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Collaborative learning among high school students in a chamber music setting

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COLLABORATIVE LEARNING AMONG HIGH SCHOOL STUDENTS IN A CHAMBER MUSIC SETTING

by

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ABSTRACT

This study is a qualitative case study of collaborative learning in two chamber music ensembles in a public high school orchestra program. Collaborative learning, as applied to chamber music education, is a setting in which musicians engage in a common musical task and are accountable to the other members of the group. Using social constructivism as a conceptual framework, I sought to explore student collaboration within chamber music ensembles through social interaction and the development of creative rehearsal strategies. Attention was directed to the way in which students identified problems and developed rehearsal strategies to solve them. The following research questions guided this study: (1) How do students in the selected chamber music ensembles engage in collaborative learning? (2) What are the learning structures that enable collaboration within each group? (3) How do the students interact with each other in the selected chamber music ensembles? (4) What are the social structures that enable collaborative learning within each group?

Using Mediated Discourse Analysis (MDA) I analyzed and interpreted the collaborative learning that occurred in the musical development of these high school chamber musicians. Data collection occurred during one semester of instruction (five

months) and included individual interviews, focus group interviews, and observations, which included field-notes and digital video of rehearsals. The research methodology used in this study comprised the "interpretive–descriptive" method and focused on turning the participants' words and actions into the development of potential themes and implications. My approach used a three-step process to analyze data in which concepts were coded relating to the phenomenon of collaborative and mutual learning as well as sociocultural mediation.

In this study, I examined the collaborative learning process among the student participants. My study was further informed by the participants' perceptions of their own collaborative learning processes. Themes found were learning structures that allowed for collaboration in interpretation and problem solving, and social structures that enabled peer pressure, socialization and a work ethic. Results indicated that when given the opportunity to work in small groups toward pre-determined musical goals, the participants in this study: (1) worked with internal group leaders to identify musical problems and develop creative rehearsal strategies to solve them, (2) used positive and negative peer pressure that created an organic social structure which contributed to team efficacy, and (3) showed a willingness to work harder toward group goals when empowered with the responsibility for their own learning.

The results of this study suggest that a collaborative learning environment that includes small groups of heterogeneously mixed students can advance student learning in multiple ways. The traditional teacher centered learning environment may not be the most effective learning environment because it may limit student development in one or

more capacities, including decision making and social development. Recognition of the active, purposeful character of human development and respect for the shared understanding (socially distributed knowledge) that enables peers to teach one another ought to shape the music educator's role and function; to serve as a musical guide, facilitator, and source of social support. Based on the results of this study, it appears that it may be possible to adapt collaborative learning to diverse instructional situations regardless of the heterogeneous makeup of the learning group.

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CHAPTER 1: INTRODUCTION

Since the late 19th century American music educators and professional music organizations have considered large ensembles as the predominant type of performance group in schools (Mark & Gary, 1992). In this context, music teachers typically organize students into large music ensembles, place a high priority on performance skills, and may set goals in terms of specific tasks modeled upon imitation of professional groups such as symphony orchestras, military bands, and opera choruses (Herman, Aschbacher, & Winters, 1992). In an effort to elevate performance levels, many instructors require ongoing assessment by means of participation and performance tests. These assessment and performance tests often foster a competitive nature within the groups with students challenging and competing against each other for preferred parts and chair assignments (Miller, 1994). Because of the high visibility of these groups, abuses of reward systems (e.g. prizes, contest ratings, approval of parents and school boards) occur, where both educators and students focus their priorities on ratings (Wolf & Pistone, 1995). Abeles, Hoffer, and Klothman (1995) stated, "The ideal performing group would be involved in…stimulating the creative process" (p. 295). Miller (2011) sees educators sacrificing principles of student collaboration to performance pressures.

Statement of the Problem

In traditional learning structures in music education programs in the United States, the classroom teacher actively directs the learning outcomes with students acting in a passive role (Freire & Freire, 1997). Most music teachers view themselves as the main authority of learning music in their classroom (Allsup, 2003). Unsurprisingly,

many music educators are uncomfortable teaching in contexts in which they are not the sole deliverers of information (Berg, 1997). In addition, music educators are reluctant to implement collaborative learning teaching strategies because of their lack of training and experience (Campbell, 1991b). Further, teachers rarely give students the option of learning in small collaborative settings, such as a chamber ensemble (Bonwell & Eison, 1991). If teachers of school music programs created a learning environment where students and teachers shared ideas and jointly made decisions, it may be possible for students and teachers to experience more meaningful, sensitive experiences in music making. The chamber music ensemble, typically comprising 2–10 musicians with one person per part, is well suited for fostering creative processes among students (Berg, 1997). Chamber music ensembles are settings that can encourage collaborative learning among the participants (Berg, 1997). Collaborative learning is a classroom teaching strategy in which students work together toward a common task; each member being responsible, accountable, and interdependent to the other members of the group (Panitz, 1999). Schrage (1990) defined collaboration as "the process of shared creation: two or more individuals with complementary skills interacting to create a shared understanding that none had previously possessed or could have come to on their own" (p. 40).

The collaborative learning experience often involves one or two students who become self-appointed leaders of their social group through social interactions. Groups may align themselves into structures containing both learning and social organizations. Research on these structures, called Group Dynamics (Cartwright and Zander, 1968), has been prominent in the educational and business field and is an integral part of this study.

Collaborative vs. Cooperative Learning

Practitioners often conflate the terms "collaborative learning" and "cooperative learning," leading to unnecessary confusion (Whipple, 1987). The differences between collaboration and cooperation are complex; yet, basic distinctions do exist. The first distinction concerns the method of division of the task among the members. According to educational psychologists (c.f. Johnson & Johnson, 2009; Panitz, 1999) cooperative learning is a set of processes where the task is divided into independent subtasks by a teacher. Students take ownership of separate pieces of the overall project based on their ability and in turn contribute to the learning process of the project at hand under the supervision of the teacher. In collaborative learning, the project is shared among students, but the teacher does not assign specific pieces of the overall project to individual students. The students work on aspects of the project in conjunction with each other (Roschelle & Teasely, 1995). Thus, the primary distinction between collaborative and cooperative learning relates to structure and control.

In some ways, the two approaches represent a difference in teaching strategies rather than completely different learning situations. Bruffee (1999) explained the difference between cooperative learning and collaborative learning in terms of how these terms originated:

> In contrast with cooperative learning's origins in a concern that competition can impede learning, collaborative learning began with a concern that the hierarchical authority structure of traditional classrooms can impede learning (p. 89).

Rees (2002) defined collaborative learning as "a process that seeks to engage parties with common interests to work cooperatively on some endeavor toward mutually agreed goals

or outcomes" (p. 257).

In this study, I define collaborative learning as a process in which each student brings knowledge and expertise to bear on the mutual learning task, with additional guidance from a teacher or coach as needed (Bruffee, 1995, 1999). This broad definition is necessary in order to examine the interactions in groups of different levels of expertise, including those who need guidance from teachers. Many school chamber groups do need at least some teacher direction and modeling in the beginning. Vygotsky and other scholars have interpreted these interactions between the teacher and student, and student and peers. In the following section I will discuss social constructivism and Vygotsky's associated theories that provide the conceptual framework for this study.

Theoretical Basis of Collaborative Learning

Collaborative learning is a learning strategy based on a branch of educational theory called constructivism (Duffy & Jonassen, 1992). Inspired by Dewey's (1934) progressive educational philosophies, constructivists argue that people develop intelligence and meaning from interactions between ideas and experiences, and that learning begins with the interests of the learner (Jordan-DeCarbo & Nelson, 2002). Constructivists, including Bruner (1986, 1996), Feuerstein (1990), and Vygotsky (1962, 1978), have identified particular descriptors of this learning theory:

- Learners acquire knowledge and beliefs.
- Learners imbue experiences with meaning.
- Learning activities should cause learners to gain access to their experience, knowledge, and beliefs.
- Learning is a social activity that is enhanced by shared inquiry.
- Reflection and meta-cognition are essential aspects of constructing knowledge and meaning.

- Learners play an essential role in assessing their own learning.
- The outcomes of the learning process are varied and often unpredictable (Walker & Lambert, 1995, pp. 17–19).

Critiques of Constructivism

Mayer considered many constructivist teaching strategies as being inefficient or ineffective for collaborative learning tasks, and misapplied by educators. These ineffective constructivist strategies often simply required students to be behaviorally active which did not necessarily equate to authentic learning. Mayer wrote, "I refer to this interpretation as the *constructivist teaching fallacy* because it equates active learning with active teaching" (Mayer, 2004, p. 15). Mayer does advocate that learners be cognitively active during instruction but that instructors ensure authentic learning with a technique called faded guidance.

Social Constructivism

Social constructivism is a learning theory that maintains that each individual learns in socially unique ways (Salomon & Perkins, 1998). Individual learners construct meaning based upon their own personal background, experiences, and previous social interactions. In constructing meaning, students are learning to identify and interpret symbols, reacting to problems they encounter, and how they might respond to them. For learners, all new experiences are viewed in light of past personal experiences. Social constructivists focus on examining each learner's experiences and encourage students to arrive at conclusions based on their own real life experiences (e.g., Bandura, 1986; von Glaserfeld & Steffe, 1991; Vygotsky, 1978). Students themselves identify problems and direct solutions. While the instructor establishes the parameters for the learning

experience (e.g. providing questions and guidelines), it is the students who must share ideas and exhibit critical reasoning on the subject matter. This need for change through social groups is the basis for the creation of the three competing social constructivist approaches to learning: the sociocognitive approach (Bandura, 1977, 1986); the shared cognition approach (Lave, 1988; Suchman, 1987) and the sociocultural approach of Vygotsky (1978) and his followers (e.g. Wertsch, 1995; Paul & Ballantine, 2002).

The sociocognitive approach. In the 1970s psychologists such as Bandura investigated how social interactions affected cognitive development (Bandura, 1977; Doise & Mugny, 1984). The sociocognitive approach attempted to account for development though conflict as well as the adaption of different points of view called centrations. The sociocognitive approach is so named because it focused on the role of interactions with others rather than the actions themselves. Doise (1990) stated, "it is above all through interacting with others, coordinating his/her approaches to reality with those of others, that the individual masters new approaches" (p. 46). Cognitive development was seen as a spiral of learning, where the individual's participation in social interactions produced new states of development, which in turn generated even more sophisticated interactions. Therefore, mental functioning develops out of social activity. Social activity becomes the basic unit of analysis.

The shared cognition approach. The third branch of social constructivism is the shared cognition approach, also known as situated cognition theory. This approach focuses not just on the immediate participants, but also on the entire social context in which the collaboration is taking place, such as the school or neighborhood (Lave, 1988;

Suchman, 1987). In this theory, the social environment and past are an important part of all cognitive development rather than just a series of circumstances in which independent cognitive activity is being constructed. The physical context is just as important as the social context. In the shared cognition approach, sociologists and anthropologists focus on the communities in which collaborative groups inhabit and interact. This later approach provided a new perspective to social constructivism and led to rethinking of the Piagetian sociocognitive approach.

The sociocultural approach. The sociocultural approach centers meaning-making on social interactions in light of cultural backgrounds (Butterworth, 1982). Researchers who favored the sociocultural approach include Wertsch (1985, 1991) and Rogoff (Rogoff, 1990). In contrast to Piaget's view that social interaction provided a catalyst for changes in the individual, the sociocultural perspective saw inter-psychological procedures being internalized by the person involved. As interpreted by Wertsch, and Rogoff (c.f. Rogoff, 1990, 1996; Wertsch, 1991a, 1991b, 1995), the sociocultural approach focused on the direct relationship between social interactions and cognitive changes. This approach became the major component of new paradigms in educational and developmental psychology in the 1970s and after. Research based on sociocultural approach is not without criticism. Wertsch (1991) questioned the experimental settings used for developing the sociocultural approach. For example, Wertsch claimed that in much sociocultural research, social interactions were being studied without consideration of any possible social structures within the group.

As Vygotsky (1962) first argued, development occurred at two levels: the inter-

psychological and the intra-psychological. As such, there are two kinds of speech: Inter-psychological speech is used to interact socially, while the intra-psychological speech is used when we think or reflect. Vygotsky theorized that inner speech enabled the development of learning (1978). This inner speech can be understood as musicians who, while rehearsing together, constantly listen and think to themselves, and constantly make adjustments in timing, intonation or style. The musicians continually negotiate and adjust to each other in this setting. The participation in a joint problem solving venture by the musicians to change an understanding of the problem is called appropriation (Rogoff, 1991). Appropriation is a collaborative learning process where each member provides added meaning to the action of other's actions within their own conceptual framework (Newman, Griffin, & Cole, 1999).

The chamber music ensemble, as conceived within the theory of social constructivism, has the potential to provide a structure for this type of learning environment. Student musicians of moderate to advanced ability in a self-directed small music ensemble bring their own interpretations of the music filtered by their past experience and education to the group. While it is true that ensemble members must come to the rehearsal with some musical knowledge and expertise on their instrument, their active engagement in "doing" chamber music greatly enhances learning well beyond individual practice. Engagement with others brings about change.

In an ensemble such as chamber music, the goal of the group is to actively interpret and reconstruct the musical notation as they attempt to perform it. The demands of learning and performing the music as a group may force individuals to create a group

interpretation. In the process of discovery, each individual member may be socially and intellectually active. Because the playing of chamber music is, by nature, a socially and culturally collaborative endeavor, in this study I adapted the sociocultural approach of Vygotsky and his followers. Through the concept of appropriation, each musician interprets other musicians' actions based on past experiences.

Sociocultural constructivists emphasize encouraging students to come to their own answers and to think intuitively (Brown, & Palincsar, 1989). Students with diverse skills and experience should work together collaboratively in goal-oriented tasks. In discussing the problems and possible solutions, they may come to a consensus and a shared concept of the solution (Duffy & Jonassen, 1992). In this approach, every student brings to the classroom previous experiences that they have learned through their own interactions and experiences, which can include family, friends, and other classes at school. Teachers encourage students to share their experiences and knowledge with other students in their learning environment.

Vygotsky's theories have evolved from an original focus on language and word meaning to action or tool-mediated action. For example, with a sociocultural approach to psychology, Wertsch (1991) extended Vygotsky's definitions with terms from anthropology. Wertsch maintained that human actions employ "mediational means such as cultural tools and language to shape the action in essential ways" (p. 12). According to Wertsch (1995), in sociocultural research:

> Mental functioning and sociocultural setting [should] be understood as dialectically interacting moments, or aspects of a more inclusive unit of analysis-human action. Action is not carried out either by the individual or by society, although there are individual and societal moments to any action. For related

> reasons, an account of action cannot be derived from the study of mental functioning or sociocultural setting in isolation. Instead, action provides a context within which the individual and society (as well as mental function and sociocultural context) are understood as interrelated moments. (p. 60)

According to Wertsch (1995), the sociocultural approach is unique because the primary focus for research is either individual mental functioning or the surrounding culture. In the past, much psychological research focused on attitudes, concepts, or linguistic/knowledge structures without considering how these units of analysis interact with or relate to the larger culture. Thus, ethnographers advocated the idea of cultural relativism: one can only understand another person's beliefs and behaviors within the context of the culture in which they are living (e.g., Blacking, 1995; Nettl, 1989, 2005). Researchers consider both mental functioning and cultural, historical, and institutional context when studying problem solving among groups of students.

In studying how student peers moved toward increased inter-subjectivity by the appropriation of others' language or phrases, Wertsch (1991) suggested that researchers study cognitive change through this appropriation because language is used to mediate learning. Wertsch described language use as dependent on a variety of social factors:

> By focusing on speech genres as meditational means, one is constantly reminded that mediated action is inextricably linked to historical, cultural, and institutional settings, and that the social origins of individual mental functioning extend beyond the level of intermental functioning. (p. 144)

Wertsch highlighted the significance of peer utterances and language usage. Music making is a creative act that allows for divergent approaches to problem solving and multiple problem solutions. A chamber music ensemble is an excellent medium for the application of sociocultural theory to the study of collaborative learning. Thus, we may

learn new ways to think about music, music performance, music learning, and peer interaction by listening to students' voices as they interact with one another in small chamber music ensembles.

Vygotsky: Scaffolding, ZPD, Cultural Mediation, and Tools of Mediation

Four of Vygotsky's theoretical concepts associated with the sociocultural approach form the underpinnings of this study: the zone of proximal development (ZPD), scaffolding, cultural mediation, and the use of tools of mediation. Although Vygotsky developed these psychological concepts in the 1930s, it was not until the 1970s that Western educators and psychologists widely embraced them as new models. Educational theorists disagree over interpretations of Vygotsky's original concepts.

For example, it was Cole's (c.f. Vygotsky, 1978) translation and edits of Vygotsky's writings and Wertsch's (c.f. Wertsch 1986, 1988) interpretation of Vygotsky's ideas that widely spread and disseminated in the 1980s. Critics point out, however, that biased and watered down interpretations of Vygotsky's theories are put forth by representatives of what are termed "neo-Vygotskian fashions in contemporary psychology," (Van der Veer & Valsiner, 1991, p. 1) or, "Selective traditions in Vygotskian scholarship" (Cazden, 1996, p. 165). Vygotsky's original notion of Z*ona Blizhaishego Razvitiia* (*ZBR*), which was strictly adult/child dyads, needs to be distinguished from its later and more well known Western interpretation of the Zone of Proximal Development (*ZPD*) (Valsiner & Van der Veer, 1993), as extended to child/child dyads. Most critiques of Vygotskian concepts address distortions of Vygotsky's ideas by others (c.f. Valsiner, 1988; Smagorinsky, 2011). Miller (2011) is

especially critical of publications by Cole and Wertsch, which revealed inconsistencies, contradictions, or flaws in interpretation of Vygotskian literature.

Scaffolding. It was in the 1930s that Vygotsky originally theorized a learner's knowledge could extend beyond the limitations of independent developmental maturation (Vygotsky, 1978). Through a process of what was later named scaffolding, students are placed in cooperative learning situations with other peers. Educational psychologists attribute scaffolding to Vygotsky, but the concept was appropriated by Bruner, who originated the term in the late 1950s (Bruner, 1986; Stone, 1998). Scaffolding describes the use of instructional and social support for students as they learn new concepts. When the supports are removed, the student is still able to function at the higher level. These supports may include modeling, examples, or demonstrations. Teachers gradually remove these supports as students develop independent learning strategies (Wood, Bruner, & Ross, 1976). Cazden (1983) considered scaffolding "a temporary framework for construction in progress" that instructors put into place to help students gain understanding and then take it away when the student securely masters the task (p. 6).

The Zone of Proximal Development (ZPD). Closely tied to scaffolding, the zone of proximal development (ZPD) was originally described by Vygotsky as "the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers" (Vygotsky, 1978, p. 86). Other theorists (e.g. Mayer, 2008; Wells, 1999) developed this framework further to include the students working alongside more capable peers (child/child dyads or larger).

In these cooperative learning situations, the learning process of each individual is greater than a student could achieve on their own without guidance (Vygotsky 1978).

In the 1980s, researchers studied the application of Vygotsky's ZPD to formal school settings (e.g. Bereiter & Scardamalia, 1987; Brown & Palincsar, 1989; Schoenfeld, 1985). These educational methods became known as cognitive apprenticeship models (Collins, Brown & Newman, 1989). Educational methods based on these models used the following strategies: modeling of a task by a teacher or more capable peer, giving guided advice through feedback, supported practice or scaffolding where the teacher does part of the task and gives suggestions to the student to finish, and fading into the background or gradually giving the student less assistance whereby the student works independently. Collins et al. (1989) viewed the student as an active rather than a passive participant in the ZPD and the learning process. Because teachers and students interpret tasks differently, there is an ongoing, negotiated dialogue. The learner contributes to new knowledge through interactions with the teacher.

Cultural mediation. Vygotsky developed the concept of cultural mediation within the parameters of social constructivism (Liu & Matthews, 2005). Cultural mediation centers on how students make meaning through social interactions within their own cultural background. That is, students bring to the learning environment their own perspectives shaped by their own life experiences. Vygotsky understood psychological processes to emerge out of cultural practices and from the actions of collaborative social activities with a distinct purpose. Vygotsky theorized that students shared their prior knowledge in collaboration to solve problems.

Tools of mediation. Vygotsky believed that cultural tools such as signs and symbols mediated the human mind. These tools are used to restructure and reshape the mind. In contrast to previous educational social constructivists who considered the social environment as the leading influence on the individual learner, Vygotsky recognized that other tools of mediation can shape a student's perception of an object. Vygotsky described three tools of mediation: (a) technical tools; (b) psychological symbols; and (c) other people. These tools of mediation "are inserted as an intermediate link between human activity and external objects," and are "directed towards producing one or more changes in the object itself" (Vygotsky, 1981a, p. 140). If one considers the object to be the interpretation of the music, then the metronome, as a technical tool, transforms the perception of appropriate tempo. The musical notation and directions for interpretation are psychological symbols that shape the performer's interpretation of the music, and other people (e.g. peers and coaches), function as tools which offer different concepts of the music.

Learning and Social Structures

The learning and social structures that are constructed within collaborative learning are understood within the concept of Group Dynamics. Group Dynamics are theories that focus on the key role of human social groups within society. Cartwright and Zander defined Group Dynamics as a "field of inquiry dedicated to advancing knowledge about the nature of groups, the laws of their development, and their interrelations with individuals . . ." (Cartwright & Zander, 1968, p. 7). Zander later theorized that people intuitively draw distinctions between the different groups they are a part of: intimate

groups, task focused groups, loose associations, and broader social categories (Zander, 1971, 1985).

One particular type of group described by Group Dynamics is the emergent group, which are circumstantial, and self-organizing (Arrow, McGrath & Berdahl, 2000). As people meet each other frequently over the same time and place, they instinctively form into groups and become interdependent on one another. In other words, they organize themselves into groups as they interact socially. Arrow et al. (2000) described a second type of group as task groups. These are working groups that are goal oriented. Members of the group perform actions toward defined tasks or goals. These actions may be sequential, where the influence of one member carries over to another; or reciprocal, where the actions of two or more members influence each other.

Learning and social structures are often organized into predictable patterns, where roles and norms of behavior are established. Group Dynamics theorists described two types of leaders in task oriented collaborative social groups. The *instrumental leader* is responsible for keeping the group on task and moving towards its goal, while the *expressive leader* is responsible for maintaining the morale of the group through social dialogue, humor and levity (Cartwright & Zander, 1968; Gallagher & Burke, 1971; Zander, 1971, Zander, 1985). Learning and social structures as understood within Group Dynamics became a key finding of this study.

Rationale for the Study

Chamber music is a natural setting for the utilization of collaborative learning strategies that provide the opportunity for students to be independent learners, responsible for their own learning experiences. A study of students' engagement in collaborative learning will provide insights into how student musicians collaborate in decision-making in all aspects of the music making process (e.g., interpretation of style, tempi, phrasing). Further, according to Vygotsky's ZPD, when students collaborate, whether it is the more advanced students or less advanced students making contributions in the ensemble, all students receive a sense of fulfillment by their increased contributions to the collaborative group and by the attention they receive from each other (Brown & Palincsar, 1989).

As members of a chamber group, students should become aware that they have learned together in collaboration which may contribute to a sense of togetherness as they work to further improve their work for performance. Bonding in peer relationships may occur as students encourage one another by building trust through constructive criticism and achieving consensus towards rehearsal and performance goals.

Historically, there are few studies on collaborative learning in music education research (Luce, 2001). Within the last two decades, however, increases in the number of studies that entail some aspect of collaborative learning in music education are more prominent. Current music education research on collaborative learning can be divided into studies on either mutual learning or the socio-psychological benefits of belonging to a group. The most extensive work on collaborative learning in music education was Berg's (1997) study. Berg focused on identifying components in the process of students

dealing with particular problem solving strategies developed by the musicians in a chamber music ensemble. Berg (1997) found that students organized socially constructed networks that allowed them to challenge each other to think at higher levels, to justify their reasoning, and explain their thinking. Berg called for further research on the perceptions of the ensemble members themselves in the process of their musical collaboration. In this current study an investigation of not only how students reported their collaborations but also how they identified problems and developed rehearsal strategies to solve them, as they interacted socially during the course of rehearsals can provide insights into how students learn by collaborating with each other.

Purpose of the Study

The purpose of this study was to examine collaborative learning among secondary students enrolled in a chamber music program and to examine the learning structures created by each collaborative group. In addition to learning among the students, I explored the social dimensions of cognitive and technical learning in a collaborative class environment with how the students shared knowledge and skills, and how they engaged in problem solving as they rehearsed in a chamber ensemble.

Research Questions

The following questions guided this study as I explored collaborative learning:

(1) How do students in selected chamber music ensembles engage in collaborative learning?

(2) What are the learning structures that enable collaboration within each group?

(3) How do students interact socially in the selected chamber music ensembles?

(4) What are the social structures that enable collaborative learning within each group?

Orientation of the Study

In Chapter 2, I discuss the literature that supports the conceptual framework and main components of collaborative learning for this study. In Chapter 3, I present the methodology and study design including the criteria for selecting the school site and participants. A description of the school site and the general personality traits of each of the ten participants are included. I will discuss how I collected data using tools of ethnography and the different techniques used to analyze the data, especially in regard to Mediated Discourse Analysis (MDA) through an interpretive-descriptive method. In Chapter 4, I present the findings as broken down into two parts: Learning structures and social structures. Learning structures will focus on the observed leadership of each ensemble and how the student leaders acted as tools of mediation, solved problems, created rehearsal strategies, and used their prior musical knowledge to interpret the score. Social structures will present the analysis of the observed social structures in each ensemble and how leaders used positive and negative peer pressure to exert changes in lesser ability ensemble members' playing levels. These structures are analyzed for how they translated into a greater sense of a group work ethic and sense of community in each group. Chapter 5 entails the final discussion on the conclusions and the implications of this study for music education in general, my role as the researcher in this study, and the need for further research.

CHAPTER 2: REVIEW OF LITERATURE

In this chapter I will present a review of literature regarding research studies on the components of collaborative learning, critiques of constructivism, peer mentoring/peer tutoring, and mutual learning. Throughout this chapter I will review the studies conducted that focus on collaborative learning and to provide support and context for this study.

Components of Collaborative Learning

Within the last two decades, research on collaborative learning has been extensive. Studies have focused on the efficiency of collaborative learning vs. learning alone, how group composition affects collaboration, how the use of novices impacts collaboration, and the tasks studied.

Collaborative Learning Efficiency

Many educational research studies have been conducted to answer the question, "Is collaborative learning more efficient than learning alone?" (Dillenbourg, Baker, Blaye, & O'Malley, 1996). Researchers who analyzed the subject's performance on tasks done in collaboration have shown contradictory results. For example, Brown & Palincsar (1989) demonstrated that small groups of students who participated in learning dialogues on interactive texts scored higher in assessment than the same students with similar texts alone. Webb (1991), however, found low-ability students became more passive when collaborating with high-ability students. Similarly, in a study involving fifth and sixth grade students, Mulryan (1992), found that low achievers exhibited a higher level of passive behavior in small collaborative groups working in mathematics. Palincsar and

Herrenkohl (2002) further found that students who worked in homogenous groups (those of similar ability) scored higher in assessment than groups that were heterogeneous (those of diverse ability).

The research of Salomon and Globerson (1989) further suggested that social issues may come into play in how effectively collaborating teams work together. High aptitude teams characterized by free social discourse worked more successfully than similar high aptitude teams that did not engage in social discourse. Building on the findings of Salomon and Globerson, Barron (2003) conducted a case study involving a meta analysis of sixth grade triads (groups of three students) working collaboratively to solve problems. Barron found that prior achievement did not account for correct problem solving outcomes among the triads. Barron suggested that it was the quality of the conversations between partners working in the joint problem space that correlated to learning. Less successful groups ignored correct proposals based on social priorities within the group. More successful groups freely exchanged ideas and discussed them.

Brufee (1994) identified three specific requirements for efficient collaborative learning:

> Willingness to grant authority, willingness to take on and exercise authority, and a context of friendliness and good grace are the three ingredients essential to successful semi-autonomous collaboration. If any of these three is missing or flags, collaboration fails. These three ingredients are essential also to successful collaboration, such as classroom collaborative learning (p. 44).

Effective Conditions for Collaborative Learning

Much research has studied the conditions that collaborative learning is most effective (Dillenbourg, Baker, Blaye, & O'Malley, 1996). To determine this, researchers

varied the conditions systematically with several independent variables. These variables include the goal or task, the setting, the medium used for communication, and the different compositions of the group. Variables in the composition of the group have been widely researched. These include gender, differences between pairs of students, and the number of students involved. This body of research covers three areas: group heterogeneity; novices; and joint tasks studied.

Group heterogeneity. One of the most studied variables is the heterogeneity of the group. Group heterogeneity can be composed of diverse differences. Some of the differences studied are general intellectual development, social status, core skill proficiency, as well the differences the subjects perceived amongst themselves. Webb (1991) studied connections between group composition and independent variables such as gender, the relative expertise in the skill subject, and the degree of introversion or extraversion of the participants. Webb's research on relative expertise showed effective collaboration results occurred more frequently when the composition of the group was moderately mixed (high ability subjects combined with average ability; or average ability with low ability subjects) as well as groups homogeneously composed of all average ability students. Groups composed of all high ability subjects showed a lesser degree of collaboration because they assumed they all knew solutions to the problem.
Another combination that scored poorly in test data were groups composed of all three levels: high, average, and low ability students. In these groups, the advanced students only helped lower ability students and excluded any collaborative dialogue with the students of medium ability. Forman and Cazden (1985) supported these conclusions.

They demonstrated that Vygotsky's ZPD could be applied in a small group context where members of a group were approximately at the same development level and related to each other as peer collaborators. In this setting, partners assumed complementary but separate social roles. One student served as an observer and guide, the other student performed task procedures. This separation of tasks enabled the two collaborators to solve problems sooner than they would have done alone. Collaboration works best in tasks involving mostly advanced learners (Kalyuga, Ayres, Chandler, & Sweller, 2003).

Use of novices. An important omission for the current study was the use of novices (those with little or no experience or ability) in collaboration. Research studied the use of novices to solve problems in collaboration. Kolfschoten, Hengsbrugeling, and deVreede (2006) found that the use of novices unsuitable for use in poorly structured collaborative learning settings. Additional research paired dyads of novices with expert children in collaborative computer activities. These findings showed that even though the information and activities used by novices were similar to high ability students, novices lack of experience made them less adaptable to changes in outcomes, conflicts or new directions in the collaboration process (Kolfschoten, Lukosh, Verbraek, Valentin, deVreede, 2010). Jonassen (1997) suggested that if novices are to be used, that they only be placed in a highly structured setting that provides scaffolding for problem solving Verba & Winnykamen (1992), studied collaborative interactions between pairs of unequal learners. These studies were conducted on the task interactions between a high ability child with high core skills and a low ability child as a novice. Guidance or tutoring from the high ability child characterized these interactions. Additional studies

were then conducted using pairs of children in which the high ability learner was the novice in the core skill and the low ability child the expert. These pairs of interactions involved the greatest collaboration on the task.

Joint tasks. Typical tasks used to study collaboration from a sociocultural approach include categorization, joint skill building, group planning, and memory tasks. Alverman and Moore (1991) indicated that most research on students put in *cooperative* tasks utilized predetermined tasks that did not require student input to plan for the collaboration. Alverman and Moore further recommended that tasks come from naturally occurring differences. They found that coordinating tasks typically involved obtaining different perspectives, planning, and problem solving. Alverman and Moore (1991) determined that the independent variables described did not directly affect the learning outcomes, but instead interacted in a complex way – the interaction between the compositions of the learner types paired together and task requirements. Not only must the group be homogenously blended, but the task features (in this study, the music) must also be suitable and manageable for the ability level of the group.

