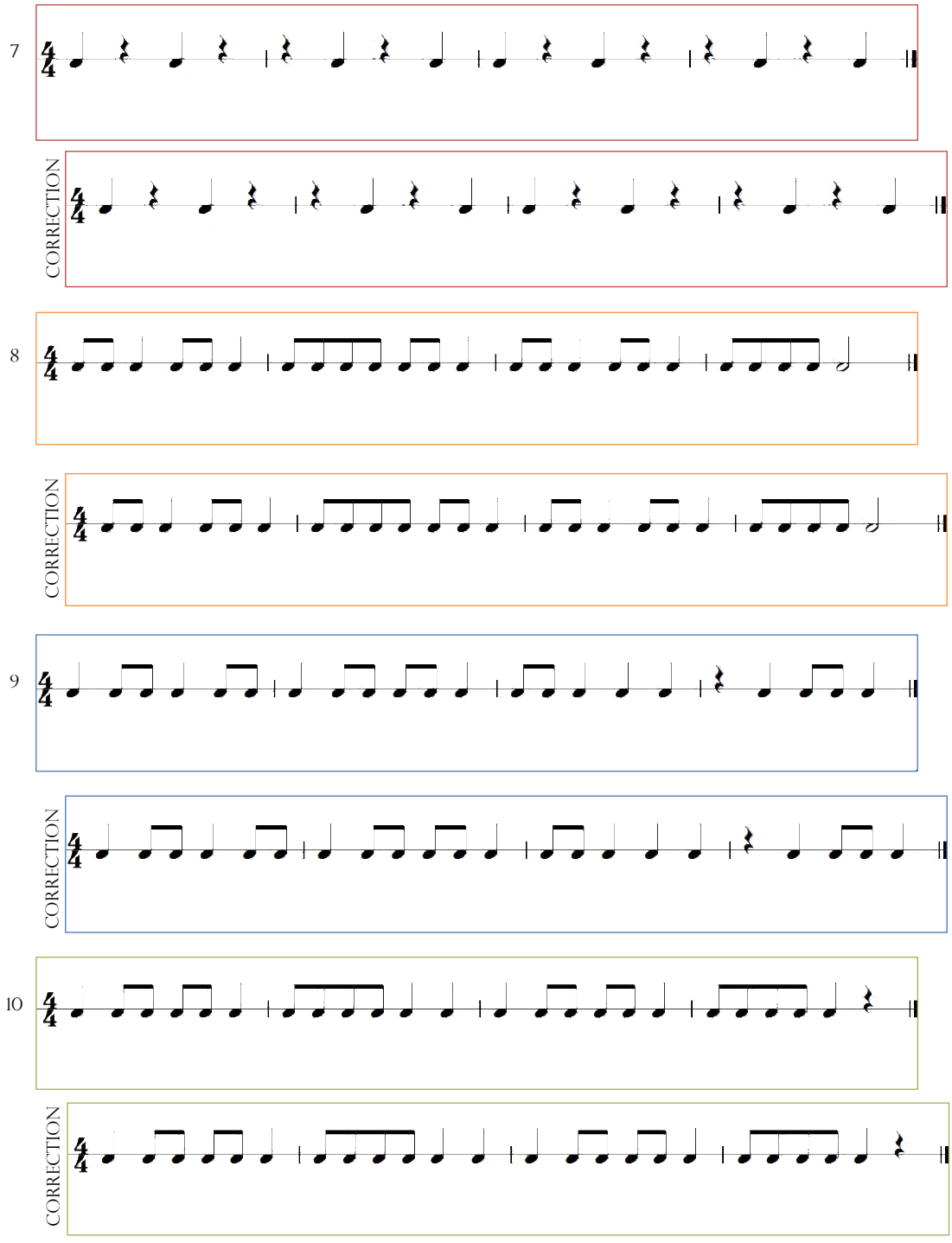
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"TOGETHER WE CAN!"

TUTORING ANSWERS

WEEK 1: 7TH GRADE

DIRECTIONS:

1. YOUR PARTNER WILL HAVE 5 MINUTES TO COMPLETE AS MANY RHYTHMS AS THEY CAN
2. FOR EACH RHYTHM, YOUR PARTNER WILL NOTATE THE CORRECT COUNTING
3. YOUR PARTNER SHOULD USE ALL OF THE FOLLOWING COUNTS: **1 + 2 + 3 + 4 +**
4. IF YOUR PARTNER MAKES A MISTAKE: CORRECT THEM USING THE ANSWER KEY AND INSTRUCT THEM TO USE THE CORRECTION LINE TO RE-DO RHYTHM (AWARD 1 POINT)

   IF YOUR PARTNER DOES NOT MAKE A MISTAKE: PRAISE THEM FOR A JOB WELL DONE AND INSTRUCT THEM TO CONTINUE TO THE NEXT RHYTHM (AWARD 2 POINTS)
5. REPEAT STEPS 2 – 4 FOR EACH RHYTHM
6. IF YOUR PARTNER FINISHES BEFORE THE 5 MINUTES, CLAP EACH RHYTHM WITH THEM

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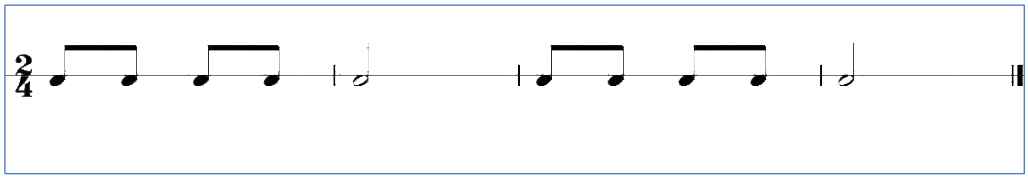

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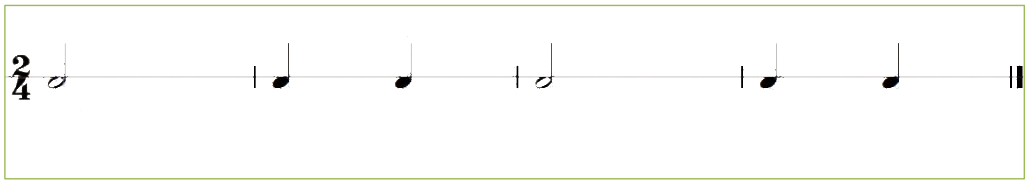

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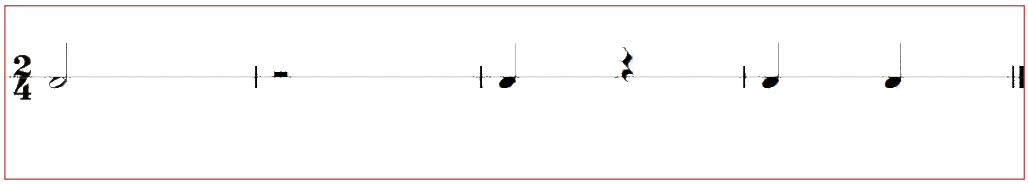

