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dissertation entitled

GOALS AND SELF-ASSESSMENT IN THE MIDDLE SCHOOL LEARNER: A STUDY OF MUSIC PRACTICE HABITS

presented by

Steven Rex Oare

has been accepted towards fulfillment
of the requirements for the

Ph.D. degree in Music

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GOALS AND SELF-ASSESSMENT IN THE MIDDLE SCHOOL LEARNER: A STUDY OF MUSIC PRACTICE HABITS

by

Steven Rex Oare

A DISSERTATION

Submitted to
Michigan State University
In partial fulfillment of the requirements
For the degree of

DOCTOR OF PHILOSOPHY

Department of Music Education

2007

ABSTRACT

GOALS AND SELF-ASSESSMENT IN THE MIDDLE SCHOOL LEARNER:

A STUDY OF MUSIC PRACTICE HABITS

By

Steven Rex Oare

With the intent of improving the teaching of practice strategies to young musicians, the purpose of this multiple case study was to discover how students use goal setting and self-assessment within their personal practice sessions and how these self-regulative components affect strategy choice and motivation. The specific questions were as follows: a) What goal setting and self-assessment comments do novice, adolescent instrumental musicians make during instrumental practice? b) What goal setting and self-assessment strategies do novice, adolescent instrumental musicians use during instrumental practice? c) Are there differences in practice strategies found among students when they are deliberately involved in goal setting or self-assessment compared to times when they are not setting goals or self-assessment? and d) What strategies do students use to address various technical aspects of performance?

This study entailed the observation of middle school aged instrumental music students (N=6) during their individual practice. Two students were in eighth grade and four were in seventh grade. The students played flute (N=2), clarinet (N=1), saxophone (N=2), and trombone (N=1). Data was collected via field notes, videotape analysis of three practice sessions per student along with concurrent and retrospective verbal reports, focus group interviews before and after the observation cycle commenced and concluded, and an interview with the students' band director.

Data were analyzed within cases and across cases for emergent themes. Four themes were found to describe a cyclical practice process in which students moved from *motivation*, to *goal setting*, to *strategy use*, to *assessment*, and back to motivation. Each stage of the cycle seemed to drive other stages. Students with learning goal orientations seemed to practice more effectively than students with performance or time orientations. Student goals tended to lack specificity, which negatively influenced student choice of practice strategy and self-assessment.

Three external factors were found that had a strong influence on the practice cycle, including *teachers*, musical *aural image*, and learning *development*. These three factors wove their way through all four stages of the practice cycle.

DEDICATION

This dissertation is dedicated to my wife and best friend, Frances Oare, and to my children, Jacob and Rebecca, in gratitude for their love, patience, support, prayers, and assistance throughout my doctoral program. I am truly a blessed man.

ACKNOWLEDGEMENTS

The completion of this dissertation could not have been accomplished without the help and encouragement of a great many people. I would first like to convey my deep gratitude to Dr. Mitchell Robinson, my advisor, for his encouragement, wisdom, and incredible editing prowess. Thank you for going above and beyond. I also would like to thank the rest of my committee, Dr. Cynthia Taggart, Dr. Judy Palac and Dr. Kevin Sedatole for their insight and advice in the completion of the document.

I am deeply indebted to the teacher and students who allowed me to look inside their minds. Ms. Zingerman is truly a fine teacher who deeply cares about the students in her charge. It was a thrill to be able to observe her work with her middle school bands and even more of an honor to get to know her more.

I owe a great deal to Mr. John Terris, my high school band teacher and mentor, who inspired me to become a music teacher. His dedication to his students and selfless sacrifice of time and resources were a model I will always strive to follow.

I would also like to thank my son Jacob and my daughter Rebecca for their support and love and for forgiving my mistakes. They have taught me a great deal about how children learn music. I am proud of them.

I would also like to thank my wife, Frances for her support, encouragement, and sacrifice in allowing me to pursue my studies. Further, I would like to thank her for reviewing my work, allowing me to share my ideas, and providing insight that only comes from a master teacher.

Finally, I would like to thank my Lord and Savior, Jesus Christ who makes all things possible. Joshua 24:15.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1

INTRODUCTION

Mr. Terris, the band teacher at Lakefield Middle School, was disappointed with his students' performance on their latest playing tests. He knew they were capable of playing the assigned excerpt, but few of the students were able to play it at an acceptable level. After discussing their performances with the students, he noticed a number of reasons for the poor performances. Nathan stated that he was able to play it the night before but, when further questioned, admitted that he played it correctly only twice in nearly twenty attempts. Adrianne stated that she spent no time practicing the assignment until she crammed for it the night before the test. Cassie was unaware of the mistakes she had made during the test, and Ben was unable to recognize that the difficult technical passage was simply the same C minor scale pattern they had been playing in warm-ups.

When Mr. Terris asked others to tell about their practice habits leading up to the test, they were unable to articulate the goals they had set or the strategies they had used. Instead, it seemed that their practice sessions could be more accurately described as, "play through sessions," in which students simply played from the beginning to the end of each piece without goals or plans for improvement.

Mr. Terris noticed another troublesome anomaly between amount of time some students practiced and their performance. Each week, students in the band were expected to turn in practice reports that recorded the number of minutes practiced each day. Though Monica was one of the best trumpet players in the band, she consistently earned Cs on her practice reports because she only practiced 15 minutes per day. Lindsey, on the other hand, recorded 90 minutes of practice every day, but was a weak clarinetist.

In the past, Mr. Terris believed that performance was directly linked to talent and the amount of time one put into home practice, but evidence was beginning to show him that other factors might be involved. Students needed to know how to practice effectively and efficiently in order to become independent musicians. Therefore, he needed to show them how to practice more effectively. The problem was that, though he had some assumptions, he had no reliable knowledge of what they were actually doing at home when they were practicing. If only he could be like a fly on the wall and observe his students as they were practicing. . . Maybe then he would know what to do to help them to work smarter without having to work harder. . .

Though the previous vignette is fictional, it is loosely based upon my own experiences with students during my years as a band teacher. It expresses concerns I have had with my ability to teach effective practice habits, as well as my desire to know the

thought processes used by my students as they practiced and how their modes of thinking translated into their actions. The vignette also reflects comments made by my colleagues regarding the abilities and inabilities of students to practice efficiently on their own.

Success in musical performance is dependent upon both the time spent in practice and the effectiveness of each practice session (Ericsson, Krampe & Tesch-Romer, 1993). Individual practice is a vital part of developing performance skills in instrumental musicians. Sloboda (1991) found that musicians often spend over 15,000 hours of practice over a span of more than 10 years in order to develop the skills and understandings needed to become experts at their art. Others have found that expert musicians systematically approach their practice, using problem identification, creative strategy planning, imagery and self-assessment as key components of their practice (Hallam, 2001b; Nielsen, 1997, 2004).

Researchers have found that expert musicians demonstrate high levels of reflective learning (i.e., metacognition) as they identify their strengths and weaknesses, choose appropriate learning strategies, and monitor their progress (Chaffin & Imreh, 2001; Hallam, 1997; Nielsen, 1997). Others have discovered that novice musicians demonstrate fewer characteristics of this component of self-regulation, resulting in slower musical progress. Students tend to lack a systematic plan in their practice, often moving from one selection to another with little apparent reason and without discernable improvement in performance (McPherson & Renwick, 2001; Pitts, Davidson & McPherson, 2000). Barry's (1992) comparison of videotaped practice between middle school students engaged in structured and unstructured practice showed that, during free practice, students tended to play their music faster, use a metronome less, use mental

practice strategies less or not at all, and identified trouble spots less than the students engaged in structured and supervised practice. Though Oare (2006) and Leon-Guerrero (2004) found that students demonstrated a variety of practice strategies with and without playing their instruments, the students in Oare's (2006) study demonstrated a lack of ability to effectively use the strategies they knew.

Because novice musicians tend to lack efficient practice skills, giving instruction in appropriate practicing techniques is an important task for music teachers (Barry, 1994; Ericsson, Krampe & Tesch-Romer, 1993; Jorgensen, 2003; McPherson, 1995; McPherson, Davidson & Pitts, 2000). Lehmann and Davidson (2002) state that, "learning to practice is in itself a skill that needs to be acquired. Therefore, teachers should take great care to teach their students how to practice correctly." This explicit instruction and supervision of practice methods should provide individualized diagnosis of errors, informative feedback, and training in remedial practice techniques (Ericsson, Krampe & Tesch-Romer, 1993).

While research suggests that instruction in practice skills is important, investigators also report that these skills often are not taught to novice musicians. According to McPherson (2005), "Despite the importance for children to develop an armoury of task-appropriate strategies to aid their performance, evidence suggests that school teachers do not sufficiently emphasize this in their teaching, particularly during the early years of schooling." Barry and McArthur (1994) report that most teachers, "always or almost always discuss the importance of practice and specific practice techniques with students," while Kostka (2002) found that, although the teachers in her

survey stated they taught practice strategies, only 67% of their students reported that practice strategies were ever discussed.

The disconnect between what should be taught and what is being taught may be due to a lack of information about effective ways to practice. Music education researchers have recently begun to address this, as research in practice strategies and the development of expertise has rapidly increased since the early 1990s. Researchers in this field have studied expert musicians with the hope of transferring what is learned from their practice skills to novice students (Ericsson & Lehman, 1997; Geiersbach, 2000; Hallam, 2001a & 2001b; Nielsen, 1997, 1999, 2001 & 2004). Others have studied the effects of supervision and structure upon student practice effectiveness (Barry, 1992; Coffman, 1990; da Costa, 1999; Davis, 1981; Maynard, 2006; Rosenthal, 1984, 1988; Rosenthal, et al. 1990), parental involvement in beginning music students (McPherson & Renwick, 2; Pitts, McPherson & Davidson, 2000; Zdzinski, 1994), the strategy use of novice musicians (Barry, 1992; DaCosta, 1999; Leon-Guerrero, 2004; Hallam, 2001b), goal setting (Austin, 1991; Geiersbach, 2000; Lehmann, 2003; Smith, 2005), and student self-assessment skills (Bergee, 1993,1997; Bergee, Cecconi-Roberts, 2002; Hewitt, 2001, 2002, 2005). Some researchers have described general learning theories as they relate to the process of music practice (Lehmann & Ericsson, 1997; McPherson & Zimmerman, 2002), while others have grounded their research upon these theories (Giersbach, 2000; Leon-Guerrero, 2004; Hallam, 2001; Nielsen, 1997, 1999, 2001, 2004). Finally, researchers have studied ways in which private instructors teach students to practice (Barry & McArthur, 1994; Kong, 2001; Kostka, 2002). Yet, teaching students to practice

efficiently remains a task that many teachers do not do with sufficient success (Jorgensen, 2003).

Little research in instrumental music practice has been conducted that focuses on the use of the self-regulative characteristics of goal setting and self-assessment within instrumental music practice. Geiersbach (2000) studied the types of goals made within the practice sessions of advanced musicians, while Austin (1991) and Smith (2005) investigated the effect of goal orientation upon achievement in band. Hewitt (2001, 2002) and Demorest and Montemayor (2004) investigated the effect of self-assessment upon achievement in musical performance. Other researchers in fields outside of music have studied the effect of goal setting upon self-regulation (Radosevich, et al., 2004; Schunk, 2001).

Rationale for the Study

The rationale for this study is based upon a developing understanding of self instructional theories as they relate to music practice. Discussions of predominant theories related to music practice, including self-regulated learning, deliberate practice, and cognitive learning will be introduced.

Self-regulated Learning

One goal of teaching is for the teacher to be rendered obsolete by helping students to become proficient with their subject to the point that the teacher is no longer needed. In the current information age, students must learn to teach themselves in order to be self-sufficient in learning fast-changing information and skills. Unfortunately, researchers have found that few teachers encourage students to establish specific goals, teach explicit

study strategies or ask them to self-evaluate their work or estimate their competence on new tasks (Zimmerman, Bonner, & Kovach, 1996).

Self-teaching, also known as self-regulation, includes planning, doing, and evaluating oneself (Jorgensen, 1995, Zimmerman 2000, and Hewitt, 2001). Multiple modes of metacognition are engaged as one engages in self-regulation. Zimmerman (2002) states that self-regulation of learning involves the self-awareness, self-motivation, and behavioral skill to implement knowledge appropriately and the selective use of specific processes that must be personally adapted to each learning task. The component skills include: (a) setting specific proximal goals for oneself, (b) adopting powerful strategies for attaining the goals, (c) monitoring one's performance selectively for signs of progress, (d) restructuring one's physical and social context to make it compatible with one's goals, (e) managing one's time use efficiently, (f) self-evaluating one's methods, (g) attributing causation to results, and (h) adapting future methods. A students' level of learning has been found to vary based on the presence or absence of these key self-regulatory processes (Schunk & Zimmerman, 1994; 1998).

Self-regulation in music is a paradigm that describes how learners acquire the tools necessary to learn necessary musical skills on their own. McPherson and Zimmerman (2002) describe it as the processes and skills that students adopt or acquire as they mature into independent learners. Self-regulation is a cyclical process in which feedback obtained from prior performance helps learners to adjust their performance and future efforts. These feedback loops allow learners to adjust factors related to the environment, their own behavior, and their own cognitive and affective states.

According to McPherson and Zimmerman (2002), students undergo a socialization process that facilitates the development of self-regulated skills. Through this process, students learn to develop self-motivation, task strategies, time management, and self-control, while also learning to structure their learning environment and seek appropriate sources of help. As students learn these skills, they pass through the four developmental levels of observation, emulation, self-control within structured conditions, and finally self-regulation.

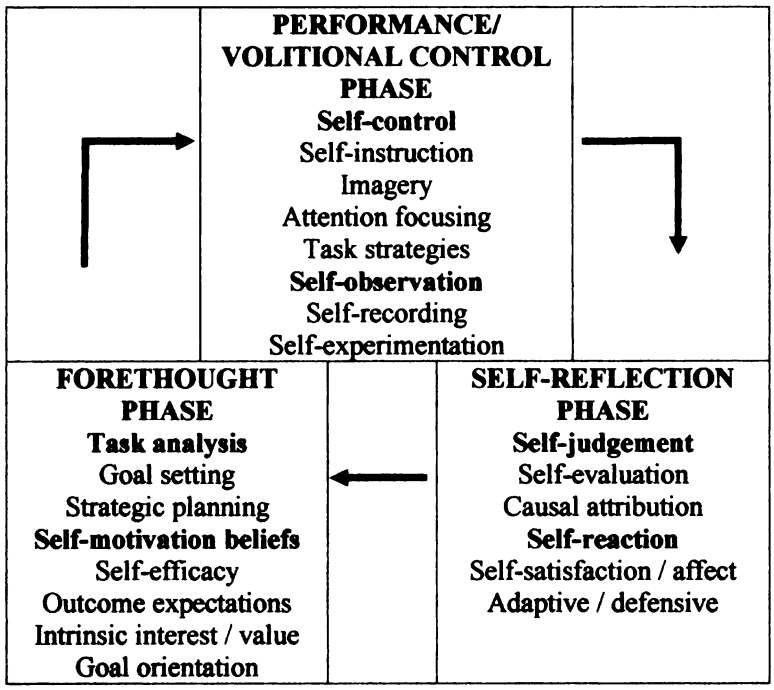
Zimmerman (1998 in McPherson & Zimmerman, 2002) developed a three phase cyclical process that self-regulated learners use to direct their learning (Figure 1). In this model, learners develop goals and self-motivation in the forethought phase, that proceeds to a performance phase in which they use self-control to maintain their focus and provide self instruction. The self-reflection phase follows, in which the learner evaluates the quality of work, determines the causes for the results, and reacts to the results. This phase then leads back into the forethought phase for the next logical step in learning.

Deliberate Practice

The field of expertise theory has produced a large body of research that describes how experts in various fields develop their high capabilities. Multiple researchers have stated that expert musicians develop their skills over a period of at least ten years and accumulate over 10,000 hours of practice time in the process (Ericsson, Krampe, & Tesch-Romer, 1993; Sloboda, 1996; Jørgensen, H. 2003). Because practice time is an important piece of the puzzle in the development of expertise, Ericsson, Krampe, and Tesch-Romer (1993) state that students must be taught how to practice by teachers who

aid in the diagnosis of errors, and provide informative feedback and remedial training. They also found that improved instruction appears to benefit learners with lower cognitive ability more than high-ability learners.