Elaboration and Self-explanation Effect

The elaboration effect is used to assess collaborative interactions between pains of learners. The range of these explanations can be seen from those that only provide the correct answer to those with more elaborate explanations providing detailed directions. By studying the explanation or elaboration of the explainer to the explainee, Webb (1991) showed there were two distinct results. First, an elaborate explanation did not necessarily produce a higher performance for the explainee, and second, it did positively correlate

with the explainer's higher performance level. Webb explained this result as the peer who learned by receiving instructions was not necessarily being watched the whole time by the explainer. The information needed to be delivered at the same time as the peer needed it, or it needed to be understood to correctly solve the problem. The benefit to the explainer had already been confirmed in earlier studies (Barg & Schul, 1980). A similar theory is described as the self-explanation effect. This effect was observed when high ability learners were able to provide elaborate explanations when they were asked to explain solutions to themselves (Chi, Bassok, Lewis, Reimann & Glaser, 1989).

Interactions in the Joint Problem Space

Research has been conducted on how to identify when collaboration is actually taking place in the classroom and the kind of interactions that may occur. Rochelle and Teasley introduced the theory of the Joint Problem Space (JPS). This theory is held when a group of learners have jointly agreed to a set of goals, problems, tasks and solutions defined as "coordinated, synchronous activity that is the result of a continued attempt to construct and maintain a shared conception of a problem" (Rochelle & Teasley, 1995, p. 70). The researchers conducted a microanalysis of the collaboration between two fifteen-year-old boys working in a computer environment physics program. By analyzing the discourse and mediated actions through the use of mouse actions, Rochelle and Teasley followed the participants' process of problem solving through coordinated talk and action in order to achieve a shared understanding of the problem and its solution.

Faded Guidance

Based on Vygostky's scaffolding theory, **t**his approach was introduced by Sweller and his followers who described a continuum of guidance. In this approach, the instructor closely works and supervises learning in learners in the novice stage. As students develop skills, the instructor gradually reduces guidance over time. This approach has been empirically tested in several studies to produce several different effects: the worked out-example effect (Sweller & Cooper, 1985) where the instructor provided worked-out examples that were gradually reduced over time; the faded guidance effect (Renkl, Atkinson, Maier, & Sweller, 2002); and the expertise-reversal effect (Kalyuga, Ayres, Chandler, & Sweller, 2003) where expertise was seen to gradually shift from the instructor to the learner.

Reciprocal Teaching/Learning

A study similar to faded guidance was conducted by Brown and Palincsar (1989) who described what they called, "reciprocal teaching*"* to introduce students to group discussion techniques focused on the understanding of texts. Using 150 seventh and eighth graders with low reading scores, the instructor only provided guidance and feedback by posing questions about the text, clarifying the content, summarizing the major aspects, and predicting what material may follow the given text. The effects of the method were measured in terms of changes in observed group participation, daily independent reading, tests, and long-term improvement in reading and transfer to other classroom settings. Researchers reported that over time, discussion moved from being teacher directed, to student controlled.

Vygotsky based his original research on adult/child dyads. Studies compared the differences between children as they interacted with adults and as they interacted with their peers. Results showed that when children interacted with peers, they collaborated more effectively than with adults in tasks that required skill development or knowledge acquisition (Wertsch, 1991a). Wiggins (2000) found adult-child dyads controlled by the adult, in contrast to peer dyads who exchanged roles to solve the tasks. When roles exchanged children shared their ideas and conclusions with each other more often than with an adult.

As the focus of chamber groups is interpreting and performing music, unless the students are advanced, studies reviewed in this body of literature indicate that at least some need for adult coaching exists for these types of ensembles. Researchers showed that positive results may emerge by having the coach start out as a strong partner in the learning task, and then slowly fade to being an observer. In addition, the coach must decide whether the nature of the task is suitable for peer collaboration. The initial benefits of strong early guidance would be the establishment of rehearsal parameters and strategies for solving problems of intonation, ensemble or rhythmic accuracy, however, once these guidelines are set out, students should be encouraged to collaborate on their own group development.

Peer Mentoring and Peer Tutoring

Two of the most prominent models of collaborative teaching strategies involve peer mentoring and peer tutoring. A more experienced peer leading and supporting the overall advancement characterizes the peer mentoring relationship. The peer tutoring

relationship is based on a highly structured curriculum typically involving an upper division classmate with a lower division classmate (Colvin, 2007a; Colvin & Ashman, 2010; Topping, 2005). Bozeman and Feeney (2007) point out that most mentoring research is not based on practical theory:

> Despite its having provided a wide array of valid and useful research findings, conceptual problems have impeded the mentoring studies' ability to provide compelling middle-range or broad-range theoretical explanations (p. 721).

After a thorough review of the literature on mentoring, Bozeman and Feeney developed the following definition of mentoring:

> A process for the informal transmission of knowledge, social capital, and psychosocial support perceived by the recipient as relevant to work; …mentoring entails informal communication, usually face-to-face and during a sustained period of time, between a person who is perceived to have greater relevant knowledge, wisdom, or experience (the mentor) and a person who is perceived to have less (the protégé) (p. 731).

Peer-assisted learning (PAL) programs have been well evaluated over the past two decades (Topping, 2005). Most PAL studies have centered on the subject areas of mathematics, science and English. The focus of PAL program evaluations, has typically been on the experiences of the peer-assisted learner (e.g., Heirdsfield, Walker, & Walsh, 2005), the experiences of the peer assistant (e.g., Heirdsfield, Walker, Walsh, & Wilss, 2008), and the interactions between peer-assisted learner and the peer assistant (e.g., Hill & Reddy, 2007; Topping & Ehly, 2001).

Greenwood, Delquadri, and Hall (1989) identified conditions of peer tutoring which are important to collaborative learning. The first pre-requisite was that the student tutor must be skilled at the task. A second condition was the ability of the student tutor to consider his or her own performance adequate if the task was required of them. The third

condition was that the student tutor must be able to assess if the learner's wrong action was a result of improper instruction or primarily wrong only in carrying out the task.

Socialization occurs in peer mentoring among students. Normally, peers dialogue and share information as they learn. Colvin and Ashman (2010) found that student peer mentors identified with five distinct roles as mentors: as a connecting link with school activities and life, as a student leader, as a learning coach, as a student advocate, and lastly as a trusted friend to the mentee. Women saw the benefits of having a mentor as gaining a trusted friend. Men saw the mentor more as an equal peer who was an academic aid.

Roswai and colleagues studied the effects of a collaborative peer tutoring instruction program in light of self-identity and school cultural attitudes of seventh-grade students at a large urban junior high school (Roswai et al., 1995). Results showed that urban seventh grade students, working with a peer tutor, gained self-esteem and created healthier attitudes towards schoolwork.

Peer tutoring can often be hierarchical in nature with unequal power found in dyadic structures (Driscol et al, 2009). Some researchers argue that one-on-one tutoring dyads promote a hierarchical power relationship (e.g., Darwin, 2000; Hansman, 2003; McCormack & West, 2006). Creamer (2003) identified four transitions for a peer mentoring group's collaborative experience: (a) dialogue, (b) familiarity, (c) collaborative consciousness, and (d) the examination of differences.

Critics of peer mentoring note that there is a lack of research showing how peer mentoring relationships develop, how they operate, and what the benefits are (Tyler,

1994). Bozeman and Feeney (2007) insist that little is known about the nature of these relationships beyond findings that peer mentoring creates good feelings and develops friendly relations. There are arguments on whether peer collaboration is more beneficial to the less able student or the more advanced student (Tudge, 1992; Webb, 1991). Tudge suggested that participants' perception of their relative degree of skills may not be apparent to themselves. A less capable, but socially more adept peer may be able to convince a more capable peer to agree to their solution to the task problem. In this case, collaboration may have detrimental consequences.

When peers have similar abilities they may have what is called horizontal interactions (Hatano, 1993; Kumpulainen & Kaartinen, 2003; Lazar, 1993; Moschovich, 1996) where students are more likely to explore since no one is considered the expert. Hatano showed that peers can have different strengths in problem solving, and so exchange the role of peer tutor. Kumpulainen and Kaartinen conducted a study of 12 year old dyads working in mathematics. The researchers found that discussion and coordination of activity led to successful collaborations, and confirmed Tudge's observation that successful collaboration was a social construct involving a shared understanding of the problem. Negative results occurred when dyads lacked a shared understanding as seen by a lack of a clear mathematical vocabulary and the use of incoherent strategies. In these instances, the researchers observed conflict and domination between peers. Moschovich (1996) found that conversations between peers led to construction of a shared description, but not necessarily by presenting conflicting ideas or by one student leading the discussion. Instead, negotiations occurred through

references, metaphors, coordinated gestures and open discourse.

Foster (2014) used ethnographic techniques to examine reciprocal peer mentoring in a post-secondary piano course. Foster found reciprocal peer mentoring to be efficient and effective as participants developed interdependent relationships through peer mentoring. Students reported successful mentoring without training, and received personal satisfaction in helping others. Foster found a collaborative learning environment that included reciprocal peer mentoring and advanced student learning in multiple domains: knowledge, skills, and dispositions. The participants mentored successfully modeled on teacher demonstration and informal mentor experiences in and outside of school. Participants called upon multiple social and conceptual skills (e.g., empathy, judgment, reading ability, auditory memory, and inner hearing) to aid them in the task and provide useful feedback even when they themselves did not have technical mastery of the piece of music being studied. Interestingly, participants did not favor the exclusive use of peer mentoring in the classroom. They preferred teacher oversight, both during the introduction of new material and during mentoring sessions due to concerns regarding peer dissemination of erroneous information (p. 232). Foster called for further research on the viability of reciprocal peer mentoring in different settings and among students of different age groups and developmental levels.

The concept of peer mentoring and peer tutoring would also apply to chamber music as students exchange areas of expertise in coming to a consensus in musical interpretations. Current music education research on collaborative learning has focused on various outcomes, which may be loosely structured into two categories: mutual

learning; and the socio-psychological benefits of belonging to a group.

Mutual Learning Research

While many studies on collaborative learning have greatly contributed to its application in settings, populations and disciplines, very few studies have applied this approach to music learning (Luce, 2001). Since the turn of the 21st century, the topic of collaborative learning is now beginning to be studied by researchers in the field of music education. Within the last decade an increase in the number of studies that entail some aspect of collaborative learning has become more prominent in music education. Two noteworthy studies on mutual learning in music education include collaborative learning in choral music (Kaschub, 1996) and group composition in the classroom (Wiggins, 2000). Both authors developed practical approaches that engaged students fully in the processes of music making.

Kaschub (1996) proposed a different strategy to achieve student success in a high school choral setting. Students worked in collaboration with each other without the assistance of the teacher to create an original song that the choir could sing in a performance. In the first exercise, each student in the class submitted a poem that would serve as a possible text for choral work. In consultation with a literature teacher, a committee of students critiqued each poem and selected several they believed offered the best opportunity for musical development. The second exercise developed the melodic material. Each student in the choir was assigned one line of a poem and instructed to create an original melody that he or she could sing to it. Each line of the poem was delegated to one student. Students were placed into quartets in which each line of the

poem was sung by that student as a solo. The students of each group collaborated on their ideas and made revisions so that the individual melodic fragments were melded into a melodic structure that became the whole song. Each quartet performed its version of the song. The final exercise had the full ensemble evaluate the particular aspects of each composition that appealed to them (Kaschub, 1996).

Wiggins (2000) viewed work done in collaboration as being more useful in problem solving and decision making than students working by themselves. Wiggins observed students in classrooms that had a traditional hierarchical structure experience greater difficulty in engaging creative processes. By analyzing student interactions during the creative experiences of composition and improvisation in elementary general music classes, Wiggins found that in group work, students advocated their ideas and defended them. Individual ideas led to results more carefully thought out. For example, in an assignment to create a song in ABA form, pairs or trios of students improvised short melodic motifs on a recorder (Wiggins, 2000, pp. 72–73). Students shared discussions on how many times to repeat a motif, the length of held notes, and the contrasting motifs they created themselves. Another experience had students composing a song with lyrics on the glockenspiel. Students improvised lyrics, adapted ideas from others in the group, and modified them to fit the melody struck on the glockenspiel (pp. 76–80).

Studies utilizing mutual learning through peer tutoring (Alexander & Dorow 1983) and informal music (Campbell, 1995) making have been conducted in instrumental music education research. Other mutual learning studies have focused on constructivist philosophies, the sociocultural approach, and a discourse analysis of collaborative

interactions.

A study comparing the pre-test and post-test instruction of regular band members tutoring the beginning band members was conducted by Alexander and Dorow (1983). Tested were tutored students who received positive approval techniques in error correction against those tutored with disapproval techniques in error correction. Comparing tutored students to a control group that had not been tutored, the tutored students performed significantly higher in the post test than those who had not been tutored. Similarly, those students who had been tutored with approval techniques scored higher than the disapproval tutored group. The researchers also found a positive correlation between approval tutee post test scores and the number of positive approvals received.

Campbell's (1995) study of garage bands and informal music making among adolescents is useful for describing how leaders work within a small ensemble using mutual learning through a peer tutor. By observing the setting of two different garage rock bands in rehearsal, Campbell explored how music is taught, transmitted and learned. In both rock bands, one student functioned as a voice of authority by organizing rehearsal strategies as well as demonstrating and modeling formal rhythmic and melodic elements as each band learned a new song. The same social leadership structure has also been detected in Berg's study on two high school chamber groups (Berg, 1997).

Working within a constructivist framework and Vygotskian social-culturalist approach, Kieffer (1996) studied seven high school seniors enrolled in an integrated arts project to study a theme in collaboration with at least one peer. The results of the study

showed students' approach to thematic study depended on multiple factors of prior knowledge, interests, background learning styles, and their peer collaborator's approval; all of which were very different than the instructor's. Peer collaboration in selecting themes for the project affected the student's work both negatively and positively. The most successful peer collaborations involved those pairs previously acquainted with each other prior to the study. Kieffer called for further research on balancing reflective studies with collaboration and different learning styles.

Peters' qualitative interpretive study (2007) investigated the nature of sociocultural interactions and collaborations between secondary school students and community members in a high school near an Italian community in a large Canadian city. Using ethnographic tools of cultural inquiry, Peters purposefully selected thirteen students who interviewed members of the local Italian community, transcribed their interviews, and documented their representations and interpretations in a joint online database. Working in a collaborative learning environment, students read other's database entries, shared information, and interacted with other participants. Research questions focused on the nature of collaborative learning in a secondary music classroom unit focused on local music culture, and how the participants represented their understanding of that culture. Peters analyzed the nature of interactions in the collaborative learning environment of the classroom, the database, and the community. Peters found students willing to express themselves with peers online and that they viewed learning as a social process amongst themselves. Peters said, "The learning environment, allowed the students to self regulate and to problem solve with each other"

(p. 307). In addition to allowing students to learn by themselves, students reported that the collaborative environment allowed them to strengthen their own theories. By receiving multiple perspectives from other members, students validated their own process of theory building and thus contributed to the reliability of their theories.

The mutual learning research of Allsup (2002, 2003) described the study of nine instrumentalists in a suburban high school who divided into two groups for the purpose of collaborative creation of compositions within popular or classical genres. Allsup sought to understand differences between mutual and traditional hierarchical learning. Using qualitative analysis methodologies of ethnography, participant observation, and collaborative inquiry, Allsup determined that students focused on interpersonal relationships, engaged in mutual exchanges and peer critique, and expected other group participants would respect others' opinions in an open-ended learning structure. Allsup related Friere's terminology of social dialogic relationships (Friere, 1970, 1995, 2000) to the foundations for democratic practices in music education. Allsup called for further research to replicate the study in an urban area focused on gender roles, and explore curriculum alternatives in instrumental music education.

Borrowing from theories of Foucault, Blommaert, Scollon and Scollon, Talbot (2010) defined discourse as meaningful mediated action in place during the transmission of Gamelan music from a master instructor to college students participating in a Gamelan ensemble. Talbot defined discourse as acts of speech and the use of cultural objects and concepts. Following Scollon and Scollon's instructions for a nexus analysis (2004), Talbot analyzed discourse to discover and document cultural concepts used in appropriate

contexts of the language. Talbot's analysis included tools of cultural mediation to study how concepts or objects were used in the discourse of the participants. Talbot's intention was to bring into relief complex relationships of power, focusing on the participants' social and cultural position to each other.

In recent years, collaborative learning in music education focused on mutual learning with a computer or web-based assisted technology, either in distance settings, or in paired dyads at one computer. Educational virtual environments, which are web-based, may provide a means for increasing collaborative learning settings. Hadjileontiadou and colleagues (2004) designed a "fuzzy logic-based expert system" (pp. 443–444) to measure collaborative activity grounded upon a pedagogical background. The program automatically evaluated the written synchronized, web-based collaborative activity between two peers. Results from its experimental use have shown the model significantly enhanced collaborative activity, and showed it was transferable to other settings, including medicine, engineering, law and music.

A sociocultural approach case study conducted by King (2006) investigated if a learning technology interface (LTI) was more or less effective than a paper manual booklet for collaborative planning and execution of a set task. Using stratified sampling, pairs of college students worked in a music studio on a drum kit recording (King, 2006) with each pair given the choice of following either the LTI or a paper manual. Students were in control of the set task. The task involved completing a work book and creating a mixed down two-minute recording of a drum kit. Each session was videotaped as each pair worked on the drum kit and recorded CDs of rhythm tracks. Using Bales'

Interactive Process Analysis (Bales, 1950), King analyzed video data and scored each CD recording and workbook. King's analysis of the data found that the LTI encouraged efficient collaboration between the participants as they determined the joint task for each set piece as they created and performed the rhythms on a drum kit.

Hewitt's study identified and analyzed specific features of collaborative engagement in an empirical study in which a group of ten and eleven-year olds worked in pairs on computers to compose short melodies (Hewitt 2008). Hewitt analyzed 'transactive' dialogue (dialogue which developed or extended musical ideas) between and within pairs of pupils. Hewitt found that transactive dialogue occurred spontaneously and was dominated by who had control of the mouse. Factors of musical experience or whether the pair socialized previously did not show a significant influence on the nature or range of the collaborations.

Collaborative Research Using Small Ensembles

Studies on the advantages of a chamber music education often followed collaborative teaching models. Music education research on student collaboration in small ensembles focused on how students interacted both socially and musically in settings where the instructor is less involved. One of the earliest studies involving the chamber music setting was Zorn's study (1969) of the effects of student participation in chamber music on the development of performance accuracy, musical sensitivity, and attitudes towards music and music participation (Zorn, 1969). Using a non-randomized control group pre-test/post-test quantitative design methodology, Zorn divided the 32 junior high brass or clarinet students into either a treatment chamber group or a control

large ensemble. Subjects were administered a combination of six different aptitude, attitude and intelligence tests called the *Zorn Attitude Survey* (Zorn, 1969). Using a *t*-test and an ANCOVA analysis, data was analyzed to determine whether a correlation existed between musical sensitivity, intelligence and selected non-musical aptitudes. Zorn found that the only statistically significant difference between the two groups was in attitudes towards music and participation. Students enrolled in the treatment chamber group scored significantly higher in positive attitudes toward music and participation than the control large ensemble groups.

Zorn's study was adopted by Carmody (1988). Using the same *Zorn Attitude Survey* described above, Carmody investigated the effects of chamber music experience on forty-seven junior high string students from two schools over fourteen weeks. Subjects sat next to a professional string quartet member who provided a standard pitch center during the administration of the performance measure of a researcher designed composition. Similar to Zorn, Carmody found that the students in chamber groups had significantly higher positive musical aptitudes, but contrary to Zorn's study, Carmody's results found that students in the treatment group performed better with a significantly better intonation on the post-test than the pre-test. Both Zorn and Carmody found that students benefited from being in small musical groups compared to larger ensembles, but neither focused on the specific methods students collaborated on musical interpretations.

Particularly relevant to this study is Berg's mixed methods study of collaborative learning as applied to a chamber music setting (1997). Berg's study found collaborative learning to be multifaceted because of the variety of ways students share musical

knowledge as part of a socially constructed network. Using ethnographic tools of qualitative research and a statistical analysis of frequency and percentage of topics discussed by students in rehearsals, Berg studied students' processes of musical interpretation. Based on socio-linguistic theories and developed within a Vygotskian framework, research questions in Berg's study sought to: a) identify patterns of musical thought that might exist in the ensemble; and b) how those patterns enabled students to use tools, interaction and social structures to move through ZPD in interpreting music. Berg observed that peers challenged each other to critically think at a higher level of musicianship, and subsequently analyzed the content of their collaborative discussions on the music. Berg called for further research to replicate the study in other settings with the use of participant journals.

Socio-Psychological Benefits of Group Membership

Collaborative learning is most often learning done in small groups. Studies have been conducted on the socio-psychological benefits of group membership within music ensembles based on Turner's Social Identity Theory (SIT) (Turner 1975). The basis of this theory is that a major portion of a person's self identity is defined by participatory learning within a group membership. When individuals identify themselves being part of a social group, the self-esteem of that group increases.

Turner's Social Identity Theory (SIT). The basic tenet of SIT is that there is a distinct relationship between a group's behavior and individual self-worth (Hogg & Terry, 2000). Hogg and Terry see SIT as "a social category within which one falls, and to which one belongs, [and] provides a definition of who one is" (Hogg & Terry, 2001, p.

7). Baxter found that music students working collaboratively with peers enhanced their self-esteem and encouraged positive Group Dynamics, which translated into improved instruction in the classroom (Baxter, 2007). Using SIT, Tajfel and Turner attempted to identify inter-group behavior factors that influence the progress of young musicians. Tajfel and Turner showed that when students simply categorized themselves as members of a group, they showed favoritism to ideas submitted from within the group over outside control groups. The researchers found three variables that contributed to in-group favoritism: 1) The extent that the participants identified with an in-group and it became internalized as part of their self-identity and positive distinctiveness, 2) The extent to which the context provided grounds for comparison between groups, and 3) The perceived relevance of outside groups was shaped by the relative and absolute status of the in-group (Tajfel & Turner, 1986, pp. 7–8). Following the theory of SIT, self esteem and self concept can, therefore, be understood in terms of Group Dynamics.

Group Dynamics. A theory that focused on the key role of human social groups in society, Cartwright and Zander defined Group Dynamics as a "field of inquiry dedicated to advancing knowledge about the nature of groups, the laws of their development, and their interrelations with individuals…" (Cartwright & Zander, 1968, p. 7). Zander later theorized that people intuitively draw distinctions between the different groups they are a part of: intimate groups, task focused groups, loose associations, and broader social categories (Zander, 1971, 1985).

One particular type of group described by Group Dynamics is the emergent group, which are circumstantial, and self-organizing (Arrow, McGrath & Berdahl, 2000).

As people meet each other frequently over the same time and place, they instinctively form into groups and become interdependent on one another. In other words, they organize themselves into groups as they interact socially. Arrow et al. (2000) described a second type of group as Task groups. These are working groups that are goal oriented. Members of the group perform actions toward defined tasks or goals. These actions may be sequential, where the influence of one member carries over to another; or reciprocal, where the actions of two or more members influence each other.

Group structures are often organized into predictable patterns, where roles and norms of behavior are established. Group Dynamics theorists described two types of leaders in task oriented collaborative social groups. The *instrumental leader* is responsible for keeping the group on task and moving towards its goal, while the *expressive leader* is responsible for maintaining the morale of the group through social dialogue, humor and levity (Cartwright & Zander, 1968; Gallagher & Burke, 1971; Zander, 1971, Zander, 1985).

In a German study of musical self-socialization, Schaeffer (1996) focused on adolescents' aesthetic choices, such as becoming a member in a youth culture, a fan of a music star or group, or becoming a member of a school band or orchestra. Schaeffer observed that young people made sense of their lives by interacting with music. Schaeffer described the respondents moving through three phases of social integration: the experimental phase, the self-reflection phase, and finally the stylistic integration phase where the successful respondents affirmed the band's particular style and as reported a strong communication among the band's members. Schaeffer found musical

and stylistic integration processes coincided with a development of group solidarity within the peer group. Schaeffer saw the process of working toward the goal of the group project did not minimize the contributions of any one member. Rather, the individual contributions to a musical group work were validated in the group's performances.

Research has shown other social benefits from musical learning in musical groups. In an investigation of the social conditions within which an adolescent's musical experiences took place, Mueller and Fleming (2001) found that adolescents developed musical flexibility and tolerance as they deliberated choices over different styles of music. Mueller and Fleming saw the choice of musical repertoire created ownership on the part of students allowed to participate in the choices. This collaboration among students to choose repertoire automatically required the flexibility and tolerance Mueller and Fleming described.

Summary

Collaborative learning is philosophically based on the constructivist theories of Piaget (1950) and the social constructivist theories of Vygotsky and his followers (e.g. Vygotsky 1962, 1978, 1987; Wertsch, 1991; Mayer 2008). The sociocultural approach of social constructivism can be seen in Vygotsky's Zone of Proximal Development (ZPD) (Vygotsky, 1978), where peers may benefit from interactions in small structured groups using scaffolding instruction designs. Research on the efficiency or inefficiency of collaborative and cooperative learning in education is extensive, showing that collaborative learning works best in groups composed of moderately homogeneous participants (Forman & Cazden, 1985; Verba & Winnykamen 1992; Webb, 1991) and

when tasks are suitable to the ability levels of the group (Jonassen, 1997; Kalyuga, Ayres, Chandler, & Sweller, 2003). Collaboration without a facilitator is poorly suited for use in groups composed of novices (Chandler and Sweller, 1992; Moreno & Mayer, 1999; Mousavi, Low, & Sweller, 1995; Paas, 1992). Studies show that the technique of faded guidance is appropriate in moving groups from facilitator initiated cooperative learning to student controlled collaborative learning (Brown and Palincsar, 1989; Chandler, & Sweller, 2003; Kalyuga, Ayres, Sweller & Cooper, 1985; Renkl, Atkinson, Maier, & Staley, 2002).

The theories of Group Dynamics (Cartwright and Zander, 1968; Zander, 1971, 1985) has provided a framework for understanding the creation of learning structures and social structures within collaborative learning groups called task groups. The *instrumental leader* is responsible for keeping the group on task and moving towards its goal, while the *expressive leader* is responsible for maintaining the morale of the group through levity and humor. Through interactions in music making, Schaeffer (1996) found music students involved in the process of working toward the goal of the group project did not minimize the contributions of any one member. Schaefer found individual contributions to a musical group work were validated in the group's performances. Mueller and Fleming (2001) found that students when students collaboratively made a choice of musical repertoire, they took greater ownership of the task at hand. Despite the large amount of research on collaborative and cooperative learning in education, only a small number of studies have applied these models to music education. Yet Vygotsky's Zone of Proximal Development (ZPD) has been successfully applied to the field of music

education in a number of recent studies (Allsup, 2002; Berg, 1997; Foster, 2013; Hewitt, 2008; Kaschub, 1996; Kieffer, 1996; King, 2006; Wiggins, 2008).

Kaschub (1996) argued that students working independently of an instructor in collaboration with peers can interpret musical symbols and become interdependent through teamwork on their own. Wiggins (2000) saw collaborative work in problem solving and decision making as being superior to individual work and creating greater confidence in the individual. Mueller and associates (Mueller & Fleming, 2001; Mueller, 2002) found that giving students a choice of musical repertoire created ownership on the part of students who were allowed to participate in the choices. Schaeffer (1996) observed that young people made sense of their lives by interacting with music in groups.

Foster (2014) found reciprocal learning through peer mentoring to be efficient and effective; participants developed interdependent relationships and social bonding, enhanced their self-efficacy, and successfully mentored without training. The work of Berg (1997) showed that students shared musical knowledge within a socially created framework and Allsup (2002, 2003) demonstrated that in collaborative situations, high school students depended on each other socially. Allsup saw improved musical negotiation of ideas and greater group self-identity fostered in small ensemble settings.

While not based on the theories of Vygotsky, Talbot's work (2010) provided tools for recognizing and analyzing tools of mediation. As ethnographic research, Talbot's framework for discourse and cultural analysis has applications for the chamber ensemble. Talbot defined discourse as meaningful mediated action in place during music rehearsals. Acts of speech as well as the use of cultural objects and concepts occurred

during the learning and transmission of ethnic music.

Nearly all of the studies discussed above cited a lack of comprehensive research in the area of collaborative learning in the field of music education (cf. Hunter, 2006; Luce, 2001; Maehr, Pintrich, & Linnenbrink, 2002). Most of the extant research involved choral, band or other large music education groups, where group learning was imposed by the teacher directly. Other than the work of Zorn (1969), Carmody (1988), Berg (1997), and Allsup (2002), only general articles in non peer-reviewed journals describe the actual use of chamber music for the purposes of creating collaborative learning settings.

Since 1996, studies on collaborative learning in music education have predominately used qualitative methodologies. Studies prior to 1996 (Carmody, 1988; Zorn, 1969) used quantitative methods that were *de rigueur* for the times, however, it appears that a qualitative ethnographic approach is the preferred method for case studies such as this. All six of the dissertation studies completed since 1996 were qualitative case studies (Allsup, 2002; Berg, 1997; Kieffer, 1996; Peters, 2007, Talbot, 2010, Foster, 2013). Five of six studies used ethnographic tools for analysis. Kiefer was the only quantitative study not to use ethnographic analysis, although Berg used a mixed methods analysis combining ethnography with percentages and frequency analysis. This literature review indicates a need in music education research for an investigation into the dynamics of small music group learning in instrumental music using ethnographic analysis.

CHAPTER 3: METHOD AND PROCEDURES

The purpose of this study was: (a) to examine collaborative learning among secondary students enrolled in a chamber music program; (b) to examine the learning structures created by each collaborative group; (c) to examine the social dimensions of cognitive and technical learning in a collaborative class environment; (d) to explore how the participants engaged in problem solving as they rehearsed in a chamber ensemble.

Research Questions

In this study, the following questions guided this study as I explored collaborative learning:

(1) How do students in the selected chamber music ensembles engage in collaborative learning?

(2) What are the learning structures within each group that enable collaboration?

(3) How do the students interact with each other in the selected chamber music ensembles?

(4) What are the social structures that enable collaboration within each group?

Research Design and Justification

I chose an ethnographic case study to explore how the participants identified problems and devised strategies to solve them. As applied to music education research, Phillips (2008) defines ethnography as, "A genre of qualitative research used to study an intact cultural group in natural settings" (p. 357) and defines a case study as research that studies an activity in a single setting over an extended period of time. With the approach of this ethnographic case study design, I followed the collaborative actions and dialogue

among the members of two high school chamber groups in a previously established public high school instrumental music course. This study was bounded by a period of one semester or about five months. To initiate this study, each chamber group were given the tasks of choosing from two assigned works, rehearse the chosen work, come to a consensus regarding tempo, style and interpretation, and finally perform the work in concert at the end of the term. Participants in the two chamber groups engaged in collaborative learning as they worked together in social groups that created learning structures to guide and construct knowledge and develop skills. Participants in both groups additionally acted as peer mentors, where students interacted in one-on-one dialogues in which mentoring activity was initiated and shared among peers.