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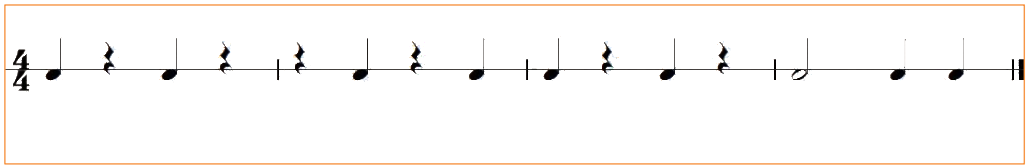

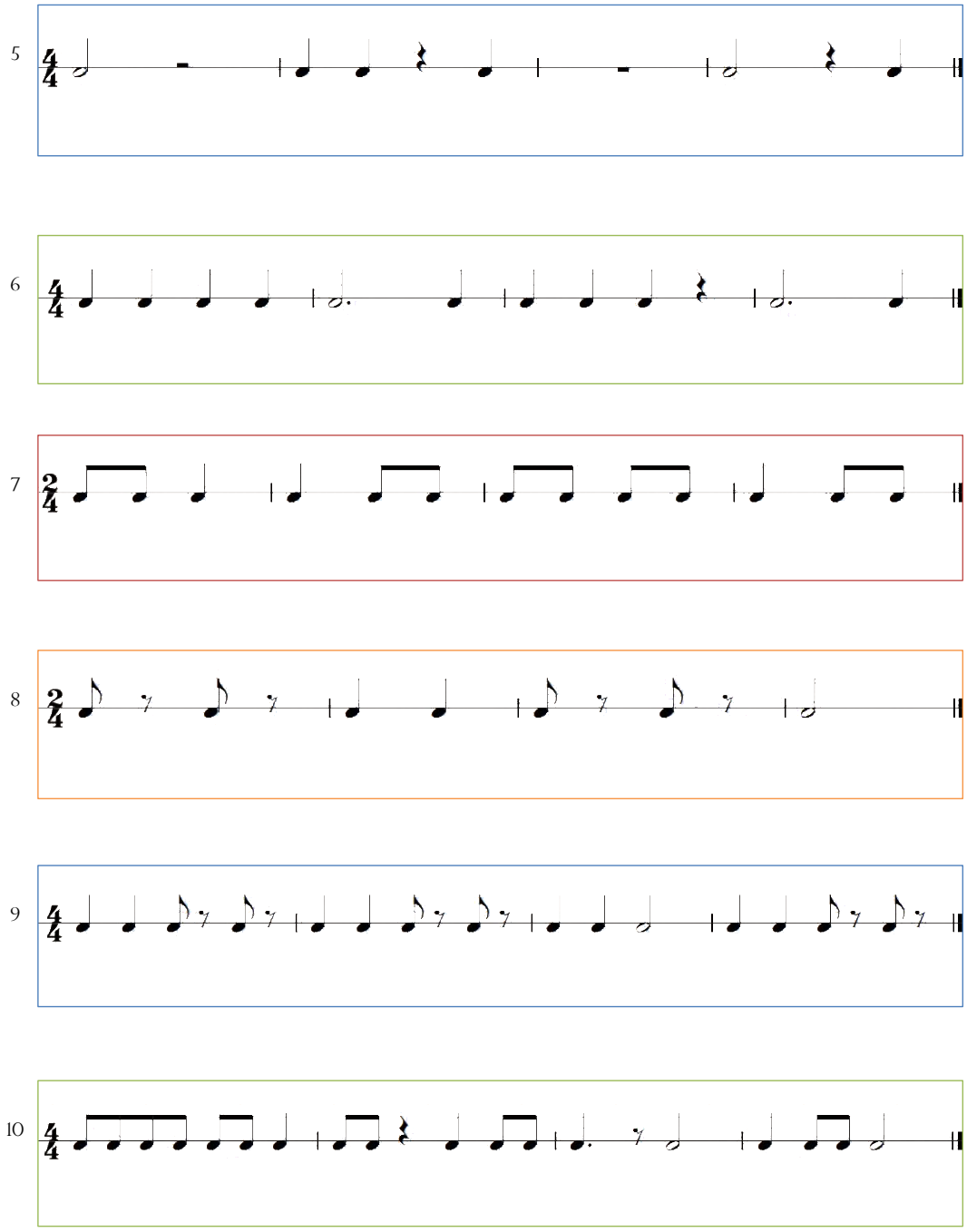
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"TOGETHER WE CAN!"

TUTORING WORKSHEET

WEEK 1: 7TH GRADE

DIRECTIONS:

1. YOU WILL HAVE 5 MINUTES TO COMPLETE AS MANY RHYTHMS AS YOU CAN
2. FOR EACH RHYTHM, NOTATE THE CORRECT COUNTING
3. USE ALL OF THE FOLLOWING COUNTS: **1 + 2 + 3 + 4 +**
4. YOUR PARTNER WILL CORRECT ANY MISTAKES
5. IF YOU MAKE A MISTAKE: USE THE CORRECTION LINE TO RE-DO THE RHYTHM

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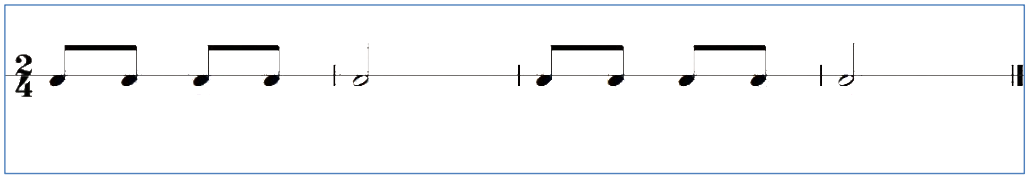

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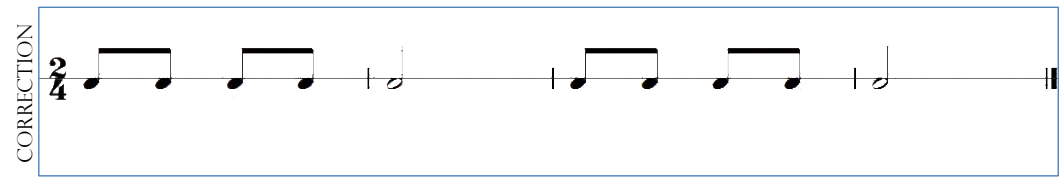

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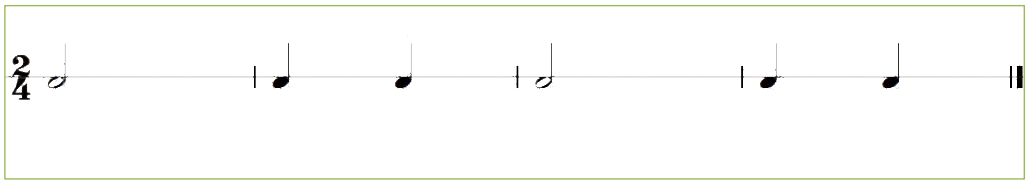