Figure 1. Self-Regulated Learning Cycle Phases.



Ericsson, Krampe, & Tesch-Romer (1993) have developed a model of deliberate practice that is similar to the self-regulation model, and is based upon research in expertise and self-regulation. This model describes the type of practice that has, "the primary purpose of attaining and improving skills" (p. 367). It requires a well defined task with an appropriate level of difficulty, informative feedback, and opportunities for repetition. Motivation for continued practice is found in the desire for improvement. The process includes three self-teaching activities: planning and preparation, execution, and observation and evaluation. Metacognition is also a key factor in the model, as with the

self-regulation model, as the practitioner uses his repertoire of strategies and monitors and controls their use.

This type of practice does not consistently occur. Deliberate practice can only be sustained for limited periods of time because it requires great effort and concentration (Lehmann & Ericsson, 1997). Also, the primary purpose of practice is often for enjoyment and play as opposed to improvement. Therefore, to engage learners in more deliberate practice, it is necessary to help them to discern the difference between the two and to provide structure and supervision to encourage deliberate practice.

Goal Setting

Schunk (2001) states that effective goals are specific, proximal and appropriately challenging. They are involved across the different phases of the self-regulatory process and enhance self-regulation through their effects on motivation, learning self-efficacy and self-evaluations of progress (Schunk, 1995). Schunk (2001) states that effective goal setting requires that people set a long-term goal, break it into short-term, attainable sub-goals, monitor progress and assess capabilities, adjust the strategy and goal as needed, and set a new goal when the present one is attained. This process of setting remedial goals enhances motivation by encouraging positive self-efficacy and helping students to attribute progress to stable factors within their control.

The process of setting goals is a key component of both self-regulated learning and deliberate practice. Numerous researchers have found strong positive effects of goal setting on motivation and performance achievement (Barry and McArthur, 1994; Ericsson, Krampe & Tesch-Romer, 1993; Geiersbach, 2000; Pitts, Davidson &

McPherson, 2000; Lehmann, 2003). Ericsson, et al. (1993) state that goal setting is highly predictive of self-efficacy. Students who do not set goals are less likely to develop effective practice strategies and attribute performance failures to uncontrollable personal sources, such as low ability, and fail to perceive their chances for future success. Pitts, et al. (2000) found that students accomplish more and enjoy practice more when they practice to accomplish goals rather than practice for a required amount of time. Geiersbach (2000) developed a taxonomy of practice objectives designed to describe the different levels of complexity in a practicer's goals. Lehmann's (2003) findings suggest that practice behavior is commensurate with the students' own goals. He also defined process goals as those goals that help lead to the ultimate outcome goal, and stated that self-monitoring of these goals facilitates self-controlled learning.

By setting outcome goals and the procedural goals needed to reach the desired outcomes, students are engaging in metacognition. According to Hallam (2001b), "Metacognitive skills are concerned with the planning, monitoring, and evaluation of learning, including knowledge of personal strengths and weaknesses, available strategies . . . and domain knowledge to assess the nature of the task and evaluate progress toward the goal." As musicians become more proficient, they demonstrate an extensive use of metacognitive skills (Hallam, 2001b; Geiersbach, 2000; Nielsen, 1999).

Assessment and Evaluation

Assessment, in the light of the current *No Child Left Behind* legislation, is often seen as a summative tool to be used by teachers and administrators as a means of holding students, teachers, and schools accountable for student learning. According to Black and

William (1998), teachers risk a number of negative consequences when the educational environment focuses on evaluation in this manner. When the classroom culture focuses on evaluation as a means to compare students or provides extrinsic rewards to those who achieve at a certain level, students tend to focus on obtaining the best scores rather than on improvement. They spend time and energy looking for the right answer instead of assimilating the information into their own mental schema. This is rectified, according to Black and William, when assessment is looked upon as a formative tool, the student is the key assessment user and when students receive and produce feedback that describes the quality of their work, avoids comparison with others, and leads to the production of new goals.

While Stiggins (2001) recognizes the value in assessment as an informative tool for others, he promotes the paradigm of the student involved as an assessment user. Viewed from this perspective, student-involved assessment is used as a tool to provide direction, communicate progress, and convey a sense of ownership for one's own learning. Students who take part in showing evidence of their progress develop a greater sense of self-efficacy and learn to attribute assessment results to their own effort, while focusing on improvement as opposed to gaining rewards or avoiding failure. The experience gained through their involvement in their own assessment allows them to develop the skills necessary for them to become self-regulated learners.

According to Chappuis and Stiggins (2002), when students learn to use assessment for the purpose of learning, "students become self-directed learners by developing their self-assessment skills." The actual process of assessment becomes like instruction, as learners use the descriptive feedback they receive to make adaptations in

their future work. This reasoning for the importance of self-assessment is reiterated in the writings of researchers in the field of self-regulation, as they describe development of self-efficacy and the self-regulatory process of forethought, volitional control, and reflection (Schunk & Zimmerman, 1994; McPherson & Zimmerman, 2002).

Self-evaluation is also a key component of both self-regulated learning and deliberate practice in music because it provides students with feedback and spurs new goals (Lehmann & Ericsson, 1997; McPherson & Zimmerman, 2002). Schunk (1983) notes that students who have the capabilities to detect subtle progress in learning will increase their levels of self-satisfaction and their beliefs in their personal efficacy to perform at a high level of skill. Schunk (1994) and Zimmerman (1998) also found self-recording significantly enhancing to the self-regulatory cycle. McPherson and Zimmerman (2002) claim that students are inclined to evaluate their performances according to one of four criteria, including mastery, personal improvement, normative criteria, or collaborative criteria. Students who are mastery oriented tend to be more motivated in their practice because they generally feel a stronger sense of control over their own learning.

While it may be important for students to self-assess, novice instrumental students tend to have difficulty assessing accurately (Hewitt, 2001). Self-assessment, like other practice skills, develops with experience and maturity (Hallam, 1997, in McPherson & Zimmerman, 2002). Novices who have not yet developed strong aural schemata are often unaware of their own errors, while more capable musicians are more aware of their strengths and weaknesses, know more about the nature and purposes of different tasks and adopt a larger range of strategies to meet their needs (Barry & Hallam, 2002).

Finally, Barry and Hallam (2002) claim that novices first focus on pitch as they assess themselves. As they develop their assessment ability, they begin to focus on rhythm, followed by other technical aspects of playing, and finally dynamics, interpretation, and expression, suggesting the existence of a hierarchy of self-assessment skills.

Researchers in the music community have used self-assessment in a variety of ways. Self-assessment has been used in conductor training (Yarbrough, 1979 & 1987; Byo, 1990; Johnston, 1993), in the context of self-advisement within college music programs (Brown & Darrow, 1989), in teacher effectiveness training (Rosenthal, 1985; Madsen, Cassidy & Standley, 1989; Barry, 1994; Colwell, 1995;) and in music performance (Davis, 1981; Kepner, 1986; Bundy, 1987; Sparks, 1990; Bergee, 1993 & 1997; Byo & Brooks, 1994; Aitchison, 1995; Kostka, 1997; Sheldon, 1998; Hewitt, 2001, 2002 & 2005; Morrison, Montemayor & Wiltshire, 2004). The studies by Yarbrough (1979 & 1987) and the study by Johnston (1993) each measured improvement of conducting skills as students self-assessed videotaped conducting assignments while Byo measured student self-assessment of intensity contrasts in conducting gestures. The Madsen, Cassidy & Standley (1989) and Colwell (1995) studies both used self-assessment as a tool to teach teacher intensity within laboratory teaching experiences. Rosenthal used a case study method to study the effect of self-assessment on teacher effectiveness, and Barry's action research used self-assessment as one of six factors to promote reflective thinking in an elementary music education course.

Self-assessment research in the field of instrumental performance has enjoyed a great deal of expansion within the last decade. Researchers have attempted to discover the effect of self-assessment on the improvement of performance within an ensemble

(Byo & Brooks, 1994; Sheldon, 1998; Caliendo & Kopacz, 1999; Benton, 2002; Morrison, Montemayor & Wiltshire, 2004) and alone (Davis, 1981; Sparks, 1990; Aitchison, 1995; Kostka, 1997; & Hewitt, 2001,2002 & 2005), while others have compared self-assessments with those of experts and peers (Kepner, 1986; Bundy, 1987; Bergee, 1993 & 1997; Hewitt, 2001,2002 & 2005; & Oare, 2005). Hewitt's (2001, 2002 & 2005) studies along with the study by Morrison, et. al (2004) observed the effects of modeling combined with self-assessment on student learning and Davis (1981) studied the effects of student performance when self-assessment was combined with singing. Studies by Kepner (1986), Bundy (1987), and Oare (2005) have examined the differences in live versus recorded self-assessments. Finally, many of the studies have measured the effect that self-assessment has upon student attitudes in practice and in music (Davis, 1981; Sparks, 1990; Aitchison, 1995; Kostka, 1997; & Hewitt, 2001, 2002 & 2005).

Strategies to Develop Performance Skill

When considering practice strategies, ones must consider how students learn before deciding which strategies should be used. Researchers in the field of neurology have discovered a number of aspects about memory that influence learning (Wolfe, 2001). First, the brain automatically filters out competing stimuli to aid in focusing on the most relevant sensory information. This helps to explain why novices often have difficulty paying attention to the most important information during new experiences (Barry & Hallam, 2002). Once the brain chooses what to focus on, the stimulus remains in the working memory for only 15 to 20 seconds unless it remains as the focus of attention. This information becomes retained in long term memory through elaborative

rehearsal and consolidation, which is enhanced when the learner associates the new learning with past experience or when it is connected to strong emotions (Watson, 2006; Wolfe, 2001).

Sanders (2004) described a schema theory of motor learning in which learners develop a motor schema for related actions. This schema, also called automaticity, is a learned relationship in which similar actions are remembered as a single unit of kinesthetic thought. Watson (2006) explains that, the more often a pattern of neurons is activated, the more efficient the synapse becomes, causing the responsibility for the task to move from the conscious to the subconscious. Technical exercises of various types, including those based on scales, are designed to inculcate such motor subroutines. Sanders describes the process of developing this automatic action as one that begins with verbalization of each movement and moves to a closed-loop routine in which the actions are monitored by the learner until the skill finally becomes automatic. Watson states that successive training sessions produce additional increments of improvement that become progressively smaller until an upper level of proficiency and automaticity is reached that may be retained for months or years.

Caine and Caine (2005) remind us that students learn more effectively when they are involved in experiences that engage multiple senses. They suggest that students need to use multiple strategies during learning. Nielsen (1999) found that advanced organists spontaneously invented new practice strategies customized to their needs. Rosenthal (1988) found significant differences in rhythm, phrasing, tempo, and dynamics when students used a number of practice strategies. Others have found that practice strategies

tend to change as musicians progress through different stages of preparation of a piece of music (Lisboa, T., Chaffin, R., Schiaroli, A. & Barrera, A., 2004; Nielsen, 1999).

Caine and Caine (2005) also state that students increase learning when new patterns are linked to what they already understand. By analyzing new material, one is able to make connections with previous learning (Barry & Hallam, 2002). Geurrero (2004) found that students would often draw on previous musical knowledge while practicing. Others found that novice students are often unable to transfer theoretical knowledge of music to the learning of the pieces they are playing (Barry & Hallam, 2002). Hewitt (2001) suggests that this is because they compartmentalize knowledge without being aware of the interconnectivity of theory with performance.

Many researchers have found that mental practice may accelerate the acquisition of new motor skills (McPherson & Zimmerman, 2002; Watson, 2006). Others have discovered that the process of mentally practicing specific skills activates some of the same neural structures used for the actual movements (Barry & Hallam, 2002; Watson, 2006). Barry and Hallam (2002) suggest that mental practice is more effective when it is combined with physical practice. It is also more effective when the learner has some prior experience with the skill being practiced.

Summary

Caine and Caine (2005) emphasized that learning is developmental in that students develop new playing skills by building upon previous learning. The same is true as they learn to practice. Just as teachers help them gradually develop their playing skills, they must also help them gradually develop their practice skills. The more effective educators are in this realm, the more students will become self-regulated learners.

The theories of self-regulation and deliberate practice have provided an effective beginning point for a number of music education researchers who are interested in studying the practice of musicians, though relatively little of the research has focused on novices. Hallam produced a number of articles based on a study in which she compared the practice strategies used by novice and expert musicians (1995; 2001a; 2001b). Barry (1992) studied the effects of practice strategies and cognitive style differences on practice. Miksza (2005) assessed the effects of mental practice on performance achievement, and Leon-Guerrero (2004) investigated the self-regulatory strategies of middle school band students. Davidson, Sloboda and Howe (1996) looked at the roles of parents and teachers in facilitating student success. Finally, McPherson, et al. have published a series of articles based upon findings from a three year longitudinal study of beginning instrumentalists from New South Wales, Australia (McPherson, 2005; McPherson, Davidson, & Pitts, 2000; McPherson & McCormick 1999; McPherson & Renwick, 2001; McPherson & Davidson, 2002; Pitts, Davidson & McPherson, 2000; Pitts, & Davidson, 2000; Renwick & McPherson, 2002).

More research needs to be conducted that focuses on ways in which instrumental music students use the self-regulation concepts of goal setting and self-assessment. While a copious amount of research in this subject has been conducted with experts, relatively little has addressed novice musicians. Even less research has attempted to describe the thought processes of novice musicians while they were engaged in practice. With greater understanding of student thought processes as they set goals and assess themselves, it is hoped that educators may begin to develop more effective methods for facilitating efficient practice.

Purpose of the Study

The purpose of this study is to discover how students use goal setting and self-assessment within their personal practice sessions and how these aspects of self-regulation affect strategy choice and motivation. The information revealed in this study will inform teachers of the capabilities of students to use self-regulatory skills and strengthen their foundation for effective teaching of practice skills to young musicians. The insight gained from this study regarding student use of goal setting and self-assessment will serve to inform teachers about ways in which they can help students make more effective use of their practice time and reach their musical potential.

Specifically, the research questions for this study are as follows:

1. What goal setting and self-assessment comments do novice, adolescent instrumental musicians make during instrumental practice?
2. What goal setting and self-assessment strategies do novice, adolescent instrumental musicians use during instrumental practice?
3. Are there differences in practice strategies found among students when they are deliberately involved in goal setting or self-assessment compared to times when they are not setting goals or self-assessment?
4. What strategies do students use to address various technical aspects of performance (rhythm, notes, articulation, etc.)?

Chapter Summary

Understanding how students think as they engage in practice is the first step toward helping them learn to practice effectively. This study will examine the thought processes of novice instrumental music students as they make decisions related to what and how they practice. It is hoped that the information gleaned from this study will inform music educators and suggest ways in which they can effectively facilitate learning experiences that result in improved student practice.

The writings of McPherson and Zimmerman (2002) on self-regulated learning and Sloboda (1996) and Ericsson, Krampe, and Tesch-Romer (1993) on deliberate practice offer a basis upon which researchers can analyze how musicians learn on their own. Further, the verbal report methodology described by Ericsson and Simon (1993) provides an avenue by which researchers can discover the inner thought processes of student musicians. Similar studies by Barry (1992), Geiersbach (2000), Leon-Guerrero (2004); Hallam (2001a & 2001b), Nielsen (1997, 2001, & 2004) and McPherson, et al. (1999, 2000, 2001, 2002 & 2005) provide guidance and a foundation upon which this project can stand.

CHAPTER II

REVIEW OF RELATED LITERATURE

This chapter will present the findings from a number of studies related to this dissertation. Related topics in practice research include the analysis of the practice of expert musicians, the effects of structure and supervision in practice on achievement and retention, and perceptions of practice education engaged by private instructors. I will discuss the use of verbal report protocols in music education, and review studies related to goal setting within a self-regulation context. Finally, I will review self-assessment research in music education.