The influence of peers and student leaders within an instrumental ensemble has received very little attention from systematic research (Claire 1994). In this study the ethnographic case study design allowed me to focus on the "meaning and functions of human actions" in the mutual learning of these students by investigating the ways in which students collaborated with each other within a small ensemble setting (Atkinson & Hammersley, 1994, p. 248). As I followed lines of social-cultural inquiry within the ethnographic case study design, I analyzed not only how students identified musical or technical problems and developed rehearsal strategies to solve them, but I observed the ways in which they interacted socially during the course of the rehearsal. This study described the social and musical interaction in a mutual learning culture and focused on the learning and social processes used by two high school chamber groups (Bruner, 1989).

Criteria for Selection

The criteria for the research site selection depended on a high school that already had chamber music instruction in the curriculum. I wanted to study an established program where independent collaborative learning was already part of the shared culture of the students. I sought a site where the students had to be primarily responsible for their own instruction through collaborative learning, rather than a music teacher, or an authority of learning, who directed the ensemble.

As research demonstrates, collaboration is most efficient when student ability levels are moderately heterogeneous (e.g., Forman & Cazden, 1985; Mulryan, 1992; Salomon & Globerson, 1989; Verba & Winnykamen, 1992; Webb, 1991). Recent research has advocated settings in which advanced learners rather than novices are involved in problem solving (Jonassen, 1997; Kalyuga, Ayres, Chandler, & Sweller, 2003). It appeared from this literature that it would have been unwise to include beginners or inexperienced instrumentalist in this study.

Researchers have determined that students interact with each other in a complex way with collaborative learning—the interaction between the learner types paired together with the task features (Alverman and Moore 1991). This had implications for the criteria for selection as well. The groups had to be heterogeneously blended, and the music (task features) had to be suitable and manageable for the ability level of the group.

Based on my past experience as President of the California Orchestra Directors Association, I knew of one other school in the San Francisco Bay Area that offered chamber music instruction as part of the regular curriculum. In order to ensure

confidentiality, I assigned pseudonyms to all the schools and participants discussed in this study.

The other potential school site included the 100-member Cambridge High School Orchestra. The school orchestra director annually placed all the students into chamber groups during the months of January and May for the purpose of achieving the benefits of small group learning. During the time period for this study, the chamber groups met every Tuesday and Friday mornings during "A" period from 7:20–8:30 a.m. While this program did have excellent collaborative learning conditions, it functioned only in January and May making it less than ideal for this study.

Based on the criteria for this study, I chose the Grapevine High School Chamber Orchestra Honors class to be the research study site. This site met the criteria for selection more than the aforementioned school because it represented a high school where students actively engaged in the chamber music experience on a regular basis. Student instrumentalists who enrolled in either the school's band or orchestra could additionally enroll in the chamber music class for honors credit (honors credits are awarded on a 5.0 unit scale instead of a normal 4.0 scale). The class met each Wednesday afternoon from 3:00–5:00 p.m. during the school year of 2012–2013. The class included a variety of instrumental musicians at various levels of accomplishment ranging from medium ability to advanced ability.

Description of the Site

Grapevine High School is a suburban public high school in the East Bay region of the San Francisco Bay Area. The population of this school is mainly Caucasian and

Asian. Neighborhoods are composed of well-kept, single-family homes reflecting an upper middle class stratum of society. The orchestra program reflects the ethnic population of the school. The 75 members of the Grapevine High School Orchestra were predominately Asian-American in the string and woodwind instruments and Caucasian in the brass and percussion. Besides traditional band, orchestra and choir classes, Grapevine High School offered chamber music as an honors course every Wednesday afternoon after school from 3:00–5:00pm. During the course of this study the chamber ensemble program at Grapevine High School consisted of 12 student-led chamber ensembles. Each small group was largely independent and received only minimal guidance from the instructor.

Purposive selection of participants. After I decided that the chamber ensemble program at Grapevine High School met the criteria for this study, I used the aforementioned criteria to select two ensembles at Grapevine High School to study. At the beginning of the semester, Ms. Ingrid Carlsen, the instructor, and I presented an introduction and description of the proposed research study to the honors class. Information, consent, and assent forms were distributed to all fifty students enrolled in the Honors class. Of the fifty students enrolled in the class, thirty-seven consent/assent forms were returned and collected.

The selection of the participants was accomplished through a five-minute live audition. All students enrolled in the class prepared a solo piece that demonstrated their ability, one two-octave major scale and one two-octave minor scale, the audition list for the 2013 California All-State Orchestra (for the strings) and All-State Band (for the

winds and brass). Sight reading material was taken off the internet from the Tennessee Valley Jr. High Honor Band and Orchestra audition repertoire. Students signed up to play their auditions in blocks of five students over a two-week period. Each block was given thirty minutes to accomplish the auditions for that block of students. All students in each block were present in the school band room during the open audition process.

Although I was interested in exploring the collaborative learning in the chamber ensembles, I wanted to be present for the audition process so I could observe the classroom instructor's standard practice for forming the ensembles based on student auditions. The instructor and myself judged the students using a rubric (see Appendix E: Audition Score Sheet) totaling 100 points that included points scored for the two scales (30 points), the audition list excerpt (50 points) and sight reading (20 points). Scores from the audition rubric sheets were tallied, and students ranked in ability for each instrument from highest to lowest. In addition, students made requests to be placed in a group with a short list of friends. Those requests were granted by the instructor if doing so met the criteria of heterogeneous combinations of high and medium ability level and the norms for standard chamber music ensembles.

By following a roll sheet of the students enrolled and the instrument they played, Ms. Carlsen constructed twelve standard chamber groups to match the instrumentation of the class:

3 String Quartets	1 Piano/String Quintet	1 Woodwind Quartet
2 Piano/String Sextets	1 Brass Quintet	1 Violin Trio
1 Piano/Woodwind Sextet	1 Clarinet Quartet	
	1 Violin Quartet	

At the completion of the auditions and using the list of student friend requests, Ms. Carlsen placed all the students in the class into one of the pre-constructed chamber groups. The groups were put together without regard for the needs for the study. Thus, the audition process was not about selecting participants for the study, it was part of the normal classroom routine for creating chamber ensembles. The primary criteria for building each group included a mixture of high and medium ability (as this was an Honor class, no low ability students were enrolled) in each group and, if possible, the secondary criteria for putting friend requests together. Each chamber ensemble was coded to a color grouping assignment of Gold, Green, or White (the school colors) with each color group containing four ensembles each. Of all twelve pre-constructed groups, only two chamber groups entirely consisted of the original 37 students who agreed to participate in the study. These two groups were the Gold Piano Sextet, and the Green String Quartet. In order to meet the requirements of this study, these two research groups were assigned to a research schedule that included six one hour rehearsal observations, personal interviews, group interviews, and a focus group.

Informed Consent

All participants received information and notification of the study through Boston University approved Informed Consent forms. These forms documented permission from both the parents (consent) and the students (assent) themselves. All 10 participants completed the entire study. I procured additional approvals for this study from the Superintendent of Instruction for the Grapevine Public School District, the principal of

the high school, and the orchestra Instructor, Ingrid Carlsen, who was also listed as an adult participant.

The Participants

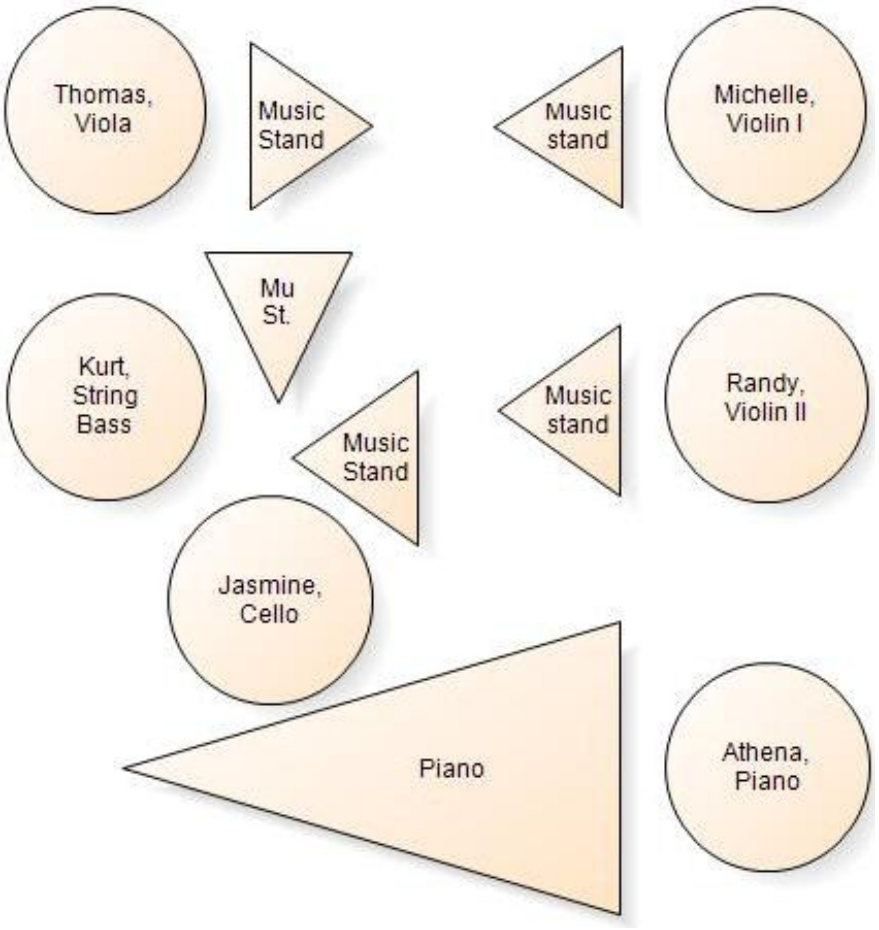
This study included a total of 10 student participants: six girls and four boys. Five were seniors, four were juniors, and one was a sophomore. Because the research site was a high school honors class, all of the participants reported they took other honors and AP courses to prepare themselves either for their career or their college education and admission. Six student participants reported their long-term goals included pursuing a career in the sciences, while two others planned to pursue business, and two more in the Fine Arts.

Most of the student participants played music outside of school. Many played in a local summer music program, others as members of youth orchestras, state honor groups or church praise and worship teams. One student competed in piano competitions; another choreographed dances. Many of the student participants played a second instrument. These included piano, the ukulele, and the monomé, a multi-keyed electronic instrument used in Caribbean dance music. Six of the students hoped to continue with some form of musical activities in college and then into adulthood. These included teaching private lessons for supplementary income or simply continuing to play music for their own enjoyment. Only two hoped to make music a career, one in the music retail business and the other as a music teacher.

The musical preferences of the ten student participants were diverse. All of them listened to many different kinds of music. Five students listened to classical music in

their spare time, two to Christian music, six to popular styles (rock, hip-hop, or soft rock), five to older popular styles (jazz, Latin, or the blues) and two listened to ethnic traditional music of the Far East. Four of the students stated they greatly enjoyed the sound of their instrument while they played on it. Two reported making music a relaxing thing they could do to release stress. Surprisingly, only one of the student participants came from a family where parents had participated in music. All the others reported that their parents encouraged participation in music with about half of the student participants involved in private lessons.

Table 1 *Gold Sextet Seating Chart*



Athena was the pianist in the Gold Sextet. Athena had played piano since she was age three and competed in piano sight reading competitions and performed in piano ensembles. As a senior, Athena had recently added viola as her second instrument, but she always considered herself a pianist at heart. Her private teacher was an important influence. Athena stated what she wanted to do with her life: "It is to do something with my passion so that I can help more than just myself" (Interview, Week 3, p. 5, line 1). This statement perfectly exemplified Athena. She was passionate not just in her music, but in social relationships with her friends. A natural born leader, Athena easily dominated any small group discussions with her charisma and personality. While Athena most often encouraged those around her, she could sometimes be harsh in her comments. Athena loved to talk with her hands, using them to articulate and amplify what she said.

As the Gold Sextet's first violinist and concertmaster of the school orchestra, Michelle was a serious, determined musician. A senior and veteran of All-State Honor groups, youth orchestras and concerto competitions, Michelle earned the respect of all the orchestra members, including Athena. Violin playing came naturally for her and she used it to escape the stresses of school. Despite her serious approach to music making, her friends got her to smile and forget herself. Despite being an outstanding music student in high school, Michelle chose to pursue a dental career in college and had been to a prominent pre-dental school program.

The second violist in the Gold Sextet, Randy, was a senior. Described by Athena as the "epitome of good looking," Randy was a confident young man and possessed a keen sense of humor. Randy learned to play the ukulele by watching YouTube, and liked

to sing in the shower. He stated his goal in life was anything that would make him a lot of money. Randy understood that his role in the chamber group was to be a follower to Athena and Michelle.

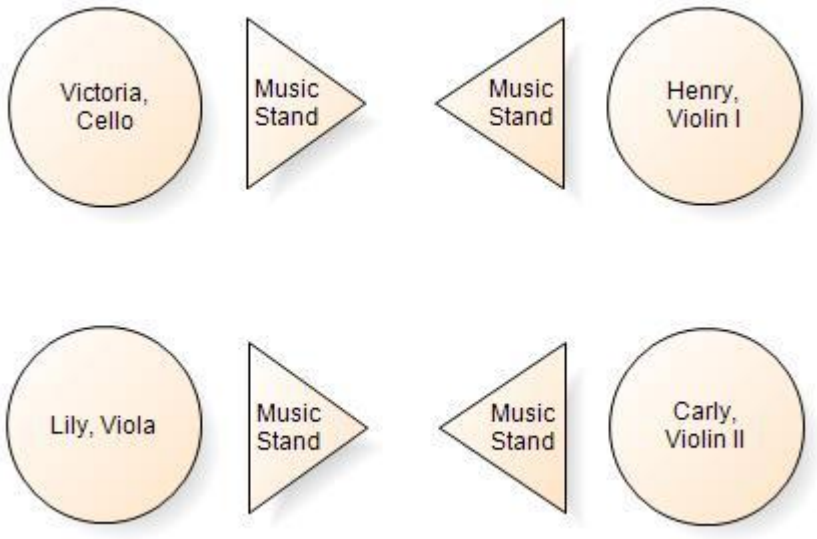
Thomas was the violist in the Gold Sextet and a junior. The opposite of Randy's swagger and *machismo*, Thomas was a favorite of the girls with his gentle smile and cheery disposition. Originally a violinist since first grade, Thomas had just switched to viola the previous year. Thomas loved the sound of his viola and relished his solos. Due to his sweet, easygoing disposition, more assertive students picked on him.

Jasmine was the cellist in the Gold Sextet and a senior. Jasmine's main goal in life was to have a happy family. She often responded to funny comments with a girlish giggle or a boisterous laugh. While Jasmine recognized Athena and Michelle as the leaders in her group, she saw herself able to ease tensions whenever Athena used a "not nice voice" (Interview, Week 3, p. 5, line 52). Even so, Jasmine could become a leader as well, especially at the expense of the boys, when she reprimanded them for not counting the rhythms correctly.

The bassist in the Gold Sextet and a junior, Kurt started out as an outsider socially. Because he read from a cello part, Kurt was often in deep thought on how to play his part. He played soft pizzicatos while the others conversed socially. By the completion of the school term, Kurt integrated socially with the other boys in his group and joined in the banter. Kurt primarily played piano and grew up singing in a boy's choir. A fan of classical, jazz, reggae and world beat, Kurt was a self-motivated music student and practiced many different styles of music. While Kurt's passion was in all

types of music, he already had his career and college plan mapped out to become an electrical engineer for the aerospace industry.

Table 2 *Green Quartet Seating Chart*



The first violinist in the Green Quartet and a junior, Henry was the only participant planning to make music his career as the owner of a music store. The son of a school teacher, Henry was a serious student of the violin and orchestra having already played in many community orchestras. Handsome and attractive, Henry knew how to impress girls. Once, Henry entered the band room with a bouquet of handmade flowers, got down on one knee, and asked a young girl out to the school dance. She accepted.

The youngest participant, a sophomore, Carly was the second violinist in the Green Quartet. Very conservative in her dress and manners, Carly was an outsider socially. Carly could be seen as a future leader and expressed her opinions freely, whether it was appreciated or not. Carly played five different instruments in a wide

variety of styles. These included the blues on the harmonica and traditional Chinese music on the *erhu*, a Chinese string instrument. Carly had not made up her mind if she wanted to be a musician or work for the C.I.A. She admitted she liked to "spy on people and eavesdrop!" (IW3-5:47).

Lily was the violist in the Green Quartet, but her passion was dancing, particularly hip-hop. Lily vacillated between a depressed, sullen teenager, and an outgoing charismatic performer. An average violist, Lily described her part as the wallpaper in the background. Lily liked the sound of her viola and didn't like the violin sound because she had sensitive ears. Lily often made popping sounds with her mouth during rehearsals and tended to whistle in tense moments.

Victoria, a senior, was the cellist in the Green Quartet. A confident and intelligent young adult, Victoria freely expressed her opinions and was not afraid to challenge the status quo of any social situation. She peppered all of her dialogue with typical teenage interrupters such as "like," and "you know?" Victoria loved the sound of her cello. A committed Christian, Victoria's dream was to teach music to children in third world counties in Africa.

Goals

Bryce (2001) described collaborative learning instruction in music education as placing students in small groups with the task of achieving defined goals. In this study, Ms. Carlsen established defined goals for each chamber group, which included: to select a seven to ten minute chamber work for rehearsal, perfect it to the best of the group's ability, and perform it at the appropriate venue at the end of the semester.

The literature demonstrated the importance of the student participants being able to choose their own repertoire for this study. The design provided two choices of appropriate level music for the participants of each group to choose from. The Green Quartet members had the choice of any movement from either the Mozart String Quartet in C, K. 157 or the Haydn String Quartet Op. 71, No. 2. The Gold Sextet members had the choice of the Schumann Piano Quintet in Eb, or the George Onslow Piano Sextet, Op. 77. The members of the Gold Sextet chose to rehearse and learn the second movement of the Schumann Quintet while the members of the Green Quartet chose the first movement of the Mozart.

In addition to the final performances, each chamber group was collectively responsible for a presentation to the class in PowerPoint, which explained the historical background of the composer, a theoretical analysis of the piece, and a timeline of important events during the era of the composition. Each chamber group was under the general supervision of an adult facilitator (myself as the primary investigator) who was available for internal guidance on most musical elements, e.g. group balance, intonation, tempo, or stylistic advice as needed.

Examples of Facilitating

In this setting, my role was that of an observer and sometime facilitator, one who closely watched the participants as they undertook the tasks that generated data to be collected and analyzed (Glesne & Peshkin, 1992; Beadie, 1996). Because the participants in this study were medium to advanced high school instrumentalists, they already functioned well as independent learners. The facilitation I provided, in particular,

was limited to: (a) providing students with a choice of at least two suitable pieces of music to perform; (b) arranging students in seating formations for greatest visual and aural contact; (c) establishing the parameters for the group's work; and (d) helping the group to evaluate its progress.

I was listed as a Research Volunteer with Grapevine High School for the purposes of conducting this study. My role in the classroom was to serve as an observer, and as a facilitator for the two participant chamber groups. I was present at nearly all of the rehearsals for both groups (due to a conflict with my university responsibilities, I had to limit my research in Week 8 to only one hour: 3:00–4:00pm). Even though I was present at each rehearsal, I rarely became involved in the learning process because the participants in this study were already independent learners. For the most part, I served as an observer during the weekly rehearsals except in certain situations that required intervention.

Data Collection

The mutual learning research of Allsup (2002, 2003), influenced the methodology of this study. Allsup charted differences between mutual and traditional hierarchical learning. To accomplish this, Allsup used qualitative analysis methodologies of case study, participant observation, and collaborative inquiry, to examine collaborative learning among high school musicians who composed new music pieces for their small ensembles. I responded to Allsup's (2002) call for further research by use of a design centered on exploratory learning (chamber music interpretation) in an instrumental music curriculum.

Collection of data included the weekly Wednesday afternoon ensemble rehearsals at the school site for fourteen weeks beginning January 16 through May 29, 2013. This time period covered fifteen classes, which totaled fourteen hours of classroom observation plus five and a quarter hours spent in interviews. All interviews and videos were transcribed concurrently during this time period. (See Table 3 Data Collection Schedule)

Table 3 *Data Collection Schedule*

DATE 2013	ENSEMBLE/EVENT	PLACE	TIME
Jan. 9 Intro. Week	DISTRIBUTE CONSENT/ASSENT FORMS	BANDROOM	3:00–5:00 pm
Jan. 16 Week 1	GREEN QUARTET REH. #1	HALLWAY	3:00–4:00 pm
Jan. 23	NO RESEARCH	FINALS WEEK	
Jan. 30 Week 2	GOLD SEXTET REH. #1 INSTRUCTOR OBSERV. #1	CHOIR ROOM BANDROOM	3:00–4:00 pm 4:10–5:00 pm
Feb. 6 Week 3	PARTICIPANT INTERVIEWS GREEN QUARTET REH. #2	MUSIC OFFICE HALL/CHOIR	3:00–4:00 pm 4:10–5:00 pm
Feb. 13 Week 4	INSTRUCTOR INTERVIEW PARTICIPANT INTERVIEWS	Canyon MS Band CVHS Music Office	11:30–12:00 3:00–5:00 pm
Feb. 20 Week 5	GOLD SEXTET REH. #2 INSTRUCTOR OBSERV. #2	STAGE BANDROOM	3:00–4:00 pm 4:10–5:00 pm
Feb. 27 Week 6	GOLD SEXTET REH. #3 GREEN QUARTET REH. #3	CHOIR ROOM CHOIR ROOM	3:00–4:00 pm 4:10–5:00 pm
March 6 Week 7	GREEN QUARTET INT. GOLD SEXTET INTERVIEW	CHOIR ROOM CHOIR ROOM	3:00–3:30 pm 4:00–4:30 pm
March 13	NO RESEARCH	Primary Investigator SPRING BREAK	
March 20 Week 8	GREEN QUARTET REH. #4 GOLD SEXTET REH. #4	STAGE STAGE	3:00–3:30 pm 3:30–4:00 pm
March 27 Week 9	GOLD SEXTET REH. #5	STAGE	2:50–3:45 pm
April 3, 2013	NO SCHOOL/NO REHEARSAL	SPRING BREAK	
April 10 Week 10	GREEN QUARTET REH. #5	STAGE	4:00–5:00 pm
April 17 Week 11	GOLD SEXTET PRESENT. GREEN QUARTET PRESENT.	BANDROOM BANDROOM	3:00–3:30 pm 5:00–5:30 pm
May 1 Week 12	FOCUS GROUP DISCUSSION W/ALL PARTICIPANTS	BANDROOM	3:30–4:00 pm
May 8 Week 13	FOLLOW-UP INTERVIEWS	BANDROOM	2:45–3:00 pm
May 29 Week 14	CHAMBER MUS. CONCERT	AUDITORIUM	7:00–9:00 pm

Data Collection Techniques

I collected data using techniques based in the field of ethnographic research. These included interviews, observation memos, and document analysis. I recorded and transcribed all formal personal, group and focus group interviews from each of the two purposively selected small ensembles. For observations, I made written memos and field notes in observations of student-led rehearsals. In addition, I made recordings, both digital and audio, of all the rehearsals and concert, and the presentation. Transcriptions of the recordings of the rehearsals were added to the data for further analysis. In document analysis, I reviewed documents that pertained to the honors class or that possibly impacted student collaborations.

Interviews. I followed Spradley's guidelines for interview protocols (1979). These guidelines involved structuring the interview with open-ended questions, which allowed me to probe and ask additional questions or follow new leads as surprising or different data emerged. There were three scheduled formal interviews. The first was a private one-on-one interview with each participant (See Appendix B). These interviews took place in the third and fourth weeks of the study. The purpose of the initial individual interview was to gain the trust of the participants as well as to discover each student's background and experience in music. I asked all the participants to describe their previous experience in music, their family's background in music, classes they were taking, and their musical and long-term goals. Additional inquiries addressed the student's participation in music outside of school in formal or informal contexts. I followed Noddings (1999) advice for establishing rapport by asking a question to get the

interviewee to feel comfortable. I opened the interview with a friendly, informal question, such as "What classes are you taking this year?" to attempt to establish a rapport between myself and the participant. After the initial interviews and reflection, I modified the interview questions to follow new directions of inquiry. Data compiled from these early interviews sharpened the focus for questions in the later interviews (Bogdan & Bilken, 1982).

I conducted focus group interviews with the two participant chamber groups during the seventh week (See Appendix C). The goal of this group interview was to assess each group's attitude toward itself and the music in progress. Maykut and Morehouse defined the group interview as a "group conversation with a purpose" (1994, p. 104). This meeting established and clarified the group's tasks and goals and assisted the students in understanding the collaborative process. Group interview questions included, "How does your group overcome problems in learning the music?" "How do you see progress being made with regard to the music (elements of style, intonation, rhythm, etc.)?" "How do you describe your role in the work of the group so far?" "What is working or not working with regard to ____?" and "What still needs to be done and why?"

The third and final formal interview included all ten participants acting as a focus group in the twelfth week of the study (See Appendix D). Fern (2001) viewed optimal focus group size as dependent on the type of research conducted: exploratory, clinical or experiential. Experiential research is that which seeks to uncover participants' attitudes, intentions, preferences and behaviors. For this type of research, Fern advocated optimal

focus group size as being between five to eight participants, with ten being the maximum. Larger focus groups may allow introverted members to hide within the larger group.

As the moderator of the focus group, I asked the participants to reflect on the collaborative and social interactions within their groups. The participants commented on and gave examples of their group's approach to music making and problem solving (See Appendix A). Questions explored rehearsal strategies such as, "What makes for a successful rehearsal?" or "How did you resolve differences regarding the interpretation of the piece?" The answer to these questions provided additional data to help answer the research questions of how the students engaged in collaborative learning (RQ #1), how learning structures within each group directed and impacted the learning (RQ #2), and how they interacted socially during the learning process (RQs #3, #4). Some participants were brought back in the fourteenth week for additional questioning when I needed clarification on a specific comment the participant had made during the course of the study.

In addition to the three sets of formal interviews I utilized data from informal discussions. These informal discussions took place as casual conversations before or after rehearsals. When appropriate, I noted these comments in my field notes for coding.

Observations/memos. Following ethnographic methodology (Erickson & Stull, 1997; Geertz, 1973), field notes consisted of my observations of rehearsals or interviews in a detailed and descriptive manner. Included in my personal observations were the participants' body language and mannerisms as they collaborated through dialogue and movement. Athena, for example, amplified her verbal instructions by adding movements

of her hands to communicate her intentions more completely. Other examples included Michelle, as she used her bow to point to specific parts in the music or toward individuals as she addressed them; and when Victoria rolled her eyes to show her doubt on a concept delivered by Henry. Reflective memos were written at any point in the data collection or during data analysis where I gained an insight or saw a need to follow an idea or comment made by the participants (Gubrium & Holstein, 1997, 2009). Examples of my reflective memos included my perception of the attitude of the participants. In these memos, I attempted to consider the *emic* viewpoint of the students and describe it using my *etic* viewpoint. I took notes of my reactions and interpretations of the data as it was observed and collected.

Document analysis. In addition to field notes and memos, I reviewed documents that pertained to the honors class such as the course syllabus, instructions on how to prepare the class presentation, the rehearsal schedule, as well as school or social events that affected the participants' time and energy (Bogdan & Bilken, 1982). These included the school musical rehearsal schedule (pit orchestra assignments), the Prom, and the Talent Show. I provided a clean copy of each chamber group's music for participants to mark passages on it that held special musical, emotional value or social significance for them (Berg, 1997). These annotated comments were included into a data folder marked Annotated Comments-Week 12.

Data Analysis

In a qualitative study such as this, analysis occurred throughout the entire data collection period. Marshall & Rossman described qualitative data analysis as a search for

general statements about relationships among categories of data (1989). In this study, the data methodology I utilized comprised the "interpretive-descriptive" method (Strauss & Corbin, 1990). This methodology focused on the participants' words, actions, recordings, into the development of potential themes and implications. Using Mediated Discourse Analysis (MDA) (Scollon & Scollon, 2004), I analyzed and interpreted what occurred in the musical development of high school chamber musicians of two select chamber ensembles. I used the research questions to help sift the data at all stages of the process. The approach used three steps to analyze the data, which I will next discuss.

Coding

With the aid of NVivo 10 (QSR, 2013) qualitative data analysis software, I coded all transcribed documents and written memos for concepts relating to the phenomenon of collaborative and mutual learning as well as sociocultural mediation. Within *NVivo*, source folders were created and given these labels:

Interviews	Memos
Video Transcripts	Participant Observations
Instructor Observations	Annotated Comments
Documents	Scores and Parts

Once I imported all the external data into NVivo, I began the coding process.

Step 1, open coding: I labeled each concept (or construct) with a name (called a "node" in NVivo) for easy categorization. Highlighted specific passages of data are saved to the desired nodes for future reference. The collected data resulted in a total of fifty-two different nodes, each representing a different concept.

Step 2, axial coding: Within NVivo, I identified relationships between all the concepts and placed them into categories. I used a procedure known as *analytical*

induction (Goetz and LeCompte, 1984). In this procedure, I searched for similarities between concepts in order to reduce the data into categories.

Step 3, overarching concept: As I organized and combined categories, I reduced them to the overarching concepts of "collaboration" and "peer pressure" which guided the storyline in the presentation.

Techniques used for analyzing data.

Data was analyzed using a variety of means: enumeration, selected quotes, range of responses, discrepant case analysis, and models. Enumeration involves the number of times a concept or idea is described by the participants. This technique was carried out using NVivo software. I ran searches on the number of references to a concept or idea in order to describe them as "many," "few," or "some." This helped to provide an accurate representation of the prevalence of a particular concept within the data. In organizing quotations for presentations, I selected quotes that either showed a degree of intensity or those that clarified a purpose. A degree of intensity is seen as a particular participants' intensity in making a point. Whenever a participant emphasized a word, I underlined the word to indicate its spoken intensity. Quotes that clarified a purpose are those where a participant's statement described a concept clearly, as when Kurt described the process of how his group collaboratively approached solving a problem:

> Well basically it just follows through these basic simple steps: One of us speaks out, 'Hey, you guys, I think there is a problem here,' and then all of us just give our opinions about it. Everybody gets a say in it, and if we have a problem with it, then we all have to agree with it (IW3:35).

I described the range of responses and rankings from all of the participants to a particular question in a series of participant evaluations on their group's progress. Using

discrepant case analysis concept (Miles & Hubermann, 1984), I carefully considered any discrepancies in the data as well as tried to deduce possible explanations for the discrepancies. In some cases, I called a participant back for clarification in a follow-up interview as when I invited Jasmine back to follow up on a comment she made about how group rehearsed at students homes in previous years. Models were created using the NVivo program to construct six diagrams to show seating positions, learning structures and social structures within each participant group.

To assist with organization during the transcription process, I developed a system to label each source of data that is used in chapters 4 and 5. I used the following codes to identify the specific data source: AC-Annotated Comments; FG-Focus Group Transcript; FU- Follow Up Interview; GI-Group Interview Transcript; I-Personal Interview Transcripts; VT-Video Transcript; W1-10-Research Weeks number 1–10; 2:51- page 2 line 51. For example, a reference to (VT W3:52) indicates the reference may be found in Video Transcripts, Week 3, line 52.

Discourse Analysis

Discourse analysis (DA) is applied to a number of research techniques that attempt to analyze spoken, written, or significant semiotic events (e.g. use of signs and sign processes, indications, designations, likenesses, analogies, metaphors, symbols, signification, and communication). Gee (1990) delineated between two types of discourse: discourse (lower case) used to describe references to long stretches of focused dialogue such as conversations, stories, or arguments; and Discourse (uppercase) for ways that imitate life through "words, acts, values, beliefs, attitudes and social identities

as well as gestures, glances, body [language] and clothes" (p. 142). I used discourse analysis to organize the dialogue and actions of the participants to find concepts and ideas that could be coded for further research.