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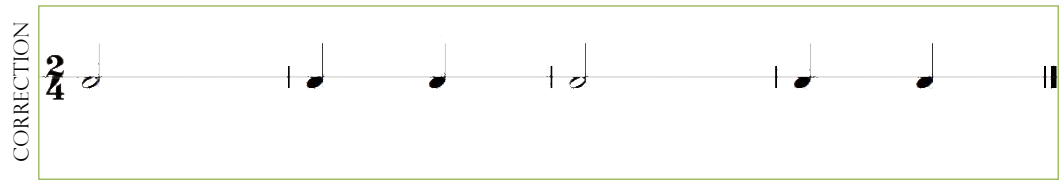

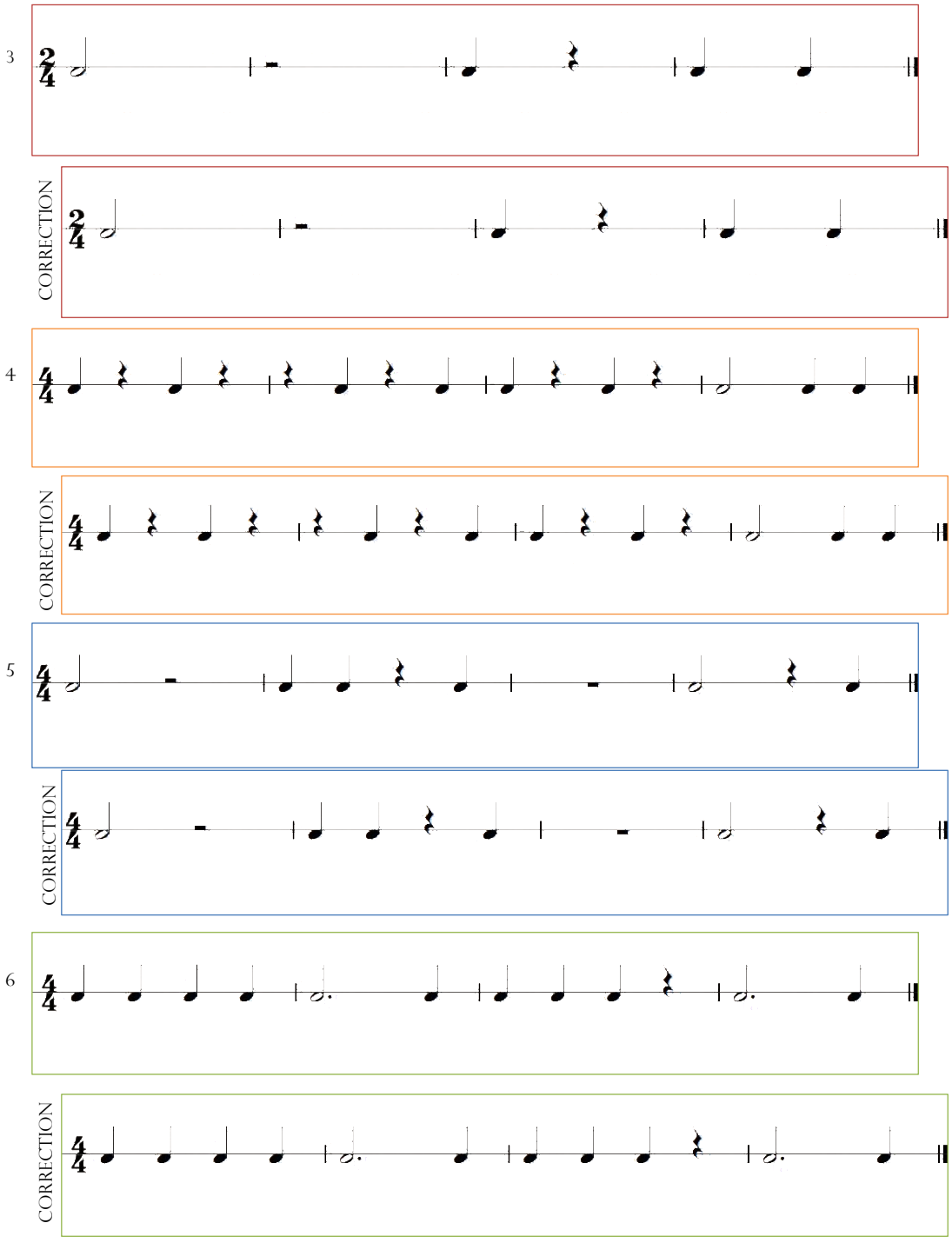
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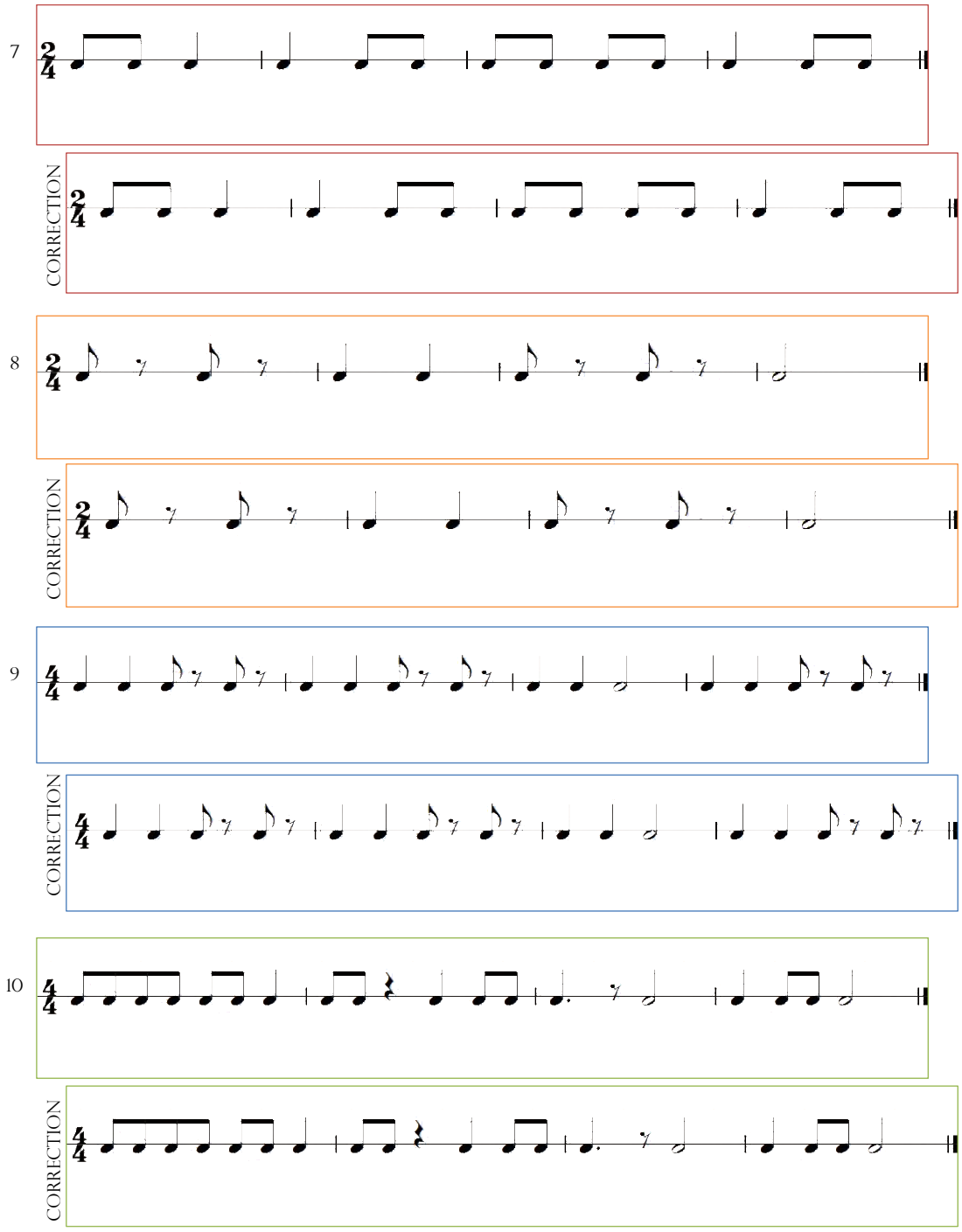
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CORRECTION