The Use of Verbal Reports in Music Education Research

Verbal reports, also called verbal protocols or think alouds, have been an important part of psychological investigations since the advent of the science of psychology. When used data gathering technique, participants are asked to essentially say out loud what they are thinking in their head as they engage in various activities. Richardson and Whitaker (1996) state that the verbal report method is a valid, rigorous research technique that provides investigators information concerning the thought processes of subjects as they complete a task. Verbal reports are a key source of data for researchers in the fields of cognitive psychology, cognitive science and behavior analysis. Recently, researchers have begun to use verbal reports in usability studies, as the verbal report, or "think aloud" sessions inform computer programmers of the thought processes computer users go through as they navigate new programs. Researchers in the field of education have also begun to realize the wealth of information that can be gleaned from

the study of student thought processes while completing tasks in reading, solving mathematics problems, and translating foreign languages (Kucan & Beck, 1997).

The value of the verbal report technique is that it provides researchers with information regarding the thinking that occurs as a subject performs a task. Other methods of research must rely on observation and the analysis of completed works. These forms of research can then only infer what thoughts actually occur within the mind of the subject.

Educators have found that verbal reports can improve teaching in a number of ways. Kucan and Beck (1997) state that verbal reports can be used as a method of inquiry, a mode of instruction, and as a means for encouraging social interaction. As a method of inquiry, Kucan and Beck discuss the use of verbal reports while analyzing the reading process during reading, during recall, and in error detection. As a mode of instruction, they describe the use of verbal reports as a tool the teacher may use while demonstrating the performance of a task.

Verbal reports have been established as a valid methodology for collecting data related to understanding the thought processes of subjects while they are engaged in various activities (Ericsson & Simon, 1993). However, researchers have only recently begun to use this methodology within the discipline of music education. Researchers in music education have used verbal report methodology in studying students while engaged in composition (Younker, 1997; Younker and Smith, 1996) while others have used the methodology to analyze conducting experiences (Hasty, 2004). Still more have had participants provide verbal reports while listening to music (Bundra, 1993; Williams, 1997; Kerchner, 1998; Richardson, 1996). Finally, verbal reports have been used as key

data sources for the analysis of participant thought processes while practicing (Nielsen, 1997, 1999, 2001, 2004; Geiersbach, 2000; Leon-Geurrero, 2004).

Ericsson and Simon (1993) state that verbal reports are reliable when they focus on subjects' cognitive processes as they engage in activities that require their attention. The key is for the data to be collected while the subject's thoughts are still in short term memory. Therefore, the most valuable reports are those that are given while the subject is performing the task or immediately after the completion of the task. This is identified as concurrent think aloud (CTA) and retrospective think aloud (RTA).

Music Research Using Verbal Reports

A number of studies have analyzed the thought processes of instrumental musicians while practicing. Nielsen (1997, 1999, 2001, 2004) was among the first to have used verbal reports as data in her research. Nielsen's studies used CTA, RTA and videotape analysis of first one, and then two advanced organists enrolled in a Swedish conservatoire. She used self-regulation theory to guide her development of a coding scheme for the analysis as she looked for apparent self-regulating skills used by the participants during their practice. Conclusions from this study suggested that the students proceeded through a number of stages as they prepared a piece of music for performance. As the students moved from stage to stage, Nielsen found that the strategies used and the aspects of music on which they focused changed.

Nielsen's (1997) case study analyzed the methodological issues of a single organ student preparing a musical piece for performance. The purpose of the study was to determine the value of verbal reports in the study of music practice. It describes how

verbal report analysis was modified in order to be used in a practice setting and details how trustworthiness issues were alleviated. Nielsen videotaped an advanced Norwegian organ student while practicing. The student was asked to provide CTA while practicing and then provided RTA while watching the videotape of the practice session. Through this study, Nielsen found that concurrent and retrospective verbal report methods were both effective techniques for gathering information about the thoughts of advanced musicians during practicing and problem-solving.

Buoyed by the success of the first study, Nielsen (1999) analyzed the practice of two advanced organ students in their third year of a Norwegian university while they each practiced a different piece of music. The purpose of the study was to describe the self-regulated practice strategies demonstrated by the students. Data included video observation of practice on the first day, one hour of CTA while being videotaped during the second practice day (students were asked, "what am I thinking or focusing on?"), and RTA reflecting upon the initial practice stage and second stage. This data collection occurred during the first two practice sessions of the first and of the second learning "stages" for the new piece, though the stages were not defined. From her literature review, Nielsen chose to focus on three types of practice strategies, focusing on the selection of relevant information to master tasks, organization of information, and the integration of these new thoughts and skills with existing knowledge. Results from the study show that an extensive repertoire of self-regulatory strategies varied slightly between the students and by stage of preparation of each piece. The second stage of learning used the same strategies as in the first level, plus the creation of various exercises to help solve issues. Students spent more time selecting and organizing sections

needing work, practiced longer segments of music, and used multiple solutions for problems at each stage of learning.

Nielsen used the same data in 2001 to analyze the students' use of self-regulatory skills within their practice sessions. The students demonstrated many skills related to self-regulated learning as they set goals, planned methods of incorporating the new skills into their playing, monitored progress of selected musical components, chose and created practice strategies, and revised goals and criteria of performance. The skills enabled them to optimize their learning and performances, taking into account interpersonal, contextual, and intrapersonal conditions.

In 2004, Nielsen used a survey of first-year Norwegian undergraduate music students to determine the cognitive and metacognitive practice strategies that were most relevant to improving performance and to correlate their perceptions of self-efficacy to these practice strategies. Self-efficacy was defined as "people's judgment of their capabilities to organize and execute the courses of action required to attain designated types of performances." Her review of literature emphasized that previous studies in other academic areas have shown strong, positive relationships between self-efficacy beliefs and the use of study and learning strategies, and also to persistence and performance. Students who were confident about their academic abilities persisted longer and worked harder.

The principal result of this study was the strong association between self-efficacy and actual performance, and the clear superiority of self-efficacy as a predictor of actual performance. Students who were confident about their ability to learn used more learning and practicing strategies.

The male students in the study generally rated themselves as more efficacious and made greater use of critical thinking strategies than female students. Female and male students reported using the same range of learning strategies, though male students reported making significantly more critical evaluations with respect to standards of excellence than female students. The study indicated that most of the students used a full range of strategies rather than one particular type, though they tended to use fewer help-seeking and peer-learning strategies than other strategies.

The study also reported that many music students enter higher education feeling they have not been taught how to practice by their previous teachers. Nielsen also mentioned that, though results of this study and others show the strong relationship between self-efficacy and performance ability, little is known regarding the factors involved in helping students come to believe in their own abilities to perform well.

Nielsen's studies are valuable models for the present investigation. Her establishment of verbal reports as a trustworthy method of data collection supports the current method. Further, the delineation of goal selection, organization of strategies and association of strategies, combined with findings of other research related to monitoring of progress, provide a framework upon which an initial set of categories for analysis can be constructed.

The purpose of Geiersbach's study (2000) was to test a taxonomy of practice objectives designed to describe different levels of complexity in a practicer's practice that he developed from his review of research. The taxonomy was based on Gruson's (1981) research and used five categories of goals: unpremeditated, repetitive, technical, interpretive, and metacognitive (see Table 1). Geiersbach's taxonomy, like Gruson's,

used categories that describe levels that move from behaviorist activity into more abstract means of practice.

The study investigated the practice of twelve graduate students, five male and seven female, in music education. Each participant was videotaped as they practiced pieces of their own choosing, in their customary practice environments, during three one-hour practice sessions. Participants essentially engaged in concurrent think aloud (CTA) as they described their philosophies of practicing and provided and their thoughts on their own learning processes while practicing. Following their practice, participants reflected on their work in video stimulated retrospective think aloud (RTA). Geiersbach also collected data through interviews and analysis of the practice videos.

He found through his analysis that the participants used each level of his taxonomy of objectives while focusing on technical and interpretive aspects of playing. Participants concentrated on three key components of practice objectives, including goal setting, playing, and reflection. Higher order thinking was reflected in goal statements and reflections that transcended technical concerns and instead focused on abstract interpretive aims. Lower order thinking was illustrated in practicer verbalizations, which suggested repetitive or technical aims.

Table 1: Taxonomy of practice objectives

1. Unpremeditated	Describes practice without goals, analysis, reflection, or wait time between repetitions and lots of stops and starts
2. Repetitive	General plans are apparent with repetitive goals, little analysis, still little wait time, repetition of incomplete musical units, and simple observations generally concerning errors after playing
3. Technical	Plans are in regard to technical accuracy and analysis, repetition and self-critique occurs at only a technical level, wait time is irregular.
4. Interpretive	Plans are related to expressive playing, analysis is extensive and uses theory terminology, reflection is concerned with expression, wait time is at regular intervals, and repetition is of complete musical units.

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5. Metacognitive	Plans are expressive in nature, interpretive and emotional goals are stated, extensive score analysis uses theory and stylistic terminology, reflection is empathetic, wait time is common, repetition is of complete musical units and uses a high degree of self-awareness, mostly exemplified by creative playing through improvisation or composition.

The data analysis suggested that multiple benefits occur as one begins to organize practice objectives. Participants who engaged in the higher order objectives developed motivation for the process by acknowledging progress toward their goals, playing uninterruptedly, evaluating the effectiveness of methods, and reflecting on playing in holistic or expressive ways.

Leon-Geurrero (2004) studied the self-regulation strategies used by middle school band students in their practice. She defined self-regulation as, "the process of improving individual performance by self-monitoring during a given task. Planning, organizing, self-instruction, self-monitoring and assessment repeatedly occur through the task completion process." The participants for the study were 16 seventh and eighth grade students who were enrolled in a band class taught by the researcher. The students in the study were each videotaped while they practiced a given musical exercise during a 15 minute session. Students provided CTA while they practiced and, immediately after, reviewed the videotape of their practice while engaging in RTA with the researcher. Video analysis, along with the CTA and RTA, provided triangulation for the study.

The analysis of data focused on answering research questions aimed at identifying the self-regulatory strategies reported by novice, adolescent instrumental musicians during practice and after practice, as well as strategies observed through video analysis. Leon-Guerrero also proposed to identify tendencies found in the self-regulatory strategies

used by musicians with different (a) years of experience, (b) gender and (c) instrument played.

Data from CTA and RTA were transcribed. Video of each practice session was transcribed in a five step process. First, CTA comments were recorded. Next, notations were made regarding what the students played and when they stopped. The third stage determined if student starts and stops were due to performance errors. Finally, non-verbal gestures were analyzed, followed by a last review of the video to check the transcripts.

Leon-Guererro divided student comments into segments that included a single complete thought. She then assigned each segment a code based on the three categories of problem recognition, strategy selection, and evaluation of performance, suggested by Nielsen (2001), as well as a miscellaneous code for comments that did not address a defined category. Next, she analyzed comments within the category of strategy selection, and 24 different strategies were identified and then condensed into four broad categories of strategy: musical elements, repetition, non-playing tasks, and non-specific tasks. She then tallied codes in order to determine how often each code was used and how many students used them.

Leon-Guerrero coded the video transcriptions using Chaffin and Imreh's (2001) categories of "runs" (instances in which students played through their music) and "works" (instances that students worked at improving isolated chunks of their music) at a macro-level and then coded the data at a micro-level using codes suggested by McPherson and Renwick (2001). These codes initially included playing only, moving, counting, thinking, singing, and fingering; but more specific codes were added as data

were analyzed. These codes were then tallied in order to determine the frequency of each code during student practice.

Finally, Leon-Guerrero used demographic data supplied by a questionnaire to analyze her final question regarding tendencies of self-regulatory strategies used by students of different genders, instruments, and years of experience. The CTA, RTA and video analyses were then re-examined by groupings: male/female, brass/woodwind, and seventh grade/eighth grade. Numbers of comments and numbers of students using the comments were then tallied and compared across groups.

As she tallied her codes, Leon-Geurrero observed 15 types of self-regulatory strategies. The most common was restarting a measure (41%) and was seen in all 16 participants. She found that repetition was used in over half of the codes in the video analysis and was the most common code in CTA analysis, but was second to musical elements in the RTA analysis. This suggests that a disconnect may exist between what the students know they should be doing (as expressed during the RTA) and what the students actually do (as witnessed by the CTA and video).

Leon-Guerrero found that repetition was the predominant approach to practice and that it can be applied in multiple ways. Gruson (1988) and Hallam (2001) also found that students frequently use repetition of short segments, measures, and single notes as a practice strategy. Also, students were found to draw on previous musical knowledge while approaching practice, which is similar to findings of Chaffin & Imreh (2001). They also demonstrated musical awareness and the capability of incorporating musical elements into their performance. Student use of non-playing strategies also demonstrated that some students were capable of planning as they approach practice.

Nine of the 16 participants tended to practice in sections while the rest tended to practice from the beginning to the end of the piece, illustrating a common problem in student practice habits. One reason for this could be that the piece could have only been minimally challenging for some of the students, therefore requiring larger chunks of music to be practiced.

This study provides a base for the current project. First, the CTA & RTA data gleaned by Leon-Guerrero indicate that novice, adolescent musicians are able to provide informative verbal reports of their self-regulating strategies during music practice. Next, this study serves as a model for assignment of a multi-layered set of codes that are initially based on prior research and then modified to fit the current situation. While her results provide a new perspective regarding *how* novice musicians practice, Leon-Guerrero did not address *why* they make their decisions. It is my belief that, by analyzing the goals students have in their practice and their assessments of progress, I may be able to learn more about the underlying reasons that inform students' decisions about what they practice and how they practice it.

Summary of Verbal Report Research

Verbal report have become an important tool for educational researchers. It is gradually becoming a more common data source for researchers in music education. The use of verbal reports provides a deep, rich perspective into the thought processes of participants. When combined with other research tools based on observation and the analysis of artifacts, researchers can use verbal reports to gain a more complete

understanding of the thinking that takes place inside the heads of musicians. This, in turn, will begin to suggest new, more effective ways of teaching.

The number of research studies in music education that use verbal reports as data is relatively small, and there is room for more research using this methodology. One topic in which verbal report data may be appropriate is the study of the decision making processes related to the development of daily practice goals. Verbal reports could also be used to understand how students assess themselves and how they use the resulting information. Other studies can analyze the ways in which students remediate their own learning.

Studies in the Development of Practice Skills

The following studies have each investigated multiple factors that effect self-regulated instrumental music practice. When taken as a whole, three key concepts emerge: motivation, goal orientation, and strategy selection. Other concepts, such as structure of practice, self-monitoring or self-assessment, supervision, and the development of practice skills also emerge within these studies, but to a lesser extent.

Ericsson, Krampe, and Tesch-Romer's (1993) seminal article was a review of literature that focused on the role of "deliberate practice" in the acquisition of expert performance. Their review of the development of expertise found that, to acquire top levels of performance in most domains, one must deliberately practice their skill over a long period of generally more than 10 years. Also, they found that experts in their chosen field tend to start their learning at a young age and spend 2 to 4 hours per day in deliberate practice.

They differentiate "deliberate practice" from other types of practice by explaining that one engages in deliberate practice when he places a great deal of concentration into the practice process. This practice is constrained by resources, effort, and motivation, and they found that people can effectively engage in this type of exercise for limited periods of time. Deliberate practice considers motivation, previous experience, feedback, repetition, and strategies. Without it, learning and improvement are significantly slowed.

Ericsson, et al. (1993) found that students who reach a plateau in their skill development must increase their effort in order to rise to the next level in their performance. To do this, they must change their training methods and use multiple activities that promote the acquisition of associated skills needed to propel them to a higher level. Students become motivated to practice deliberately by considering long-term effects. Whereas work and play create extrinsic or short term rewards, students who engage in deliberate practice are able to accept delayed gratification in order to enjoy the long term benefits of their effort.

Ericsson and Lehmann (1997) examined the implications of the deliberate practice model for the education of amateur musicians and music students. They listed the key characteristics of deliberate practice as feedback, goal setting, and monitoring, and emphasized that practice must be deliberate and thoughtful in order for learned skills to be applied to new experiences. They recommended peer assessment, because this provides feedback for the performer and helps students learn to monitor and internalize their personal goal setting. Various forms of supervision, such as using peers as practice partners, asking for advice from more advanced musicians, and self-supervision using a

practice diary were also recommended as means to enhance feedback, goal setting, and monitoring.