The goal of discourse analysis is to analyze writing, conversation and other communication means. These other means include incomplete sentences, vocables, grunts, hums or other single utterances used to acknowledge reception of an idea or the disagreement thereof. In contrast to traditional text linguistic studies, discourse analysis not only studies communication beyond normal sentences, it also provides the researcher insight to natural cultural language usage in the setting. The focus of discourse analysis, therefore, is to provide insight into the socio-psychological qualities of the subjects (Yatsko, 1995). This type of analysis helped me to answer my research questions on social interactions and how these interactions impacted collaborative learning.

In this study I used analytical techniques borrowed from Wertsch's concept of cultural mediation (1985, 1991a, & 1995) and more specifically those from Wertsch's followers, Scollon and Scollon (2004) who developed a specialized tool of DA called Mediated Discourse Analysis (Talbot 2010). Because objects of mediation and cultural tools can be difficult to analyze, I had to consider how to recognize and analyze these components when practiced among the participants of this study. I generally followed four types of discourse analysis in this study: Blommaert's Five Principles of Discourse; frames of utterances; Wertsch's sociocultural mediation; and finally, Scollon & Scollon's design of a Mediated Discourse Analysis (MDA) within a framework of nexus analysis.

Blommaert's Five Principles of Discourse

Blommaert (2005) described discourse as comprising "all forms of meaningful semiotic human activity seen in connection with social, cultural, historical, and patterns of developments of use" (p. 3). Blommaert outlined five theoretical principles of discourse:

1. What does language mean to its users? When we analyze language, we must realize that language and words are important to every culture, and what that culture does with language, how it invests in it, and how language matters to them.
2. Language operates differently in different environments. In order to understand how language works, we must put it into proper contextualization and the relation between its use and the particular purpose and conditions it operates under.
3. Linguistic analysis is not on an abstract language, but on densely contextualized forms in which language occurs in societies. Analysis should focus on the many varieties of a particular language rather than just 'English,' or 'Spanish.' It may be necessary to create new names or titles for particular forms of occurrence of language.
4. Distribution of repertoires is unequal in societies. People are constrained by the range and structures of their repertoires of language, which contain different variety sets. We must use a sociolinguistic background in any discourse analysis because what people produce in discourse is conditioned by

their background.

5. Communication systems are also influenced by structures of the world system. In an era of growing globalization, contextualization of discourse analysis needs to include the relationships between different societies and their effect on the repertoires of language users (pp. 14–15, 235).

Frames of Utterances

The verbal expressions of the student musicians in the chamber groups were not always complete words but simply utterances. While utterances in musical settings may be few in performance they are an important component of the rehearsal process. They supply information about the musicians' reactions to the task and often make judgments on the basis of something more than the words themselves. Frames of utterances fall into four categories: contextualization, uptake, indexicality, and intertextuality (Gumperz, 1982, 1992, 2001).

1. Contextualization (Gumperz 1982, 1992): This type of analysis is the interpretation of an utterance in the context of its location. For example, when a musician used a vocable of "um-hum," she was agreeing with a statement or discourse that what was communicated just previously.
2. Uptake: This is the second step in an interaction and is the interpretation by the receiver of a sign or utterance offered by the giver. Without contextualization, these interpretations can take on different meanings than the giver intended. This was most seen and understood when an ensemble responded to the group leader's up bow or breath. When placed in its context

of a specific measure of music, the receivers interpreted speed of the tempo given by the uptake and responded accordingly.

3. Indexicality (Gumperz, 2001): Conversations are filled with references that rely on indexical signs that signal by direct association between sign and context. As I reviewed the transcripts, I found examples that included:
    a. Demonstrative pronouns: “this,” “that,” “those.”
    b. Personal pronouns: “I” and “you.”
    c. Temporal: “now,” “then,” “yesterday.”
    d. Spatial: “up,” “down,” “below,” “above.”
    e. Placement: “here,” “there.”
4. Intertextuality: This term is borrowed from literary criticism, meaning when we speak, we constantly reference others or cite and recite expressions and meanings readily known and available to all. Blommaert (2005, p. 46) describes how intertextuality grounds discourse into histories of social, cultural or political use. Use of references can construe powerful social, cultural and political cues. These references were most readily seen when participants used musical terms to define a passage (i.e. *Agitato* or *andante*) that were understood by all.

Cultural Mediation

People use cultural mediation as tools of speech to integrate their environment into their own behavior (Jones, 2005). In this study, I sought to discern how the participants established collaboration by communicating to one another through the

construction of common language or phrases. Wertsch suggested that cognitive change can be studied through language used to mediate learning (Wertsch, 1991a). Wertsch described language used as being dependent on a variety of social, cultural, and historical factors that highlight the significance of peer utterances and language usage. Wertsch viewed people as "coming into contact with, and creating, their surroundings as well as themselves through the actions in which they engage" (p. 8). In addition, Wertsch emphasized "that human action typically employs mediational means such as tools and language, and these shape the action in essential ways" (p. 12). This action is undertaken by the individual in real-life situations using the mediational means and tools involved.

As humans interact, they use social dialogue. Social dialogue is a result of many past experiences in the past that have come to frame the current mediation of action. By seeing these actions as a resulting blend of historical, cultural and social settings, Wertsch enabled the researcher to gain an understanding of how thinking and mental processes give way to concepts and ideas. Wertsch identified three properties of speech utterances: boundaries, finalizations, and generic forms.

Wertsch defined boundaries of an utterance as who is doing the talking. A person may make utterances in reaction to others' utterances in a social setting. The start of the boundary is the reaction to others; the end of the boundary is the start of others' speech. By defining boundaries, researchers analyze a unit of discourse dependent on the change in speakers. Boundaries may be paired into question and answer; assertion and rejection or agreement; suggestion and agreement; or order and execution.

Wertsch's second property of speech was finalization. This referred to the point

in which a person has finished saying everything they will say on the subject. These finalizations are usually marked by some kind of clear social discourse or gesture. These may include pauses, body language, or gestures to show that the speaker has finalized an utterance.

Wertsch's third property of speech was the generic form. Wertsch saw two forms: the referential semantic form and the expressive form. The referential semantic form denotes the connotation of the words or utterance. The connotation provides a specific meaning to the words or utterance. These connotations are derived from the sociocultural linguistic background that is separate from any speaker and are referenced by the speaker to clarify a concept or idea. The expressive form, in contrast, is the emotion and feeling that the speaker brings to an utterance. These emotions are often evaluations of the importance that the utterance has to the speaker and valuations about other utterances by the other speakers in communication. Wertsch views utterances as meaningful and never neutral, as they are "expressions of intentions and values, by individuals about something, in relation to someone" (p. 107).

In this study, my task was to select a unit of analysis for each utterance that was bounded by each speaker, finalized by the speaker, and understood to be important to the dialogue or discussion. Utterances meet these requirements, because they bring together the social and cultural domains of the participants. Since music making is a creative act that allows for divergent approaches to problem solving and multiple solutions, I was able to analyze music learning and peer interaction by listening to students' voices as they interact with one another in small chamber music ensembles.

Mediated Discourse Analysis (MDA)

The linguistic sociologists Scollon and Scollon (2004) follow Wertsch's concept of cultural mediation and suggest conducting a "foreground study of cultural objects or tools and concepts as mediational means," (p. 165) or, in other words, how people use adapted language and signs as a way to mediate actions and ideas. This type of discourse analysis is important to music education research because so many musical transmissions can occur non-verbally, (i.e. when a leader of a group offers an example and it is copied by the others in the group).

When mediated discourse or actions happen many times in a particular setting, Scollon and Scollon defined this as indications of a social practice. According to Scollon and Scollon, "These actions [practice] are the narrowest sense of a single, recognizable, repeatable action." They go on to state, "These are personal habits that have become so habitual that one carries out the actions without being told" (p. 13). In these places, many different practices or actions take place together in complex ways called nexuses. Some discourses are relevant to the object while others are not. This study sought to identify important mediating discourse when it occurred and also analyze how it was part of the collaborative process. I will now trace two analysis techniques that were useful for this problem.

Mediated Discourse Analysis (MDA) is a specialized tool of linguistic discourse analysis designed by Scollon and Scollon (2004, p. 2) to describe the use of language or actions in social settings and the way in which people engage each other in communication. MDA mediates discourse, individual free will, and praxis into what

Scollon and Scollon call a nexus of practice (p. 4). The goal of MDA is to focus on discourse *in* action, as opposed to discourse *as* action, making discourse analysis responsible for applying discourse or actions into various practical and useful contexts. Since each individual's musical background comprises many varied experiences in school as well as outside of school (Campbell, 2002) these experiences will often be brought to bear in mediated actions of collaborative learning in situ.

In this study, I describe discourse as observed dialogue or actions between students and/or a facilitator sharing and exchanging their ideas in the classroom. As I examined and analyzed these discourses and nexus of practices, I considered the context as well as the background of the speaker or signifier. I was also looking for cultural references to ideas or concepts as well as the use of mechanical devices such as metronomes, tuners or YouTube recordings that were used as mediational tools in the practice of the collaboration.

Nexus analysis. Scollon and Scollon described all discourse to be empirically studied as relevant or irrelevant as discourse in place. Some discourse may be background for a social action to be studied. When a pre-determined action is observed in the appropriate setting and time, it is called the nexus of practice (2004, p. 14). Scollon and Scollon provided a field guide for conducting nexus analyses. They included:

1. Enter into a zone of identification with key participants (p. 153). Through the chamber music rehearsals at the school site, I came to know each student personally in their natural rehearsal and social setting.

2. Map the cycle of people, places, discourses, objects, and concepts in place (pp. 159–160). I asked myself, "How were these participants who all came to be placed at this moment and this way able to carry out this action?"
3. Explore objects and concepts as mediational means.
    a. "How did this object come to be present, and by whose agency?"
    b. "What is its history of use?"
    c. "How thoroughly internalized is this mediational means and by which social participants?"
    d. "How widely is a concept shared among the participants?"
    e. "Is it internalized equally for all participants?"
    f. "Are objects or concepts the result of resemiotization?" Actions often transform in a cycle from one kind of action/object to another (p. 165).
4. How are social power interests produced in this discourse including speech, texts, images and other semiotic systems; the historical body of the participants and the practices in which they engage the design of the environment and objects? (p. 173). I asked in reflective memos, "What power relations are evident and how are they affecting the collaboration?"
5. Focus on interpersonal relationships and participation structure (p. 174). I asked in memos, "What positions and alignments are participants taking

> up with each other, the discourses in which they are involved, the places and times in which these discourses occur, and to the mediational means they are using and the mediated actions they are taking?"

Trustworthiness of the Final Report

Establishing reliability of findings is an important aspect of conducting research within qualitative inquiry (Orcher, 2005). To assist with reliability of the findings, I triangulated the interview and observation data to look for confirming and disconfirming examples in the data record. Trustworthiness in this study was established via my keeping track of the biases I brought to this study, use of an external audit, peer review, and member checks.

Bias of the Researcher

During the course of the data collection and data analysis portions of this study, I reflected and kept track of the biases I brought to this study. I chose a musical setting that was very familiar to me both professionally and academically. I am an experienced music educator with extended experience teaching and conducting orchestras and bands at all levels. I served in this capacity at Patten University and its laboratory school, Patten Academy, for twenty-eight years. I served on the board of the California Orchestra Directors Association for over 10 years, including two years as President, where I was involved in adjudicating musicians and orchestra programs at the state level.

Chamber music is a medium that I often recommend to school districts, not only for the richness and depth of repertoire, but also for its ability to motivate students musically and creatively. As a horn player in a professional brass quintet, Brassworks, I

have had over 20 years experience in rehearsal and performing techniques in the chamber music genre. As a chamber music coach, I have also served as a clinician at the Sequoia Chamber Music Workshop at California State University, Humboldt, for fourteen summers.

As the primary investigator, I made all efforts to set aside any personal biases for the intent and purposes of the study, and to have an open mind regarding any emergent core concepts that might arise, even if some of the data may reveal different implications than originally realized. For example, even though I was listed as an adult facilitator, I did not attempt to refocus the participant groups if the group members wandered off-task and began to socialize. I conscientiously tried to document all adolescent attitudes, problems or negative consequences of using collaborative learning as fully and honestly as the benefits. It was in these same off-task social dialogues that I gained particular insights into the key peer social structures that later help define my findings.

External Audit

In order to establish reliability, my dissertation supervisor, Dr. Andrew Goodrich, performed an external audit of the results of the study. During the data collection and analysis process he reviewed coded data to not only verify or contradict what I thought I was discovering, but also provided suggestions for identification of confirming and disconfirming examples in the data record.

Peer Review

Peer review was conducted by my wife who is a recognized and widely published scholar in the field of the Dead Sea Scrolls. Dr. Hannah Harrington reviewed much of

my data analysis and findings and made suggestions for clarity of content and noted any inconsistencies.

Member Checks

All participants reviewed transcripts of the personal interviews for verification of their meaning and intent. All changes by the participants were made as suggested. For example, two member's corrections focused on clarifying career goals. Once they saw what they had said in print, both Michelle and Henry clarified their intent. Michelle wanted to pursue orthodontics, not general dentistry; and Henry hoped to open a music store in Castro Valley, not just teach music lessons. Nine of the eleven participants volunteered to engage in a process of member checks in which they would be able to verify the results of the study or make corrections as needed.

CHAPTER 4: FINDINGS

This chapter is divided into two parts. In Part I of this chapter, I provide the data that relates to the research questions, "How do students in selected chamber music ensembles engage in collaborative learning?" and "What are the learning structures that enable collaboration within each group?" In Part II of this chapter, I provide the data that relates to the research questions, "How do the students interact socially with each other in the selected chamber music ensembles?" and "What are the social structures that enable collaborative learning within each group?"

In order to answer these questions, observations and analysis were carried out within the sociocultural approach of Vygotsky. Vygotsky theorized that inner speech enabled the development of learning (1978). This inner speech can be understood as musicians who, while rehearsing together, constantly listen and think to themselves, and constantly make adjustments in timing, intonation or style. The musicians continually negotiate and adjust to each other in this setting. Rogoff (1991) described the joint participation in a problem solving venture by musicians to change an understanding of the problem as appropriation. Appropriation is a collaborative learning process where each member provides added meaning to the action of other's actions within their own conceptual framework.

The chamber music ensemble, as conceived within the theory of social constructivism and seen in the following analysis provided a structure for this type of learning environment. Student musicians of moderate to advanced ability in a self-directed small music ensemble brought their own interpretations of the music filtered by

their past experience and education to the group. While it is true that ensemble members already came to the rehearsal with some musical knowledge and expertise on their instrument, their active engagement in "doing" chamber music greatly enhanced the collaborative learning. The engagement with others brought about change.

In these chamber groups, the goal was to actively interpret and reconstruct the musical notation as they attempted to perform it. The demands of learning and performing the music as a group forced individuals to create a group interpretation. In the process of discovery, each individual member became socially and intellectually active. Because playing chamber music is, by nature, a socially and culturally collaborative endeavor, in this study I adapted the sociocultural approach of Vygotsky (1972) and his followers. Through the concept of appropriation, each musician interpreted other musicians' actions based on past experiences. In order to analyze the transcripts from the data, I followed Scollon and Scollon's (2004) technique of Mediated Discourse Analysis (MDA). MDA describes all discourse to be empirically studied as relevant or irrelevant to the study. Some discourse may be background for a social action to be studied, in this case collaborative learning within a small chamber group. When I observed a pre-determined action taking place in the appropriate setting and time, called the nexus of analysis, (p. 14) I followed Scollon and Scollon's field guide for conducting nexus analysis (p. 160–174) in research.

I had already become identified with the participants through personal interviews and through the chamber music rehearsals at the school site; I came to know each student personally in their natural rehearsal and social setting. As I analyzed the transcripts of

rehearsals, I considered discourses, ideas, and concepts being put into place and I asked myself, "How were these participants placed in this chamber group in this way able to carry out this action?" I explored ideas and concepts as mediational means. I reasoned, "How did this idea or concept come to be present, and by whose suggestion? What was its history of use? How thoroughly internalized are these ideas and concepts and by which participants and they mediated? Are the ideas and concepts internalized equally among all the members of each group? How widely is a concept shared among the participants?"

Finally, I asked myself if I observed any social power interests produced in the discourse including power relations that were evident and how they affected the collaboration. In focusing on the interpersonal relationships and participation structures, I asked myself in memos, "What positions and alignments are participants taking up with each other?"

I found that the participants within each small ensemble in this study organized themselves into dual categories of both learning and social structures. Just as there were leaders responsible for learning, there were leaders who guided social interaction that enabled collaboration among the ensemble members. Learning structures guided the direction of the knowledge acquisition and social structures maintained lines of communication and improved group morale. Ultimately, both learning structures and social structures contributed to an overall sense of efficacy within each group.

Part I: Learning Structures

To assist with the organization of the data, I divided Part I into five categories: dual learning structures, musical interpretation as a tool of mediation, collaborative rehearsal strategies, leaders solving problems, and student collaborative use of media and technology.

Dual Learning Structures

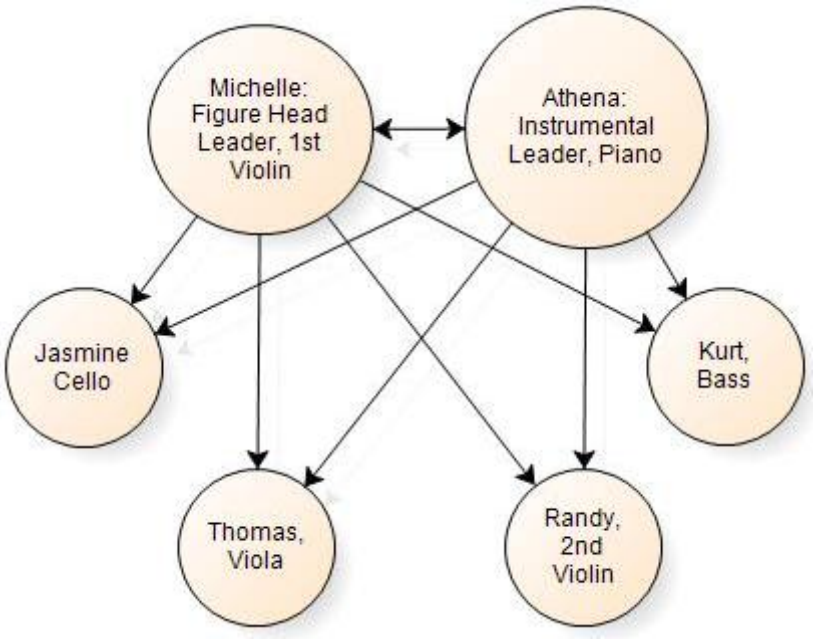
During the course of this study, I found that both of the participant chamber groups exhibited a strong dual learning structure, each with two different sets of leaders. This dual learning structure of each group allowed the participants to collaborate both individually and corporately to discuss interpretations and identify and solve problems. These leaders acted as Others under Vygotsky's (1981a) definition of Tools of Mediation. I will first describe and discuss the dual learning structure of each group followed by a definition and examples of leaders acting as Others within Tools of Mediation.

Based upon my observations and interviews, the first and most obvious type of leader was the primary leader, which Group Dynamics (Cartwright and Zander, 1968) describe as the *instrumental leader*. These instrumental leaders were student leaders in each group seen as having authority by the other students in the group. The instrumental leader was very easy to recognize. For example, this participant was often a task-oriented leader, seen by the other students as being responsible for keeping the group moving toward its goal. In addition, I observed two types of secondary leaders not defined by Cartwright and Zander. For the purposes of this study, I describe these two additional

leaders as a *figurehead leader* and a *challenger*. The figurehead leader I observed in both groups, was granted leadership based on a seated position within the orchestra by the teacher. The additional challenger leader I observed in the Green Quartet was one who challenged (whether actively or passively) the authority of the figurehead leader. The roles of these new secondary leader types I observed were confirmed by the participants in both personal and group interviews. Participants saw these secondary leaders' actions impacting the collaboration within their respective groups.

Gold Sextet. The members of the Gold Sextet came under the capable instrumental leadership of Athena, the pianist in the group. The participants even jokingly resorted to calling the Gold Sextet, "Athena's group." Athena was not as musically talented as Michelle, the first violinist. Michelle was the figurehead leader by virtue of her occupation of the Concertmaster seat in the school orchestra. Athena, with her charisma and personality, directed the course of action in each rehearsal with Michelle's approval (see Table 4).

Table 4 *Gold Sextet Learning Structure*



Athena clearly led the rehearsal by counting out loud or giving instructions. Regarding her "take charge attitude," Athena stated:

> I think chamber music is the only music I'll continue in college. I won't join orchestra, just play in a small chamber group. It's more intimate and I get to be more in charge (FG W12:10).

Athena's leadership was apparent in a rehearsal in early January when she provided direct, rapid fire directions. Even though the performance was not until the end of the semester, Athena immediately got the group working together:

> OK, a few things to talk about. Let's start at the beginning [Shuffles music]. At the beginning, whenever Randy [on second violin] or Thomas [on viola] have the melody, you guys should copy Michelle's style. Especially the coming-in sixteenth notes. Randy, you're a little bit hurried, and then when you play, you get ahead. And then Thomas, whenever you come in with those eighth notes, you're a little too slow (VT W6:321–328).

Despite her fast-paced aggressive leadership, Athena gave credit to Michele, the first

violinist in the group and figurehead leader. Athena called Michelle "the President" and stated, "that's not a bad thing!" (GI W7:22). Athena summarized the learning structure of her group as having two strong leaders leading other capable peers. She was aware of a hierarchy of ability within the group and stated:

> There is definitely a leadership, and Michelle and I are the leaders. The cello player [Jasmine] and the bass player [Kurt] are pretty rock solid. And then I guess we kind of just guide the second violin [Randy] and viola player [Thomas]. Viola players usually don't play out, and the second violin player, he's not use to taking a lead part (I W3-5:4).

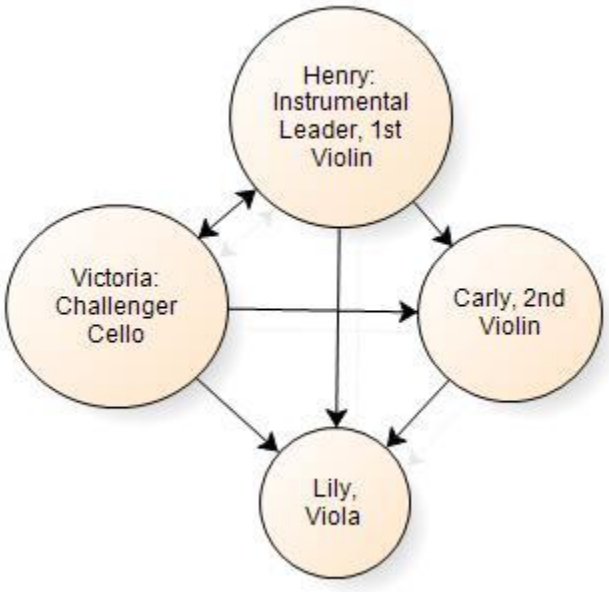
As the figurehead leader, Michelle used her influence to keep the group on task. She would dictate the plan for the rehearsal, such as, "Alright, let's not just run through the piece, so let's start at G, then we can go back and fix parts" (VT W5:33–35). Michelle helped the other members of the group with bowing issues. For example, while looking over Thomas' harmonic note at the end of the movement, she advised him, "How about from here to here, [Showing how much bow to use] start piano, [Demonstrating on her violin] kind of like that. And then kind of come back down, so that you match the rest of our dynamics" (VT W9:58–61). Nevertheless, Michelle did not overload the group with technical details but kept her focus on the flow of the entire movement. For example, to keep the pace moving forward, she said, "Alright, alright, let's try it from the beginning again and try going through the <u>entire</u> [Michelle's emphasis] *Agitato* (VTs W6:190–191; W9:563–564, 570–571). With characteristic efficiency, she took upon herself the responsibility for giving cues not only in rehearsals (e.g. VT W9:28–29) but also during the other five members' oral remarks during the final presentation and concert at the end of the semester (e.g. VT W11:23, 35, 58, 100).

Michelle was diligent in her role as the figurehead leader of the group by virtue of her first violin position. As she reflected on her leadership role, Michelle said, "I think I learned to lead more aggressively. Keeping everybody in check, keeping the group together" (FG W12:12). From Michelle's viewpoint, leadership was a duty she took responsibility for and to do her best as the first violinist. Yet for all of her figurehead leadership status, Michelle still understood that Athena was the main instrumental leader and stated, "some other people do have suggestions, but I think for the most advice, Athena does that" (I W3-5:9). Athena was the instrumental leader and Michelle recognized this.

Green Quartet. The Green Quartet was led by Henry, the first violinist with Victoria, the cellist, as the group's secondary challenger leader. In contrast to the Gold Sextet's Athena, Henry was more thoughtful and demonstrative in his directions to the group. For example, in his verbal directions he often used visual cues. In rehearsal, Henry asked his group, "So over there, for the fortes, I say we try to accent it more?" Raising his bow to his violin, he demonstrated the accents and explained, "So when we do . . . [He played the downbeat of m. 121 and accented the forte dynamic strongly], so the forte is, like, accented." As he did this, Victoria looked at her part, nodded, and agreed and said, "Oh." Carly confirmed that she also understood Henry's directions and said, "Add more forte." Continuing, Henry said, "And try to play the pianos lighter, so then there's more of a dynamic contrast" (VT W1:93–100).

Despite his instrumental leader status and ability to create consensus with his musical suggestions, Henry was occasionally questioned in his decisions by Victoria (see Table 5).

Table 5 *Green Quartet Learning Structure*



When Henry suggested reading the entire movement one more time and lifted his violin to start the group, Victoria, not willing to just read through the movement without a goal, remained in her rest position and challenged him and asked, "What's the specific purpose?" (VT W10:114–116). Victoria functioned as a challenger leader. This was not the only occurrence of her challenges to Henry. For example, during a rehearsal in Week 6:

Victoria: Henry, when you have quarter notes, like, at Letter B, can you, like, not pulse them?

Henry: Which ones?

Victoria: Like, in general, when you have a string of quarter notes, you pulse them, like [Sings] sometimes it comes out pulsed. Like, are they supposed to be pulsed, or are they supposed to be even?

Henry: Pulsed.

Victoria: Because they don't come out 'dah, dah, dah, dah;' [Sings legato] they come out Dah, Dah Dah.' [Sings marcato] Kind of. Or . . . never mind.

Henry: [After five seconds of silence] What do you mean by that?

Victoria: Never mind.

Henry: [After eight seconds of silence] They're supposed to be staccato . . quarter notes.

Victoria: Yeah, but they don't sound, like, even. But I don't mean weird exactly, it's just sometimes it comes out a bit so.

Henry: Yeah.

Victoria: [Softly] Yeah.

Henry: I think we need to work on some of those places (VT W6:47–64).

The use of MDA helped guide my analysis of this transcript. In this example, Victoria criticized Henry's playing style. The silences before Henry spoke appeared to show he processed her comments. After Henry finally protested that he had staccato notes, Victoria stood firm in her opinion until she realized she offended him. Victoria tried to mollify him, saying she did not think he played badly, only that he did not use the correct bowing style for the music. Showing a spirit of collaboration, Henry thoughtfully agreed to work on those passages.

Student leaders as Tools of Mediation. Vygotsky described three tools of mediation: (a) technical tools; (b) psychological symbols; and (c) other people

(Vygotsky, 1981a). Under these conditions, I observed the participants interpreting notation as psychological symbols, as leaders themselves offering new concepts of the music.

In this study, I sought to discern how the participants established collaboration by communicating to one another through the construction of common language or phrases as they became tools of mediation. Vygotsky recognized that tools of mediation can shape a student's perception of an object (in this study, the music). While the types of leadership that I discovered in this study varied, all could be defined as "others" operating as tools of mediation within ZPD (Vygotsky, 1981a, p. 140).

The leaders of both ensembles became active tools of mediation in the rehearsal. For Victoria, the cellist in the Green Quartet, consulting the other members of the ensemble became an important facet of how she led the group. Victoria commented on her leadership style and stated:

> Sometimes I ask for confirmation, like, 'Is that part supposed to be like that?' or 'Are you playing that right?' Then I guess, from there, if it still sounds weird, then we'll continue to play it and try to figure it out" (GI W7:2).

Her role of asking for confirmation can be seen in the following conversation in the Green Quartet on interpreting beat emphasis in Mozart:

Victoria:	Isn't that that note thing? [Looking at Henry] Like, if this is a 1, [Giving a downbeat with her left hand] 2 is third emphasis, 3rd is … second emphasis. This 4th is least emphasis [Smiling].
Carly:	Oh, yeah, like, one is the strongest, then 3, 2, 4. I think that is how you count it.
Henry:	Oh, yeah. (VT W1:104–112).

Victoria mediated the definition of beat emphasis, by asking Carly and Henry for

confirmation. Once Carly tentatively confirmed Victoria's definition by repeating it, it became clear to Henry as well, and he accepted Victoria's exercise of leadership.

Mediating among members in the Gold Sextet was more complex due to the larger number in the group. Collaboratively, the members freely shared their comments with each other:

Athena: I! [Rehearsal marking] We all stopped at I?

Kurt: Yep!

Jasmine: Yeah.

Athena: [To Thomas] Did you?

Thomas [Smiling at Randy] I went [too] fast!

Randy: I was four beats off!

Jasmine: I really think you guys went faster.

Randy: Were you going very slow?

Jasmine: [To Athena] I feel we were going slow.

Athena: Huh?

Jasmine: I feel we are going slower.

Athena: Oh, OK [Getting ready to start again].

Jasmine: We need to go faster.

Athena: OK, OK [Practices the first measures at a faster tempo] (VT W8:103–115).

In this example, Athena, the instrumental leader, stopped the group to encourage the ensemble to stay together. While Kurt and Jasmine responded that they followed Athena and together on the verbal cue, Thomas and Randy admitted being off at the cue.

Jasmine suggested that Athena was at fault due to her leading the group too slowly. This interaction was significant because it showed that the entire group, even the challenger Jasmine, regarded Athena as the timekeeper for the group. In a spirit of collaboration, Athena admitted that possibility and responded with a faster tempo. Despite Athena's status as the instrumental leader of the group, she promoted a spirit of collaboration and compromise.

This spirit of collaboration was recognized by the other members of the Gold Sextet. Kurt, the bass player, described it as:

> When the group has a problem, it is usually with just one of us. It's my understanding that 'Hey, can I get an opinion on this?' We actually have an opinion voice, it's more democratic. All of us just talk about it, saying what we can do with it, should we ignore it, should we fix it, or should we remove it? Anything like that, so we all make a choice and we all have to conform to one agreement, because, if we all agree or if half of us agrees and half of us disagrees we have to come to a solution (I W3-5:34).

This same philosophy of collaboration and the ability for anyone in the Gold Sextet to ask for clarification was exhibited by Jasmine. While often quiet during most rehearsals, when she did speak, it was often to question a tempo or ensemble problem with the others:

Jasmine:	Are we a little fast? Is K supposed to be faster than before?
Athena:	Actually, Michelle in that part has the right to push it.
Jasmine:	Uh-huh.
Athena:	So … [Turning her music back] from H on …
Jasmine:	Will go, like, faster? [Resting her bow on the music stand].
Athena:	Actually, even then, [Turning her music back farther] even from C or even B. Michelle has the right to push it.