"TOGETHER WE CAN!"

TUTORING ANSWERS

WEEK 1: 8TH GRADE

DIRECTIONS:

1. YOUR PARTNER WILL HAVE 5 MINUTES TO COMPLETE AS MANY RHYTHMS AS THEY CAN
2. FOR EACH RHYTHM, YOUR PARTNER WILL NOTATE THE CORRECT COUNTING
3. YOUR PARTNER SHOULD USE ALL OF THE FOLLOWING COUNTS: **1 + 2 + 3 + 4 +**

   COUNTS FOR RHYTHMS WITH 16TH NOTES: **1 e + a# 2 e + a 3 e + a 4 e# + a**
4. IF YOUR PARTNER MAKES A MISTAKE: CORRECT THEM USING THE ANSWER KEY AND INSTRUCT THEM TO USE THE CORRECTION LINE TO RE-DO RHYTHM (AWARD 1 POINT)

   IF YOUR PARTNER DOES NOT MAKE A MISTAKE: PRAISE THEM FOR A JOB WELL DONE AND INSTRUCT THEM TO CONTINUE TO THE NEXT RHYTHM (AWARD 2 POINTS)
5. REPEAT STEPS 2 – 4 FOR EACH RHYTHM
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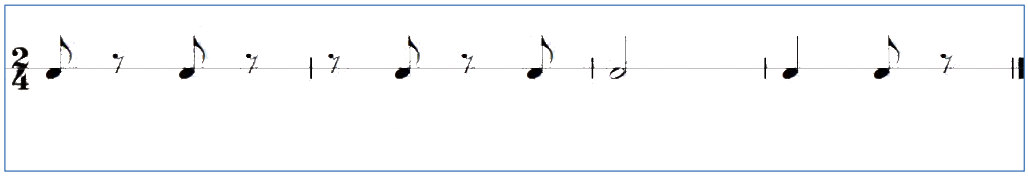
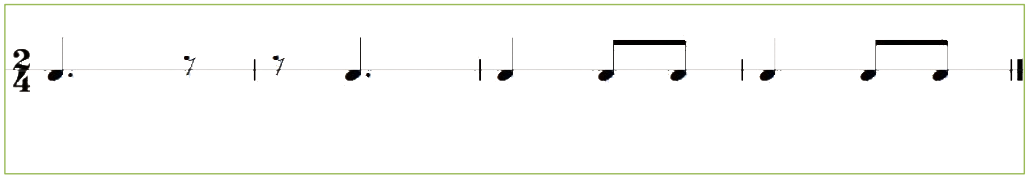
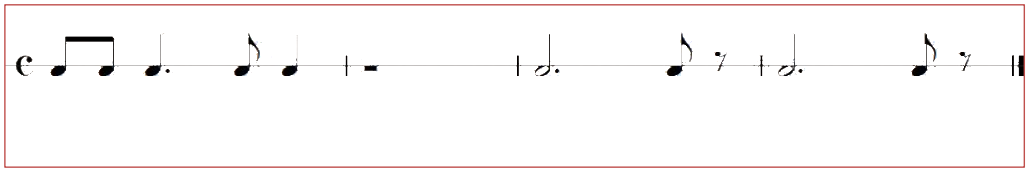
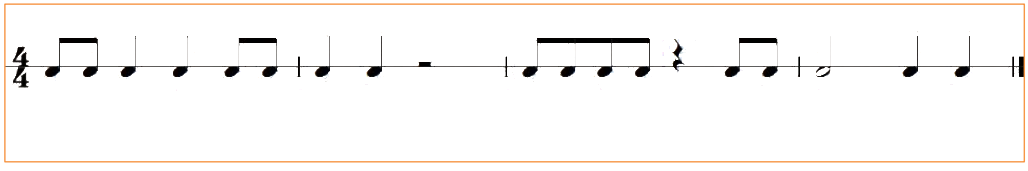
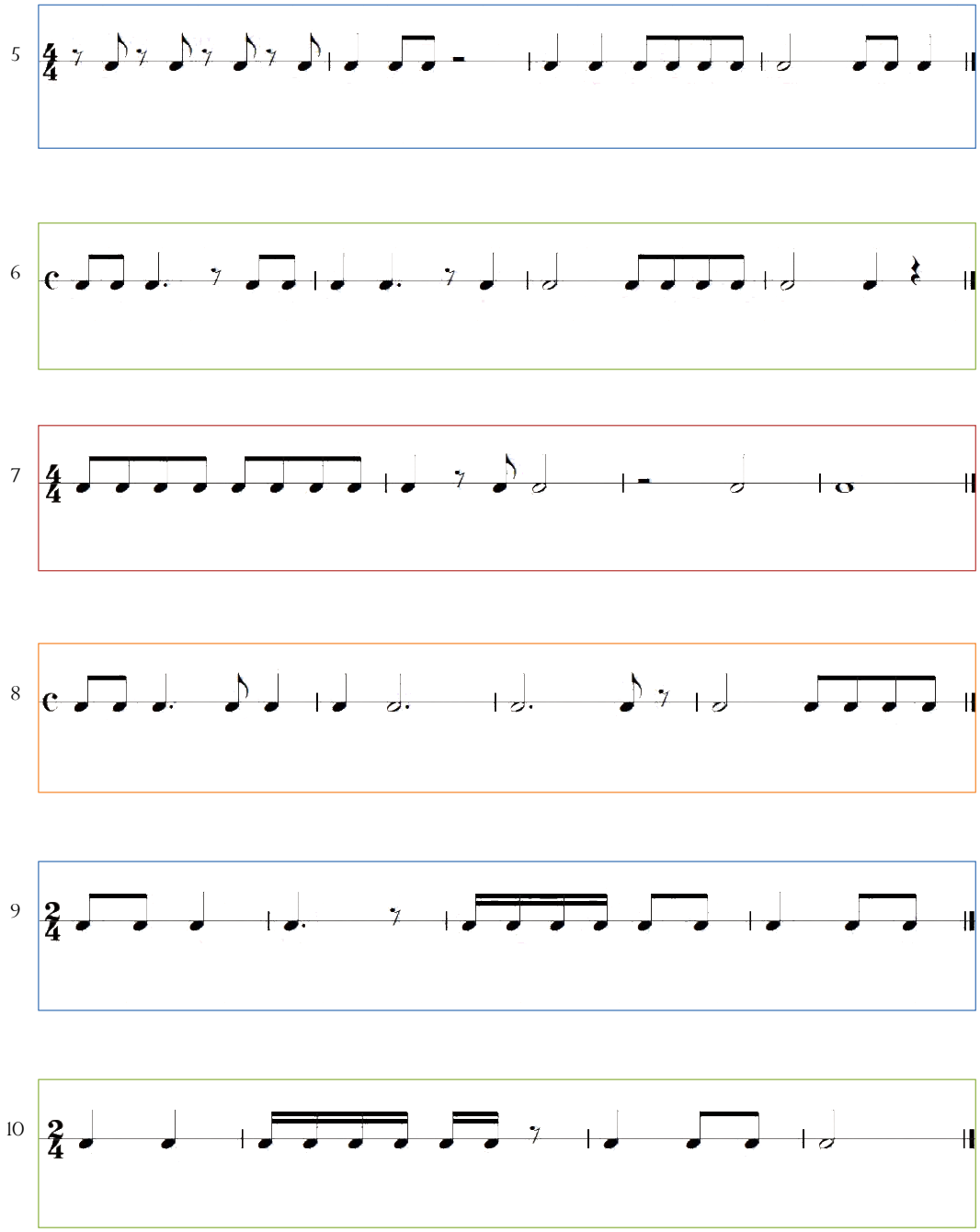
1 