Ericsson and Lehmann warn of the hazards of over-repetition. They acknowledge that repetition leads to increased automaticity that requires the performer to exert less effort to obtain the results. But, this phenomenon leads to improved performance only if the level of effort put forth by the musician is maintained by attending to more elements of the music being performed. According to them, "Building mastery in a domain and finding the least effortful method to attain a specific performance goal are different activities. This distinction is crucial for separating a performance that has been entrenched through mindless drill from one that is flexible and adaptable through the use of mental representations – a hallmark of expert performance" (p. 49).

Chaffin and Imreh (2001) studied the practice of a concert pianist (Imreh) during her process of preparing the Presto from J. S. Bach's Italian Concerto for performance. They made video or audio taped recordings of 57 practice sessions, totaling over 30 hours of data. During each session, Imreh commented on her actions and thought processes and gave appraisals of her progress at the end of sessions 12 and 24. The researchers transcribed each practice session by recording the measures in which each practice segment started and stopped. A practice segment was defined as a section of playing that, "was not continuous in the score." The researchers found high correlations (.8 and .9) in their transcriptions by independently transcribing a number of same practice sessions and correlating the number of starts and stops and repetitions of practice segments for each measure. They were then able to construct graphic representations of practice segments related to each bar of the composition. Next, the researchers transcribed Imreh's

comments and correlated them to their appropriate measures. Chaffin and Imreh identified a total of 20 codes, organized into four broad groups: basic (fingering, technical difficulties, and identification of patterns), interpretive (phrasing, dynamics, tempo, and pedal use), performance (memory, attention, musical structure, and score use), and metacognitive issues (self-assessment, descriptions of plans, learning process, etc.).

The first three sets of codes (basic, interpretive, and performance) served as criteria for the analysis of performance features in each measure of the Presto. The researchers used a regression analysis to determine if the number of performance features per measure served as predictor variables for the number of starts, stops and repetitions encountered during practice. This analysis of data suggested that the process of learning a new piece of music can be divided into three separate learning periods in which the basic performance features affected the first two periods and the interpretive features affected the last two periods, while the performance features were apparent throughout the process.

The researchers found that the pianist's verbal reports showed "striking correspondence" (p. 65) between the amounts practiced in two sections of music and the number of basic features identified in each section. The regression analysis also related to the pianist's practice goals in comparison with the frequency of comments of basic, interpretive, and performance dimensions.

Chaffin and Imreh found that the analysis of practice and verbal reports did not correspond in cases. At times, verbal comments did not acknowledge potential practice areas, though analysis of practice demonstrated that these were, in fact, being isolated for

practice. The researchers listed a number of possible explanations, including the observation that some features of practice were routine and did not attract comment. By finding slightly different perspectives in their analysis of practice and of verbal reports, they suggest that it may be necessary to obtain multiple sets of data in order to fully describe practice. This observation is substantiated by Ericsson and Simon (1980).

Lisboa, Chaffin, Schiaroli, and Barrera (2004) conducted a study similar to that of Chaffin and Imreh. In their study, an experienced cellist (Lisboa) was observed while undertaking the process of preparing a new piece of music for performance. Over 17 hours of practice sessions were videotaped, and the cellist provided comments regarding her thought processes. Data was transcribed similar to Chaffin and Imreh. The purpose of the study was to determine how the way a piece is practiced and memorized affects its performance.

The researchers found that Lisboa, as did Imreh in the previous study, progressed through three learning periods separated by intervals of time in which the piece was not practiced. These three periods could further be divided into five or more different stages of learning. Each stage was entered at different times for each section of the piece. The first three stages, sight reading, exploring the music, and smoothing out, roughly relate to the first learning period. The second learning period began part way through stage three and continued through most of stage 4, defined as listening to the music, and the third period began at the end of stage four and continued through stage 5, defined as trial performance. The researchers anticipated that at least one further stage related to polishing of the piece would be encountered as the project continued.

Both of the studies conducted by Chaffin, et al., as well as the recommendations by Ericsson and Simon (1993) provide support for the methodology chosen for this study. By observing practice from multiple viewpoints, it is possible gain a deeper understanding of how one practices. While a researcher can only assume what is being thought while observing practice, the concurrent think aloud can provide corroboration of the researcher's assumptions. On the other hand, it is quite common for some thoughts to go unsaid by participants for various reasons. The analysis of practice aids in identifying these non-verbal thoughts. Next, these studies strengthen the findings of Ericsson and Lehmann (1997) regarding the necessity to change practice strategies in order to move on to the next level in performance. Once a level of automaticity is attained, the musician must use different practice strategies in order to move to the next level of performance. This finding may inform the analysis of the current study as codes are developed for repeated exercises separating purposeful repetitions from mindless or low effort repetitions.

Gruson (1981) investigated the development of practice skills of Canadian pianists who spanned a continuum of performance levels from novice to artist. Forty-three piano students between the ages of 6 and 23 and three professional pianists were observed over 10 practice sessions. Gruson scripted each practice session at five second intervals and developed codes for the practice techniques that the subjects used. In order to gain an understanding of student practice behaviors, a number of statistical analyses were performed, including correlations, descriptive statistics, and analysis of variance. Students were all rated according to the Royal Conservatory of London evaluation system. A subset of students at novice (Grade II), intermediate (Grade VI) and advanced

(artist) levels, along with the concert pianists were then interviewed in regard to their knowledge about the strategies they used when they practiced. Gruson's findings suggest that, as students improve in performance ability, the size and complexity of repeated musical sections increases. Advanced students also tended to pause and play one hand at a time more, verbalize self-instruction more, and spend more time practicing a single piece than less skilled students. Gruson also found that more competent practicers developed automated skills, leading to less conscious control of motion. As a result, mental slips tended to increase in frequency in advanced practice sessions rather than decreasing with practice. This again corroborates the findings of Ericsson and Lehmann (1997) which discuss the negative consequences of mindless practice once automaticity is attained. Student interviews also corroborated Gruson's observational findings, while also indicating that more advanced students tended to demonstrate metacognitive skills that were more articulated, varied, goal-directed, and cognitively complex than less experienced students.

The purpose of Barry's study (1992) was to determine the effects of field dependence/independence and gender upon the technical accuracy and musicality of student instrumental performance under both structured and free practice conditions. Field-dependence/independence was assessed by the Group Embedded Figures Test (GEFT). The subjects for the study were 57 (34 male & 23 female) brass and woodwind instrumental students enrolled in a summer music camp. The subjects, who were in seventh through tenth grade, were equally divided according to the results of the GEFT and then assigned to either a free practice group or a structured practice group. Students in the structured practice group were supervised as they practiced and were asked to use

strategies such as mental practice, analysis of the music, and specific drills. Subjects had four short practice sessions distributed across two weeks. Pre-test and post-test performances were evaluated by three independent judges with a high degree of reliability.

Independent variables for the study were the student practice condition, field dependence/independence, and gender, while dependent variables included melodic & rhythmic accuracy and musicality as measured by the improvement in scores from pre-test to post-test. Barry used a 2x2x2 analysis of covariance to analyze the data and found significant main effects for the practice condition for all dependent variables. The data indicate that the practice procedures used by students in the structured practice group were more conducive to improvement in musical performance than the free practice techniques chosen by the students in the second group ($p<.05$). While this was true for both girls and boys, Barry found that girls from the free practice group improved more than the boys from the same group. These findings support prior research that suggest that supervision of practice as well as an organized plan of practice is an effective means of improving musical performance.

Barry also analyzed videotape recordings of each student's practice. Students in the free practice group were allowed to practice in any way they chose. Subjects in this group tended to play the music over a number of times from start to finish, quietly analyzed the music, break it into small chunks, write in fingerings, and identify difficult spots. Comparison of the videotapes of structured and free practice variables showed differences in tempo, metronome use, mental practice, and identification and correction of trouble spots. Generally, free practice students tended to play their music faster and

use the metronome less, while structured practice students tended to use mental practice, tap rhythms and mark and correct errors.

Though Barry was able to identify a number of significant reactions, she was not able to generalize the findings to a broad population. Because the study used a relatively small sample of self-selected students involved in a summer band camp, the sample was not sufficiently random. Also, the lack of training given to the experimental group limited their ability to fluently use the practice structure in an efficient manner. Therefore, results from further investigations of the same students may be significantly different as they become more fluent in their ability to follow the given practice structure.

Hallam published seven separate articles based on the same study, examining the nature of planning and metacognition in musicians and how they change as expertise develops, though only three will be discussed in this review (1997, 2001a, 2001b). The subjects for Hallam's study included 22 professional freelance musicians and 55 novice string instrumentalists, ranging in age from 6 to 18. All subjects in the study engaged in semi-structured interviews regarding their approaches to practice. Both expert and novice musicians were asked what activities they would use to practice a specific piece of music. The novice musicians were also tape recorded for ten minutes while practicing and performing a short, developmentally appropriate piece of music. The final performances were then assessed by two independent judges and interview data were independently coded by three judges.

In 1997, Hallam used the data taken from interviews with the professional and the novice musicians to analyze the strategies each group used for memorizing music. She found that individuals used various strategies from a diverse array of options, depending

upon the nature of the material to be memorized. Subjects engaged aural, visual, and kinesthetic modes of thinking to aid in memorization and simultaneously adopted several other strategies to reduce anxiety related to performance. A key finding was that music memorization strategies changed as expertise developed. Professional musicians were more likely to inform their memory through analysis of the score and design memory devices to aid in differentiating similar passages.

Acknowledging that musicians require several metacognitive skills in order to practice, Hallam explored the development of metacognition and performance planning strategies used by both expert and novice musicians in her next study (2001a). She once again used data taken from interviews, as well as data taken from the analysis of the videotape of novice student practice. Her findings suggest that experts possess extensive metacognitive skills, such as self-awareness of strengths and weaknesses, knowledge of various techniques to address different tasks, and knowledge of self-regulative strategies such as monitoring, adjusting and concentrating.

The professional musicians demonstrated that they have "learned how to learn," and extensively used metacognition in relation to their preparations for performance, encompassing technical matters, interpretation, and issues relating to learning itself (e.g., concentration, planning, monitoring, and evaluation). In learning a new piece of music, professionals generally progressed from an overview of the whole piece of music, either through playing or score analysis, to identification of difficult sections. These sections varied from person to person, based on their knowledge of their strengths and weaknesses and the idiosyncrasies of their instrument. A number of strategies for addressing the

difficult sections were identified that fit within the two overarching categories of analysis and repetition.

Although there were similarities in the strategies adopted, there was considerable variation based on individual need. In the novice musicians, there was a complex relationship between the development of expertise and the use of planning strategies. Hallam saw qualitative change in practice expertise with older, more experienced students. Also, as age and grade level of novices increased, total practice time increased and, the length of practice sessions increased concurrently with level of expertise.

To analyze the planning novice and advance students undertake in relation to the videotaped practice, Hallam set criteria to distinguish high, moderate and low levels of planning. Criteria for high levels of planning included the completion of task requirements, speedy identification of difficulties, emphasis of practice on difficult sections, and integration of the sections practiced into the whole for performance. Moderate level criteria were completion of task requirements, evidence of on-task behavior but repetition of large sections of the work rather than a focus on difficulties and no integration specifically towards performance. She described criteria of low levels of planning as incompletion of tasks and considerable amounts of time off task. Eleven of the advanced students exhibited high levels of planning in their recorded practice, while five (12.5 percent) of the novices did so. Twenty-eight novices (70 percent) showed moderate levels and seven (17.5 percent) demonstrated low levels.

Ten percent of the novices and 33 percent of the advanced students demonstrated high levels of planning in daily practice, characterized by specified aims of practice, a consistent order of practice, self-imposed organization of when practice was undertaken

and a tendency to mark things on the part. Sixty-five percent of novice and 66 percent of advanced students demonstrated aspects of moderate planning, such as undertaking some organization of practice, and organizing time. Twenty-five percent of the students were categorized as having low planning skills. Characteristics of this group included not having a consistent practice time, being in need of constant reminders to practice, wasting time repeating unnecessary material and being disorganized in their work.

Hallam (2001a) found that students become familiar with specific learning strategies in parallel with their development of musical skills and knowledge. She suggests that a key component of this development is the cultivation of accurate internal aural representations of the music they are learning (Hallam, 1994; 1998b). She determined that repetition may be the most effective means of practicing in order to develop a level of technical automaticity, and that students must develop rudimentary playing skills before they can "learn to learn." Teachers may facilitate this process when they demonstrate practice skills with their students. She recommended encouraging students to: consider personal strengths and weaknesses; assess task difficulties; select appropriate practice strategies; set goals and monitor progress; evaluate performance; develop musical interpretation; manage time; and plan strategies for memorization, motivation, and time management.

Hallam (2001a) concluded that it is possible for teachers to teach their students to practice effectively, once the students have developed a minimum level of proficiency on their instrument. She found that planning mechanisms in music practice operate on three levels. According to Hallam, planning relates to the ability to complete specific tasks, plan and organize practice in an automated fashion, and consciously choose strategies to

compensate for deficiencies in self-regulatory mechanisms. Each of these levels of planning is dependent upon the level of expertise held by the musician.

Metacognitive skills are related to students' ability to assess the level of difficulty in tasks and select appropriate strategies, set and monitor goals, evaluate performance, and develop interpretation. Further, knowledge of personal strengths and weaknesses, memorization strategies, motivation, time management, monitoring concentration, and dealing with performance anxiety were found to be key metacognitive skills. Hallam's findings suggest that musicians use more metacognitive strategies as they gain in expertise. She also found that a key component of developing expertise is the acquisition of appropriate aural schemata to facilitate the monitoring of progress and correction of mistakes.

Finally, Hallam (2001b) considered the relationships between strategy use and the development of expertise at varying levels of ability. Data for the study included the semi-structured interviews and the tape recordings of the 55 novice string students while engaging in a 10 minute practice session and performance of a short piece appropriate to their level of skill development. Two judges evaluated the performance of each student's musical selection. Hallam found that students needed to develop an "appropriate aural schemata" in order to effectively choose appropriate practice strategies and monitor progress. Strategy development was closely related to the developing level of expertise. She recommended that further research attempting to explain levels of attainment and quality of performance focus on a multi-dimensional approach to the topic.

Hallam's conclusions support other research that has found the development of practice skills to be related to performance level (McPherson, 2005; Nielsen, 2004;

Gruson, 1988), and this holds several implications for music education. Primarily, Hallam states that development of effective practice strategies and metacognitive skills is directly related to levels of musical expertise and suggests that teachers should endeavor to provide direction in the development of self-regulative skills in conjunction with the development of performance skills. Further, she advocates providing students with aural models in order to facilitate the development of appropriate aural schemata in order for students to begin to identify and correct their mistakes.

The novice subjects within Hallam's project were all string instrumentalists who were engaged in private instruction in the United Kingdom. In order to provide more information for school music teachers in the United States, it seems logical to conduct similar studies using school band and orchestra students as participants. Further, Hallam analyzed tape recordings of short, ten minute practice sessions. It may be beneficial to use videotape recordings in order to include visual cues in the analysis as well as aural cues. Also, students generally tend to practice for more than ten minutes at a time, so more authentic information may be gleaned from longer practice sessions. Finally, interview data for Hallam's studies were based upon semi-structured interviews. While this method offers a number of benefits, one may be able to gain a more clear perspective of student thought processes through the use of verbal reports (Ericsson & Simon, 1993).

Hamann and Frost (2000) surveyed 512 string students in sixth through twelfth grade in regard to their practice habits and attitudes toward music. Using chi-square analysis procedure, the researchers found that the string students who studied privately tend to be more professionally goal oriented, and practice longer, smarter, & more efficiently than those who only studied in school orchestra classes. These students

practice daily at regular times, establish objectives and maximize time in shorter, though on task, practice segments. They also find practice more emotionally satisfying than there counterparts and experience anxiety, depression & guilt when they are unable to practice. To these students, motivation is driven by a focus on improvement and a desire to show their musical ability.

While Hamann and Frost were able to produce significant results in relation to the practice habits of school aged string students, the nature of the study did not allow for a deeper understanding of student abilities to set goals and self-assess. Furthermore, the study was able to delineate the differences in practice between students who take private instruction and those who do not, but the study did not focus on what the non-private study students were able to do. The current study may help to address these issues.