Jasmine: OK [Nods in agreement] (VT W6:286–294).

Athena addressed Jasmine's concern about the faster tempo without usurping the figurehead status of the first violinist, Michelle. Athena reminded Jasmine that Michelle, as the figurehead leader of the group, had the right to push the tempo. In this way, Athena supported the traditional hierarchy of the group although she actually functioned as the *de facto* leader. While Jasmine relented and agreed to follow Michelle, she did so at Athena's request. As in the previous example, Athena continued to promote the democracy of the group by respecting Michelle's position and Jasmine's concern, but she ultimately had the last word.

Interpretation as a tool of mediation

The sociocultural approach guided my analysis as student leaders used the study of musical symbols and historical events to influence the other musicians towards their own understanding of dynamics, tempos, and style. These interpretations can be seen as psychological tools of mediation between the leaders and the other members of the group. These interpretations included matching performance styles, the general view that that intonation was less important than the proper performance of rhythms and dynamics, how to apply music theory to interpret harmony, and finally the use of music history to inform performance practice.

Matching styles. Similar to the student leaders' knowledge of music history was the knowledge of musical styles. Most often, the interpretation of style was based on intuition and previous training, of the music being performed by incorporating similar bowing styles within the group, and having the members imitate the leaders stylistically.

Both groups agreed to match the styles set forth by the student leaders. Looking back, Athena and Michelle did see an issue that emerged in getting all the upper strings to play in the same style as Michelle:

> Athena: Yeah, I don't think we really had any differences in interpretation, but, like, playing-wise, the violins, the three violins … two violinists and one they all played stylistically different, and it was kind of hard to …
>
> Michelle: Match styles.
>
> Athena: All match Michelle's style (FG W12).

Jasmine apparently agreed, when she observed the same problem. Jasmine said, "I remember one instance wanting Thomas and Randy to play how Michelle was playing more, and I was, like, 'Hey Thomas, hold the quarter notes longer,' cause they all have different styles" (FU W13). In Week 6, Athena attempted to set the record straight for the Gold Sextet in front of the other members. "We have to match Michelle's style. Because Michelle has awesome style!" (GI W7). Athena seemed to be endorsing Michelle as the role model here.

Henry viewed the Green Quartet as having problems with different individual playing styles. In rehearsals, Henry actively engaged in getting the rest of the group to match bowing and articulation styles. In the first rehearsal, Henry instructed his group, "Play your parts more *staccato*. And then long tender lines." Then pointing to the music, he clarified, "I mean, so all those [Picking up violin and playing nine measures after the repeat] piano notes should be staccato … more staccato*"* (VT W1: 14, 25–26). Later, Henry observed as an aside to Carly, "Carly, maybe we should accent more at the beginning with the cello? (VT W1:266–267). Henry always listened to the members of

the group and encouraged them to match a style that he had in his head. Unlike Athena, his leadership was effective without raising the level of his voice.

Where did the group leaders learn about musical style? An obvious answer would be based on their previous training and experience. "We play a lot of Mozart," summed up Victoria (FG W12). Yet, I found an additional influence on their stylistic interpretation: the use of smart-phones and the internet.

Student leaders revealed a good understanding of the proper style for playing Mozart and Schumann. On playing the Mozart string quartet, Henry described some of the stylistic aspects that he attempted to bring out in the music and said, "The dynamics, the style of the music from that time period, maybe not as much vibrato, more staccato bowings" (I W3–5:39). Victoria, likewise discussed the challenges of playing and interpreting Mozart. She stated:

> Well this piece particularly, it's not that challenging playing wise, but it's challenging in that we have to make it interesting, and, like, characteristic, and so I think we really focus on adding dynamics and contrasts and feeling, in a way (I W3–5:43).

The interpretation of Schumann for Michelle in the Gold Sextet was more a matter of phrasing. In answering a question about how her group learned to play musically, Michelle answered, "I guess it depends on the phrasing. I guess some people use actual recordings which definitely help your interpretation" (GI W7:19). Michelle's phrasing transmitted to the rest of the group, some not nearly as interested in deciding interpretations as in closely following Michelle and Athena. For example, Randy said, "Personally, I just followed along, so I just did whatever Michelle did" (FG W12: 5). Jasmine too, understood the leaders' role in interpreting the music, and remarked

"Typically, like, Michelle and Athena would say, like, 'Oh we should play it this way,' or something, 'Maybe a little softer here,' or 'More dynamics'" (FU W13:2).

Kurt had the challenge of adding a bass part to the Schumann Piano Quintet that fit stylistically with the piece even though not original to it. Rather than simply ask him to double the cello part an octave lower, Athena gave him license to modify his playing as necessary to fit the characteristics of a bass part and style. She provided him a copy of her piano part for the times he preferred to double her left hand rather than play the cello part along with Jasmine. He did this in the B sections where the cello part was too difficult for the bass. Kurt described the challenge of adding a bass part to a piano quintet that did not include the bass:

> Just [play] every first beat of the measure and keep it constant, don't try to overthrow everything! But it's also difficult because you have to make it work. You have to find a way to not change the piece. Because there's the golden rule in music playing where music, you can change it. Its custom fit like a tuxedo, but you can't change the look of it. You have to stick with it. Otherwise, you can't add let's say . . . a black tuxedo with a red bow tie, and then you put a flower, then you stitch designs, and all of a sudden, you've ended up with something for a runway [fashion show] instead of a formal event. You're trying to stick with the goal; you're trying to stick to the basic plan (I W3–5:32–33).

Kurt's explanation showed that he struggled to maintain the style of the piece while still fitting in and contributing to the overall effect.

Blommaert's Five Principles of Discourse (2005) aided my analysis of Athena's discourse as she attempted to mediate an idea or concept. I soon observed that Athena was often animated when she wanted to communicate a musical idea and often used expressive gestures. Athena might say, holding both her hands in the air, "Play accents!" (VT W6:413) or, holding her index finger in the air to get everyone's attention, she said:

> One thing. Bass, cello, viola. When you guys end with your chord, that one has to die away. It can't just sound like you lifted your bow; it has to sound like you tapered your note" (VT W6:445–450).

Athena often combined verbal descriptors to her hand signs when she tried to mediate an interpretation:

> Athena: And Kurt, um, the part that we both have? [Walking over to Kurt's stand] The super low, where the lowest note?
>
> Kurt: The lowest note? For me its E [Because he is reading from a cello part and must adjust some octaves].
>
> Athena: OK, so that super low note is going to have like, a "POW" to it! [Opening her left hand on the word POW]. After that "POW," we're going to be super soft! [Begins marking Kurt's part with a pencil].
>
> Kurt: [Plucks his bass softly, while Athena marks his part]
>
> Athena: [Moving back the piano, Kurt continues to pluck while Athena talks] Because the lowest note deserves a, [cups her right hand and shakes it] deserves some "POW" [Smiling at Kurt].
>
> Kurt: OK! (VT W9:153–163).

Athena constantly pushed her group to make the music come alive, and not settle for a rote performance.

Student leaders often negotiated tempos, especially early in the semester. In Week 3, due to the absence of Henry from the rehearsal, Victoria and Carly assumed leadership status and discussed the proper tempo for the Mozart:

> Victoria: Is it the right speed, because I think we were going a little bit faster? [Tapping on cello]
>
> Carly: Yeah. [Begins humming the first theme in the 1st violin part]
>
> Victoria: [Nods her head along with her] Yeah.

Victoria: How fast is this? Like . . . 80? Slower?

Carly: [Continues to nod her head to the sound she hears in her head] Maybe around there.

Victoria: OK. I think it would be good to try it faster. (VT W3: 24–32).

In the absence of Henry, Victoria and Carly negotiated a tempo and even a number value for what they considered appropriate. As the semester progressed, the Green Quartet enjoyed setting faster tempos to challenge themselves and maintain their interest (e.g. VT W6b:332–342). This negotiation of tempos was discussed by the leaders of Gold Sextet, where Athena and Michelle mediated how to set the tempo for the *Agitato*:

Michelle: [To Athena] What tempo did we choose for the *Agitato*?

Athena: [Laughing] It's been changed! Like 80?

Michelle: No, that was Kreutzer, this is Schumann.

Athena: Oh, this is Schumann [Begins playing the *Agitato* section]. Yeah dude! Bring it on!

Michelle: One, two, three, four [The group begins playing at letter E] (VT W6:50–57).

When Michelle asked Athena for clarification of the tempo, Athena playfully responded by encouraging Michelle to take a new faster tempo. Later in the rehearsal, Athena affirmed the new faster tempo for the *Agitato*. She told the group:

> And then for *Agitato*, we're going to go faster. Because, [Smiling at Jasmine] I think you play better when I go faster. Um, we'll keep the slow tempo in the beginning, and then Michelle can do whatever she wants at B and C, and then I'll pick it up at *Agitato*" (VT W6:402–403, 423–425).

By Week 9, Athena accelerated the final tempo considerably. When the strings struggled to stay together (VT W9:4–6), Athena sought a compromise tempo with Michelle:

Athena: What tempo do you guys want that [*Agitato*] at?

Michelle: [Thinking about the tempo, plays her *Agitato* violin part] Something like that, unless we can't handle it. If we can't do it faster, we can slow it down!

Athena: [Undeterred] Let's do it at that tempo then, at the arco?

At the *Agitato,* Athena moved the tempo faster, and the group followed Athena through the *Agitato* section. When they reached the end, Michelle countered, "We can slow down. It sounds better slowed, I think that's a better choice" (VT W9:184–209). Michelle knew that Athena wanted the faster tempo, and she was willing to try it once. But she stood firm for a slower tempo in the more difficult *Agitato*. The two leaders had a tug-of-war over how to set the tempos for the group.

Intonation less important. The participants did not seem to be nearly as concerned with correcting intonation as with perfecting rhythmic accuracy and observing dynamics. They rarely spent rehearsal time tuning intervals and chords. The reasons for this lack of attention come into relief in the participants' self-evaluations. During Week 7, the participants were asked how they would rate their group's intonation on a scale of one to ten with ten being the best score. The Green Quartet responded (in order) with Carly giving an 8, Lily with a 7, Victoria with a "7.7!" and Henry with a 7.3. Apparently, the members of the Green Quartet were satisfied with its level of intonation.

In contrast, when the Gold Sextet members were asked to evaluate their intonation skill, they revealed that they had not thought much about it. Randy looked for confirmation from Athena, and submitted "a 6?" with Athena nodding in agreement. Michelle countered with a "7.7" then backed down to "or 6." Kurt offered a 6.5 and

Thomas rated the group at 6. As the group reflected on the question, their ratings begin to fall, and Kurt finally admitted, "Yeah, it's one of the areas that we could improve on" (GI W6:6, 17–18). The realization that the group ignored the intonation issue also came up during the focus group in Week 12 near the conclusion of the study:

> Michelle: Did we use a tuner? I can't remember.
>
> Michelle and Athena: [Both laugh, because they realized they did not use one]
>
> Athena: Did we tune?
>
> Participants: [Laughter] (FG W12:8).

The leaders of the Gold Sextet did address obvious intonation problems. In the closing harmonic chord of the Schumann, Athena made sure everyone matched in intonation. Athena said to Michelle, "You're high," and then to Thomas, "and you're a little bit flat." Everyone continued to tune their harmonic while Athena played individual notes on the piano (VT W9:574–575).

Student leaders saw dynamics as an important part of musical interpretation. "I like the change in dynamics," Carly wrote into her annotated part, and bracketed mm. 120–126. Victoria wrote, "Prominent dynamic contrasts + good wrap up" in her annotated part and bracketed mm. 46–52 (AC W14). Clearly, the observation and performance of dynamics was an important part of the performance for these two students in the final presentation and performance of the Mozart. The interpretation of dynamics by the student leaders was seen in three types: (1) the use of contrasting dynamics to provide color and shade to the music, (2) the use of crescendos and decrescendos to shape phrases, and (3) the dynamic balancing of the various instruments

of the group.

The Green Quartet leaders were concerned that their group observed contrasting dynamics. Already in Week 1, while reading and rehearsing the Mozart for the first time, the leaders strictly enforced the written dynamics (e.g. VT W1:99–100). At times, in order to achieve greater contrasts, the leaders added further dynamics to enhance the printed markings:

> Victoria: Oh. So, you know how we have, like, a piano, and it comes out of nowhere? It's the last dynamic a bar or so before B?
>
> Carly: Uh-huh.
>
> Victoria: Like, somewhere it should be, I don't know, forte? Maybe mezzo-forte? It's, like, more contrast in the part. We're just playing at a normal dynamic before B, right? [looking to Henry]. What dynamic are you before piano? Just forte? Maybe . . . I don't know, maybe forte the whole time?
>
> Henry: Probably forte the whole time. From A up until the piano [Looks to Carly]. And then Carly, when you have the other part [plays mm. 17] for the first note? Maybe you should accent it? Say, make it sound, like, louder? (VT W1:159–169).

Victoria searched for greater contrasts from Henry and asked him to stay forte before his piano. Likewise, Henry asked Carly for greater contrast on a particular accent and demonstrated what he wanted her to play.

The members of both the Green Quartet and the Gold Sextet exaggerated dynamics to achieve an instrumental balance within their group (e.g. VT W1:128–129). Athena and Michelle were often both involved in either getting the inner strings to play louder (Thomas) or softer (Randy) to achieve a balance:

> Athena: And then Randy and Thomas have to be super soft. I think we were way too loud for B. It's sempre piano e legato.

> Michelle: [Studying her part] Oh yeah, like Athena says, so right when you get to C, that's when you start playing really loud [Mimicking a heavy bow hand]. You're trying to 'blow-someone's-eardrum-away' kind of loud. But make sure to stay soft at B. I'll try to make sure I stay soft, too.
>
> Athena: Actually Michelle, [Waving arm] you don't need to stay soft!
>
> Michelle: [Grinning] OK! (VT W6:370–377).

Athena and Michelle pushed Thomas and Randy to play both softer at rehearsal letter B, and then louder at rehearsal letter C. Michelle's use of an extreme metaphor showed her intention to create a dramatic dynamic contrast in the music.

The leaders of each group took advantage of dynamics to bring out and shape the phrasing of particular expressive melodies. Victoria often used singing to demonstrate her suggestions for dynamics. Victoria asked her group, "You know where it goes [singing the second theme accompaniment]? That's actually some variation there. It sounds kind of interesting. How about … crescendo-decrescendo … hairpins?" (VT W1:190–194). Victoria exaggerated the rising and falling of the line by singing to show how she thought the accompaniment should be played. In contrast, Henry always chose to demonstrate his dynamic suggestions by playing them on the violin. Henry said to Victoria, "You have that forte-piano part? I was thinking maybe we should do, uh, crescendo until the forte and accent the forte. So what I mean is … [Demonstrates six measures before the repeat]. So, gradually crescendo into that and drop down to piano" (VT W1:239–244). Henry used dynamics to shape the direction of the musical line into a particular forte-piano, and then contrast it with a continuous piano.

The following discussion provided evidence for all three uses of dynamics: to

create contrasts, achieve balance, and enhance phrasing:

> Athena: [To group] Because I feel like if we went pianissimo there and had a diminuendo later, then maybe it won't die.
>
> Michelle: Maybe it's supposed to sound, like, nothing, then.
>
> Athena: [Thinking about it] Let's just move the *pianissimo* later. And in order to emphasize the diminuendo, we could even get a little bit louder at the pianissimo, just a little bit, and then they'll hear the contrast [holding both hands in front of her, one above the other] (VT W9:87–98).

Athena asked the group to modify the written dynamics by moving a pianissimo to later in the phrase in order to provide not only a better balance of sound and a greater contrast, but also a means of articulating the phrase without it dying away.

Knowledge of music theory. Leaders in both groups used their knowledge of music theory to solve problems. For example, Athena had prior experience with learning music theory. She recalled:

> I'm doing the theory part. I've always done it ever since ninth grade. That's just my thing, because as a piano player, I tend to get more theory practice than the other people (I W3-5:5).

In one rehearsal, Athena took advantage of her music theory knowledge to solve a harmonic issue involving the Gold Sextet. The last note of the Schumann contained a difficult harmonic chord for the strings. When the group reached the end of the movement, Kurt still struggled with the cello harmonic on his bass, so Athena broke up the chord on the piano while the strings held their harmonic note:

> Athena: That's how it's supposed to sound [Plays a C chord in second inversion] Do you think it hurts with a [Plays a C chord in root position]?
>
> Athena: Kurt, can you play a C?

Kurt: [Plays a G below the staff] That's a harmonic?

Athena: Change your last note to a C.

Kurt: OK.

Athena: So you play C, Jasmine plays G, because the last note should end in the root position [Plays a middle C on piano].

Kurt: As a harmonic or just as a note?

Athena: As a harmonic.

Kurt: [Reflecting softly] That's a harmonic.

Athena: [Smiling] I don't know, I don't know how the strings do it.

Kurt: [Out loud] Harmonics on the bass are just totally different.

Athena: Or just play the highest C you can that's not a harmonic.

Kurt: [Finding his highest C on the string bass]

Athena: It can be about that high! [She again plays middle C on the piano].

Kurt: I just don't play that high [Plays the same C and looks at the rest to join in on the chord].

Athena: [To the other strings] 'Cause once you have that C, all the other notes will fall in place (VT W5:226–244, 250–251).

Kurt doubled the cello part that ended on the fifth of the chord, and was actually written higher than the viola which was sounded the third. Since the bass sounded an octave lower and, therefore, below the viola, Athena realized that Kurt must change his note to the root of the chord to avoid the chord heard in second inversion. With the root of the chord now placed in the bass, the harmonic chord was much more in tune.

Use of music history. The leaders of both groups tried to utilize what little bit of music history knowledge they knew to inform their interpretations. This was most

evidenced by the Green Group's members' conversation in the first week of the semester. Knowledge of Mozart performance practice was scant and fragmented for the members of the Green Quartet. The members of the group inquired of each other what they knew about Mozart performance practice:

Victoria: Was . . . Mozart during the Classical period?

Carly: I think so.

Henry: [Kiddingly] Mozart!?

Victoria: [Laughing] Anything is possible! What's that mean then?

[Silence]

Henry: [Reflectively] Probably not as much vibrato, on it.

Victoria: He didn't have it, right?

Henry: [Shaking head, but not sure] Right.

Victoria: Yeah. Didn't it . . . didn't it exist? Vibrato? [Laughs].

Henry: I don't think so [More sure].

Carly: Didn't Mozart do something funny with pick . . . pick-ups?

Henry: Like up bows?

Carly: Aaack! I use to know about all this stuff!

Henry: I don't know. The main thing I think we should be focusing on is accents, maybe?

Carly: Yeah.

Henry: Like, accenting notes.

Victoria: I think space. Let's be crisp.

Carly: Yeah.

Victoria: [Mimicking *staccato*] Like "Bomp, Bomp" (VT W1:57–72).

The members of the Green Quartet knew of certain standard performance practices, but they were either unsure of what they are, or they forgot. Henry showed his instrumental leadership tentatively at first and then more assuredly. He believed the group should be focusing on accents to make the piece sound more authentically Mozart. While Carly agreed with his concept, Victoria, as the challenger leader, wanted to modify his concept by focusing on the space between the notes. This scant knowledge early in the semester did impact the ensemble members' choice of bowing styles and variations of vibrato. For Henry, the use of music history to inform an interpretation was more a matter of intuition and sound. Henry summed up his group's use of music history when he observed:

> We don't really have any particular strategy, but sort of collaborate with each other. We look through the music, play it over and see what sounds more suitable for that time period (I W3-5:39).

Michelle summarized how her group approached the use of music history to help interpret the music. She stated, "I think we just kind of thought about the era the piece was written for and then based it off of that. Classical music is not as emotional and rough as Romantic music. So the Romantic era was our piece" (FG W12:5). Michelle stated that she was already aware of the differences in performance practice between Mozart in the Classical era and Schumann in the Romantic era. She understood that her group's interpretation of Schumann's Piano Quintet should be more emotional and dramatic than the Green Quartet's performance of Mozart. Ultimately, as each group prepared its final presentation, their understanding of the musical background of their

selected work and its informed practice grew, but this was well after their own interpretations shaped their performance in their final presentation (cf. I W3-5:40, vs. VT W11).

Collaborative Rehearsal Strategies

Both groups made a collaborative effort to solve problems independently within each group. Issues such as technique problems, counting rhythms correctly, performing polyphonic passages, developing precise ensemble playing and developing a performance interpretation were accomplished through diverse means. These diverse means included reading from the score over the pianist's shoulder, checking the score for reference, doubling parts for practice, working out the leaders' parts first, playing in pairs, rehearsing in slower tempos, playing *alla breve*, and referencing YouTube performances in the rehearsal. Notably absent from problem solving among the student leaders was the inattention given to intonation.

Reading from the piano score. One problem solving strategy Athena often applied had the string players stand behind her and read off of the piano score so that they could see how their parts fit together:

> Athena: Um, you guys should come here and play it, 'cause then you could see it right next to each other.
>
> Michelle: [Thinking about it] OK (VT W2:71–72).

Michelle and Thomas then moved to stand behind Athena and attempted reading from the piano score. Once Michelle tried it, she used it to her advantage later in the rehearsal when she had a question with how her violin part fit with Athena's piano part (VT W2: 368–375).

Checking the score. The usefulness of checking the piano score became evident early on for the Gold Sextet. Michelle stated, "I guess it also helped to look at the piano music because after we did that we found out that Athena actually had a couple of notes before people came in" (GI W7:14). On another occasion, a question came up regarding a wrong note in a particular part. This time Athena checked the part against the piano score when Randy's double stops did not sound correct:

Athena:	[Stopping the group] Randy, play that chord again, starting at forte.
Randy:	[Plays his double stop chords seven measures before the end, but plays a D# instead of a D natural six before the end]
Athena:	[Looking closely at score] Are you sure that's right? [Plays a B minor chord on piano].
Randy:	[Bending down to examine his part closer, Randy corrects his double stop chord to B, D natural to match what Athena plays] This one? Its Eb? [D#].
Athena:	No, it's a natural.
Randy:	[Bending down again to look at his part closer] It's Eb.
Athena:	Are you sure there's not a natural on it? [Kurt and Michelle both gather over Randy's stand to check his note]
Kurt:	[Pointing to Randy's part] Are you sure?
Randy:	Yeah, right.
Michelle:	[To Athena, examining Randy's part] There is an Eb there.
Kurt:	[To Athena] Yep, it is flat.
Athena:	[Examining her piano score] Put a natural in then.
Michelle:	[Begins playing the double stop chord as a B, E natural]

Kurt: No.

Athena: [Gets up to go and look at Randy's part, too]

Randy: [To Athena as she comes over] It is flat.

Athena: Flat? [Examines his part]

Randy: Note bad?

Athena: That is so weird. It's a D natural in the piano [score]. It's D natural.

Randy: D natural?

Athena: Yeah, because they already have Eb in the key signature. Here's a pencil [Gives Randy a pencil for him to change his part].

Randy: OK (VT W9:250–276).

While everyone agreed that Randy's double stop sounded wrong, Randy and Kurt couldn't believe the notes might be wrong in his part. The matter resolved when Athena declared the note was wrong based on her reference to the score and her ear training. The Green Quartet leaders had no full score to reference in their rehearsals; however, they employed a technique of sharing their parts with one another (e.g. VT W2:9).

Doubling parts. Due to the problems of playing with a larger group, the leaders of the Gold Sextet developed a strategy of doubling or playing along with the other members' parts. This was very easy for Athena to do since she saw everyone's parts in front of her and could readily jump to someone's part if they got off. For example, Athena doubled Thomas' solo viola line with him at Letter H when he got apart from the group (e.g. VTs W2:489; W5:94–96). She doubled Randy's part with him nine measures after letter K to prevent him from rushing the sixteenth notes in his second violin solo.

She continued to play the string parts for the entire section, leaving out her piano part (VT W8b:171–175). Later, she again doubled Randy's part to keep him in tune with the first violin (VT W6:356–357, 362–363). Michelle also used the strategy of doubling parts to help another player. During Week 2, she looked over and played Randy's part with him at letter A (VT W2:6).

Working out leaders' parts first. When ensemble problems became extremely problematic, Michelle and Athena developed a rehearsal strategy to enable them to work out the ensemble themselves without the rest of the strings. Once Michelle and Athena could play the part together, then the other strings followed Michelle's lead when they added in. This strategy proved very useful in learning to play the *Agitato* section where the piano and strings play the same passages two beats apart:

Athena: Hey Michelle, you want to play F with me?

Michelle: OK [Laughs]. All right. One, two, three, four.

Athena and Michelle rehearsed the *Agitato* section together at first, making several attempts to play the same music two beats apart as Schumann wrote. Athena counted out loud as they played it again:

Athena: [To the other members] Can you guys play F, again?

The other strings joined in and they all read letter F together (VT W5:272–291). Jasmine described the success of the strategy:

> So in the *Agitato* section of the Schumann, Michelle and Athena just played it, because with all of us playing, we couldn't tell who was off in the piano or the strings. So, with Michelle just matching it with Athena, it was a lot easier. As a string group, we could just follow Michelle, because she was matching Athena (I W5:50).

Playing in pairs. Related to the strategy of the lead violin playing with the piano was the strategy of other members playing in pairs or threes (e.g. VT W6:345–346). Athena described this strategy as "Sometimes having different people play together, not just the whole group, just like two or three at a time," to help work out ensemble problems (FG W12:5).

Slower tempos. Another common strategy used early in the semester involved rehearsal in slower tempos. Michelle described the use of slower tempos in learning the music and remarked:

> I think in the beginning we didn't really know how the song [movement] worked, so I guess we actually played it a lot slower than it actually was, and we were just trying to find the notes and the rhythm (GI W7:23).

A slower tempo was especially important for the Gold Sextet during the first rehearsal reading of the *Agitato*. Athena gave the directions to the group: "OK, let's go off the *Agitato* really slowly, right now. Let's reset the tempo [slower]. And everyone count out loud," she said smiling to everyone, "if you can." The music started much more slowly, and everyone seemed to be counting out loud, or at least moving their lips. The ensemble was much better at the slower tempo (VT W2:162–168, 268). In the coming weeks, the Gold Sextet continued to play the *Agitato* much more slowly in order to work on ensemble. Even in Week 5, Athena found that the group was still not ready for a faster tempo. Her question, "You guys want to go slower?" was more of a demand than a request (VT W5:189).

The Green Quartet experimented with slower tempos in the early part of the semester. "Can we try it a little slower this time?" Henry asked, after reading through the

first movement, *Allegro* (VT W1:188). Even in Week 8, Carly wanted to practice certain passages at a slower tempo. When she noticed that Lily still fumbled with the ornamented passages in measures 29 and 31, she said, "OK. We need to go slower" (VT W8a:52).

Playing *alla breve*. As both groups became more comfortable with the notes and rhythms, they began experimenting with *a tempo* performances. The rehearsal in Week 8 was notable for Athena's attempt to begin counting the B section of the movement *alla breve*, instead of counting in four as they had been doing:

Athena: Oh! We'll just count in half beats! One, two, one, two [The group Starts at the a tempo again in a half time feel].

Athena: [To Randy] Nope, that's already off. You were too slow, and you came in late. Um, this is a half measure [Begins playing at the a tempo and counting] One, two! [Repeats the same thing for emphasis] One, *two*! [To Randy] And you are supposed to come in after I play the first beat, right?

Randy: OK.

Athena: OK [Begins playing and still counting]. One, two!

Athena: Early! [Letter] I. Yeah?

Jasmine: Yeah.

Randy: We were at I?

Athena: Yeah, you were a little bit ahead. You were speeding up around your G, F, A, after the second time, third time you do your long [Sings his rhythm on "tah" and wiggles her fingers in the air at him].

Athena: OK. Let's do the same thing again [Begins playing the movement at a tempo again]. One, two!

Athena continued to count the half time feel throughout the B section. After the group

reached letter I and kept going, Athena complimented them by saying, "Good!" (VT W8b:139–158).

Athena seemed determined to get Randy to count and feel his part in cut time. She told him specifically where he rushed and sang his part back to him to make sure he understood. After the group successfully stayed together on the second attempt she seemed satisfied by telling them they did a good job.

Referencing YouTube. A final problem solving strategy involved the participants using technology. All of the participants had smart phones in which they could easily download a performance of their chosen work. These phones functioned as technical tools of mediation. If a particular question arose about tempo or bowing, they could locate a performance on YouTube as reference during rehearsal. Jasmine described the use of this tool and said, "Yeah, I mean, like, when we were practicing, we could readily say, like, 'How did other people do that? [On YouTube] and then just play it [on my phone] (FU W13:4).

Leaders Solving Problems

The student leaders in this study showed an excellent ability to identify ensemble problems before devising strategies to solve them. Both groups dealt with issues involving specific problems of ensemble, rhythm, and intonation. The most common method of problem solving was a three-step process termed by some of the participants as Read, reflect, and revise. A second method involved leaders counting out loud to keep the group together. A third method involved the concerted focus of the group on solving rhythms first and then observing dynamics second. In these roles, student leaders also

acted as Others within Tools of Mediation. Leaders solved problems by providing demonstrations to less able members in their groups, and organized and directed effective ensemble skills within their groups.

Read, Reflect, and Revise. Both the instrumental and figurehead leaders participated in the identification of problem areas or passages in the music. The leaders of the Gold Sextet in particular seemed concerned that their group not just read through the music, but instead focus on specific problems encountered during the reading. Michelle described her group's rehearsal strategy as:

> Making sure that we go through the parts that we have difficulty with, so that we don't just play through the entire piece and don't go back to fix things or work on the challenging passages (FG W12:5).

Kurt verified Michelle's assessment of the Gold Sextet's read, reflect, and revise approach, when he stated, "Well basically it just follows through these basic simple steps: One of us speaks out, 'Hey, you guys, I think there is a problem here.' And then all of us just conform, just giving our opinions about it" (I W3-5:35). Similarly, Thomas elaborated:

> So, if we hear a problem, we might stop and we might go, 'OK, something happened there,' so we play it again and if it happens again, then we might go back and see what happened and hopefully fix that problem by maybe singling out each person and seeing how their part sounds. Whoever does not fit, and then we work with that person. Everybody plays it one at a time and everybody else critiques it, unless we know who it is (I W3-5:27).

Reflecting on his role as a follower, Randy remarked:

> One person usually notices the problem, so that person will stop everybody and point out the problem. We'll all pay attention and work together and hopefully fix the problem. I listen to what the person has to say, and I try to do what the person sort of suggested. My role, I think I just follow, because I'm not very good, so I just follow along (I W3-5:14).

The members of this group all understood the principle of Read, Reflect, and Revise and due to the collaborative spirit of this group, felt empowered to add their own ideas.

The Green Quartet leaders' process of identifying problems was similar in its own read, reflect, and revise approach, but the members used the principle of compromise to a greater degree. Victoria described her group's approach:

> We definitely discuss it and then pinpoint what the problem is. Then we probably would just have to talk it out, because all the people who have a say in fixing the problem. It also has something to do with their part. And so, I'd think we'd have to reach a compromise that suits everyone's needs and their part (I W3-5:43).

Some participants stated in their interviews that compromise was important because of the smaller number of members and the greater potential for instability if one member of the group had issues with another. Carly and Lily were not considered leaders of this group but understood the importance of compromise in order to maintain stability when identifying problems. They described the same process of read, reflect, and revise evident in the Gold Sextet:

> Carly: Usually, just one person points it out and then everyone else tries to find a solution to it, and we try to compromise to make it work.
>
> Lily: We set up. We play through it once. And then we think about what we just did.
>
> Carly: We assess what we did.
>
> Lily: We … reflect (GI W7:2).