2 

3 

4 


5
6
7
8
9
10

"TOGETHER WE CAN!"

TUTORING WORKSHEET

WEEK 1: 8TH GRADE

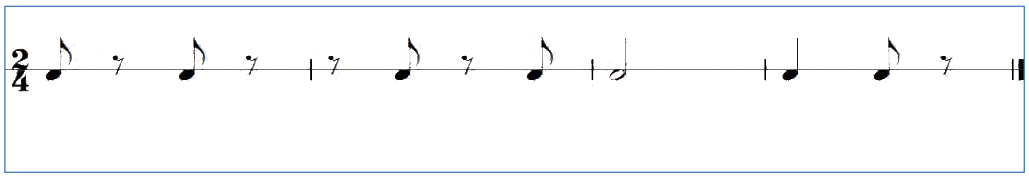
DIRECTIONS:

1. YOU WILL HAVE 5 MINUTES TO COMPLETE AS MANY RHYTHMS AS YOU CAN
2. FOR EACH RHYTHM, NOTATE THE CORRECT COUNTING
3. USE ALL OF THE FOLLOWING COUNTS: **1 + 2 + 3 + 4 +**

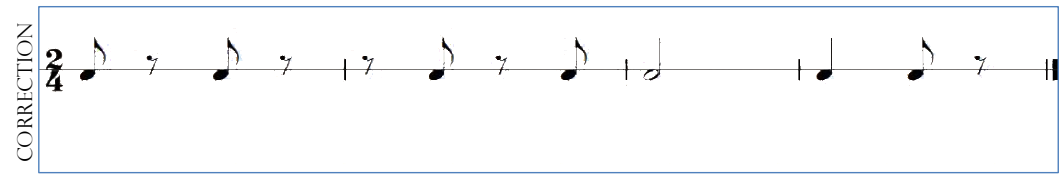
   COUNTS FOR RHYTHMS WITH 16TH NOTES: **1 e + a# 2 e + a 3 e + a 4 e# + a**
4. YOUR PARTNER WILL CORRECT ANY MISTAKES
5. IF YOU MAKE A MISTAKE: USE THE CORRECTION LINE TO RE-DO THE RHYTHM

   IF YOU DO NOT MAKE A MISTAKE: CONTINUE TO THE NEXT RHYTHM
6. REPEAT STEPS 2 – 5 FOR EACH RHYTHM
7. IF YOU FINISH BEFORE THE 5 MINUTES, CLAP EACH RHYTHM

1



CORRECTION



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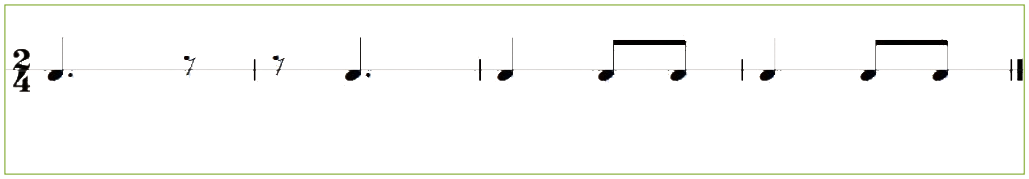

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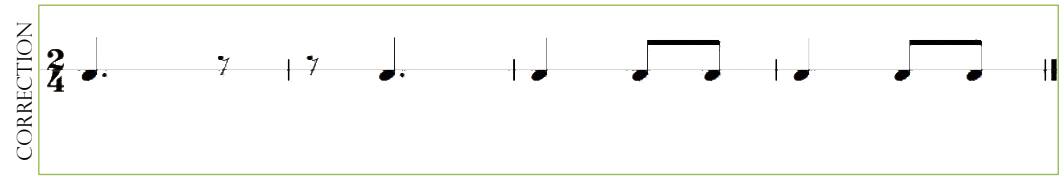