Research in Practice with Instrumentalists

McPherson (1994, 1995, 1997, 2005; McPherson & McCormick, 1999; Pitts & McPherson, 2000a, Pitts & McPherson, 2000b; McPherson & Renwick, 2001; McPherson & Renwick, 2002; McPherson & Davidson, 2002) has conducted a vast amount of research in the area of practice and skill development of school instrumental music students. Most of this research took place in Australia. Topics of study have included self-regulation in practice, the use of strategies in different performance types, parental support, and factors involved in motivation.

In the first set of studies (1994, 1995, & 1997) related to the current project, McPherson conducted a three year longitudinal study with a group of 101 high school clarinet and trumpet students to examine the development of five distinct types of

musical performance. Subjects were administered the Watkins Farnum Performance Scale to measure their capacity to perform a rehearsed piece, sight read, play by ear, play from memory, and improvise. Additional data concerning factors thought to influence skill development were obtained in structured interviews and analysis of reflective comments made by students immediately after completing each of the four measures.

Results from the 1994 study show a significant improvement in each of the skills over the three years, as well as changes in the aural and creative activities in which instrumentalists report engaging during musical activity. Reflective comments show distinct differences in the types of strategies used by instrumentalists to perform on each of the measures. McPherson (1995) found important differences between younger and older students in performance of rehearsed music, sight reading, playing by ear, playing from memory, and improvising, with strengthening correlations among these five skills as instrumentalists mature. Findings from the 1997 study show that, in the beginning stages of training, sight-reading skill is not significantly correlated with an ability to perform a repertoire of rehearsed music for a comprehensive performance examination. Correlations between these two aspects of performance appear to strengthen markedly as instrumentalists mature. Consistent with other studies (Elliot, 1982), results show that rhythmic errors recur more frequently than all other types of errors.

McPherson's findings suggest two important points for my study. First, the 1994 study suggests that the development of practice strategies may be related to maturation and skill development. This relationship of practice to maturity and skill implies that teachers must develop a sequence of practice habits to teach instrumentalists that reflects their capabilities as they progress in their musicianship. Second, McPherson suggests that

students learn five separate performance skills, including performance of rehearsed music, sight reading, playing from memory, playing by ear, and improvisation. Each of these skills requires a different practice strategy. Therefore, the analysis of student practice must recognize the skill being practiced, and its associated goal, in order to compare the strategies one chooses with their purpose.

McPherson and McCormick (1999) explored the ways self-regulation (cognitive strategy use) and motivation (intrinsic value, anxiety, and confidence) might interact with the quantity and content of a musician's practice. Subjects for the study included 190 pianists who were taking the Trinity College, London, performance examinations. A questionnaire exploring possible relationships between self-regulation and motivation and the quantity and content of musical practice was completed by each subject before taking the test. The researchers used a regression analysis to discover key components within practice and motivation. They found that the quantity of practice was related to anxiety toward the oncoming test along with the amount of technical work practiced. They also discovered that subjects who reported greater amounts of practice on informal, creative activities (playing by ear and improvising), repertoire (new as well as older pieces), and technique tended to be more cognitively engaged while practicing and expressed more intrinsic interest in learning their instrument and that the quantity of practice in the month before the performance exam was related to the amount of technical work the subject reported practicing. Finally, they found that the level of cognitive engagement during practice and achievement are related.

McPherson and McCormick found that pianists who take private instruction tend to achieve more when their practice is characterized by creative and purposeful activities.

While the pianists were exposed to regular one-on-one instruction and guidance, school band students often are left on their own to develop their own practice techniques. Little research has been conducted regarding the purposiveness of practice activities within the school band population.

McPherson, Davidson, Pitts, and Renwick conducted a three year longitudinal study investigating the practice of beginning band students that generated a total of seven journal articles. A total of 157 participants in third and fourth grade took part in the study, and 107 children out of the initial pool participated throughout. Participants came from eight different primary schools with an established teacher and band program in Sydney, Australia. The subject sample controlled for a balance of gender, socio-economic status and school background. Students were provided instruments and given the opportunity to join band, with the promise that students who continued through the three year study would be allowed to keep their instruments.

The researchers collected multiple forms of data, including playing tests, sight-reading tests, performance from memory, performance by ear, and improvisation, along with parent interviews regarding practice time and student interviews regarding practice strategies. Parents, teachers and students were interviewed in relation to changing perceptions, attitudes, and skills during the first three years of learning. A number of students were periodically videotaped as they practiced. Parents were interviewed in structured phone interviews after 1 month, 6 months, and 1 year, while students had structured live interviews before beginning, and at 10 and 20 months. Many questions asked of participants were consistent over the 20 month period, which allowed for a

number of comparisons. Students who discontinued their participation in band completed a questionnaire.

Pitts and McPherson (2000a) studied factors related to the success and failure of the participant over the course of the project. Comparisons were drawn between children who maintained and lost motivation over that period, and between those who ceased to have lessons and those who persevered. Data included the student and parental interviews and exit questionnaires supplied by those who dropped out of the study.

The results of their analysis showed that highly motivated students were more likely to focus on quality of practice instead of practicing for a set amount of time. They found that parental support was an important factor in developing success and that intrinsic motivation tended to be more related to success than extrinsic rewards. Students who maintained motivation were more self-critical, reflective, and conscientious in practice. All three of these qualities tended to decrease as motivation decreased.

Pitts, Davidson, and McPherson (2000b) conducted a set of case studies of three of the participants in order to more deeply understand the cognitive strategies the students used in practice. They related practice strategies and other factors, such as environment, motivation, and general ability, to the progress that was made in the first six months of learning. Data for this portion of the project included videotaped recordings of 'normal' practice at two to six week intervals.

Students involved in this portion of the study included a ten year old male trumpet player, a ten year old female saxophonist, and a nine year old female flautist. Analysis of the data was based on "systematic and repeated viewings," and a number of salient themes were introduced. First, each student in this study exhibited qualitatively different

strategies and dispositions toward practice. While the boy seemingly enjoyed his practice, the saxophonist seemed to rebel against her mother's direction to practice, and the flautist seemed to passively accept practice as a duty that was "good for her."

Next, students seem to all exhibit negative attributes such as a short attention span, avoidance strategies when the music was difficult, and a lack of self-correction. The trumpet player spent significantly more time playing and doing things that he felt confident he could play successfully. This seemed to be one way he could avoid the tasks that were more difficult. Students also exhibited seemingly appropriate practice strategies, such as singing and fingering the music, and using repetition, but they were generally done without an understanding of why they were doing them.

The researchers found that students who can identify and imitate their teacher's practice strategies tend to use their time more productively than those who do not. Most students tended to demonstrate few self-correction techniques, and played through their pieces or exercises with little discernible self-evaluation. This finding is supported by Hallam's (1998) suggestion that teachers need to model and teach effective practice skills, even though the development of practice skills seems to be dependent upon musical development. The study also reinforced the findings from other studies that stressed importance of parental support (Pitts, et al. 2000; Sloboda et al. 1996; Davidson et al. 1996, 1997; O'Neill, 1997; Zdzinski, 1996). They state that parents need to understand concepts related to practice, such as goal orientation, avoidance techniques, and the importance of detailed practice, in order to help their children be more efficient.

They also emphasize that teachers should teach practice strategies to students by example and explanation. Parents, on the other hand, have a different function. They

should not be intrusive; instead they should focus on encouraging their children in ways that develop intrinsic motivation. According to the authors, "Practice must, at some level, be enjoyable if it is to bring musical development and satisfaction, and our cases demonstrate this in that the trumpeter is the only one to maintain a level of interest and so make discernible progress. . . Practice will only become purposeful and self-determined when the pupil has a range of 'task oriented strategies' to draw upon."

McPherson (2000) analyzed student interviews immediately before beginning instruction, in order to investigate their value motivations in music related to how long they thought they would learn their instrument. Interview results show that the children were able to differentiate between their interest in learning a musical instrument, the importance to them of being good at music, whether they thought their learning would be useful to their short- and long-term goals, and the cost of participation in terms of the effort needed to improve. Children's expectancy and value beliefs were found to be powerful predictors of achievement, as the children's commitment to learning their instruments and the amount of practice undertaken were useful in predicting achievement after nine months of study.

McPherson and Renwick (2001) analyzed regularly videotaped practice sessions of seven of the participants over the whole three year period. Based on six dimensions of self-regulation, behavioral coding was used to assess the content of practice, the nature of errors and common features and individual differences in musical practice. They found low levels of self-regulatory behavior in which students set goals and monitored their own learning. Students seemed to play through songs rather than work on spots and mistakes were generally ignored or corrected by repeating single notes. Learning

strategies consisted almost exclusively of playing through pieces once or twice. Most errors were either ignored or corrected by repeating one or two notes.

McPherson and Renwick found that beginners tend to practice less, partially due to the fact that they are unable to use self-regulating strategies as well as more experienced musicians. The children tended to show little evidence of deliberate practice strategies typically exhibited by expert musicians.

Renwick and McPherson (2002) also conducted a case study of one of the students in the program. For this female clarinetist, interviews and analysis of videotaped practice sessions were used to compare practice behaviors for teacher-assigned repertoire and a piece she chose herself. The authors state that motivational research in academic subjects has demonstrated that when students are interested in an activity and feel free to choose whether or not to do it, they are more likely to engage in higher-level cognitive functioning, find it easier to concentrate, persevere, and enjoy their learning. When the student in this study practiced music of her own choice, she was more likely to engage in strategies typical of more advanced stages of development, such as silent fingering, silent thinking, and singing. She also spent more time practicing the piece and persevered when faced with difficulties.

McPherson and Davidson (2002) studied mother and child interactions during the first year of learning an instrument. All 157 mother and child interviews were analyzed during the first year of training. The authors analyzed interactions in quantity and content of practice, the mother's support and supervision, the relationship of previous exposure to learning an instrument and consistency of practice. Differences in expectations and

practice habits of children who ceased instruction were compared to those who continued.

Results show that the children's mothers were able to accurately anticipate the amount of support their children would need. The mothers who were concerned about helping their children practice consistently were more likely to have children who eventually dropped out of band. These children typically set unrealistic goals concerning the amount of practice they would undertake. After they started and they experienced the challenge of playing, this group of children consistently practiced less than those who continued in band.

Finally, McPherson (2005) examined the strategies employed by children in the early stages of learning their instrument. Researchers administered playing tests at the beginning and end of each school year to assess the five types of musical performance suggested by McPherson (1994, 1995, 1997). The children were then interviewed at the end of the school year to assess their use of a practice diary, their focus on improvement in practice, and their strategies for self-correction, sight reading, and memorization.

Results of the tests show that the children tended to retain their position relative to their peers across the course of the study. A high percentage of children who experienced difficulties in sight-reading and ear-to-hand coordination dropped out. The sequenced and orderly use of strategies was found to be more important in predicting achievement than the amount of practice, with the highest achievers showing a more sophisticated use of strategy.

McPherson suggests that the common forms of assessment (practice time and performance of rehearsed music) are unable to provide complete, accurate feedback

regarding musical development. He proposed that teachers may gain a better understanding of progress by observing the range of practice strategies children employ. These strategies may be telling regarding why some students are able to progress effortlessly while others struggle and fail. He proposes the need for instruction of students in practice skills.

Numerous implications flow from the set of articles emanating from this project. Primarily, the results of these studies suggest that students need to be taught how to practice in conjunction with being taught how to play their instruments. The researchers state that students must be taught and encouraged to focus on quality rather than quantity in their practice. They stress the value of intrinsic motivation and the influence that parents and self choice have in this process. Finally, the results suggest that the choice of practice strategy is partially dependent upon the type of performance skill being addressed.

The team of researchers used a number of data sources, including parent, teacher and student interviews, student questionnaires, and video recording of student practice. While their chosen sources of data were valid sources of information for their research questions, the investigators were unable to gain a deeper understanding of student thought processes while they were engaged with practice. The current study intends to address this issue with the use of verbal reports. Also, the series of reports were focused upon students in the first three years of instrumental study. The current study will have a slightly different focus, as participants will be in their second and third year of instrumental music and will be slightly older than the Australian students. Because the students in this study started instrumental music in sixth grade, as opposed to initial

lessons in third grade for the Australian students, it is anticipated that the difference in age may produce qualitatively different results.

Self-assessment Research in Musical Performance

McPherson and Zimmerman (2002) stress the importance of self-assessment within the context of self-regulation, as does Ericsson (1996) in his description of deliberate practice. The process of self-assessment has an effect on the diagnosis and correction of mistakes and student motivation. An analysis of a number of seminal studies on the self-assessment of musical performance may lead to the formulation of implications for this research project.

Davis (1981) was among the first to study the effects of self-assessment in the music classroom. His study looked at the effect of structured singing activities and self-evaluation on performance, tonal imagery and attitude in an elementary band setting. In his design, 93 fifth and sixth grade band students from three separate schools were separated into 12 heterogeneous groups. The experimental groups engaged in structured singing activities, practiced self-evaluation, or a combination of the two while learning to play their instruments and the control groups learned in what was considered a customary teaching environment. At the end of the intervention, students were given an attitude questionnaire and a performance test in which their self-evaluations were correlated with those of experienced music teachers. The data were analyzed using analysis of variance and Pearson and Spearman correlations.

Significant results of this study showed that the self-evaluations of the combined experimental groups produced significant correlations with the expert evaluations, fifth

grade students engaged in structured-singing activities scored higher on instrumental performance, and sixth grade students engaged in structured singing and self-evaluation practice, along with one of the control groups, scored higher in instrumental performance and attitude. Through this study, Davis concluded that structured singing activities, self-evaluation practice, and a combination of the two improve performance skills and, to a lesser extent, attitude. He found that practice with self-evaluation improves correlations with external evaluators and that neither of the interventions had an effect upon the development of melodic tonal imagery. He also concluded that the customary approach was an effective method of teaching for second year students.

Limitations of this study were that it used a relatively small number of subjects and that the second year students had been conditioned to learning using the customary teaching methods from the prior year. These two factors could have a significant effect on his final conclusion. Davis' study suggests that beginning instrumental students can learn to self-evaluate, but it does not describe what evaluation skills they currently have.

Bergee's (1993 & 1997) two studies focused on the reliability of self-evaluation with college aged music students. In the first study, Bergee used a small number of brass students and two panels of musicians as the subjects. Students were assessed by a panel of faculty brass professors during their end of the semester performance jury using an established brass adjudication form. A videotape was made of each performance and students were given the opportunity to view the video and complete a copy of the same adjudication form within one week of the assessment. A second panel, identified as the peer group made up of college and professional level brass musicians, also viewed student videotapes and completed the adjudication form. Bergee then correlated the

assessments of each group. The results showed that inter-judge reliabilities were high in both the faculty and peer panels and, while the assessments of the peer panel tended to be higher than the faculty panel, there was a moderately high correlation between the two. The self-assessment scores, on the other hand, had low correlations with both the peer and faculty groups, confirming prior investigations that suggest that self-evaluation generally correlates poorly with external evaluations. Neither of the three groups, however, were trained in the use of the adjudication form. Training, discussion, and practice using the forms may have had a significant effect on the results of the study.

Bergee's second study was much like the first. The difference was that he expanded the number of subjects and the range of performance idioms to include woodwinds, brass, percussion, strings, and voice. To accomplish this, he used over 50 students and 26 faculty from three separate universities and adjusted the adjudication form to accommodate the needs of the various families of instruments. His findings were nearly identical to those of his previous study, but he also found that faculty inter-judge reliabilities were uneven. This new finding led to a new research project studying faculty inter-judge reliability, published in 2003. The assessment tool used in this study had not been tested for reliability, and therefore it, along with a continued lack of training in the use of the tool, could have attenuated the results of this study.