The third step of revising occurred once the two groups came to a consensus on what the problem entailed. The majority of these problems had to do first with rhythm, then with dynamics.

Counting out loud. The most common method to mediate ensemble playing by

the members of the Gold Sextet was to count out loud. Jasmine described the process as: "People are counting. Athena and I would always be, like, 'One, two, three, four,' we were counting to fill in" (FU W13:1). The benefit of Athena and Jasmine counting out loud to keep the group together was evident, especially in the early part of the semester (e.g. VTs W6:279, 311; W8b:46–47, 73–76, 139–146). Athena counted out loud whenever Randy or Thomas came in late on their solos in the funeral march, and she began to count the rests when Randy dragged his solo slightly (VT W6:432). When asked to give an example in the focus group of a comment that made their group sound better, Michelle deadpanned, "One, two, three . . . [Laughing]."

In contrast to the Gold Sextet, the Green Quartet did not count out loud. This was due to the thinner texture of the Mozart Quartet (see Appendix F, Mozart String Quartet, K.157 score) in which members often played in pairs (e.g. first and second violin, viola and cello) or in short imitative fragments of each other. In rehearsing the Mozart, the members of the Green Quartet did not get apart nearly as often as the members of the Gold Sextet did in rehearsing the Schumann.

Focus on rhythm first, dynamics second. In the early weeks of the semester, the two groups still focused on learning the notes and rhythms and just tried to stay together. In this early stage, most of the comments regarding problems had to do with rhythm and dynamics. The Gold Sextet members described this period and the difficulty of just getting through the music together:

> Michelle: I think in the beginning we didn't really know how the song [movement] worked, so I guess we actually played it a lot slower than it actually was, and we were just trying to find the notes and the rhythm.

Athena: Sticking together and playing on time.

Thomas: That's the main thing.

Michelle: And then, probably dynamics (GI W7:23).

Michelle makes clear her view of a hierarchy of the early problems: those that dealt with rhythm and ensemble, then those dealing with balance and observance of dynamics.

Ensemble playing constantly challenged the members of the Gold Sextet. For example, the four against three rhythms between the piano and strings in the Schumann Piano Quintet proved difficult to play together. This following discussion occurred in a rehearsal of this section in Week 8. Athena tried to communicate the concept that the string and piano notes should line up every two beats:

Athena: [To Thomas] Do you guys hear us meeting every other beat? [When the four against three line up].

Randy: Yeah, I do [pointing with his bow to Athena].

Athena: [To Randy, doubtfully] You hear it?

Thomas: I can hear you! [Points his bow at Randy] (VT W8:128–133).

In contrast, as the semester progressed, the group became more comfortable with the rhythms and ensemble and began to focus on dynamic interpretation more. This detailed discussion on the finer points of how to interpret a diminuendo occurred in Week 9:

Athena: [To group] I feel like if we went pianissimo there <u>and</u> had a Diminuendo later, then maybe it won't die.

Michelle: Maybe it's supposed to sound like nothing, then.

Athena: [Thinking about it] Let's just move the pianissimo later. And in order to <u>emphasize</u> the diminuendo, we could even get a little bit

louder at the pianissimo, just a little bit, and then they'll hear the contrast [Holding both hands in front of her, one above the other].

Michelle: [Being practical] Or we could just change that to a regular piano and make a dimindo … duh! [Rolling her eyes] diminuendo to, like, pianissimo.

Athena: Yeah, that's good, too (VT W9:87–98).

Athena showed concern that a written pianissimo followed by a diminuendo might interrupt the momentum of the music but recognized the need for dynamic contrast at that point in the music. Michelle suggested a compromise to make Athena's suggestion easier to perform.

The members of the Green Quartet were not as challenged rhythmically in the Mozart as the members of the Gold Sextet in the Schumann. All the members of the Green Quartet viewed the proper performance of dynamics as being critical to helping the group solve balance problems and in giving the music its proper character. Carly described this emphasis on dynamics when she said, "They help me make the music more interesting than just the notes on the paper" (GI W7:4). Henry added his comment on work that still needed to be done with the Mozart, "I think our dynamics are pretty good, but maybe the contrasts between each instrument need to be more defined, as in maybe bring out some instruments out more in certain parts" (GI W7:9).

The Green Quartet's earlier focus on dynamics can be seen in this discussion from the very first rehearsal:

Victoria: [To Carly] Oh. So, you know how we have, like, a piano, and it comes out of nowhere? It's the last dynamic a bar or so before B?

Carly: Um-Hum.

> Victoria: Like, somewhere it should be, I don't know, forte? Maybe mezzo-forte? It's, like, more contrast in the part. We're just playing at a normal … normal dynamic before B, right? [Looking to Henry for confirmation]. What dynamic are you before piano? Just forte? Maybe … I don't know, maybe forte the whole time?
>
> Henry: Probably forte the whole time. From A up until the piano [Looks to Carly]. And then Carly, when you have the other part … [plays m. 17] for the first note? Maybe you should accent it? Say make it sound like louder? (VT W1:159–169).

Lily was absent from this first rehearsal. When she appeared the next week for the second rehearsal, Victoria and Carly took it upon themselves to try to get her up to date with all the dynamic markings at the beginning of the rehearsal. They took time to communicate to Lily the importance of following the performance of the dynamics determined in the previous rehearsal (VT W3:1–36). The focus of both groups on rhythm and dynamics was seen as critical to each group's improvement in the early stages of the study. As the two groups progressed in their understanding of the music's rhythms and dynamics, they began to attempt to solve more complicated musical problems that involved higher levels of critical thinking and analysis.

Leader demonstrations. The leaders of both groups demonstrated on their instruments or sang their musical interpretations to the other members. Some leaders found it more useful to communicate a concept by demonstration on their instrument rather than attempting to describe it in words. For example, Henry's discussions of his interpretations almost always included mediating his ideas by playing them on his violin. Henry said:

> So, other there, for the fortes, I say we try to accent it more? [Raising violin to demonstrate]. So, when we do … [Plays downbeat of m. 121 and accents the

> forte strongly]. So, the forte is, like, [Air bowing accents] accented (VT W1:94–96).

Rather than communicate his ideas verbally, Henry often communicated ideas through his violin playing. Henry's method of nonverbal communication was seen in this later example in the same rehearsal. Henry stated:

> Even the first … first two notes. Try to make it more staccato [Demonstrates first two notes of second theme] or spiccato, one way or the other [Demonstrates first two notes spiccato]. That way [Demonstrates the spiccato idea another time] (VT W1:200–204).

Michelle and Athena likewise understood the mediating value of demonstration. This demonstration occurred when Athena tried to communicate the essence of an appoggiatura in Randy's part:

Athena:	[Stopping and singing to emphasize the appoggiatura for Randy].
Randy:	[Tries to imitate on his violin the way Athena sang the falling appoggiatura]
Athena:	Don't make any of them jump [The sixteenths notes before the appoggiatura]
Randy:	[Tries to control his bow on the sixteenth note pickups]
Athena:	[Plays it the way she wants it on the piano for Randy's sake]
Randy:	[Tries to imitate Athena]
Athena:	Put less emphasis on the first note.
Michelle:	[Observing Randy's bow, demonstrates what Athena is saying using her violin bow]
Randy:	[Keeps trying to get the right articulation and phrasing that Athena wants]
Athena:	[Plays it again on the piano]

Randy: [Plays it again on his violin]

Athena: [Plays his first note on the piano]

Randy: [Taking her cue, plays the same first note]

Athena: OK. Let's do it again (VT W9:112–130).

Michelle and Athena both tried to communicate to Randy the articulation of an appoggiatura. They demonstrated to Randy three different ways: First Athena sang, then played on the piano, and finally Michelle demonstrated on her violin. Randy tried to imitate what the leaders demonstrated to him. This pattern occurred several times until Athena noticed that Randy understood the concept.

Athena and Michelle mediated other articulations:

Athena: Yeah, especially the . . . [Demonstrating on piano Randy's part at letter A]

Michelle: [Repeats the same rhythmic notes on the violin for Randy to hear again]

Michelle: OK [steps back to her place].

Athena: [Continuing to play the rhythmic line of the second violin part]

Athena: [To Randy] Ah, and the short notes, keep them short and the long notes,
the quarter notes, keep them long.

Michelle: [To Randy] So, basically, most of this stuff is on the lower part of the bow [Motioning silently with her bow had over the strings]. Stay on the lower part of the bow.

Randy: [Quietly] OK (VT W2:9–18).

While Athena demonstrated the actual sound of the articulations by singing and by verbal description, Michelle mediated Athena's symbols to Randy with visual bowings on her

violin. Michelle demonstrated her perception of how the other string players played incorrectly in this example of how to play pizzicato. Michelle said to Randy, "Instead of doing, like . . . [Demonstrates by plucking a dead sounding note] doing, like . . . [Plucks a resonant note with vibrato]. Otherwise, it sounds really rough" (VT W6:416–417).

Effective ensemble skills. The student leaders used effective ensemble skills to facilitate rehearsals and improve performances. These ensemble skills included positioning of the group in good sight lines with the music stands down, making eye contact with other members of the group, breathing together to play together, providing visual cues, and confirming who had the leading part.

One effective ensemble skill simply positioned each musician to provide maximum eye contact and cues (e.g. VT W6:390–393). Michelle understood this best, who said, "I guess that our stands [should be] in the right place, so, like, certain people stand in the right position so that we can see each other more . . . (GI W7:13). Athena and Michelle thought it important that they always be able to see each other:

Athena: Is this how we are going to stand?

Michelle: Yeah, I think so. We've been practicing like this.

Athena: Ah! [To Randy] Can you stand back just a bit, Randy?

Randy: [Moves back slightly to allow Athena to see Michelle]

Athena: OK, Michelle can see me (VT W5:322–326).

A key positioning change was made in the Gold Sextet in Week 6. Michelle and Athena decided that the balance of the group would be helped by switching the position of Randy on second violin, and Thomas on viola (VT W6:93). With the viola *f* holes

facing into the ensemble rather than out, they noticed that Thomas had difficulty getting out his important solos. By putting him between Michelle and Athena, not only was his viola facing out towards the audience, but Athena kept him in rhythm, as he was sometimes prone to be late in his counting. Randy was a strong violinist and having his violin face into the group was not considered detrimental to the overall balance.

Because the upper strings of the Gold Sextet chose to stand during all rehearsals and the presentation, Michelle thought it important that they keep their music stands down low in order to provide greater visual cues and eye contact. Reflecting, Michelle said to the group, 'Um, I wonder if we should, like, lower our stands a little so that we can see other." Randy, Thomas and Jasmine pushed their stands down lower (VT W6:390–393).

By keeping the upper strings stands down low, it provided Jasmine a better sight line from her seated position.

Maintaining eye contact was an important concept to both groups. Athena explained the concept best when she said, "You also have to look at each other to make sure that you end at the right time together and start at the same time" (GI W7:13). Athena described having to follow Michelle in the first B section when she followed Michelle's lead of the *rubato* melody over the three against four accompaniments (VT W9:143–144). Jasmine saw the importance of having visual contact to bow together. Jasmine said to Thomas and Randy, "Try matching bows with Michelle! Don't forget her!" Jasmine chastised Thomas and Henry when she observed they had not followed Michelle's bows (VT W6:443–444).

The leaders of the Green Quartet, Henry and Victoria, constantly reminded the other two members to watch each other in order to bow and phrase together. "Just make sure to look at one another," Victoria said in the first rehearsal (VT W1:263). Victoria reminded Lily in Week 3, "It's kind of hard to make our parts together. You kind of have to watch the bows. Watch the bows" (VT W3:35–37).

Once eye contact had been initiated, the next step in the process was to breathe together. Athena summarized the link between eye contact and breathing together as, "I think our goal for this is to just breathe together and play together." Michelle added, "And also cues" (GI W7:27–28). This understanding of the importance of watching each other and breathing together was well understood by the two group leaders as seen in their visual cues to the other group members.

Henry was a master at cuing. Not only did he communicate timing and dynamics, he indicated his interpretation of the music. For example, Henry emphasized the downbeat *fortepianos* eleven measures before the repeat with his violin both aurally and visually. As first violinist, Henry led the *ritardando* before the recapitulation. Henry said to his quartet, "So at that part, I'm going to make a ritardando, and I will cue you guys into C (VT W10:77–78). Henry not only took his time with his solo into the recapitulation, he also gave a nice cue on the arrival point and the other ensemble members watched him and followed his lead (VT W10:91–92). This same mediation sequence occurred in the following week's rehearsal and the ensemble members still followed his lead without a discussion reminder (VT W11:23).

The Gold Sextet visual cues were given by both Athena and Michelle. For

Athena, giving cues was an important part of her chamber music experience and leadership responsibility. In her self-annotated copy, Athena circled the half note chord in measure 64, "Big signal to 1st violin leading tone" (AC W12). As pianist, Athena could only use her head and body to cue, while Michelle also used her bow. For example, in Week 8, Athena cued Randy's *forte* double stops seven measures before the end of the movement by making eye contact and then moving her head in a firm downward thrust (VT 8b:176–177). Some of the cues had to be rehearsed:

> Athena: [Looking at Michelle and cuing] Ta-tah.
>
> Michelle: [Following Athena's cue at same time] Ta-tah. Okay (VT W6:305–306).

Some cues had to be practiced:

> Michelle: [Trying it out silently with her bow, first] So I'll probably go like this [Lifts her violin] when we do it (VT W6:315–316).

Other cues had to be demonstrated to the group first:

> Michelle: So, I guess look at me at B. I'll give a big [Shows a big down bow motion with her bow over her violin] (VT W9:28–29).

Cuing was seen by both group leaders as being integral to performing with good ensemble. Athena and Michelle both described the importance of cuing in their ensemble:

> Athena: Michelle is like the conductor … and you also have to look at each other to make sure that you end at the right time together and start at the same time. I think our goal for this is to just breathe together and play together.
>
> Michelle: We're still working on that, but it is better. Yeah … and also cues (GI W7).

For the leaders of the Green Quartet, Victoria reminded her group to watch for cues when she said, "Just make sure to look at one another" (VT W1:263).

Finally, the effective use of good ensemble skills was the pre-determination of who had the leading line and then to instruct the other members to be subordinate to that person. Athena described how, during the course of the semester, she learned to do this. Athena said, "I was able to see the parts in my own music that should be brought out more (FG W12). Jasmine confirmed this when she said:

> Athena helped us, because you know how she has all the parts on her score, and she could see, like, when we were playing, she told us, 'Oh, I do an accent first, and then you guys come in' (FU W13:2).

Athena often used this opportunity to reinforce Michelle's figurehead status as first violinist in the group:

> Whenever there is a tempo difference, Michelle has that, for example, that one long phrase of whole notes and quarter notes in the second theme part of the piece. The second violin player and the viola player have their eighth rests and sixteenth notes, and then I have my triplets. When I go against them, they just like went all out, like, the tempo went crazy! Michelle had to take the lead and really bring out her melody part, and then we all just follow her. We mostly just listen to her (I W3-5:4).

The dual learning structure of each of the two chamber groups was evident in the way the leaders demonstrated effective ensemble skills.

Collaborative Use of Media and Technology

I found social media to be an important technical tool of mediation with the Gold Sextet, but not the Green Quartet. Some of the focus group members reported not being able to go without social media (FG W12: p.9). In the Gold Sextet, students collaborated in their work using media and technology such as Facebook, email, the IMSLP web site,

YouTube and Microsoft PowerPoint. In contrast, the Green Group was not nearly interested in using technology in rehearsals. According to Carly, other than the final PowerPoint for the presentation, the only technology the group used was "Facebook to communicate about the project, but not recently." Victoria added, "Usually I check out music pieces online, but not so far with this group" (GI W7: 5). The members of the Green Group did not rely on social media to collaborate on the work for the presentation. Instead they only used email (FG W12:9). The following technologies and internet sites were mentioned as being used by the participants in some point in the study: Facebook, IMSLP, YouTube accessed on student iPhones, Google Docs and Microsoft PowerPoint.

Facebook and IMSLP. Social media was a major part of the collaborative process for the members of the Gold Sextet in selecting a suitable chamber work for the group to study that semester. When asked how his group decided on the Schumann Piano Quintet, Thomas laughed and said, "Well actually I don't know, but Athena 'Facebooked' us one day, and she said, 'Oh, I've found a great piece!' and we went from there" (I W3-5:27). Jasmine confirmed the same scenario and added more details. She said, "So Athena, she sent us some links on Facebook to listen to the music, and she sent us the scores to see if we could play it" (I W3-5:50). Athena used Facebook and the IMSLP web site (International Music Score Library Project) that included links to performances and pdf copies of the parts (GI W7:16).

In preparation for the final presentation, the members of the Gold Sextet broke the project down into different roles. Jasmine reported that the Gold Sextet used social media again:

> We divided our roles on Facebook, and then Randy and I just emailed each other our information. And then, like, Thomas and Kurt created a Google spreadsheet for us [to put our work into] (FU W13:4).

Interestingly, while the Gold Sextet relied heavily on social media to collaborate, they used very little technical tools such as tuners, digital recorders, or metronomes. When asked if they used any media to record themselves, Michelle replied, "No, not yet . . . although that is helpful. I find that whenever I record myself, I can find inconsistencies!" (GI W7:16). When asked about the use of technical tools such as tuners or metronomes they replied:

> Kurt: None at all that we know of. But that may be a good tip that we start using them.
>
> Athena: Yeah, a metronome would be nice.
>
> Kurt: In some cases (GI W7:16–17).

Evidently, while the Gold Sextet members understood the benefits of tuners and metronomes, they did not make any effort to use them in rehearsals.

YouTube on iPhones. Over the course of the semester, both groups used video and audio examples from YouTube played on their iPhones at least once in rehearsal to study interpretations. Five of the student participants also viewed or heard YouTube or iTunes performances at home. Of those five, Athena, Randy and Lily listened to more than one recording for different interpretations (FG W12:5). Jasmine described how the Gold Sextet used YouTube in the rehearsals. Jasmine said:

> We listened to it on my iPhone. Yeah, I mean, like, when we were practicing, we could readily say, like, How did other people do that [on YouTube] and then just play it [on my iPhone]? 'Cause we had practice like every three Weeks and we could go home and listen to it by ourselves. That definitely helped (FU W13:4).

The fact that fifty percent of the students actively listened to other interpretations at home is significant in that it provided the students a sense of what the selections could ultimately sound like and informed their sense of style and how their part fit in with the rest of the group. Athena confirmed that she listened to the Schumann movement regularly. For Athena, "Whenever I go to piano [lessons], I pop the disc into my car stereo, and I would hear the quintet for, like, forty minutes." Michelle added, "I guess some people used actual recordings [on YouTube] which definitely help your interpretation" (GI W7:19–20**).**

Google Docs. The Gold Sextet used Google Docs to collaborate and coordinate work on the report as a file that everyone could access online and add their own piece to the presentation. Each member did this by pasting their own individual assignments into the report. Athena prepared the musical analysis; Michelle read the presentation. Thomas and Kurt wrote the composer's biography, and Jasmine and Randy created the timeline (VT W11:207–210). Finally, Athena and Michelle edited the entire work for grammar and style (FG W12:9).

Microsoft PowerPoint. Ms. Carlsen, the Instructor, required all the chamber groups to create a ten minute PowerPoint presentation outlining the composer's biography, the musical analysis, and a timeline describing the world events that occurred during the time the piece was written. The PowerPoint creations of both groups included graphics and pictures of the composers, their family, associates and maps. The Green Quartet's PowerPoint was created by Lily, the group's expressive leader, who attempted to reference events in Mozart's life with humorous pictures of animals (VT W11b:151–

152). The last slide of both groups' PowerPoint presentations was entitled *Work Log*. These slides showed how the groups divided up the work.

Summary of Learning Structures

By following the sociocultural approach of Vygotsky and his followers (1978) and the use of Scollon and Scollon's Mediated Discourse Analysis (2004), the findings from this study indicated that students in both groups achieved the goal of learning and performing the music, albeit laboriously, by working with internal group leaders to identify musical problems and develop creative rehearsal strategies to solve them. Student leaders operated within a modified version of Vygotsky's theory of ZPD. In other words, more advanced student leaders assisted less advanced students to guide them in their learning.

Within this teacher-less framework, a dual student learning guided each group. The Gold Sextet's dual learning structure had an instrumental leader responsible for the forward direction and focus of the group as well as a figurehead leader, a recognized authority by virtue of her position, but who yielded to the instrumental leader. The Green Quartet's dual learning consisted of an instrumental leader and a challenger leader who occasionally questioned the ideas of the instrumental leader. Without a traditional instructor involved, these student leaders promoted a spirit of collaboration by asking for opinions and seeking out compromises within the group.

Upon close examination of the interaction between the leaders and the rest of their groups, it became clear that they functioned as tools of mediation. As such, student leaders identified problems and devised creative rehearsal strategies. The customary

procedure for the rehearsal followed a method of Read, Reflect, and Revise. Usually, rhythmic problems were treated first, then dynamics and balance second. In addition to basic rehearsal protocol, such as, leader demonstrations, counting out loud, and making notations in the parts, the student leaders also employed creative strategies. They took it upon themselves to double parts of members; they demonstrated their own leader parts in pairs and then organized pairs of members playing together. They also tried different tempos, including *alla breve*, to correct problems, and even referenced YouTube performances. Student leaders recognized the importance of honing effective ensemble skills. The leaders of both groups used effective ensemble skills to improve performances such as the positioning of the group in good sight lines with music stands down, making eye contact and giving good visual cues to other members.

In both groups, the musical symbols on the page became psychological tools of mediation as leaders communicated their own interpretation of proper performance style. The student leaders' knowledge of music history, although scant, impacted the interpretation of the pieces through proper tempos, dynamics and balance. Once a concept of a performance style was agreed upon by the leaders, it was communicated to the other members by having them imitate the leaders and follow their bowing styles.

Media and Technology were very important technical tools of mediation for the Gold Sextet, but not the Green Quartet. The leaders of the Gold Sextet coordinated and collaborated on their work with the other members through Facebook, YouTube, and Google Docs. The leaders of the Gold Sextet played recorded performances of the Schumann Quintet in rehearsal using an iPhone.

Part II: Social Structures

As I observed the chamber group leaders, I noticed that social leadership was an equally important and sometimes separate function from the instrumental and figurehead leaders. For this part of the chapter I divided the findings into five categories: models of observed social structures, social talk as cultural mediation, positive and negative peer pressure, social connections established through chamber music, and a pronounced work ethic found in both groups.

Dual Social Structure Models

Just as in Learning Structures, each chamber group exhibited a dual social leadership structure. Group Dynamics (Cartwright and Zander, 1968) describe two types of social leaders: the *dynamic leader* and the *expressive leader*. The dynamic leader coordinates important social connections between the different pairs of members (social dyads) and is involved in the mediation of conflicts. They use peer pressure to initiate student focus on the task at hand. The second type of social leader was the *expressive leader*. The expressive leader is one who maintains the morale of the group, often through humor and levity. Based on my analysis of dialogue using Scollon and Scollon's MDA I found that students operated in peer social structures that included these two models of social leadership.

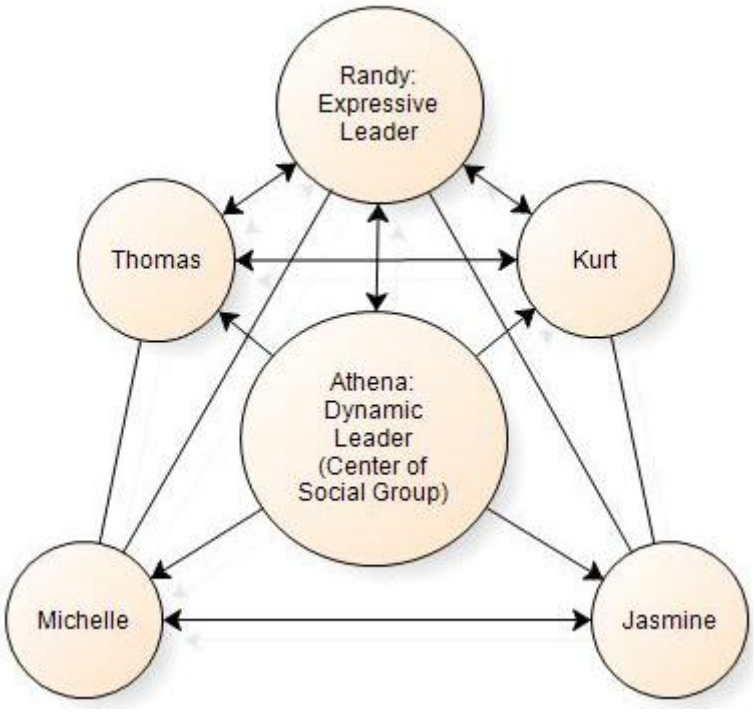
In this study, dynamic leaders established social connections between the various dyads within each chamber group. Interestingly, in this study, the expressive leaders were the least musically advanced members of both groups. Although these members were lower in musical authority, they compensated for their lack of expertise by

improving the group's morale through the use of social talk, jokes, and humor. They established their status by being socially interactive with all members of the group.

Social interaction was an important part of the participants' chamber music experience. Over the course of the semester and the study, both groups reported bonding socially in rehearsals. Jasmine stated, "I think we did get closer going through it. People do want to be with their friends" (FU W12). Since these groups were student directed, social conversations happened spontaneously, or student leaders took time for social talk as a break from the routine of rehearsing the music. These leaders were responsible for the cohesion and morale of each group. They exuded strong social skills and expressed their enjoyment in working with the rest of the group.

Gold Sextet. The Gold Sextet's social structure revolved around one dynamic leader, Athena, and one expressive leader, Randy (see Fig. 6, arrows indicate leadership). All the members of this group exhibited excellent social interaction (see Fig. 6, lines indicate social interaction) and all the Gold Sextet's members reported being friends on *Facebook* (GI W7). Athena, who acted as both the instrumental leader and the dynamic leader, formed a social connection between the male social triad of Randy, Thomas, and Kurt, and the female social dyad of Michelle and Jasmine. Randy was the expressive leader of the group. His easygoing nature and use of humor, especially in telling one-line jokes, kept the morale of the group high and contributed to the group's efficacy (see Table 6).

Table 6 *Gold Sextet Social Structure*



Athena, in her role as the dynamic leader, worked to create social connections between the boys and girls in her group. These social connections helped to bind the various dyads together. Athena used humor to establish a social connection as she interacted with each member of the group. In Week 6, Athena playfully said to the boys after a successful rehearsal, "Thomas, good job! Hey, Randy! You came in on that note "Boom," she said as she played his note on the piano, "and I was, like, 'Whoa! Randy!'" Everyone laughed at her comment (VT W6:180–182). When Thomas finally mastered playing a beautiful harmonic, Athena looked up at him (he was much taller), and gave him a warm smile (VT W9:557).

Athena used quick humor to diffuse a tense situation. In the rehearsal in Week 2, Athena began missing notes while the ensemble unsuccessfully attempted to work out the

ensemble in the *Agitato*. She suddenly began to pound random keys on the piano, and everybody stopped and laughed (VT W2:424–438). Athena used humor to compliment the group whenever possible. In Week 6, after a successful reading that followed a difficult rehearsal the week before, Athena waved her fist in the air and said:

Athena: We were a part!

Michelle: A part! I get it! [Cracks up].

Athena: No, it's bad! (VT W6:62–67).

Despite her levity, Athena could be serious when she thought others were being too silly. One conversation occurred during a planning discussion on who would do the writing for the presentation. Athena asserted she would maintain quality control of the grammar by doing all the editing herself.

Kurt: [To Athena] Wait. Hold up. If you're going to edit it . . .

Athena: Yes.

Kurt: [Smiling] I don't have to do grammar!

Randy: [With an Asian accent] I talk like this all time!

Kurt: Randy, you're a genius!

Athena [Emphatically to Kurt] I'm a grammar Nazi. I will go to your house and give you H[ell]! I don't want to use that word [Chuckles].

Kurt: OK, [Sarcastically] I'll use [good] grammar, I don't want to get H! (VT W9:401–408).

As seen in the same discussion, Randy was the expressive leader of the group. His use of one-liners kept the group in good humor, and he usually delivered them with a sarcastic tone of voice. For example, when the other members criticized Randy for

playing too loud, he complained in a monotone, robotic voice, "But I play it softly." This made everyone in the group laugh, and Jasmine replied sweetly, "Well, we still hear it" (VT W6:267–268). On another occasion, Randy made fun of Athena's exhortation to play like athletes by mimicking the way he thought high school athletes talk:

Randy: "All right, Bones!" [Whispers something under his breath]

Athena: I was just kidding! [Laughs]

Recognizing that Randy just teased her, Athena apologized and laughed. Evidently, she appreciated his sense of humor.

Even when he was serious, Randy sometimes made the group laugh. For example, he once mentioned that the last chord of the Schumann sounded pretty, but Jasmine did not take him seriously:

Randy: It sounded pretty.

Jasmine: [Laughing and teasing Randy] It sounded pretty! (VT W5:255–257).

Jasmine probably did not detect that Randy genuinely expressed his opinion about the music since he was usually sarcastic.

Randy's humor could be non-verbal. In the group interview in Week 7, he continually made the others laugh, but not always with words. When Michelle brought up the usefulness of making eye contact, Randy made silly facial expressions at her:

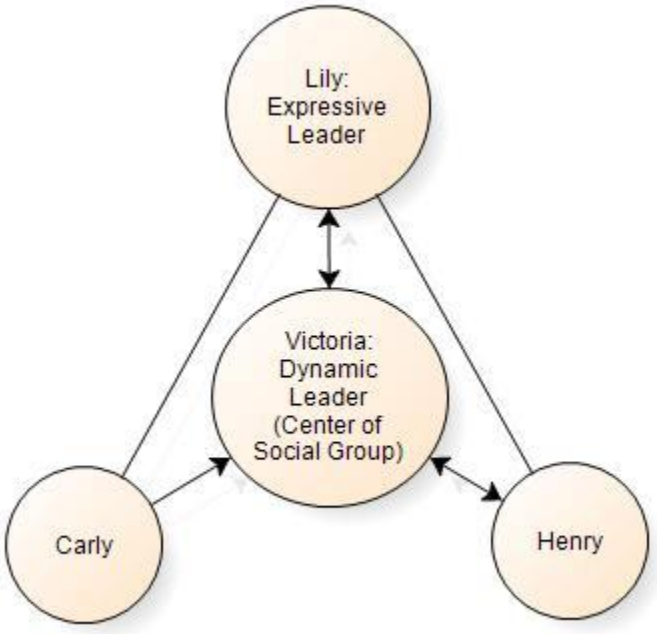
Michelle: … and also cues.

Athena: [Whispers and points to Randy] Michelle! Randy.

Michelle: What? [Looking at Randy's funny face] Oh, my God! [Laughs] That is creepy! (GI W7)

Green Quartet. The Green Quartet had a dual social structure. Victoria was the dynamic social connection between all the members of the group. She not only interacted freely with the other three members, but through her, they made connections with each other. By contrast, Lily was the wise-cracking, expressive leader, even though she was the weakest musician in the group (Table 7).