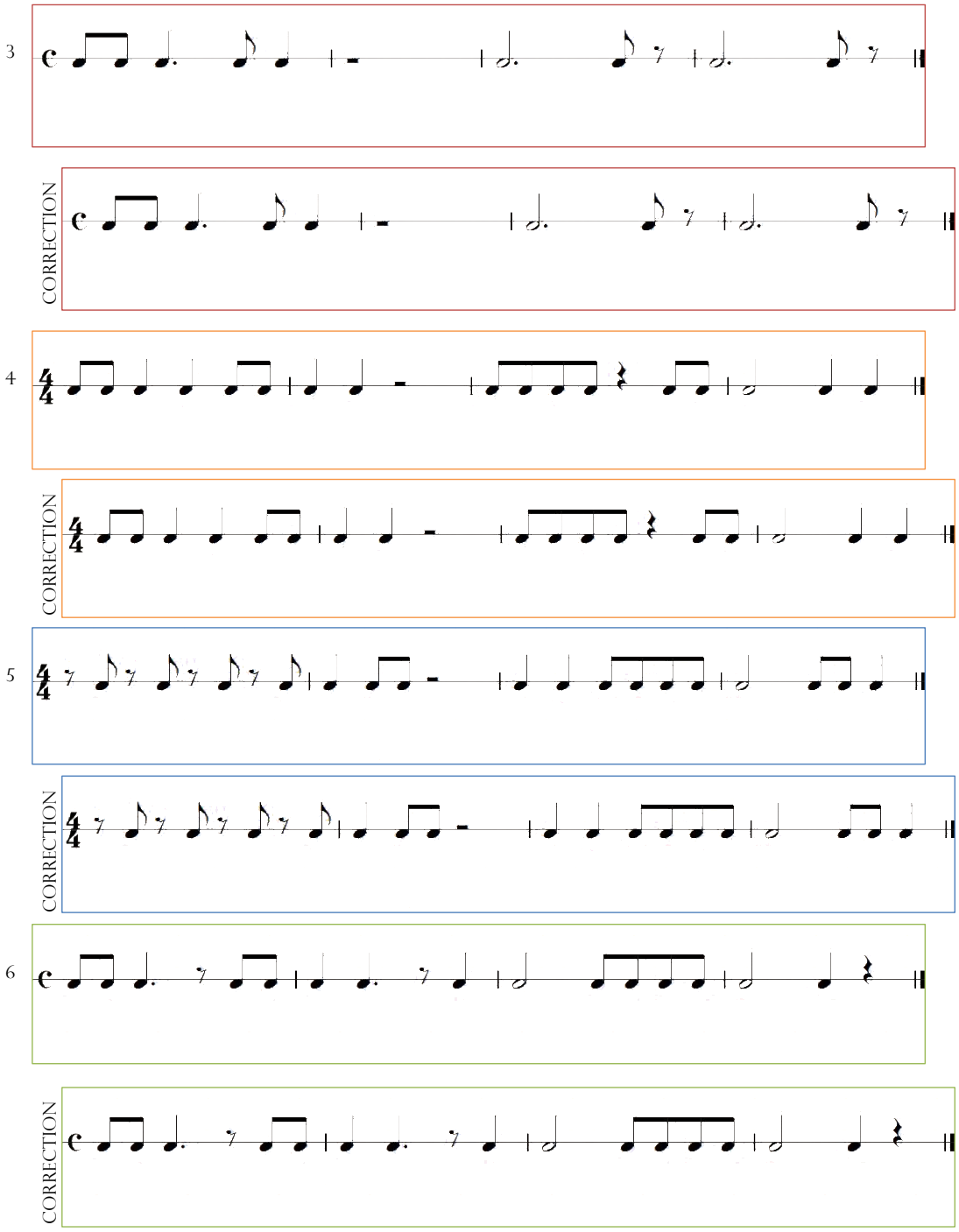
3
CORRECTION
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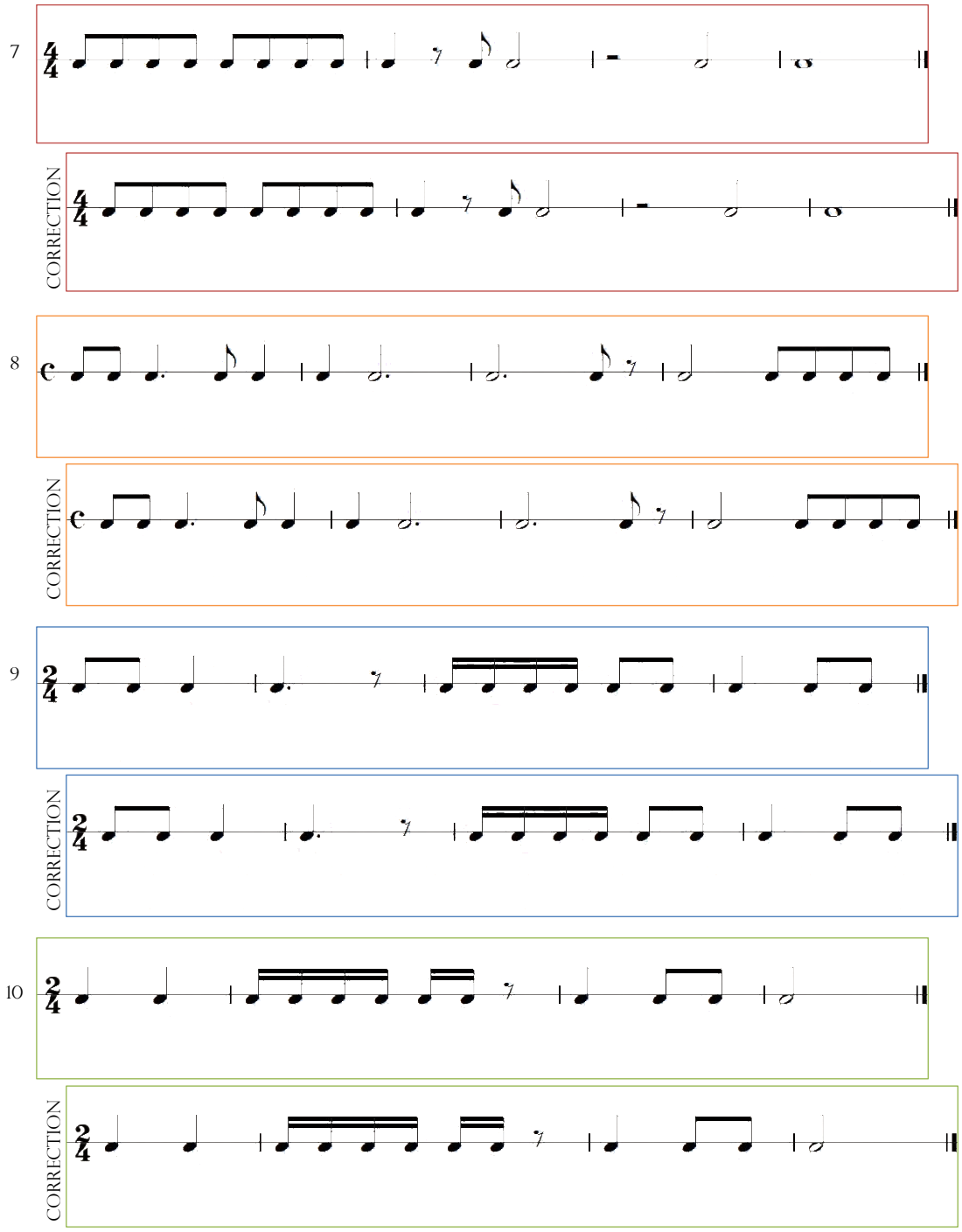
6
CORRECTION


7
CORRECTION
8
CORRECTION
9
CORRECTION
10
CORRECTION

"TOGETHER WE CAN!"

TUTORING POINT SHEET

TUTOR: _____ PARTNER: _____

SCORING REMINDER:

- IF YOUR PARTNER MAKES A MISTAKE: CORRECT THEM USING THE ANSWER KEY AND INSTRUCT THEM TO USE THE CORRECTION LINE TO RE-DO RHYTHM (AWARD 1 POINT)
- IF YOUR PARTNER DOES NOT MAKE A MISTAKE: PRAISE THEM FOR A JOB WELL DONE AND INSTRUCT THEM TO CONTINUE TO THE NEXT RHYTHM (AWARD 2 POINTS)
- CONTINUE CIRCLING UNTIL THE TIMER GOES OFF, ADDING 1 OR 2 POINTS EACH TIME
- THE LAST NUMBER CIRCLED IS THE TOTAL POINTS YOUR PARTNER EARNED

1	2	3	4	5	6	7	8
9	10	11	12	13	14	15	16
17	18	19	20	21	22	23	24
25	26	27	28	29	30	31	32
33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48
49	50	51	52	53	54	55	56
57	58	59	60	61	62	63	64
65	66	67	68	69	70		

TOTAL: _____


HELP!