Bergee's third and fourth studies regarding self-assessment evolved from the first two (Bergee & Cecconi-Robers, 2002). In them, the researchers hypothesized that participation in small, informal peer group discussions would have a positive effect on the ability of undergraduate music students to accurately self-evaluate their performances compared to faculty evaluations. In the first study, 14 students participated in small group

discussions four times over a two week period prior to end of the semester juries. During the discussions, students would perform for each other and critique the performances. Students were then videotaped during their juries along with a control group (N=15). Following the performances, each student viewed their video and assessed themselves. Finally, assessments of the experimental group, control group, and faculty evaluators were correlated. Results showed a small but significant difference ($p<.1$) between the experimental and control groups. The second study used 69 subjects following the same hypothesis, but with a number significant changes in the design. First, during similar discussion sessions, the experimental groups added an activity in which they listened to exemplars of musical performances and discussed their qualities. Second, it was believed that combining the first study with the high stakes realities of end of semester evaluations may have had an effect on the results. Therefore, students performed in a non-graded situation. Third, the researchers wanted to see if a change could be seen during the length of the study, so students were recorded during each discussion session and evaluated themselves, while the researchers served as the external evaluators. The control group performed privately for the researchers an equal number of times. They also self-evaluated, but did not participate in small group discussion or in listening to exemplars.

Data included five separate self- and external evaluations for each student, along with peer evaluations for the experimental group. Data were correlated among the three groups and compared the change within each student's evaluation over time. A small interaction was seen between time the initial ability of students to self-evaluate. Students who were initially less able to accurately assess themselves showed a prompt improvement, though the improvement decreased over time. No other positive effects

were found in this study. Again, students were not trained in the use of the assessment tool; they were only provided extra experiences in using the tool with other non-trained students.

Bergee's studies show that self-assessments by college aged music students do not tend to correlate well with the assessments of others. Logic would presume that, if this is the case for college music majors, then self-assessments by younger students may correlate as poorly or worse. Bergee's studies did not describe what his subjects heard as they assessed themselves or how they understood the criteria or what they were comparing their grade to. The current study will attempt to discover possible reasons why students assess themselves differently than others.

Aitchison's (1995) study explored the effects of incrementally increased levels of self-evaluation on the performance, self-evaluation accuracy, motivation and self-esteem of 84 seventh and eighth grade instrumental students over an eight week period. Students were separated into four groups regarding mode of evaluation: teacher-only, teacher-driven, student-only, and student-driven. Students performed a one-page, teacher-chosen etude and a self-selected piece of music representing their perceived performance level. Data included pre-test, mid-test, and post-tests of the teacher chosen etude (teacher-evaluated and self-evaluated), post-tests of the student-chosen etude (teacher and self-evaluated), pre-tests and post-tests of interest and self-esteem, one measure of self-evaluation accuracy, one of critical self-evaluation commentary and one for motivation to continue self-evaluations. Aitchison used a split-plot ANOVA to analyze the data.

Results showed significant pre-test to post-test improvements in external-evaluation ratings, self-evaluation ratings, self-evaluation accuracy, intrinsic interest,

self-esteem, and critical commentary. He also found medium high correlations between external and self-evaluations for teacher selected music and medium correlations for student selected music. Finally, analysis showed that self-evaluation positively influenced intrinsic interest and perceptions of musical performance ability.

Like Davis, Aitchison suggests that students can be trained to assess themselves. Aitchison went on to state that self-assessment may benefit intrinsic motivation and self-efficacy. Once again, though, Aitchison did not discuss how students use self-assessment when they are outside of the experimental group. A void remains in the body of research that describes this matter.

Hewitt's (2001) study explored the effects of combinations of modeling, self-assessment, and self-listening on the performance and attitude toward practice of junior high band students. Using 82 subjects, Hewitt divided them into eight groups composed of all possible combinations of the three independent variables and a control group. Students were then released from class multiple times to practice a researcher-chosen piece of music using their assigned practice method. Data included the amount of improvement experienced between pre-tests and post-tests of student performances of the assigned piece. The evaluators used an established music performance rating scale (Saunders & Holahan, 1997), and students in the self-evaluation groups used a modified version of the same scale. The results of this pretest/posttest 2 x 2 x 2 factorial design showed that students who listened to a model and self-evaluated their performance as part of their practice improved significantly more than the other groups in most dimensions of the rating scale. Self-evaluation or modeling by themselves, however, did not seem to be effective in improving student's performance. Hewitt surmised that the lack of

improvement of the self-evaluation group may result from a lack of student ability to prescribe solutions based upon diagnosed strengths and weaknesses.

The interaction between listening to a model and self-evaluation was a significant finding that led to Hewitt's second study (2002). In this project, Hewitt attempted to discover if self-evaluation with or without a model had an effect on self evaluation accuracy and if a relationship existed between self-evaluation accuracy and achievement. A total of 41 subjects participated in the pretest/posttest 2 x 2 factorial design. Analysis of the data suggested that student self-evaluation scores did not improve and increased over time regardless of model-group condition. Student self-evaluations also showed no correlation with expert evaluations in most dimensions of performance, which is consistent with other studies (Bundy, 1987; Byo, 1994; Bergee, 1993, 1997, & 2003; Kostka, 1997). The conclusions from this study were that the use of a model did not assist students in their self-evaluation accuracy and that the process of self-evaluation had a non-significant effect on self-evaluation accuracy. Based on his prior experience, Hewitt expected different results.

There are a number of possible reasons for the surprising results of this study. First, students used a rating scale that measured eight different dimensions of performance. Gordon (2002) states that reliability is attenuated when evaluators assess several dimensions all at once, because of the added complexity each new dimension brings to the task. Second, students self-evaluated without teacher assistance and with little training and prior practice in evaluation. Aitchison's (1995) research suggests that students need teacher instruction to improve assessment skill. Finally, students were not

given clear instructions in regard to what to listen for as they listened to the model. Again, without teacher guidance, student achievement may be limited.

Hewitt's most recent (2005) study attempted to discover if grade-level differences exist on self-evaluation tendencies over time and on self-evaluation accuracy. Subjects for this study were students enrolled in two summer band camps. The first camp was a high school honors band, while the second was a camp for middle school students. The two groups totaled over 140 students and the mean age difference was just under two years with a mean difference in private lesson experience just over two years. Students in both groups self-evaluated their ensemble's performance during rehearsals, while expert evaluators judged an individual final performance. Hewitt once again used the rating scales developed by Saunders and Holahan (1997) and a modified version of the scales for the students.

Results indicated that differences did exist in performance self-evaluations as the week progressed in some sub-areas and that high school students tended to be more accurate (defined as the difference between self-evaluation score and expert score) than middle school students in all sub-areas except melody and rhythm, though the middle school scores correlated more highly with the expert evaluators than did the high school scores. The difference in self-evaluation accuracy may be due to a lack of variance in the scores provided by the high school students. The two subareas in which the middle school students were most accurate – rhythm and melody – are also the two most objective dimensions of the rating scale and logically the two areas that young students may focus on the most, which may explain why the students were more accurate in these areas. Also, both groups were most accurate in the evaluation of melody and least

accurate in the evaluation of technique/articulation, a result that was found in the previous study (2002). These findings may suggest that a hierarchy of self-evaluation subareas exists, that may also imply that, pedagogically, there may be an order in which teachers should present self-assessment of musical performance dimensions.

While the value of self-assessment is well established, research is inconclusive regarding its effect on student learning (Hewitt, 2001). Prominent educational theorists expound the value of self-assessment as a part of a gestalt view of self-regulated learning in which students set goals, monitor progress and assess their progress in a cyclical process (McPherson & Zimmerman, 2002; Zimmerman, 2002). While some researchers suggest that the reasoning for low correlations between self-assessments and teacher assessments may be due to the cognitive immaturity of children that prevents them from accurate self-assessment (Nicholls & Miller, 1983), another view could be that self-assessment is part of a gestalt, and is therefore difficult to measure in isolation. Hewitt (2001) and Aitchison (1995) both suggest that students seem unable to improve their musical performance solely with the use of self-evaluation, but improvement is more noticeable when the self-assessments are combined with exposure to a model or teacher feedback.

Finally, one of the reasons for inconclusive results may be in the design of the assessment methods themselves. Gordon (2002) warns evaluators of the dangers of attempting to assess multiple dimensions of performance in just one listening attempt. Each of the evaluation tools in the studies listed above rated multiple dimensions of performance. Therefore, researchers risk poor validity when evaluators listen to performances one time, and this is compounded in less experienced students who are less

capable of processing multiple thoughts (Kepner, 1986; Bundy, 1987; Watson, 2006). Also, according to Stiggins (2001) and Black & William (1998), student-involved formative assessment must include a clear goal, a clear description of current achievement, appropriate feedback, and an implicit means of bringing achievement toward the goal. The methodologies of the prior studies did not describe how students were with this information.

While part of this lack of clarity is due to the ambiguous nature of the assessment of the many dimensions music, it seems that researchers may benefit from a deeper understanding of how students are monitoring their performance as they play. Extra training may alleviate the problems encountered in a number of the studies, but educators must first understand how students assess themselves before they can determine what interventions need to be made.

Little research has focused on how students assess themselves or how they use the information gained through self-assessment to direct their learning. Therefore, it is difficult to identify the factors that have a bearing upon the generally poor relationships between student and teacher assessments. Future research in music practice that investigates student thought processes as they assess themselves and use their self-assessments to inform their practice may provide educators with valuable information that may lead to improved methodologies in teaching practice.

Chapter Summary

This chapter has presented a number of studies that look at instrumental music practice through multiple and varied lenses. Through my analysis of each researcher's

work, I derived six elements that seem to have an effect on the quality of practice, including motivation, goal setting, strategies, assessment, structure, and supervision. Each of these elements also seems to be interlinked with the others in a myriad of different ways.

Many of the authors in this chapter stress the importance of teaching students how to practice (Aitchison, 1995; Barry, 1992 & 1994; Hallam, 2001a; McPherson, 2005; Nielsen, 2004). McPherson (2005) emphasized that, "children who applied musically appropriate mental strategies early in their learning were more likely to succeed in comparison with their peers." It seems logical that, through the process of teaching students how to practice effectively, more students will be able to apply the strategies McPherson described, and consequently, more students will be able to make music at a higher level. In order to begin to teach beginning and intermediate music students how to practice more efficiently, teachers must first discover how students currently practice. Educators cannot set appropriate teaching objectives until a baseline from which to work has been set.

McPherson (2005) stated that, "little research to date defines and clarifies children's use of strategies when learning instrumental performance." The few studies that have attempted to address this need have generally focused on the strategies students use in their practice and on their motivation to practice (Barry, 1992; Leon-Guerrero, 2004; McPherson 1997, 2000 & 2005; McPherson & Renwick, 2001 & 2002; Pitts, Davidson & McPherson, 2000a & 2000b). Even fewer studies have investigated the thought processes that inform and drive practice in novice students (Leon-Guerrero,

2004; McPherson & Renwick, 2002), and no study has examined the ways in which students use goals and assessment in their practice.

Beginning instrumentalists' practice may be characterized as inefficient (Barry, 1990; Gruson, 1988; McPherson & Renwick, 2001; Pitts, Davidson & McPherson, 2000a), but Schunk (1996a) states that the combination of learning goals and self-evaluation can be powerful self-regulative tools. He further states (2001) that when people set and meet goals, they build self-efficacy and begin to select newer, more challenging goals. He found that learning goals combined with self-evaluation led to greater persistence than the performance goals without self-evaluation (1994a). Further, McPherson (2005), Pitts et al. (2000a), and Smith (2005) state that students who practice to improve demonstrate more persistence.

The purpose of this study is to fill a void left in the extent research related to student thought processes while they are engaged in instrumental music practice. By understanding the reasons behind student choices related to goal setting and self-assessment in the context of practice, we may begin to understand what steps must be taken in the process of teaching them to practice effectively.

CHAPTER III: METHODOLOGY

The detailed plan for the design and analysis of this project will be described in this chapter. I will describe the site and setting, discuss the teacher's background, and discuss the steps the teacher has taken with the objective of teaching practice skills to her students. Next, I will discuss the validity of verbal reports as a reliable research methodology and describe the student tasks used to create data. Finally, I will explain how the data was analyzed and interpreted.

Researcher's Lens

I was always a one of the top students in my school band. I was good because I practiced more than anyone else. When I became a music major in college, I began to realize that some of the other students were able to generate more quality from their practice without putting in as much quantity of time as I did. My professor helped me develop a practice routine, and I noticed an increase in my rate of improvement. As a beginning teacher, I took a course based on Madeline Hunter's instructional theory into practice (ITIP), which focused on learning theory, and I found that much of the information I gleaned from the course could be directly applied to my own practice.

Throughout my sixteen years as a music teacher, I maintained a small clarinet and saxophone studio. One of my major objectives for my students was for them to learn how to use effective practice strategies because I believed that my job was to help my students to become independent learners. In essence, I considered myself successful when my students no longer needed me to help them learn their music. This, of course, never

happened in the ultimate sense that students no longer needed some coaching, but I did find that many of my students gradually became independent to some degree in their playing.

As a school band teacher, I also found myself thinking of ways to teach my students to practice "smarter, not harder." From my ITIP course, I knew that setting goals and knowing how well you were doing in relation to those goals had some role to play in being a "smarter practicer." Therefore, many of the practice assignments I gave my students asked them to set goals and to evaluate themselves to some extent. I found this strategy to work for some students, but not for all. I often found myself wishing that I could be a "fly on the wall" while my students were practicing, so that I could know what they did and how they were thinking during this time.

Since arriving at Michigan State University, I have had the privilege – and the aggravation – of watching my two children practice violin. While I was teaching in the public schools, my wife, who was also their violin teacher, helped to guide their practice. Since entering graduate school, I have had more opportunities to be a "fly on the wall" in my own home, as I watch and help my children practice. I have found that my son often makes what I deem to be wise decisions related to his practice, but also makes decisions that are contrary to the suggestions for efficient practice that I have given him, based on what I have learned through reading the research. We have modeled and guided specific practice concepts with him, only to find him reverting back to old habits.

The research questions for this project emerged over the past twenty years as I have struggled with my own practice and the practice of my students. I believe that students must learn to practice efficiently in order to become independent learners, and

they must become independent learners if they are to continue playing their instruments beyond their school years. For this multiple case study, I have chosen to observe middle school students who have one to two years of experience in school band. Because I was an outside observer to the environment, students may have felt uncomfortable around me at first, which may have attenuated the data. On the other hand, students also knew that I had no power over them within the school setting, so they were free to act and to answer questions in a more open manner.

My experience as a private teacher, band teacher, and as a father of young violinists, along with my understanding of current theories related to practice, offers me a unique perspective in understanding the decisions students make during practice. I have been able to develop a personal philosophy about the development of practice skills; I have taught these skills to many private students and band classes and I have observed my children practice at home. Though these experiences aid in the interpretation of this study, they also may have limited the study because of the opinions I have already developed and attempted set aside in order view the data in an unbiased fashion. It is my hope that this dissertation may answer a number of questions about how children practice at home and why they make the decisions they make. From this data, new and more effective methods of teaching practice may be developed leading to increased musical independence.

Purpose

The purpose of this multiple case study was to describe the self-regulated practice of middle school band students. Specifically, student use of goals and self-assessment

was studied. The overarching research question guiding this study was, "What self-regulated practice strategies are exhibited by intermediate level instrumental music students?" More specifically, the key research questions were:

1. What goal setting and self-assessment comments do novice, adolescent instrumental musicians make during instrumental practice?
2. What goal setting and self-assessment strategies do novice, adolescent instrumental musicians use during instrumental practice?
3. Are there differences in practice strategies found among students when they are deliberately involved in goal setting or self-assessment compared to times when they are not setting goals or self-assessment?
4. What strategies do students use to address various technical aspects of performance (rhythm, notes, articulation, etc.)?

Because the research questions were focused upon the thought processes of the participants, the answers to the questions were found using verbal reports. Therefore, the data collection method for this study relied heavily on the work of Ericsson and Simon (1993). Both concurrent reports and retrospective reports were used as key data sources, along with video analysis of practice sessions, student interviews and teacher interviews.

This chapter will describe the methodology used in the collection and analysis of data. I will describe the process that will be used to recruit participants and obtain parental and school consent as well as student assent. A description of the setting will be

given and a chronology will be outlined that will describe when participants were selected and when data was collected. Next, the data collection method will be explained. Finally, I will discuss the method used for data analysis.