Table 7 *Green Quartet Social Structure*



As a dynamic social leader, Victoria was the social connection between Henry, Carly and Lily. Victoria described how well her group got along socially when she said, "We're all pretty … chill. Yeah" (GI W7). The contrasting personalities of Henry, Carly and Lily would not have worked well together without Victoria, who was a mediator. In Week 6, when Carly began to criticize Lily's bowing, Victoria jumped in to defend Lily. Lily agreed with Carly initially and tried to laugh it off, but when Carly continued to

criticize her, Lily became resentful and made clucking sounds several times. Victoria came to Lily's defense by moving the matter from the technical realm to a matter of personal taste and playing style (VT 6b:79–90).

Later in the same rehearsal, Victoria energized the entire group with a change of pace. When she noticed that the group sounded listless and bored, she suggested a new approach to the music:

Victoria: [To the rest of the group] Let's do it one more time. [Laughs] In high speed!

Henry: [Smiling and getting ready to count off]

Lily: No, no, no, no.

Victoria: *Allegro*? How fast is *Allegro*?

Lily: Let's just go really fast.

Victoria/Lily: [Start singing the first theme at a very quick tempo, making Carly grin and smile].

Victoria: [Continues by tapping her foot in the quick tempo] OK.

Henry: [Trying to catch the new *tempo*, cues with his violin and starts the group in the new quicker tempo] (VT W6b:332–342).

Surprisingly, the piece sounded better even though the tempo was more challenging. Victoria infused more energy and focus into the group with her suggestion.

Lily functioned as the expressive leader of the group. Playing viola was not her favorite performance medium; she preferred dancing and choreography. She admitted her lesser ability as compared to the others in the Green Quartet and said, "Playing wise, I'm not a strong player, I'm kind of like the background music" (I W3–5). In rehearsals she often appeared disinterested and even depressed, although she did come to life in the

presentation. She often resorted to humor as a way of keeping the work interesting, and her droll comments made the others laugh.

Like Randy of the Gold Sextet, Lily was proficient at making one-line wisecracks that made the rest of the group at least grin in appreciation, and perhaps forget their differences:

Victoria: We all share responsibility.

Lily: [Slyly] Anarchy!

Everyone: [Laughs] (GI W7:3).

It was valuable to have both dynamic and expressive leaders in the group. When the rehearsals began to drag, Victoria and Lily instilled new life into the quartet. In Week 10, the group finished working on the movement and reached the end of the movement, but there was still time left:

Victoria: What should we do now? We could play the song [Looking at the clock] three more times?

Everyone: [Laughs]

Lily: Let's make it crow! This is the sequel.

Everyone: [Smiles at Lily's joke and get their instruments up to play again] (VT W10:237–249).

By saying, "Let's make it crow! This is the sequel." Lily used colloquial language to mean they should really try to make it sound as a worthy sequel to the good work done previously.

The members of the Green Quartet gave revealing responses to describe their group's social dynamics:

Bill: Is there anything like that going on in this group? Such as, "You made a comment about that person that I didn't like, so I'm going to come to her aid?"

Carly: Not really.

Victoria: Nooo. I don't think so.

Lily: Off with your head! (GI W7)

The responses of Victoria and Lily showed their social leadership roles. Victoria carefully considers the question but dismisses the possibility of any unfriendly undercurrents. Lily, in typical expressive fashion, offers a sarcastic comment in order to make light of the matter.

Social structures enabled ZPD. The dual social structures of both chamber music groups promoted a culture of working together. With distinct roles, each member knew who led and who followed. The Zone of Proximal Development as a social construct can be seen in this interaction:

Athena: [Not satisfied and thinking] Yeah. Can we make that more exciting? More ghostly? Not ghostly but …

Michelle: Put more vibrato on it?

Athena: [Pondering] How to make it more exciting?

Kurt: Pulsing? I think pulsing would add a little …

Athena: [Interrupting Kurt] Yeah, add a little pulse on the strange notes.

Michelle: You mean the sixteenth notes?

Athena: Ah no, I mean, like, naturals, accidentals [Pointing to Thomas]. You have some accidentals. Bring that out. [To everybody] We have to bring out the dissonance.

Michelle: Yeah, and I guess play louder on those. [Looking at Athena] Can we get more tension before B?

Athena: [Looking at her part then back to Michelle] Yes [Thinking]. I'll bring out my accented notes more.

Michelle: [Looking over Thomas' harmonic note] How about bowing from here to here, [Showing how much bow to use] start *piano,* [Demonstrates on her violin] kind of like that. And then kind of come back down, so that you match the rest of our dynamics.

Athena: Uh, Michelle, can you make that a melody? [Plays the falling fifth in the eighth measure on piano]. Heavier on the one. Like an appoggiatura.

Michelle: [Plays the motif on her violin as Michelle suggested] Yeah, I kind of just messed up there! My fingers kind of slipped. But I will do that [Practices the motif another time].

Athena: [Getting up to point to Thomas' part] I feel like when you get louder on this one, you overpower Michelle's entrance. So do get louder, but before Michelle comes in, you have to come down.

Athena: [Sitting down and smiling to the group] OK, ready? Tension! Anticipation! Bring out your weird notes, the accidentals. Play it like an athlete, c'mon guys! Let's try it again! (VT W9:40–57, 65–70, 478–479).

As Michelle and Athena each assisted a different member of the group, they mentored the less experienced players. Athena was clearly a social dynamic leader as well. Her final exhortation to "play it like an athlete," summoned up an image of a sporting event where she acted as the coach and the rest a sports team, who actively played their part on the field.

Positive and Negative Peer Pressure

One of the key social structures applied by the leaders was subtle, but effective, peer pressure. Some of the participants even admitted feeling anxious during the course

of the study as a result of pressure from the student leadership. The types of peer pressure present among the groups are organized into the following categories: criticisms, apologies, questioning, and compliments.

Criticism. The most obvious form of peer pressure by the social leaders was direct criticism. They expressed criticism either toward an individual or toward the entire group. Victoria criticized the entire group when she felt the playing was uninspired. After a prolonged period of silence, she complained:

> Victoria: A little flat. Not tone wise, but character wise. It's, like, now, I mean we stay together, but it's just … [Droops her head and sticks out her tongue] (VT W10:43–54).

Occasionally, a leader would understand the criticism of the group as a whole to be directed toward them. In this example, the challenger leader, Victoria, criticized the group for sounding boring. She complained about the lack of dynamics:

> Victoria: I don't know. I thought it was boring.
>
> Carly: Meaning?
>
> Victoria: It needs more dynamics.
>
> Carly: Like, where?
>
> Victoria: [Looking at music] Like, that last bar. The piano…forte-piano. That and . . . I'll keep looking for more. [Looks away and clears throat] Yeah.
>
> Henry: I think I . . . our dynamics are pretty good. But maybe on some parts, more *staccato*.
>
> Victoria: So arduous!
>
> Henry: [Insistent] Play your parts more *staccato*. And then long tender lines.

Victoria: [Looking at music] OK (VT W1:5–15).

The conversation is notable for two reasons. First, Carly challenged Victoria to state specifically where the dynamics were not being played. When Henry saw that Carly did not agree with Victoria's "boring" assessment, he countered Victoria's criticism with "I think I . . . our dynamics are pretty good." Nevertheless, Victoria's challenge apparently put him in a more analytical mode because he tried to resolve the "boring" claim by suggesting that the problem was a lack of articulation, not dynamics. Victoria, not mollified exclaimed, "So arduous!" Henry maintained his viewpoint repeated his suggestion and added, "And then long tender lines." Although initially Victoria placed peer pressure on the group, especially on the leader Henry, both Carly and Henry rejected her criticism and put the pressure back onto her. Thus, peer pressure represented a risk that could possibly be turned against the plaintiff. In this case, without Carly's support, Victoria rescinded her criticism of the group and accept Henry's viewpoint.

In the Gold Sextet Week 2 rehearsal, Athena lost patience with the lower strings not counting their parts. When she stopped playing, the strings continued to play, so she raised her hand to stop them and complained, "We've never really played this part together before … I mean <u>really</u> together." She shook her head and said, "That's really . . . that's really early!" When the strings kept on playing, Athena put her hand to her forehead and raised her other hand to stop them. She then said to the lower strings, "You guys are ahead. You guys were rushing. You have to count that. It's like 1, 2, 3, 4!" As Athena began to play the *Agitato* section, she nodded her head on the beats and explained, "I play triplets and you guys don't play triplets most of the time" (VT W2:38–

39, 55, 121–122, 125–128).

As Athena functioned both as a social leader and the instrumental leader, her opinions carried significant weight. Members would follow the leader's criticism and add further weight to the attack. For example, Athena strongly criticized Thomas for not counting accurately, and this led to the additional complaints of Jasmine and Kurt:

Athena: [Stopping and looking at Thomas] Whoa! Are you counting?

Jasmine: You're not counting, Thomas!

Kurt: You're coming in a beat late.

Thomas: [Quietly] OK (VT W8:71, 79–80).

In the face of pressure from three other peers, Thomas had no choice but to submit. Nevertheless, Thomas did not view this criticism as a harsh judgment but as a necessary component of the rehearsal process. Later, in the focus group, he reflected on the positive nature of criticism from the leaders, "I'm more aware of my mistakes and actually try to fix them" (FG W12). Randy was even more succinct when he described criticism as, "A willingness to communicate issues and ways that you can improve. Because if you hear that, then it gives you incentive to try to do better" (FG W12).

Apologies. When criticized, participants sometimes offered an apology in recognition of the critic's leadership or social status. These apologies could take many forms. The apology could be one of agreement, as when Lily acknowledged the criticism of her weak bowing: "I thought it was fine, because I knew I was doing it wrong. I agreed with it" (FG W12). Similarly, Henry admitted, "Yeah. I messed up pretty bad after the repeat. I forgot about that" (VT W10:17, 63). Apologies might be offered with

an explanation, as when Jasmine confessed, "Like, usually I can hear when I change the notes, but this time I couldn't hear and I got off there" (VT W8:57–59).

Although criticism was often deemed necessary for the improvement of the group, it put a clear strain on the relationship between the members. Thomas's embarrassment when singled out for correction resulted in his mumbled response: "Yeah, I got to [mumbles]" (VT W5:83). On another occasion, an embarrassed Thomas smiled back to Athena to acknowledge his mistake while still playing, hoping that she will not stop the group and correct him in front of the others (VTs W5: 11; W6: 83). At times, the criticized party would try to ease the tension with humor. When she was chided for missing a dynamic, Victoria exclaimed, "Oh! Crescendo! [Laughing] My bad!" (VT151). Criticism could also evoke sympathy from another member:

> Athena: [Stopping] Oh, sorry! I messed up a lot!
>
> Randy: I'm sorry, I messed up.
> [They both laugh together] (VT W2:262–264)

In summary, apologies could take a variety of forms, all of which served to acknowledge the criticism and show a willingness to improve and move on.

Questioning. The members of the group questioned each other for one of two reasons. Either the question resulted from the need for clarification or from peer pressure in the form of a challenge. Victoria gave examples of questions for clarification:

> Sometimes we ask for confirmation. Like, "Is that part supposed to be like that?" or "Are you playing that right?" Then I guess, from there, if it still sounds weird, then we'll continue to play it and try to figure it out (GI W7).

This type of questioning was evident among the Gold Sextet members. During a rehearsal of the Schumann B section, Athena played quarter note triplets on the piano

against the strings' eighth notes:

> Athena: [To Thomas] But you guys hear us meeting you every other beat? [When the three against four beats line up]
>
> Randy: Yeah I do [Pointing with his bow to Athena].
>
> Athena: [To Randy, doubtfully] You hear it?
>
> Thomas: I can hear you! [Points his bow at Randy] (VT W8:129–133).

Athena sought clarification from Thomas and Randy that they heard the rhythms line up every two beats. Randy confirmed that he did, but Thomas admitted he just followed Randy. Athena's questions made sure everyone understood what happened in the music.

A question could also be a challenge and a clear sign of peer pressure. Victoria asked for the proper articulation of certain notes as a challenge to Henry's interpretation:

> Victoria: Like, are they supposed to be pulsed, or are they supposed to be even?
>
> Henry: Pulsed.
>
> Victoria: Because they don't come out dah, dah, dah, dah; they come out Dah, Dah Dah. Kind of. Or … never mind.
>
> Henry: [After five seconds of silence] What do you mean by that?
>
> Victoria: Never mind.
>
> Henry: [After eight seconds of silence] They're supposed to be staccato . . . quarter notes.
>
> Henry: [After five seconds of silence] What do you mean by that?
>
> Victoria: Never mind. (VT W6:51–57).

Victoria's initial question was not really a request for clarification but a challenge that the notes Henry played were supposed to be "pulsed" rather than even. The long pauses

before Henry's responses are notable. Henry seemed to carefully consider what Victoria asked. His careful rebuttal to her line of questions indicated that he did not agree with Victoria's interpretation of the music. Victoria decided not to push the matter further.

Compliments. Social leaders sometimes complimented members of the group as a form of positive peer pressure. Athena made the majority of compliments in rehearsals to the other members of the Gold Sextet. She constantly complimented and encouraged the members in her group. Athena said to Randy and Thomas, "I think you and Thomas do well on that part where I have, like, triplets, and you guys are playing fours? Yeah. You guys are really good on that." She complimented Michelle when she said to the entire group, "… the part where Michelle just milks it! Just kills it! Totally pumps it! (GI W7). Additionally, in Athena's own personal style of talking with her hands, she saluted Jasmine and said, "Good job counting, Jasmine!" (VT W2:273; also see cheers for solos by Randy and Michelle, T W6:141–142). Athena mixed humor in with her compliments at the end of a rehearsal:

> Athena: Hey, Randy! You came in on that note "Boom,"
> [Plays note on piano] and I was, like, "Whoa! Randy!"
> [Everyone laughs] (VT W6:180–182).

Students described most of the comments in their group as mostly positive. Kurt described them as, "Professional," to which Athena immediately added, "Encouraging" (FG W12). Athena's perspective is understandable in light of her many encouraging comments. Kurt's perspective is more significant in view of the fact that Athena made many critical comments to him as well. Apparently, Athena tried to offset her criticism by affirming the members with compliments. By contrast, Henry, an instrumental leader

but not a social leader, did not offer much criticism or compliments. He usually led simply by giving directives for interpretation.

Admitted feelings of pressure. Thomas, Randy, and Lily often bore the brunt of peer pressure from the student leaders. While none of the participants admitted feeling peer pressure during the course of the semester, at the conclusion of the study they admitted to feeling earlier peer pressure:

Thomas: I feel that this experience helped me because it forced me to count.

Participants: [Chuckles]

Randy: Yeah, same here. I feel like it helped my coordination skills, because usually when I'm playing solo pieces, I just don't count like I should. I really had to count to get by.

Victoria: [Chuckling] Well, we kind of picked on Lily, but . . .

Participants: [Chuckling]

Lily: Yeah.

Athena: Yeah, we kind of picked on Thomas!

Participants: [Laughter, everybody talking at same time]

Athena: You know those viola solos.

Victoria: Come out there!

Thomas: Well, it was . . . constructive.

Participants: [Laughter and talking]

Athena: It wasn't criticism!

Lily: I thought it was fine, because I knew I was doing it wrong. I agreed with it (FG W12).

The participants agreed that the leaders used peer pressure to improve the performance of the group. Despite Thomas' reluctance, those who received criticism admitted that it was a constructive experience. Athena, who was the most vocal in her criticisms, admitted to "picking on" Thomas but refused to acknowledge that this was criticism. Apparently, Athena considered her comments to be a necessary tool for improving the group, and hence not criticism.

Social Talk as Cultural Mediation

The sociocultural approach centers meaning-making on social interactions in light of cultural backgrounds (Butterworth, 1982). The social talk of adolescents during rehearsals shed an important light on the group's social dynamics. Michelle and Athena described how they saw social talk:

Michelle: I think it allows us to work well together.

Athena: It brings us closer, I think.

Michelle: Yeah, than we were if we were just in orchestra playing the piece. So at least we can talk to each other and converse about the music (GI W7).

In the two chamber groups of this study, social talk varied. For example, some of the social talk centered on the current blood donor drive, on the upcoming Prom, or on the auditions for the school musical. Social talk could establish familiarity and a social connection. The very first rehearsal of the Green Quartet was in a school hallway. The rehearsal unexpectedly came to a halt when people in lab coats passed through the group carrying large buckets:

Henry: Blood drive?

Carly: Yeah. Blood drive.

Victoria: It must be freaky giving blood.

Henry: [Returning to marking his music] I actually wanted to donate blood but they won't let me.

Victoria: Huh! They won't let you!?

Henry: [Smiling] You need parental consent.

Victoria: Your parents won't let you?

Henry: [Nods head no while still marking his part]

Victoria: [Twirling her pencil in her hand and raising her eyebrows] Really? [Smiling] Teacher's boy! (VT W1:221–231)

Through this personal exchange, Victoria came to know Henry better as a person, rather than as a first violinist. She evidently already knew one of his parents was a teacher and teased him with the "Teacher's boy!" comment. Social talk such as this example throughout the study helped to establish a more trusting collaborative relationship between Henry and Victoria early on.

Social Connections Established Through the Music

Students established social and emotional connections by playing in the same small ensemble weekly over the semester. In order to bring this dynamic into perspective, I distributed copies of each participant's own ensemble music to them at the end of the Focus Group. I asked them to write comments in their parts where they felt an emotional connection to the music or where a passage had a significant personal meaning. These annotations ranged from identifying musical passages, conjuring images from the music, or expressing the excitement of playing a solo part. In addition, some

comments addressed the social connections students saw themselves making with others in the group.

Athena's comments expressed her enthusiasm and excitement at being in charge of the group. She circled the first two beats of the *Agitato* and wrote, "super fun section, setting tempo, I'm in charge" (AC Athena: m. 95), and "I'm alone and leading" (m. 103). In the *Agitato* section, Athena wrote, "Yay, Violin II only time I play with someone else together" (m. 108). Other passages elicited fond memories of creating something exciting with another member of the group, such as, measure 64 which she marked, "big signal to 1st violin leading tone," and measure 192 where she circled the Violin II double stops arco *f* and wrote, "boom." In this section she got Randy to do something special with his double stops. Her sense of accomplishment was not relegated to her own playing but depended also on her relationship with Randy.

Michelle's comments revealed her emotional connections to the music and to the other players: "Beginning my mysterious sounds" (AC Michelle: mm. 3–4), and "after the storm – calm; single violin part out in open" (m. 171). But she was also sensitive to the joint impact of the group when she wrote, "everyone played part together with power" (m. 95), and "Difficult part of piece – paid off in end" (m. 104). Michelle showed gratification with the work she and the group put into learning the Schumann when she reported to the Focus Group what she appreciated most about the experience, "Just learning to work with one another" (FG W12:14).

Randy's comments showed his enthusiasm as well as concern for playing the solos: "Solo part be bold, not just 2nd violin" (AC Randy: mm. 11–15), and "solo again, I

like solos b/c they are not frequent, chance to sort of 'show off'" (mm. 73–75). Randy's comments also showed his social connection to the group and its leaders when he wrote, "Cool to play with piano" (m. 108–109), and "harmonic a big challenge for group, but fun to play" (m. 198).

Jasmine's comments also revealed her musical interactions with others in the group: "→ followed Michelle/Athena a lot" (AC Jasmine: m. 107), and "loved Thomas' sound & lead, Michelle and I playing together" (m. 115). Jasmine noted the hard work the group put into playing the *Agitato* when she wrote, "definitely worked hard on this part, very challenging" (m. 95).

Lily's comments centered on her self-identity as a member of a collaborative group which produced a work of art. She wrote, "Everyone plays something different here, and it's just really pretty and even though everyone is playing something completely different from each other, everything comes back together in the last measure … because it's very pretty with everyone together and the song comes to an end" (AC, Lily: mm. 70–74, 120–126).

Thomas only wrote two comments on his page, but they indicated the peer pressure he received as well as his excitement when he given an opportunity to shine. Thomas wrote, "Solo part → force me to count!" (AC, Thomas: mm. 18–21), and "solo part Melody yay!" (mm. 114–130).

Henry, Victoria, and Kurt did not reveal any social connections in their annotations. They did indicate their preferences for favorite passages. Henry only wrote two comments, one focusing on his solo before the recapitulation (AC, Henry: mm. 73–

74), and the other for his fondness for the end (m. 126). Victoria focused on the intellectual side of playing the sonata when she wrote, "recapitulation-swag," (AC, Victoria: mm. 46–52), and "prominent dynamic contrasts + good wrap up" (m. 75). Carly liked the harmony between the violins (AC, Carly: mm. 13–20) and the change in dynamics (mm. 120–126).

Pronounced Work Ethic

Finally, these dual social structures contributed to an enhanced work ethic among the two groups. . While each group was given one hour to work together every two weeks, it was up to the students to decide if time was used wisely or not. Each group knew they were not just working for a good grade in the honor class, but that their final accomplishments would be on public display for their peers at the presentation. These twin responsibilities resulted in a pronounced work ethic evident in each rehearsal. The timings in the video transcripts for both groups showed that the members of the Gold Sextet spent 95.6% (217 of 227 total minutes) of its rehearsal time in actual rehearsal and only 4.4% in social talk. The Green Quartet members showed an average of 89% of rehearsal time spent in actual work and the other 11% spent in social talk. Victoria summed up her group's work ethic when she said, "It takes self control, because sometimes you don't want to play it again, but you have to, 'cause you got to keep practicing!" (FG W:12). Henry connected the relationship between his same group's work ethic and its social behavior:

> I think we got a lot more done that way, especially because it was completely silent, and we could focus better and have nothing bothering us. I think we got a lot closer to each other that way (FG W12).

Social Structures Summary

In Part II of this chapter I pursued the questions, "How do the students interact with each other in the selected chamber music ensembles?" and, "What are the social structures that enable reciprocal learning within each group? As with "Learning Structures," I uncovered a dual leadership structure in the social arena as well. Both groups were led by two social leaders, a dynamic leader who made connections between the various subsets of the group, and an expressive leader, who maintained the morale of the group through humor. The social leaders were not necessarily the same as the learning leaders in Part One, in fact, the expressive leader of both groups was also the least advanced musically in both groups.

These dual social leadership structures provided the opportunity for leaders to operate under Vygotsky's concept of the ZPD to raise weaker members to a higher level of performance. Vygotsky (1978) argued that less experienced students learned from working with experienced adults than working alone. In this study, the more experienced students served the same purpose as Vygotsky's adults.

Roles were distinct: each member knew who led and who followed. This contributed to an overall sense of efficacy within each group. Group identity was high with musicians referring to their work as a collaborative, rather than an individual enterprise. Student leaders referred to new ideas or strategies as collaborative efforts rather than by their own innovations.

Leaders used both positive and negative peer pressure to either compliment peers on a job well done, or to direct peers to a higher standard of playing. I observed positive

and negative peer pressure in the form of criticism, apologies, questioning, and compliments. The members of both groups regarded criticism as ultimately constructive even though it was sometimes painful during the process. A social leader's opinion carried significant weight. Members would follow the leader's criticism and add further weight to the attack. Compliments by social leaders did much to balance the criticisms.

Social talk among the musicians revealed that they made personal connections with each other during the course of the study. Participants validated each other both musically and socially. From their comments, all of them made some type of emotional connection to the music, albeit in different ways. The process of rehearsing the same music together also helped the students to establish social connections as well. Some students identified specific social connections they made with others in the group.

Since there was not a traditional teacher in the classroom, the amount of work accomplished was surprising. The level of engagement was very high, with 89% rehearsal time spent in work for the Green Quartet vs. 11% social talk and 95.6% work for the Gold Sextet vs. 4.4% time spent in social talk. I found the work ethic among the student participants significantly higher than I originally expected. The twin social structures evident in each chamber ensemble promoted group teamwork and efficacy through collaboration. This internal leadership kept all of the participants on task.

CHAPTER 5: DISCUSSION

In this study I sought to explore how students engage in collaborative learning within each group; to examine the learning structures that enable collaboration within each chamber music group; to explore how students interact with each other in each group; and to examine the social structures that enable collaborative learning within the selected chamber music groups. With the questions that guided this study, I focused on the learning and social structures created by students in a collaborative learning environment. I explored how the inclusion of student collaborative leadership into the pedagogical process contributed to the learning environment in a secondary chamber music course. In addition, I explored how the students shared knowledge and skills as they engaged in problem solving in the chamber ensembles.

I chose an ethnographic case study design as the methodological approach, and social constructivism as the conceptual framework. As I reflected on the data I collected via interviews and observations, it became apparent that the inclusion of collaborative learning in the student directed chamber groups contributed to the learning environment in several ways. Students became actively involved in learning through discovery and collaboration. This is similar to Foster (2013), who reported that as students in peer mentoring situations worked together to solve problems and advance their skills, they developed supportive relationships that heightened their level of comfort in the classroom and, in turn, gave them the freedom to take risks without emotional constraint. I observed student leaders become tools of mediation in that they solved problems, created rehearsal strategies, and provided an interpretation of the music (Vygotsky, 1981a). Plus,

collaborative learning and social structures enabled leaders to use positive and negative peer pressure to affect changes in their peers' playing. These learning and social structures ultimately contributed to a greater group work ethic and enhanced team efficacy.

Webb (1991) found that positive results in collaborative work were enhanced when collaborative groups were heterogeneously composed in ability. Both of the participant groups were composed of students with high and medium ability levels on their instruments. Student leaders in this study guided the use of effective ensemble skills in conjunction with their lesser ability peers and made critical choices as to which problems were more important to solve than others.

Although the experiences and perspectives portrayed in this particular case study are not intended to be generalized, through description of the experience for this particular cohort, systematic analysis of an extensive data collection, and thoughtful interpretation of themes, with this study I provide insight into how peer collaboration functioned in these instrumental chamber groups. In order to address each of the research questions guiding this study, I will discuss the findings relevant to each question and relate the findings to prior literature and relevant theoretical concepts. I then offer suggestions for integrating collaborative learning into the school music curriculum, followed by a discussion of the implications of this study, and suggestions for further research based upon the findings from this study. Finally, I offer a summative conclusion.

Learning Structures in Collaborative Learning

For the first research question, I wanted to discover how the participants engaged in collaborative learning. This study supported the findings of Forman and Cazden (1985) in that they demonstrated that small groups composed of members of heterogeneous ability related to each other as peer collaborators. In this study's setting, partners assumed complementary but separate social roles. One student member served as an observer and guide, the other student performed task procedures. Based upon my observations during the course of this study, this separation of tasks enabled the collaborators of each group to solve problems. This was demonstrated in rehearsal strategies that elevated the performance level of the ensemble. The participants in this study showed an excellent ability to identify ensemble problems and then devise strategies to solve them.

Creative Rehearsal Strategies

Rochelle and Teasley (1995) introduced the theory of the Joint Problem Space (JPS). This theory is held when a group of learners have jointly agreed to a set of goals, problems, tasks, and solutions defined as "coordinated, synchronous activity that is the result of a continued attempt to construct and maintain a shared conception of a problem" (Rochelle & Teasley, 1995, p. 70). By analyzing the discourse and mediated actions, Rochelle and Teasley (1995) followed participants' process of problem solving through coordinated talk and action in order to achieve a shared understanding of the problem and its solution. The results of this study aligned with the conclusions of Rochelle and Teasley (1995) by finding that the creation of a JPS can lead to chamber groups working

collaboratively to rehearse a chosen work, come to a consensus regarding tempo, style and interpretation, and ultimately perform the work in concert. This study also found supported results similar to the findings of Mueller and associates (Mueller & Fleming, 2001; Mueller, 2002) which found that giving students a choice of musical repertoire created ownership on the part of students who were allowed to participate in the choices. Both participant chamber groups reported being satisfied with the movement they had chosen to prepare.

Rehearsing to elevate the performance level of the ensemble was one way the participants engaged in collaborative learning during the course of this study. Although I observed the social interactions between all members of the chamber ensembles, it was the leaders of both groups who used creative strategies to solve musical problems. These strategies included reading from the piano score, checking the score for part accuracy, doubling other members' parts, working out leaders' parts first, having different pairs rehearse together, practicing at slower tempos, and referencing YouTube for interpretations. The strategies the participants employed were similar to the ones observed by Kaschub (1996), who argued that students working independently of an instructor in collaboration with peers can interpret musical symbols and become interdependent through teamwork on their own.

Due to the problems of playing with a larger group, the leaders of the Gold Sextet developed a strategy of where they doubled or played along with the other members' parts. When ensemble problems became extremely problematic, Michelle and Athena developed a rehearsal strategy that enabled them to work out the ensemble themselves

without the rest of the strings.

Understanding the context and culture of the musical background was an important part of understanding student discourse. Many student led strategies, such as rehearsing in slower tempos, already reside in the larger learning culture of music education. Even so, it is notable that the student leaders in this study did not simply read through their parts each week, but resorted to well-known rehearsal techniques to solve problems in the music.

Some of these ensemble skills were not observed in the Green Quartet, however, which often resorted to setting up in haphazard formations that more easily fit the floor plan of the room than providing eye contact amongst the members. The leaders of the Green Quartet did remind the other two members to watch each other in order to bow and phrase together.

In seeking to answer how students engaged in collaboration to learn the music, I found that student leaders acted as tools of mediation in that they solved problems and devised creative rehearsal strategies. Problem solving included creating an interpretation of the music and mastering difficult polyphonic passages. To solve these problems creative strategies leaders used involved peers reading together from the piano part, leaders counting out loud, and the placement of members next to each other for support.

Dual Learning Structures

For my second research question, I wanted to determine if any learning structures were created within the participant groups that enabled collaborative learning among the participants. During the course of the study I found collaborative learning to be most

evident in the learning structures I observed in the two participant ensembles, the Gold Sextet and the Green Quartet. I observed the students in the two chamber groups operate in different dual learning structures.

Cartwright and Zander (1968) described Group Dynamics whereas groups of people instinctively see differences between social groups, task oriented groups, informal groups, and larger categories within society. One particular type of group described by Group Dynamics is the emergent group, which are circumstantial, and self-organizing. Emergent groups are formed when people repeatedly interact within a small group of individuals over time and circumstance. These emergent groups become self-organizing when individuals begin to collaborate within a network of interdependence. Many social groups become task focused and work toward a defined goal. Actions are undertaken by members of the group toward the group's tasks or goals can be reciprocal, where two or more members may influence each other (Arrow, McGrath & Berdahl, 2000).

Group structures are often organized into predictable patterns, where roles and norms of behavior are established (Cartwright & Zander, 1968). The field of study of Group Dynamics describes different types of leaders in task oriented collaborative social groups. One type is what both Cartwright and Zander call the *instrumental leader*. This leader is responsible for keeping the group on task and moving towards its goal (Gallagher & Burke, 1974; Zander, 1971, Zander, 1985). Both of the participant groups in this study contained instrumental leaders. These leaders were responsible for the forward movement of the group, the rehearsal strategies used, and problem solving.

In the Gold Sextet the instrumental leader was Athena, the pianist. During the

course of my observations I found that Athena had a strong charismatic personality and not afraid to speak her mind and opinion of other's playing. In contrast to the Gold Sextet's Athena, Henry, the instrumental leader in the Green Quartet, was more thoughtful and demonstrative in his directions to the group. He often used visual cues in his verbal directions. Under Henry's direction, the members of the Green Quartet spent a great deal of time writing down dynamics and bowings into their parts.