"TOGETHER WE CAN!"

GOOD SPORTS

- PRAISE THE WINNERS FOR THEIR ACCOMPLISHMENT
- PRAISE THE EFFORT OF THE LOSING TEAM
- DON'T TEASE OR MOCK THE LOSING TEAM
- DON'T WHINE OR COMPLAIN ABOUT LOSING
- KNOW THEY WILL HAVE A NEW CHANCE TO WIN ON ANOTHER DAY

"TOGETHER WE CAN!"

TEAM POINT CHART

TEAM: _____ WEEK: _____

NAME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
TOTALS					

GRAND TOTAL: _____

Appendix D

Rhythm Counting Pretests and Rhythm Counting Posttests Scores

Table D1

Sixth-grade string orchestra students' Rhythm Counting (RC) Pretest and Posttest scores

Student	Week 1			Week 2			Week 3			Week 4		
	RC PRE 1	RC POST 1	DIF 1	RC PRE 2	RC POST 2	DIF 2	RC PRE 3	RC POST 3	DIF 3	RC PRE 4	RC POST 4	DIF 4
6-1	40	40	0	28	40	12	40	40	0	38	40	2
6-2	0	40	40	40	40	0	40	40	0	36	39	3
6-3	40	40	0	40	40	0	40	40	0	38	40	2
6-4	40	40	0	40	40	0	40	40	0	38	40	2
6-5	40	40	0	40	40	0	40	40	0	40	40	0
6-6	40	40	0	40	40	0	39	40	1	37	34	-3
6-7	40	40	0	40	40	0	40	40	0	40	40	0
6-8	1	40	39	36	36	0	5	39	34	34	40	6
6-9	40	40	0	38	36	-2	40	40	0	37	40	3
6-10	40	40	0	40	40	0	40	40	0	37	40	3
6-11	39	40	1	39	40	1	39	40	1	36	39	3
6-12	38	40	2	40	40	0	40	40	0	32	40	8
6-13	40	40	0	40	40	0	40	40	0	40	40	0
6-14	0	40	40	15	35	20	17	18	1	19	33	14
6-15	33	38	5	13	40	27	28	29	1	27	40	13

Student	Week 1			Week 2			Week 3			Week 4		
	RC PRE 1	RC POST 1	DIF 1	RC PRE 2	RC POST 2	DIF 2	RC PRE 3	RC POST 3	DIF 3	RC PRE 4	RC POST 4	DIF 4
6-16	40	40	0	40	40	0	40	40	0	40	40	0
6-17	40	40	0	40	40	0	39	40	1	34	39	5
6-18	40	40	0	38	40	2	40	40	0	37	40	3
6-19	40	40	0	34	40	6	40	40	0	37	39	2
6-20	40	40	0	40	40	0	40	40	0	40	40	0
6-21	0	40	40	40	40	0	39	40	1	32	37	5
6-22	0	40	40	40	40	0	39	38	-1	35	40	5
6-23	40	40	0	35	40	5	30	39	9	33	40	7
6-24	40	40	0	40	40	0	40	40	0	37	40	3
6-25	5	37	32	33	38	5	23	28	5	24	33	9
6-26	0	33	33	14	38	24	27	24	-3	28	36	8
6-27	40	40	0	40	40	0	40	40	0	37	40	3
6-28	35	40	5	39	40	1	37	40	3	34	38	4
6-29	40	40	0	40	40	0	40	40	0	38	40	2
6-30	40	40	0	40	40	0	33	40	7	23	39	16
6-31	0	40	40	8	38	30	18	25	7	6	26	20
6-32	40	40	0	40	40	0	32	40	8	40	40	0
6-33	40	40	0	40	40	0	40	40	0	40	40	0

Student	Week 1			Week 2			Week 3			Week 4		
	RC PRE 1	RC POST 1	DIF 1	RC PRE 2	RC POST 2	DIF 2	RC PRE 3	RC POST 3	DIF 3	RC PRE 4	RC POST 4	DIF 4
6-34	40	40	0	39	40	1	40	40	0	34	40	6
6-35	0	40	40	34	39	5	20	32	12	12	34	22
6-36	40	40	0	40	40	0	38	40	2	38	40	2
6-37	0	39	39	40	40	0	38	38	0	32	40	8
6-38	1	38	37	33	39	6	32	38	6	31	40	9
6-39	2	40	38	40	40	0	38	40	2	29	40	11
6-40	0	37	37	34	39	5	29	38	9	32	35	3
6-41	40	40	0	38	40	2	40	40	0	36	39	3
6-42	35	40	5	24	37	13	23	28	5	25	37	12
6-43	40	40	0	40	40	0	40	40	0	37	40	3
6-44	39	40	1	40	40	0	40	40	0	32	40	8
6-45	3	40	37	38	40	2	39	40	1	40	40	0
6-46	40	40	0	40	40	0	40	40	0	33	40	7
6-47	36	40	4	27	40	13	39	40	1	28	40	12
6-48	40	40	0	39	40	1	36	40	4	36	40	4
6-49	40	40	0	40	40	0	40	40	0	35	40	5
6-50	0	32	32	13	38	25	25	32	7	20	30	10
6-51	0	40	40	23	40	17	34	39	5	33	39	6

Student	Week 1			Week 2			Week 3			Week 4		
	RC PRE 1	RC POST 1	DIF 1	RC PRE 2	RC POST 2	DIF 2	RC PRE 3	RC POST 3	DIF 3	RC PRE 4	RC POST 4	DIF 4
6-52	40	40	0	23	39	16	30	40	10	29	40	11
6-53	40	40	0	40	40	0	40	40	0	36	39	3
6-54	40	40	0	40	40	0	40	40	0	40	40	0
6-55	40	40	0	40	40	0	40	40	0	37	40	3
6-56	0	36	36	18	27	9	14	23	9	26	28	2
6-57	40	40	0	40	40	0	40	40	0	33	40	7
6-58	11	40	29	40	39	-1	37	40	3	34	40	6
6-59	0	40	40	23	36	13	37	40	3	34	40	6

Table D2

Seventh-grade string orchestra students' Rhythm Counting (RC) Pretest and Posttest scores