Chronology and Setting

A pilot study for this project took place in the spring of 2006. I used retrospective think-aloud protocol and video analysis as the core data while investigating the practice of three seventh grade students enrolled in a suburban Midwestern middle school, along with two of my own private students, who were in eighth and ninth grade. The results of this study, along with a further review of literature suggested the research questions for the current study.

I sought advice from local music teachers regarding likely participants for my project. Based on this advice, I contacted a highly recommended school band director from a nearby school district to ascertain her interest in this research project and received an enthusiastic "yes." The teacher agreed to aid in recruiting students for the study, provide a room on school property in which to videotape and interview students, submit to an interview regarding the student participants, and obtain permission from school authorities. Approval from the school district for the research study was obtained in October of 2006. This approval was then submitted along with all required information to the University Committee on Research Involving Human Subjects (UCRIHS). Final approval was received from UCRIHS in December of 2006. Informational letters and consent and assent forms were distributed following UCRIHS approval and data collection began in January of 2007.

Participants for this study were seventh and eighth grade students enrolled in Rutherford[1] Middle School situated in a small, suburban, middle class, Midwestern city. The population of the school is 738, while the band program boasts 180 students enrolled in five bands, grades six through eight. The school operates on a six period schedule with fifty minute classes. The band teacher, Ms. Zingerman, has taught at the school for seven years. The students in this school district begin band in sixth grade.

The six students in this study were all enrolled in the seventh and eighth grade bands. Ms. Zingerman and I addressed each of her seventh and eighth grade classes regarding the study and asked for volunteers. Therefore, all of the participants were self-selected. Due to the nature of this study, we limited the number of participants to six, accepting the first six students who turned in their consent forms. All encounters with students were conducted in empty classrooms situated within the school. In order to comply with district policy, the teachers assigned to those classrooms remained quietly in the room while I videotaped the students. Students were excused from their regular band class to participate in this study. Students were excused from class five times over a two month period. Three of the times, students participated one at a time in the practice portion of the study. Students also participated in focus group interviews prior to and following the practice sessions. Because the six participants came from three separate classes, we were unable to have all six students present during the focus group sessions. Instead, these sessions were conducted during each of the three classes. Therefore, the two eighth grade students were in one focus group while three of the four seventh grade students were in another. The single seventh grade trombonist was interviewed alone.

[1] The names of the school and all of the participants have been changed in order to ensure anonymity.

As I began the process of choosing and recruiting a local middle school teacher to participate in the study, numerous university professors and school music teachers suggested Ms. Zingerman due to her consistently outstanding bands, her cooperative spirit, and her own inquisitive nature. Because I was assigned to supervise a student teacher who had a partial assignment with Ms. Zingerman, I had an opportunity to visit her class and watch her teach. After my observation I was convinced that I had found a strong candidate for my study. Ms. Zingerman was encouraging to her students and the bands were all developing good skills for their experience level. Most importantly, the students seemed to have a large degree of trust and affection for Ms. Zingerman. This, I believed, would be an important factor in helping me to recruit students for my project.

Ms. Zingerman and I seemed to have a similar interest in the development of practice skills in novice musicians. She stated that she consciously teaches her students how to practice, although she stated, "You know, I don't have as organized approach as I probably should." (Ms. Zingerman Interview). Generally, this teaching happens during "teachable moments." The following interview excerpt is Ms. Zingerman's description of how she teaches her students to practice:

> *Mostly, we'll talk about practicing when we're doing something in class that is something they should be doing when they're practicing. Like if we take a section, and we slow it down. Then we gradually speed it up. Then I'll say, "hey guys, what did we just do?" And now they know the answer, and they say, "We practiced." And then I'll say, "That is really the best way to learn something like this. When you're at home, slow it down, don't just plow through it."...*

When we're doing the first scale of the day, which is a long tone scale, I'll say, "what should you be thinking about?" And then, "should you be doing that when you're practicing at home too?" . . .

I guess I just look more for teaching moments, more than approaching it like, "we're going to talk about practicing today." Which maybe I need to do, and just say, "we're going to talk about practice today, and here's what we're going to talk about." (Ms. Zingerman Interview).

Students in Ms. Zingerman's bands are required to turn in weekly practice sheets. Grades are based on a combination of the number of minutes they practice per week as well as the number of days on which they practice. She also scaffolds their individual practice by giving daily assignments that are taken either from the students' concert music or from their technique book. She also informs the students of what they should focus on as they prepare their music for the next day. Finally, Ms. Zingerman assigns playing tests for lines from the students' technique books that they have not practiced in class. The students' job is to learn the music on their own, providing Ms. Zingerman information about each student's musical independence.

Data Collection Techniques

Data was collected from five sources. I conducted focus group sessions with the participants before they engaged in their first practice session and after the last practice sessions. I also interviewed the participants' teacher, Ms. Zingerman, after all of the student data had been collected. Third, I collected video taped recordings of student

practice sessions. Fourth, as the students practiced, they were asked to provide verbal reports of their thought processes. Finally, I reviewed the video each practice session with the participants immediately after they completed their session and asked them to provide retrospective verbal reports on their thought processes.

While verbal reports have been used for over 100 years, they began to lose favor during the middle of the twentieth century as the behaviorist paradigm of research gained dominance. Verbal reports were generally considered unscientific and at best were treated as another form of verbal behavior. Ericsson and Simon's (1980) seminal article *Verbal Reports as Data* challenged the assumption of verbal reports as invalid and unreliable. Their thesis was that, when collected carefully, verbal reports could prove to be a valuable, valid and reliable method of data collection. To this extent, they promoted a number of criteria gauged to ensure trustwothiness. This article then led to their text *Protocol Analysis: Verbal Reports as Data* (1984 & 1993).

The central assumption regarding verbal reports is that it is possible to instruct subjects to describe their thoughts in a way that does not alter their sequence of thoughts while completing a task. Ericsson and Simon (1993) found no evidence that the sequences of thoughts were changed when subjects thought aloud as they completed tasks compared to subjects who completed the same tasks silently. However, some studies did show that the think-aloud subjects would take somewhat longer to complete given assignments.

Ericsson and Simon (1993) state that verbal reports are reliable when they focus on subjects' cognitive processes as they engage in activities that require their attention. The key is for the data to be collected while the subject's thoughts are still in short term

memory. Therefore, the most valuable reports are those that are given while the subject is performing the task. This is identified as concurrent think aloud (CTA). Ericsson and Simon (1980) recognize that this type of data collection is not always possible because some tasks take too short a time for subjects to talk about while they are doing it. Other tasks take too much concentration to complete, such as juggling or performing a musical instrument. Because thought can be accessed in short term memory for up to ten seconds, Ericsson and Simon (1993) recommend that subjects discuss their thought processes immediately after the completion of the task in what they call retrospective think aloud (RTA). Other complex activities, such as skiing or performing a full musical piece may not be accessible within this ten second time frame. Garner (1987) suggests that video and audio recordings can be used in order to stimulate memory while the subject engages in RTA.

While time is of the essence in obtaining reliable data, the type of thoughts subjects are asked to verbalize also may taint the data. Ericsson and Simon (1993) describe three types of verbal report and the effect they have on validity. Type 1 verbal reports are described as 'self-talk.' In this type of verbal report, the subject simply says whatever comes to mind. This is the most pure form of verbal report; but, because thoughts often occur in chunks of words and concepts, the data in this type of report is often fragmented and incoherent. Type 2 reports ask the subjects to describe their thinking and label their thoughts. Finally, type 3 reports ask subjects to make inferences in order to explain the reasoning behind their thoughts and actions. This type of verbal report requires the subject to access information from long term memory that is usually unnecessary for the completion of the task.

The prospect of human error in collecting verbal report data is great. Therefore, Ericsson and Simon (1993) suggested a number of criteria that would aid in obtaining the most reliable data possible. The first suggestion is that verbal reports must be given as close to the completion of a task as possible. They believe that CTA is the most reliable of all verbal reports, while recognizing that RTA is often the most practical. Second, type 1 and type 2 reports are considered much more reliable than type 3 reports because the data created in types 1 and 2 are the truest forms of thought. Third, the prompts given by the researcher can often hold bias and can influence the thoughts of the subject. Therefore, it is suggested that prompts be scripted and neutral. Next, Ericsson and Simon recommend that the setting of the experiment be as naturalistic as possible. Participants may provide different data when they are in an uncomfortable or laboratory-like setting.

Activities that have become automatic in the participant are not conducive to verbal report research because the participant does not access verbal thoughts in order to complete them. Therefore, it is often more appropriate to obtain data from subjects who are learning a new task instead of those who have become expert at the task. For example, a novice clarinet player may provide more detailed data regarding the thought processes involved in creating a characteristic tone than a professional, because the novice still must think about the critical elements involved in producing a good tone. The professional no longer needs to think about it.

Finally, Ericsson and Simon (1993) recommend that verbal reports be used as one of a number of data collection methods. Through triangulation, researchers can obtain more valid results. They recommend that other sources of data be accessed, such as observation, artifact analysis, eye movement sequences, reaction time, and error rates. If

appropriate, multiple sets of data from the same subjects or multiple methods of coding that data can also provide a more complete picture of a person's thinking. The use of peer-review is also highly recommended.

Procedure

My role during the data collection portion of this study was as an observer and interviewer. I worked with Ms. Zingerman to schedule days and times to visit the school and interview students. Further, I used a Canon Z60 video camera and Olympus DM20 digital recorder for data collection and again use the video camera to play back each practice session for the students.

My initial encounter with the participants was in a focus group setting. The purpose of this interview was to help students become comfortable with me and to allow me to understand their knowledge of practice. I asked the students to describe their practice routines and describe the practice strategies that they commonly use. Other questions for the students focused on their musical backgrounds and long-term goals, as well as their use of self-assessment and goal setting during their home practice. This interview session was video recorded using a Canon Z60 mini dv video camera. I downloaded all video data onto my computer and rendered it into mp3 files. All data was then stored on DVD.

Students were to be notified by Ms. Zingerman at least one day before they were videotaped during practice. Students were asked to bring any music and practice aid (metronome, tuner, etc.) from home that they were accustomed to using. On the day a student was scheduled to participate in the study, he/she was excused from the whole

music period. The student brought his/her instrument and supplies to an assigned classroom within the school. These rooms were equipped with a chair, music stand, and a Canon Z-60 video camera mounted on a tripod.

The student was then asked to practice for 20 minutes and to verbalize his/her thoughts. My instructions to each student at the beginning of the first practice session were, "Please practice your music for the next 20 minutes in the same way that you would if you were at home. You may practice any music and practice in any way you wish. I am interested in knowing what you are thinking while you are practicing. Therefore, please say whatever you are thinking out loud. You do not need to explain your thoughts or even speak in full sentences. Just say whatever you are thinking. Afterward, we will view the video of your practice together." I then turned on the video camera and took notes as the student practiced. Many times, students would forget to think out loud. I would then prompt them by saying, "Tell me what's on your mind," "What were you thinking about," or, "What were you focusing on?"

After the student had practiced for 20 minutes, I re-wound the videotape, and we watched the practice session together. These interviews were recorded using an Olympus DM-20 digital recorder. My original plan for this stage of the data collection was to instruct each student to explain what was happening and what he/she was thinking about while the videotape was playing, in essence creating what Ericsson would describe as Type 2 verbal reports. After working with the first two students, I found that I would need to become much more involved in the interview process than originally planned. The students were unable to add much insight to their thoughts without my aid. Therefore, my plan changed while I worked with the third student and I began to engage

in Type 3 verbal reports, in which I asked more pointed questions regarding what the students were thinking as they played and why. The interviews concluded with a final set of questions that I posed regarding the goals they had and the ways they used self-assessment to guide their practice. Students answered other questions that were based upon my observations of their practice.

Each student was to be videotaped in this manner three times at two week intervals. Due to a snow day, an all school function, and meeting I had to attend, the original schedule had to be altered and the third practice sessions started a week later than planned. After all practice sessions had been recorded and transcribed, the students were interviewed in their focus groups one last time. These sessions were also videotaped. In this interview, I asked students how their home practice may have changed over the course of the study. I also asked students to clarify numerous questions that arose from the analysis of the data.

I also interviewed the students' teacher, Ms. Zingerman. The focus of this interview was to obtain the teacher's perspective of each student's musicianship as well as to gain an understanding of what training in practice strategies the students have had in their band experience. Ms. Zingerman was asked to share her opinions of the students' strengths and weaknesses as musicians. She was also asked to describe the learning activities she has facilitated in order to help students develop practice strategies, especially as they pertain to goal setting and self-assessment.

Data Analysis

Creswell (1998) advocates a number of forms of analysis of case studies, including the establishment of patterns in the correspondence of two or more categories. Miles and Huberman (1994) recommend that "investigators make preliminary 'counts' of data and determine how frequently codes appear in the database" (in Creswell, p. 142). Ericsson and Simon (1993) advocate the use of multiple forms of data analysis as a method of improving trustworthiness, so I therefore chose to analyze the data in this study by establishing patterns and making preliminary frequency counts. The video data was downloaded and rendered using Windows Movie Maker and then burned onto DVD using *Cyberlink Power DVD.* Audio data from the digital recorder was downloaded onto a computer using *Olympus DSS Player 2002* and then burned onto CD. This process of downloading data served as a means of storing information and facilitated efficient transcription of the data. Backup copies of the CDs were stored in a separate, secure area and then destroyed upon completion of the study.

I transcribed the student practice video in two stages. In the first stage, I transcribed student actions, and then transcribed the concurrent verbal reports. This data was segmented into complete thoughts and placed in a parallel column to the scripted practice, in order to roughly synchronize the two transcripts (see example in Table 2 and 3). Finally, I transcribed the retrospective reports in the same manner as the concurrent reports to allow for side-by-side comparison of the three data sources. The initial and final student focus group interviews as well as the teacher interview were separately transcribed from the DVD recording. Comments were once again segmented into

complete thoughts. This meant that a segment would contain a single word or a number of sentences, depending on the focus of the student's comments.

These transcripts were typed into a table, using Microsoft Word in order to allow me to sort items by participant, code, time, or data source (i.e., Concurrent Report, Retrospective Report, focus group, Ms. Zingerman). After compiling the data, I had collected 315 pages of transcripts and numerous pages of typed and hand written journal entries based on my observations. As I coded the data, I compiled over 3500 coded instances that I condensed into eight categories, the most common categories being strategies, followed by assessment, goals, and motivation. Using the sort tool in Microsoft Word, I was able to sort the data and codes in various ways to allow me to recognize trends and tendencies within and among participants.

Ericsson and Simon (1993) recommend a system of coding in which broad categories are developed prior to the initial analysis of data to "minimize the contamination of data by ad hoc theory." They state that decisions made in regard to coding are based on a "specific body of knowledge," external to the data, that is generated from past research. Therefore, the initial coding process separated data into broad categories based upon the five main themes that emerged from a prior pilot study (Oare, 2006) and the body of literature related to self-regulated practice, including motivation, goal setting, practice strategies, assessment, and supervision and structure. Each broad category was then divided into a number of sub-categories that were derived from the data. For example, the theme of goal setting was further divided into specificity of the goals, achievement orientation, element priority, practice time orientation, routine,

clarity of criteria, enjoyment, and challenge. As a third level of coding, I added comments that seemed pertinent to each individual code (appendix H).

Furthermore, Creswell describes the analysis of qualitative data as "custom-built," in that the analytic procedures "evolve in the field" as the researcher engages in a process of spiraling data analysis (Creswell, 1998, p. 142). This internal process of analysis includes data collection, data management, reading and memoing, describing, classifying, interpreting, and representing. As the researcher proceeds through this form of data analysis, it is expected that disconfirming evidence will arise, that suggest emergent categories and themes that contradict or expand upon the external, *a priori* codes. Therefore, while the initial coding process included external codes based on prior literature, I also included another category labeled "miscellaneous" for any code that did not seem to fit any of the external categories, with the expectation that one or more internal categories may emerge. From this miscellaneous category, another category entitled *aural image* emerged.