I observed an additional secondary learning leadership role within both groups. I found that each group had a secondary leader not described by Cartwright and Zander, involved in the discussions of solutions to the problems at hand but not necessarily with the final say to the solution. These secondary leaders I called either *challenger* or *figurehead* leaders. Wertsch demonstrated that peers often exchanged roles when they solved tasks and those children were more likely to assert their ideas and opinions with themselves than with adults. (Wertsch, 1991a). Wertsch's observations were confirmed by observations of both of the participant groups. Each group contained a student leader who functioned as a challenger to the instrumental leader or as a figurehead leader who supported the instrumental leader. The Gold Sextet's secondary leader was Michelle, the first violinist in the chamber group. By virtue of her position and musicianship, the other group members viewed her as what I describe as a figurehead leader. While Michelle was the superior musician to Athena, Michelle's less assertive personality allowed Athena to be in charge. Athena was the instrumental leader but Athena knew she had earned this only with Michelle's approval as the figurehead leader.

The Green Quartet's secondary leader was Victoria, the cellist, who functioned

as a challenger leader. Victoria's dominant personality often challenged Henry's position as first violinist. Victoria allowed Henry to be in change, but she called his opinions into question many times.

Student Leaders as Tools of Mediation

Learning occurred in this study via musical collaboration. Vygotsky and his sociocultural approach argued that tools of mediation can shape a student's perception of an object or, in this case, the interpretation of the music. One particular tool of mediation Vygotsky described is Others (Vygotsky, 1981a). Foster (2014) found reciprocal learning through peer mentoring to be efficient and effective; participants developed interdependent relationships and social bonding, enhanced their self-efficacy, and successfully mentored without training. Campbell described leaders who worked within a garage band and their use of mutual learning as a peer tutor (Campbell, 1995). Campbell explored how music was taught, transmitted and learned in rehearsals. In both rock bands, one student functioned as a voice of authority, organizing rehearsal strategies as well as demonstrating and modeling formal rhythmic and melodic elements as each band learned a new song. This same example of peer mentoring has also been detected in Berg's study on two high school chamber groups (Berg, 1997). Similar to findings in Foster (2014), Campbell (1995) and Berg (1997), I observed student leaders act as tools of mediation to other members within their group. As tools of mediation, student leaders offered their concepts of the interpretation of the music. For example, student leaders' knowledge of music theory helped them to communicate to their peers an understanding of the music's structure and any expressive qualities they saw in the music notation.

When peers have similar abilities they may have what is called horizontal interactions (Forman, 1989; Hatano, 1993; Lazar, 1993; Moschovich, 1996; Smagorinsky & Fly, 1993) where students are more likely to explore because no one is considered the expert. Hatano showed that peers can have different strengths in problem solving and so exchange the role of peer tutor. This concept would also apply to chamber music where students exchange areas of expertise in coming to a consensus in musical interpretations. Findings from this study confirmed that student leaders used the study of musical symbols and historical events to influence the other musicians towards their own understanding of dynamics, tempos, and style. These interpretations can be seen as psychological tools of mediation between the leaders and the other members of the group. Student leaders revealed a subtle understanding of the proper style for playing either Mozart or Schumann. Ultimately, as each group prepared its final presentation, their understanding of the musical background of their selected work and its informed practice grew, but this was well after their own interpretations shaped their performance in their final presentation at the end of the semester.

Where did the group leaders learn about musical style? An obvious answer would be based on their previous training and experience. Yet, I found an additional influence on their stylistic interpretation: the use of smart-phones and the internet. I found social media to be an important technical tool of mediation with the Gold Sextet, but not the Green Quartet. In the Gold Sextet, for example, students collaborated in their work and used media and technology such as Facebook, email, the IMSLP web site, YouTube and Microsoft PowerPoint. In contrast, the Green Group was not nearly as interested in the

use of technology in rehearsals. Interestingly, while the Gold Sextet relied heavily on social media to collaborate, they used very little technical tools such as tuners, digital recorders, or metronomes.

Over the course of the semester, both groups used video and audio examples from YouTube played on their iPhones at least once in rehearsal to study interpretations. In the focus group in Week 12, five of the ten student participants admitted they viewed or heard YouTube or iTunes performances at home. Of those five, Athena, Randy and Lily listened to more than one recording for different interpretations, and Athena listened to one recording regularly. The fact that half of the students actively listened to other interpretations at home is significant. It provided students a sense of what the selections could ultimately sound like and informed their sense of style and how their own part fit in with the rest of the group.

Leaders Solving Problems

Student leaders of both study groups made a collaborative effort to solve problems independently within each group. The student leaders in this study showed an excellent ability to identify ensemble problems before devising strategies to solve them. Both groups dealt with issues involving specific problems of ensemble, rhythm, and intonation. The most common method of problem solving was a three-step process termed by some of the participants as "read, reflect, and revise." A second method involved leaders counting out loud to keep the group together. A third method involved the concerted focus of the group on solving rhythms first and then observing dynamics second. In these roles, student leaders also acted as Others within the Vygotskian

concept of Tools of Mediation. Leaders solved problems by providing demonstrations to less able members in their groups, and organized and directed effective ensemble skills within their groups.

Both the instrumental and figurehead leaders participated in the identification of these problem areas or passages in the music. The leaders of the Gold Sextet in particular seemed concerned that their group not just read through the music, but focus instead on specific problems encountered during the reading. The Green Quartet leaders' process of identifying problems was similar in its own Read, Reflect, and Revise approach, but these members used the principle of compromise to a greater degree than the Gold Sextet. A sense of compromise was important to the Green Quartet because of the smaller number of members and the greater potential for instability if one member of the group had issues with another. Henry and Victoria were not considered equal leaders of this group but understood the importance of compromise in order to maintain stability when identifying problems.

Positive and Negative Uses of Peer Pressure

For my third research question, I sought to understand how the students interacted with each other socially as a component of collaboration. One of the key social elements applied by the leaders was subtle, but effective, peer pressure. This same social element has also been observed in Berg's study (1997) of two high school chamber groups. I found peer pressure to be an important component of collaboration.

Research has shown peer tutoring can often be hierarchical in nature with unequal power found in dyadic structures. Researchers have found that group peer mentoring

avoided these unequal dyadic power relationships, and led to a greater degree of collaboration among peer groups (Driscol et al., 2009). The findings in this study seem to contradict this research in that power relationships were evident in the social structures that allowed peer pressure. Thomas, Randy, and Lily often bore the brunt of peer pressure from the student leaders. While none of the participants admitted feeling this peer pressure during the course of the semester, at the conclusion of the study they did admit to feeling earlier peer pressure from the group leaders. The other types of peer pressure observed among the participant groups were apologies, questioning, compliments, and criticisms. The most obvious form of peer pressure by the social leaders was direct criticism. They expressed criticism either toward an individual or toward the entire group.

Allsup (2002, 2003) found students placed in collaborative settings focused on interpersonal relationships, engaged in mutual exchanges and peer critique, and expected other group participants would respect others' opinions in an open-ended learning structure. Likewise, this study found a social leader's opinion carried significant weight. Members could follow the leader's criticism and add further weight to the attack. Thomas, Randy, and Lily often bore the brunt of peer pressure from the student leaders. While none of the participants admitted feeling peer pressure during the course of the semester, at the conclusion of the study they admitted to feeling earlier peer pressure. The participants agreed that the leaders used peer pressure to improve the performance of the group. Those who received criticism reluctantly admitted that it was a constructive experience. Athena, who was the most vocal in her criticisms, admitted to "picking on"

Thomas but refused to acknowledge that this was criticism (FG W12). Apparently, Athena considered her comments to be a necessary tool for improving the group, and hence not criticism. For example, when Athena strongly criticized Thomas for not counting accurately, this led to additional complaints from Jasmine and Kurt against Thomas for not counting. In the face of pressure from three peers, Thomas had no choice but to submit, and quietly replied that he would try to count his part correctly. Nevertheless, Thomas did not view this criticism as a harsh judgment but as a necessary component of the rehearsal process. Although criticism was often deemed necessary for the improvement of the group, it put a clear strain on the relationship between the members. Thomas' embarrassment when singled out for correction resulted in his mumbled response. When criticized, participants sometimes offered an apology in recognition of the critic's leadership or social status. These apologies could take many forms. The apology could be one of agreement, as when Lily acknowledged the criticism of her weak bowing.

Questioning could be a component of peer pressure or collaboration. The members of the two participant groups questioned each other for one of two reasons. Either the question resulted from the need for clarification or from peer pressure in the form of a challenge. A question could also be a challenge and a clear sign of peer pressure. In the Green Quartet's rehearsal Victoria asked for the proper articulation of certain notes as a challenge to Henry's interpretation.

Social leaders complimented members of the group as a form of positive peer pressure. Athena made the majority of compliments in rehearsals to the other members

of the Gold Sextet. She constantly complimented and encouraged the members in her group. Students described the comments in their group as mostly positive, professional and encouraging. Apparently, Athena tried to offset her criticism by affirming the members with compliments. By contrast, Henry, an instrumental leader but not a social leader, did not offer much criticism or compliments. He usually led simply by giving directives for interpretation.

Social Talk as Cultural Mediation

Wertsch (1991a) questioned the experimental settings used for developing the sociocultural approach. He claimed that in much sociocultural research, social interactions were being studied as if they were independent of any social environment. Wertsch argued that the total social environment was an integral part of all cognitive activity rather than a set of circumstances occurring independently within the group. The environment included not only the social context but the physical context as well: the physical setting where the activity was took place. This study sought to study social interactions not only as they occurred in rehearsal and in changing rehearsal spaces, but as they occurred naturally in down time and in creating meaningful relationships between the participants.

Social talk could establish familiarity and a social connection. The social talk of adolescents during rehearsals shed an important light on the group's social structures. In the two chamber groups of this study, social talk varied. For example, some of the social talk centered on the current auditions for the school musical. As a result of Victoria's inquiry into regarding Lily's participation in the school musical, Lily was validated and

responded with uncharacteristic enthusiasm. Although she usually had a gloomy disposition, she suddenly appeared receptive and cheery when Victoria suggested that she would be a good candidate for the school musical. Just a little bit of validation changed the social dynamic between the two girls.

Improved musical negotiation of ideas and greater self and group identity was fostered in these small ensemble settings. Allsup (2002) determined that students placed a higher value on peer relationships as well as an emphasis on accepting peer critique and ideas in the open-ended structure of the case study. Allsup related Friere's terminology of social dialogic relationships (Friere, 1970, 1995, 2000) to the foundations for democratic practices in music education. Allsup called for further research in replicating the study in an urban area and exploring curriculum alternatives in instrumental music education. This study confirmed that students developed interpersonal relationships that came to bear in the learning mutual learning environment. Although peer pressure was used to push peers to conform to musical standards, over the course of the semester, peers came to trust and support each other as part of a team.

Social Structures in Collaborative Learning

For my fourth research question, I sought to determine if any social structures were created within the participant groups that enabled reciprocal learning. Just as I found structures of collaborative learning, I found each chamber group exhibited a dual social leadership structure as well. The social structure maintained lines of communication, and improved group morale. Ultimately, the social leadership structure contributed to an overall sense of team efficacy within each group.

While learning structures and social structures occurred simultaneously, I sought to differentiate the two because they served a different purpose and task orientation. I observed the learning structures as helping to meet the task at hand, moving the group forward from point A to point B in their musical development. I observed social structures as emerging out of relationships within the learning culture. For example, the learning leader, or instrumental leader, was not necessarily the same person as the expressive leader, who kept the group in good spirits.

Dual Social Structures

Based on an analysis of dialogue, I found that students operated in peer social structures that included two models of social leadership. The first type was the dynamic leader. This person coordinated important social connections between the different pairs of members (social dyads) and involved in the mediation of conflicts. They used peer pressure to initiate student focus on the task at hand. The second type, according to sociologists, is the expressive leader. This person maintains the morale of the group (Gallagher & Burke, 1974; Zanker, 1984). In this study, the expressive leaders were the least musically advanced members of both groups. Although these members were lower in musical authority, they compensated for their lack of expertise by improving the group's morale through the use of social talk, jokes, and humor. These expressive leaders also helped to soften the blows of negative comments from the instrumental leaders. In other words, they established their status by being socially expressive. Social leadership structures allowed each member to function in a separate or joint role. For example, one person might fulfill both a learning leadership and a social role and another

only one role within only one structure.

The Gold Sextet's social structure revolved around one dynamic leader, Athena, and one expressive leader, Randy (see Fig. 5). Athena, who acted as both the collaborative instrumental leader and the social dynamic leader, formed a social connection between the male social triad of Randy, Thomas, and Kurt, and the female social dyad of Michelle and Jasmine. These two social groups would not have normally interacted had it not been for Athena. In her role as the dynamic leader, Athena worked to create social connections between the boys and girls in her group. Often, Athena playfully complimented each boy after a successful rehearsal. Athena used humor to compliment the group whenever possible. Despite her levity, Athena could be serious when she thought others were being too silly. Randy was the expressive leader of the group. His easygoing nature and use of humor, especially in telling one-line jokes, kept the morale of the group high and contributed to the group's team efficacy. His use of one-liners kept the group in good humor, as he usually delivered them with a sarcastic tone of voice.

The Green Quartet had a dual social structure as well (see Fig. 6). Victoria was the dynamic social connection between all the members of the group. She not only interacted freely with the other three members, but through her, they made connections with each other. The contrasting personalities of Henry, Carly and Lily would not have worked well together without Victoria, who was a mediator, as seen when she jumped in to defend Lily's bowing style against Carly's criticisms. Victoria could energize the entire group with a change of pace.

Lily functioned as the expressive leader of the group. Playing viola was not her favorite performance art; she preferred dancing and choreography. She admitted her lesser ability as compared to the others in the Green Quartet. In rehearsals, she often appeared disinterested and even depressed, although she did come to life in the presentation. She often resorted to humor as a way of keeping the work interesting, and her droll comments made the others laugh. Like Randy of the Gold Sextet, Lily was proficient at making one-line wisecracks that made the rest of the group at least grin in appreciation, and perhaps forget their differences.

Group Work Ethic and Efficacy

Group efficacy is a group's belief in its ability to accomplish a prescribed task. The dual social structures contributed to an enhanced work ethic among the two groups. Since there was no adult teacher to guide and direct the students, the students motivated themselves. While each group was given one hour to work together every two weeks, it was up to the students to decide if time was used wisely or not. Each group knew they were not just working for a good grade in the honor class, but that their final accomplishments would be on public display for their peers at the presentation. These twin responsibilities resulted in a pronounced work ethic evident in each rehearsal. The timings in the video transcripts for both groups showed that the members of the Gold Sextet spent 95.6% of its rehearsal time in actual rehearsal and only 4.4% in social talk. The Green Quartet members showed an average of 89% of rehearsal time spent in actual work and the other 11% spent in social talk.

Intercultural studies on group efficacy (Gibson, 1999, 2000), found corroboration between a group's certainty of the task and its effectiveness. When the task was understood, there was greater interdependence and collaboration between members. In this study each group understood the goal of performing the selected chamber works before the class as a final grade, as well as the task of collaboratively creating a narrated PowerPoint describing the historical background, biography of the composer, and a harmonic analysis of the movement. Throughout the study, I found this to be evident in all the transcripts and the focus group. The social leaders spoke of their groups with a collective reference of "we," rather than "I" or "me." The use of these plural pronouns indicated they thought of themselves as members of a collaborative group or team. They referred to new ideas or strategies as collaborative efforts rather than their own innovations. Victoria said, "If *we* put our mind to it" (FG W12:11). Michelle said, "*We* go through the parts that *we* have difficulty with, so that *we* just don't play through the entire piece" (FG W12:3). Athena said, "*We* address it together" (GI W7:7). Clearly, these were leader driven concepts, but the leaders preferred to think of themselves as part of a larger team.

My Role as the Researcher

When I chose to examine collaborative learning through the Chamber Music Honors class at Grapevine High School, I wanted students to be comfortable with me in the room as I observed them in rehearsals working together. I did not want to interrupt the flow of the learning environment which had already been established for several years under the direction of Ingrid Carlsen, the school's Orchestra Director. To that end, I

worked closely with the course instructor, Ingrid Carlsen, as a class facilitator from the start of the study. At the beginning of the semester, Ms. Carlsen introduced me as a professional educator with a specific research project which involved the class. Wearing a faculty identification lanyard around my neck as required of the faculty at Grapevine High School, I appeared to the students as a normal high school music teacher.

My actual participation as a facilitator began with the live auditions in the second and third week of the semester. I participated in the audition process because I wanted to witness the formation of the chamber groups. At this stage of the study I thought that observing how the ensembles were formed might provide useful information later in the study about how the participants collaborated with each other. Although I originally planned to be an observer only during these auditions, I quickly became both an observer and a participant. While each student performed a five-minute audition, Ms. Carlsen and I ranked them with the course audition rubric. I asked questions of some students and complimented others on well-played solos and sight treading excerpts.

At this early stage of the semester it was important that Ms. Carlsen and I strategically organized the twelve chamber groups based on the students' auditions. Using the friend request list submitted by the students as well as our audition rubric tallies; we placed each student in a chamber group with students of similar ability. Students' willingness to participate in the study was a factor in the formation of the two research ensembles. Only all of the members in two of the twelve pre-formed chamber groups were completely willing to participate in the study: all of the members of the Gold Sextet and the Green Quartet. These two groups would have been formed even

without the study.

Once rehearsals started in the fourth week of the semester (Week 1 of this study), I mostly remained an observer. Students rarely asked me questions in rehearsals. I saw this as a result of the strong confident leadership in both participant groups. Students seemed to be more comfortable with me in the room as the study progressed because they engaged in social talk with me in the room. Because chamber music is by nature a social and cultural collaboration, sometimes the rehearsal process stopped and students socialized about typical adolescent topics such as the upcoming dance or talent show, or their complaints about high school in general. In these instances, I willingly offered my own experiences, demonstrating to the participants that socializing was permitted and even desirable, as long as it did not take too much time from the rehearsal.

On one particular occasion, I was forced to become a leader for the Green Quartet when the first violinist was absent. I watched the three remaining members struggle to play the Mozart string quartet without the lead of the first violin. Lily, the violist, had particular trouble as she tried to make sense of her part without the first violin as a guide. I decided to take over the rehearsal in the absence of Henry and acted as a coach for the group that day.

Overall, my role as researcher did not alter the preconceived design of the course. Students were used to working by themselves in chamber music groups, thus the setting of the learning environment would have continued without my presence or perhaps would have been different. My role as facilitator in the course was limited to the organization and planning stage primarily. I was not in the classroom as a teacher or even a coach but

rather as a sympathetic listener offering helpful suggestions when necessary. I tried to keep my comments on the level of leading questions rather than solve problems myself. Over the course of the semester I functioned in a lateral, rather than a pedagogic, capacity and interacted with the students socially as well as musically.

One of the reasons I implemented a Mediated Discourse Approach (MDA) in this study was because many musical transmissions and concepts occurred non-verbally. In these places, many different actions take place together in complex ways called nexuses. Some discourses are relevant to the object while others are not. In this study, I sought to identify important mediating discourse when it occurred and to analyze how it was part of the collaborative process. Because the music education of the participants in this study consisted of multiple experiences both in and out of school, those other experiences often brought to bear in mediated actions of collaborative learning in situ.

These actions included acts of speech as well as cultural objects and concepts internalized as discourse in the transmission of learning ethnic music. By focusing on the positioning of participants in relation to each other, I analyzed the language and meditational means they were using with the intention to display complex relationships of peer pressure. In this study, I described discourse as observed dialogue or actions between students sharing and exchanging their ideas in the classroom. I searched for cultural references to ideas or concepts as well as the use of mechanical devices such as metronomes, tuners or YouTube recordings that were used as mediational tools in the practice of the collaboration.

Implications of This Study

The research of Allsup (2002) and Berg (1997) demonstrated that when students are placed in collaborative learning situations to create music on their own, they develop problem solving strategies to improve group performance as a result of increased self efficacy. The present study furthered this research by examining students' perceptions of their own collaborative learning process. The contrast between teacher or conductor-centered learning and student-centered learning parallels the historic philosophical debate between active, constructed process learning and passive, product-oriented learning. The results of this study suggest that a collaborative learning environment that includes small groups of heterogeneously mixed students, that is capable high ability students paired with students of average ability, can advance student learning in multiple ways. The traditional teacher or conductor-centered structure of the music classroom and ensemble, then, may not be the most effective learning environment because it may limit student development in one or more capacities, including decision making and social development. Recognition of the active, purposeful character of human development and respect for the shared understanding (socially distributed knowledge) that enables peers to teach one another ought to shape the music educator's role and function; to serve as a musical guide, facilitator, and source of social support.

Based on the findings in this study, it appears that it may be possible to adapt collaborative learning to diverse instructional situations regardless of the heterogeneous makeup of the learning group. I found the participants of my study showed an affinity for the collaborative process and they assumed the roles of instrumental, dynamic or

expressive leaders naturally with little or no training or guidance. Differing personalities serve as positives in that they challenge each other to justify each other's thoughts and actions within the group. In this study I found that positive and negative uses of peer pressure among the chamber ensemble members contributed to a sense of community among the participants and contributed to group work ethics.

The findings of collaborative learning in this study occurred among a small group of secondary students. Music educators implementing collaborative learning at the elementary level might find they need to provide students with additional support and scaffolding depending on students' developmental level and social maturity and the number of students involved.

Music educators may want to reconsider teacher-centered practices. Through this setting of chamber music in a public high school, positive findings were found regarding the influence of the collaborative learning environment, the sharing of knowledge and skills, and social interaction. The possibility of beneficial social and emotional effects for students in terms of the development of caring relationships, a positive learning environment, and self and group efficacy should be appreciated by educators seeking new views of educational development. If music educators desire to nurture young adults who are independent, musically knowledgeable, and able to continue learning on their own after they have left school classrooms and ensembles, they need to approach music education from a standpoint of reflection and discovery, rather than transmission and recitation. Music educators would do well to step off the podium and allow students to

construct and collaborate, to mature and grow as musicians, individuals, and contributors to the greater society.

In order to encourage music educators to integrate collaborative learning into their everyday practice, the misconceptions that prevent many of them from initiating it must be dispelled. Music educators may feel overextended from the multiple responsibilities associated with their jobs and wish to avoid what they view as an additional drain on their time and energy. For collaborative learning to be widely assimilated into the pedagogical practice of music educators, then, the idea that collaborative groups is difficult to implement and extremely time-consuming to manage must be changed. The setting of this study showed that collaborative groups can readily be assembled from the largest school ensembles within the confines of physical space and time for each small group.

Recent studies such as those by Peters (2007), Hewitt (2008), and Foster (2014) have focused on successful musical and social outcomes for students as well as student affinity for the process of collaborative learning and peer mentoring. Such positive results, however, may not have reached the larger body of music educators in the field. Extended outreach on the part of the music education community through the National Association for Music Education and state and local music education organizations might be effective in enlightening the greater community of music educators. A call for journal articles and presentations at conferences that focus on successful and easily accessible classroom- and curriculum strategies for incorporating collaborative learning in a variety of music education settings would be one feasible way to disseminate viable models to a greater number of music educators.

Need for Further Research

While the collaborative process was quite successful in fostering student learning under the particular conditions of this study, questions may arise regarding the viability of collaborative learning in different settings and among students of different age groups and developmental levels. Of particular concern is the role of the facilitator. During most of the scheduled rehearsals for both groups, an adult facilitator was in the room. Future research might track differences in group work ethics when an adult is in the classroom and not. In addition, future research might focus on the student perception of an adult in the role of a facilitator vs. that of the traditional authoritarian conductor role. Further research on group heterogeneity might also focus on groups containing all average students. Finally, this study was set in a suburban high school with predominately Asian participants. Replicating this study's methodology in an urban setting with greater diversity of participants' ethnicity might prove useful in validating or contradicting this study's findings.

Conclusion

The answers to the questions guiding this study suggest that students, when placed in small collaborative learning settings, will construct learning and social structures within their group to achieve group goals. My findings indicate that, when given the opportunity to work in small groups toward pre-determined musical goals, students: (1) worked with internal group leaders to identify musical problems and develop creative rehearsal strategies to solve them, (2) use of positive and negative peer pressure created an organic social structure which contributed to team efficacy, and (3)

showed a willingness to work harder toward group goals when empowered with the responsibility for their own learning.

These structures promoted group self-efficacy and showed a high rate of on-task behavior during the study. Students reported being more involved in the process of solving problems under student leader guidance through peer mentoring. Participants received no training or guidance in collaborative learning methods; rather, student leaders used creative rehearsal strategies to solve musical problems encountered in the music, including the performance of complex rhythms, stylistically correct playing, and the interpretation of musical symbols for an aesthetically pleasing performance.

The positive academic, technical and social results of this study corroborate the constructivist principles of Vygotsky and Wertsch. The participants in this study were able to work together not only academically, but socially through the use of peer pressure, to push each other to higher standards of performance. Students reported greater satisfaction and pleasure in performing certain passages of the music as a result of the collaborative experience. Students believed they gained from exposure to the multiple perspectives of their peers as they provided opportunities to discover, construct, express, self-assess, create, and communicate through the dynamic process of collaborative learning.

APPENDIX A:
LETTER OF INTRODUCTION TO CONDUCT HUMAN RESEARCH
Prior to Week 1 of study

Dear Grapevine High School Orchestra student and parents,

I am presently working toward my Doctorate in Music Education through Boston University. Part of my preparation for my dissertation involves a study that I am conducting as part of Ms. Carlsen's Honors Music class during the spring semester, 2013. The goal of this study is too study and observe the effects and benefits of student collaborative learning as exhibited and reflected on by selected students participating in the study. The information gathered from this study is to be part of my Dissertation research. The results will be presented in my final Dissertation.

Data to be collected will be my written observations of students in chamber music rehearsals, one group interview with each of two selected chamber groups and one twenty-five minute exit interview with each participating student at the beginning of the research in September. I will also be making digital recordings and video tapes of rehearsals and the two recital concerts. All videos, data and interviews will be kept strictly confidential and any names and identities will not be used in the final report.

I sincerely appreciate your willingness to help with this important compliance requirement for Boston University. Please complete and sign the attached authorization form and return it to Ms. Carlsen by this Friday. Your timely response is important because I have a strict timeline to follow. Thank you in advance for your participation in this study. If you have any questions regarding this study, please feel free to contact either myself at billharrington@sbcglobal.net or Ms. Carlsen at maestra-carlsen@comcast.net

Bill Harrington

APPENDIX B:
INDIVIDUAL INTERVIEW QUESTIONS
Weeks 3–5 of study

These questions are listed as a semi-structured guide only. The interviewer will be free to pursue any line of questions that may appear appropriate in order to answer the research questions.

1. What classes are you taking?
2. Do you know what you want to study in college? What is your dream?
3. Tell me about your musical background.
4. What is your goal this year in taking music?
5. Do you have any long-term goals in making music?
6. What kinds of music do you like?
7. Do you engage in any music making (informal or formal) outside of school?
8. Have your parents ever engaged in music making? If so, what kind?
9. What do you enjoy about playing your instrument?
10. How much practice do you do in week?
11. Tell me about your group.
12. What kinds of pieces did your group read?
13. How did your group choose the piece you are working on for the concert?
14. How is your experience in chamber music so far different than the full orchestra rehearsal?
15. How would you say your group works together? Can you give me an example?
16. What is your role in the group so far?

APPENDIX C:
GROUP INTERVIEW QUESTIONS
Week 7 of study

1. Tell me about your group!
2. How is your experience in chamber music so far different than the full orchestra rehearsal?
3. How would you say your group works together? Can you give me an example?
4. Describe the order of how the rehearsal occurs every afternoon.
5. How does your group overcome problems in learning the music?
6. Is there a leader(s) in your group, or does the group work together to decide what to do?
7. How would you describe the comments made within the group? Can you give me an example of comments that helped your piece to sound better after? Why was this comment helpful?
8. Does this type of class help you to get along better with those in your group or does it cause friction?
9. In what ways has Ms. Carlsen made comments to help your group? Are these comments different than in orchestra?
10. Has your group used any media such as YouTube to study the music?
11. Does your group use any media to record yourself? If so, how do you think it sounded? How did it help or hinder your group?
12. Describe strengths and weaknesses of the interactions of the group.

13. What is working or not working with regard to Ensemble? Intonation? Group interaction?
14. How do you see progress being made with regard to the music (elements of style, intonation, rhythm, etc.)?
15. How do you see your role in the group?
16. Overall, what still needs to be done and why?

APPENDIX D:
FOCUS GROUP DISCUSSION GUIDE
Week 12 of study

1. Opening comments on Focus Group protocol and warnings:
    a. Use only first names
    b. Do not discuss with anyone outside of this group what another person said in the focus group.
2. How did you feel about your group's performance at the concert? How did you feel about your performance?
3. Do you feel that you improved musically? If so, in what ways?
4. What makes for a successful rehearsal?
5. How did you learn a piece without a conductor?
6. In what ways has Ms. Carlsen made comments to help your group? Are these comments different than in orchestra?
7. How was having a coach/facilitator different than a having a traditional large ensemble music teacher?
8. How did you resolve differences regarding the interpretation of the piece?
9. How would you describe the comments made within the group? Can you give me an example of comments that helped your piece to sound better after? Why was this comment helpful?
10. Did this type of class help you to get along better with those in your group or does it cause friction?

11. Did your group use any technology to prepare your piece? If so, how do you think it helped? Did it improve or hinder your group's performance?
12. Would you look forward to playing chamber music again? Why or why not?

APPENDIX E: AUDITION SCORE SHEET

Honors Chamber Orchestra

Audition Score Sheet

Student Name _____ Instrument _____

Audition Time _____

I. Scales (Score: 0-10) _____ major _____ minor

Score: 8 - 10 **Perfectly or almost perfectly played**; symphonic quality, proper tempo, proper bowing and articulation

6 - 7 **Good, but less mature**, some problems in pitch.

4 – 5 **Fair.** Problems in pitch, tone, tonguing or and bowing.

2 - 3 **Weak performance.** Many problems.

0 - 1 **Extremely weak performance.**

_____ **major** _____ **minor** (Score: 0-20)

Score:	**one octave**	**or two octave**
	8 - 10	16 - 20 **Perfectly or almost perfectly played**; symphonic quality, proper tempo, proper bowing and articulation
	6 - 7	12 - 15 **Good, but less mature**. some problems in pitch.
	4 – 5	8 - 11 **Fair.** Problems in pitch, tone, tonguing or bowing.
	2 - 3	4 - 7 **Weak performance**. Many problems.
	0 - 1	0 - 3 **Extremely weak performance.**

II. Solo Excerpt (Score: 0-50)

Score:

42 - 50 **Perfectly or almost perfectly played:** symphonic quality. Outstanding technique, musicianship, style, and tone.

30 - 41 **Very good, but less mature**, some problems in pitch. Somewhat inconsistent in tempo. Less musicianship and style shown. Some problems with technique and rhythm. Stopped or hesitated once or twice.

18 - 29 **Fair.** Tempo erratic or too slow. Definite problems with tone production, pitch, and bowing. Little evidence of musicianship and style. Stopped or hesitated often.

9 - 17 **Weak performance**. Many notes missed. Many problems with pitch, technique, rhythm, and tempo. Stopped often. No musicianship or style shown.

0 - 8 **Extremely weak performance.** Little evidence of preparation.

III. Sight Reading (Score: 0-20)

Score:

17 - 20 **Perfectly or almost perfectly played.** Pitches were correct; rhythms were accurate; dynamics and phrasing well interpreted and executed.

12 - 16 **Good but not perfect**. Some errors in pitch and/or rhythms.

8 - 11 **Fair.** Little sense of rhythm, problems in pitch, rhythm and tone.

0 - 7 **Weak performance**. Many problems.

_____ TOTAL SCORE

Comments:

_____

_____

_____

Judge's signature: _____

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