Student	Week 1			Week 2			Week 3			Week 4		
	RC PRE 1	RC POST 1	DIF 1	RC PRE 2	RC POST 2	DIF 2	RC PRE 3	RC POST 3	DIF 3	RC PRE 4	RC POST 4	DIF 4
7-1	3	6	3	2	3	1	3	7	4	5	12	7
7-2	40	40	0	40	40	0	33	40	7	33	39	6
7-3	39	40	1	39	40	1	25	40	15	36	32	-4
7-4	40	40	0	40	40	0	31	40	9	32	32	0
7-5	18	39	21	37	40	3	30	40	10	29	36	7
7-6	19	40	21	40	40	0	40	40	0	36	38	2
7-7	40	40	0	40	40	0	40	40	0	39	40	1
7-8	0	39	39	40	40	0	33	40	7	29	40	11
7-9	11	39	28	34	39	5	14	38	24	27	33	6
7-10	40	40	0	37	40	3	33	33	0	25	34	9
7-11	6	23	17	23	29	6	15	29	14	28	36	8
7-12	1	35	34	34	35	1	30	29	-1	26	38	12
7-13	19	40	21	37	39	2	17	32	15	28	38	10
7-14	2	40	38	40	40	0	36	40	4	28	38	10
7-15	4	37	33	25	33	8	32	38	6	29	40	11

Student	Week 1			Week 2			Week 3			Week 4		
	RC PRE 1	RC POST 1	DIF 1	RC PRE 2	RC POST 2	DIF 2	RC PRE 3	RC POST 3	DIF 3	RC PRE 4	RC POST 4	DIF 4
7-16	40	40	0	40	40	0	33	40	7	29	40	11
7-17	39	40	1	40	39	-1	32	40	8	29	37	8
7-18	40	40	0	40	40	0	40	40	0	31	40	9
7-19	29	40	11	39	39	0	26	38	12	32	37	5
7-20	40	40	0	40	40	0	33	40	7	29	40	11
7-21	40	40	0	40	40	0	40	40	0	39	40	1
7-22	0	38	38	40	40	0	30	38	8	27	38	11
7-23	0	24	24	13	35	22	10	22	12	20	26	6
7-24	2	40	38	35	39	4	23	34	11	23	36	13
7-25	40	40	0	40	40	0	40	40	0	37	40	3
7-26	0	34	34	25	33	8	14	26	12	20	29	9
7-27	40	39	-1	40	40	0	35	40	5	39	40	1
7-28	1	40	39	37	40	3	21	40	19	26	29	3
7-29	11	39	28	38	40	2	40	40	0	36	40	4
7-30	0	24	24	29	33	4	17	26	9	25	30	5
7-31	33	40	7	40	40	0	33	40	7	36	38	2
7-32	1	12	11	5	14	9	4	14	10	13	16	3
7-33	40	40	0	40	40	0	39	40	1	37	38	1

Student	Week 1			Week 2			Week 3			Week 4		
	RC PRE 1	RC POST 1	DIF 1	RC PRE 2	RC POST 2	DIF 2	RC PRE 3	RC POST 3	DIF 3	RC PRE 4	RC POST 4	DIF 4
7-34	0	40	40	37	40	3	37	40	3	20	40	20
7-35	38	40	2	40	40	0	34	40	6	29	40	11
7-36	19	40	21	40	40	0	29	39	10	28	40	12
7-37	40	40	0	40	40	0	40	40	0	33	40	7
7-38	21	40	19	40	40	0	32	40	8	31	39	8
7-39	18	40	22	40	40	0	40	40	0	35	40	5
7-40	40	40	0	40	40	0	30	40	10	30	30	0
7-41	40	40	0	40	40	0	40	40	0	30	36	6
7-42	40	40	0	40	40	0	33	40	7	36	40	4
7-43	18	39	21	36	40	4	26	31	5	26	28	2
7-44	1	40	39	40	40	0	39	40	1	38	40	2
7-45	0	38	38	40	40	0	33	40	7	28	40	12
7-46	3	31	28	3	40	37	1	34	33	7	38	31
7-47	5	39	34	40	40	0	40	40	0	33	38	5
7-48	1	32	31	34	38	4	26	30	4	22	22	0

Table D3

Eighth-grade string orchestra students' Rhythm Counting (RC) Pretest and Posttest scores

Student	Week 1			Week 2			Week 3			Week 4		
	RC PRE 1	RC POST 1	DIF 1	RC PRE 2	RC POST 2	DIF 2	RC PRE 3	RC POST 3	DIF 3	RC PRE 4	RC POST 4	DIF 4
8-1	37	40	3	39	40	1	39	40	1	40	40	0
8-2	40	40	0	32	36	4	36	38	2	31	40	9
8-3	4	40	36	40	40	0	26	39	13	31	40	9
8-4	1	8	7	9	20	11	18	30	12	15	18	3
8-5	40	40	0	36	40	4	27	39	12	32	36	4
8-6	7	40	33	39	39	0	39	39	0	27	34	7
8-7	27	36	9	38	40	2	34	40	6	39	34	-5
8-8	40	40	0	40	40	0	39	40	1	40	40	0
8-9	1	40	39	38	40	2	27	35	8	37	39	2
8-10	36	39	3	39	39	0	33	38	5	26	37	11
8-11	2	40	38	39	39	0	35	38	3	36	38	2
8-12	40	40	0	39	40	1	39	39	0	38	38	0
8-13	1	35	34	34	40	6	28	37	9	28	30	2
8-14	31	39	8	39	40	1	39	40	1	32	40	8
8-15	40	40	0	40	40	0	36	40	4	38	40	2

Student	Week 1			Week 2			Week 3			Week 4		
	RC PRE 1	RC POST 1	DIF 1	RC PRE 2	RC POST 2	DIF 2	RC PRE 3	RC POST 3	DIF 3	RC PRE 4	RC POST 4	DIF 4
8-16	0	6	6	4	2	-2	3	5	2	2	20	18
8-17	40	40	0	40	40	0	40	40	0	40	40	0
8-18	1	12	11	18	23	5	16	26	10	6	31	25
8-19	0	0	0	0	1	1	3	4	1	7	4	-3
8-20	38	40	2	40	40	0	37	40	3	40	40	0
8-21	15	40	25	39	39	0	36	35	-1	29	31	2
8-22	34	40	6	38	40	2	25	40	15	36	40	4
8-23	40	40	0	40	40	0	35	40	5	38	40	2
8-24	14	40	26	33	40	7	27	40	13	33	40	7
8-25	40	40	0	40	40	0	40	40	0	40	40	0
8-26	0	16	16	1	2	1	2	5	3	0	4	4
8-27	5	40	35	37	39	2	26	37	11	23	36	13
8-28	29	40	11	40	40	0	30	38	8	22	37	15
8-29	40	40	0	39	39	0	37	38	1	37	40	3
8-30	16	34	18	36	40	4	30	40	10	29	34	5
8-31	40	40	0	39	40	1	28	38	10	28	36	8
8-32	4	40	36	39	39	0	28	32	4	5	40	35
8-33	0	35	35	10	39	29	22	36	14	19	23	4

Student	Week 1			Week 2			Week 3			Week 4		
	RC PRE 1	RC POST 1	DIF 1	RC PRE 2	RC POST 2	DIF 2	RC PRE 3	RC POST 3	DIF 3	RC PRE 4	RC POST 4	DIF 4
8-34	39	40	1	39	40	1	38	35	-3	38	40	2
8-35	1	6	5	9	32	23	33	36	3	16	25	9