When identifying codes within the transcripts, I used capital initials to signify the main category and lower case words to signify sub-categories (Table 2 and 3). I also made necessary notes to further clarify each individual transcript segment. For example, a performance of a scale as a part of a warm-up routine can be coded as "G: routine – warm-up scale," signifying that the incidence belonged in the goal oriented category (G), it was based on routine, and it was a warm-up scale. This process of coding segments into various levels of categorization allowed for concomitant analysis of the data at multiple levels.

Table 2: Example of a Concurrent Report Transcription

Participant	**Time***	**Data**	**My Comments / Code**
Nick1	1:54	*I'll start with scales*	G: scales Warm-up routine

Table 2 con't

Nick1	1:56	squeeks, restarts and plays Bb concert scale, 3rds and arpeggio	A: non-detection G: Priorities – Bad Tone!
Nick1	2:26	Turns the page *Ok. Now I'll start with the line that was assigned for today*	G: Teacher assigned
Nick1	2:39	Begins, playing 1 1/2 measures, stopping and restarting,	S: single repetition: beginning
Nick1	3:06	plays the wrong note in last bar,	A: detection note
Nick1	3:06	stops plays it again and finishes the song	S: single correct repetition at the note
Nick1	3:10	*OK. I'm going to do the Victors*	G: play through vs practice
Nick1	3:16	He plays, dropping two beats as he attempts low notes	A: ignores rhythm mistakes
Nick1	3:49	Finishes the piece -	S: play through vs practice
Nick1	3:49	having dropped beats in 3 spots because notes didn't speak	A: ignored tone issues
Nick1	3:50	Turns the page looking for something else to play	G: no a priori - choosing whatever he wants
Nick1	3:50	*Um, I'm going to play my honors band stuff*	G: challenge – non-band music S: play through
Nick1	4:15	Chromatic scale -plays it through once	G: play through vs practice S: play through

* *elapsed time displayed on the video player*

Table 3: Example of a Retrospective Report Transcription

Data/ Part.	**Time**	**Oare**	**Participant**	***Comments/Codes***
Nick1	4:07	Do you know what you were thinking?		
Nick1	4:11		I was kind of stumbling on the . . .notes.	*A: detection – vague*
Nick1	4:23	Oh. And you were thinking that?		
Nick1	4:28		A couple of times	
Nick1	4:36	New tune?		
Nick1	4:39		Yeah. This is #51	*G: no purpose*
Nick1	5:11		I stumbled right here. I think I started in the wrong spot or something.	*A: detection – vague*
Nick1	5:19	Oh, and now you're playing other song from that other University!		
Nick1	5:25		(he smiles) I've mastered this song. I'm smirking here 'because I could see you out of the corner of my eye grinning	*Mot: fun* *A: evaluation – what is his definition of mastery? – lots of bobbled notes*
Nick1	5:44		It's really easy. And it's like line 60.	
Nick1	5:52	Because it's in cut time.		
Nick1	6:18	So you pulled out your chromatic. Do you have a reason why you're doing it?		

Table 3 con't

Nick1	6:21		Because that's what we're doing right now in the class. . . Well 'because I have to do that for honor's band, and I pulled it out because that's our assignment now in band. That's what scale we're doing.	*G: teacher assigned* S: play through
Nick1	6:38	Now what are you thinking?		

To answer question one, "What goal setting and self-assessment comments do novice, adolescent instrumental musicians make during instrumental practice?", I used the concurrent verbal report data collected from the video of the three practice sessions of each of the participants. I tallied the number of coded segments within the major themes of goal setting and assessment and developed a second level of codes. These codes were analyzed for quantity and quality of comments and I determined if other categories of codes did exist, anticipating that the comments from the third level of codes may illuminate salient points deserving further analysis.

To answer question two, "What goal setting and self-assessment strategies do novice, adolescent instrumental musicians use during instrumental practice?", I compared comments made by the students regarding goals and assessment with the actions observed in the video analysis. This allowed me to identify patterns that may have suggested the existence of common practice strategies the students use when engaging in goal setting and self-assessment.

I analyzed codes relating to strategies from the transcripts of the practice sessions and the verbal reports in order to answer question three, "Are there differences in practice strategies found among students when they are deliberately involved in goal setting or self-assessment compared to times when they are not setting goals or self-assessment?" Segments within the transcripts were identified by practice strategy used as well as

student use of goals or assessments. Segments that include codes for practice strategies and either goal setting or assessment were compared to segments that did not refer to goals or assessments. A tally was made of codes that describe practice strategies, and of codes that combine strategies with goals and strategies with assessments.

To answer question four, "What strategies do students use to address various technical aspects of performance (rhythm, notes, articulation, etc.)?", I analyzed the data from the recorded practice sessions and compared the stated or implied goals and the strategies used to address the goals. I also noted the apparent effectiveness of each strategy in attaining the corresponding goal. This was done by subjectively noting the difference in the level of performance between the initial and final attempts of the section being rehearsed.

Verification and Generalizability

Creswell (1998, p. 194) defines verification as, "the *process* that occurs throughout the data collection, analysis, and report writing of a study." He advocates the use of the term *verification* instead of *validity* in order to emphasize the unique qualities of the qualitative research paradigm and its differences from the quantitative paradigm. He states (p.198), "The naturalistic researcher looks to confirmability rather than objectivity in establishing the value of the data. Both dependability and confirmability are established through an auditing of the research process." The terms *trustworthiness* and *authenticity* are used as concepts to establish the credibility of an investigation.

A key method of checking for trustworthiness in a study is by creating a form of triangulation, in which the participant is seen through multiple perspectives.

Triangulation can be achieved through the use of multiple forms of data gathering or multiple forms of data analysis. Triangulation was achieved in this study through both means. I analyzed data obtained from the video observation of practice sessions, concurrent verbal reports, retrospective verbal reports, focus group interviews, reflective notes and teacher interviews. Further, the data was analyzed through the process of counting the number of occurrences of each code and through the identification of patterns and relationships between multiple codes.

Finally, trustworthiness was established through member checks with Ms. Zingerman and limited peer review. I conducted informal "check-ups" with Ms. Zingerman at the end of each data collection day. At this time, I related the events of the day and asked for her impressions. I also recruited a fellow doctoral candidate in music education and an experienced instrumental music teacher to review the coding scheme and my assignment of codes to the data. I gave the peers copies of all of the transcripts and asked them to each review one practice session, one retrospective report, and one focus group session. Further discussion with my peers following this exercise helped to clarify the definitions of secondary codes. Finally, I enlisted the help of my advisor, through multiple meetings and discussions, to aid in the review of my interpretation of the data.

Qualitative studies are generalizable only to the extent that a future reader can identify with the experience described in the study (Creswell, 1998). No attempt in this study has been made to generalize results to all middle school instrumental students. Instead, future readers may consider themes identified in this study and the similar characteristics experienced within their own teaching situations.

CHAPTER 4

MEET THE PARTICIPANTS: WITHIN-CASE ANALYSIS

The purpose of this study was to examine the decisions novice band students make and the actions they take during their instrumental music practice. The original research questions I brought into this study centered on the actions students take and the comments they make regarding the practice goals they set and the ways in which they use assessment to inform their practice. A secondary line of inquiry was intended to describe the strategies the students used to achieve their goals. Through my analysis of the data, another theme emerged that warranted further inspection. This theme describes the influence of motivation upon the decisions students made in their practice.

The analysis of data in this study focuses on the activities and comments of the six participants. In order to more richly understand the interpretation of the data, one must get to know each child and attempt to see practice through each student's individual lenses. Each participant contributed unique, yet similar viewpoints of practice.

Three boys and three girls from a suburban Midwestern middle school participated in this study. Four students were in seventh grade while the other two were in eighth grade, and all six students were Caucasian and from middle class families. Two of the seventh grade students and one of the eighth grade students were taking private lessons at the time of the study. All six of the students began playing their band instruments in sixth grade under their current teacher, Ms. Zingerman. In order to maintain the anonymity of the participants in this study, the students' names have been changed.

This chapter will present a within-case analysis of each student as it relates to the four external and internal themes of motivation, goal setting, strategy use, and self-assessment. I will present each student as viewed through the lens of his or her teacher and by viewing excerpts from his or her verbal report practice sessions. I will then relate data obtained from the analysis of the practice video, the practice verbal report comments, the Retrospective Report comments, and the focus group comments to each of the themes. Chapter 5 will then present a cross-case analysis which will describe the commonalities in the themes across all six cases (Creswell, 1998). In Chapter 6, I will discuss three common threads that run through each of the themes and suggest a number of general implications for teaching based on these threads. Finally, in Chapter 7, I will summarize the study and provide a set of questions needing further investigation.

Scott

Scott was a seventh grade trombone player and the lone brass player in this study. Scott comes from a musical family. His father, his uncle and his grandfather all played trombone while they were in school, and his aunt leads a church handbell choir. Slightly over weight and awkward, he lives on a farm and made numerous comments about feeding the cows, driving the tractor, and going hunting with his dad.

Scott is a happy young man with a great sense of humor who felt comfortable working with me on a one-on-one basis. According to Ms. Zingerman, "He is. . . Quiet in class. Not one to ask questions in class, but if he's not sure of something, he will come to me before or after class maybe and ask. But not very often. ."

Scott became interested in composition earlier in the school year when Ms. Zingerman's student teacher began a composition club with some of his classmates. He stated that the first thing he does when he practices is to spend fifteen minutes composing. At the time of the study, he was composing a piece for brass quartet. Because the practice sessions in this study were shorter than the amount of time he spends at home, he only composed for roughly seven minutes during each one of the videotaped sessions. His goal was simply to work on his composition, and this lack of goal clarity could be recognized as he tended to bounce from part to part without finishing a phrase in either the melody or accompaniment parts.

His discussion of his composing process provided a window through which I could view his musical understanding. While Scott said the composition was written in Bb major, there was no sense of a tonal center throughout the piece. He also stated that he did not pay attention to beginnings and endings of phrases and admitted that they sounded like run-on sentences. The rhythms he wrote were simple, consisting of whole notes, dotted half notes, half notes, quarter notes, and eighth notes, and he accurately transposed parts for french horn and trumpet, though his tuba parts were an octave too high. Scott also demonstrated an emergent understanding of orchestration, as he adjusted dynamic markings to bring out the melody and wrote in rests for the trumpet and horn, "When the tuba has melody, so it doesn't sound overwhelmed." (Scott, Retrospective Report #2). He wrote a bass line that was essentially an ostinato that moved sequentially downwards by step. He also wrote a "harmony" part for the inner lines, but stated, "I'm not doing chords. I'm just doing the same note type of thing. That's because I lost my

sheet that has the chords on it, so I don't know the chords. So it's a lot safer to do it that way so it sounds decent." (Scott, Concurrent Report #1).

As a performer, Scott is a "strong section player." Ms. Zingerman describes him by saying,

> *Really, he's not a leader in there. He's following a lot of the time. At least, that's my perception. . . He's one of those kids who's kind of hit or miss. It's either going to be there, or it's going to be kind of odd, which makes me think that he doesn't always understand how he should be counting or what he should be doing when he practices. . . Really, I think his biggest problem is consistency of tone, which I don't think he focuses on that at all during his practice. . .*

As a practicer, Scott can best be described as someone who tends to play through his music with the goal of detecting mistakes and fixing them. He admitted that he has difficulty detecting pitch accuracy and he plays with a very weak, unsupported tone. Once he detects an error, the standard practice strategy is to stop and start again from the mistake. A single correct performance is typically considered to be sufficient. A better understanding of Scott as a performer and of his practice habits can be seen in the following excerpt from the data sheet for his second practice session with me.

Table 4: Scott – Practice Session #2

Time	**Data**	**Codes / Comments**
:01	*"I'm going to start with a scale to warm up"*	G: warm-up – scale
:04	Begins playing Bb major scale	(weak, unfocused tone)
:10	Begins playing the 3rds pattern – misses fa to la	

Table 4 con't

:15	*"dang it! I messed up on a note"*	A: detection – note
:18	begins again, playing the rising pattern accurately	S: single rep. at the phrase
:27	3rds going down, missing A (plays Ab) and stops	A: detection – note
:29	begins again, playing Ab instead of A	S: single rep. at the phrase A: non-detection – note
:39	I-V7 arpeggios plays Ab instead of A and stops	
:42	*"natural"*	A: detection – note
:43	Begins again, making the same mistake and stops	A: detection – note
:47	Begins again, playing correctly, though Eb and C are sharp.	S: single correct repetition at the phrase
:53	*"Yeah! . . ."*	A: evaluate vs assess A: nondetection – tuning
:55	*"Ok. Imperium"* – pulls out concert piece	G: concert tune
1:00	Plays the first note (high Bb) too low	A: detection – note
1:00	plays 2nd 3rd and 4th harmonic to find pitch	S: use of overtones
1:03	Begins the section, playing a whole note too short, then counts rests, plays, counts rests etc – with inconsistent pulse	A: nondetection – pulse
1:43	Begins the allegro section, and misses a pitch in the 2nd measure	G: play through vs improvement
1:47	*"Ah, dang it!"*	A: detection
1:48	Plays again, stops at the end of the 2nd measure	S: repetition at the phrase
1:54	(Oare) - *"What was going through your head?"*	
1:56	*"I messed up. That it sounds wrong."*	A: Detection – note

This pattern of identifying some mistakes and not detecting others, followed by single corrected repetitions of the mistake continued. The following excerpt picks up after he finished practicing this piece:

Table 4 con't

4:28	*"That's better."*	A: detection – notes
4:28	*"I think I was too high on it."* (he was too low)	A: diagnosis – incorrect
4:35	Oare – *"What were you thinking about as you were playing?"*	
4:40	*"Mainly, I was thinking about where I was getting stuff wrong."*	A: detection

Generally, the same type of practice occurred with the next piece Scott practiced. After he finished practicing the song, the following comments were made:

8:28	*"Wow. That was bad."*	A: evaluation
8:33	Oare – *"What was bad?"*	
8:35	*"The rhythm. That area I had to go back and fix a couple of times. The (he sings the last rhythm pattern) That one. Because it has a quarter rest in the middle of the (sings - incorrectly) part. So it's evil (chuckle). Because you want to just have it keep going, but it doesn't. It stops and then it starts back up again."*	A: detection – rhythm Dev: knowledge – lack of understanding limits his ability with the rhythm
9:03	Oare – *"How did you fix it?"*	
9:05	*"Go back and play it again until I got it right."*	S: single correct rep.

Goal Setting

For Scott, as for all of the students in this study, goal setting is not something he consciously does. He stated that he has not been overtly taught how to set goals in band, or in any other school setting, and therefore the goals he does set are vague. When I asked Scott to tell me what types of goals he sets when he practices, his reply was, "Normally, I set a goal to practice it as good as possible. Like to get as much done as I can – and to please my dad. . . That's about as specific as it gets." Though Scott was unable to clearly state goals, he seemed to innately set nonverbal goals. His unstated

goals appeared through the choice of music he practiced and the musical dimensions he focused upon while practicing.

Scott followed a consistent practice routine that suggested a number of unspoken goals. At the beginning of each practice session, the first thing he did was warm-up by playing the Bb major scale in quarter notes at a moderate speed, as written in his band book. When I asked him what goals he has when he practices scales, he replied, "To learn the scales good enough that when I can do a random scale and get it right from memory." This goal derives from his experience in class, as Ms. Zingerman regularly tests her students on performing scales and their tonic-dominant arpeggio patterns by memory.

When I asked Scott why the Bb major scale was the first thing he played in each of his three practice sessions, he replied, "Just to warm up. I never try to play without first trying to play a scale." I continued with the following line of questioning:

Oare *What does it mean to warm up?*

Scott *Get your lips ready to play*

Oare *So did your lips feel significantly different than before you played the scale?*

Scott *No. Not really, but – It just gets – Sometimes it's just getting pitches in your head.*

Scott said that he usually played three or four scales each time he practiced, but he only played one or two in our sessions together. Following his warm-up, Scott would begin to practice his band music. He stated that his method of choosing music consisted of picking, "Whatever's farther forward in my folder. I just grab it and practice it for

however long I want and I need to." Though this seems like a completely random method of choosing music, there is a pattern to his choices, because the music in the front of his folder is generally the music he played in band earlier in the day. Therefore, Scott tends to choose the music assigned by his teacher. This was verified as he chose to practice his concert music and the daily assignment given by Ms. Zingerman on two of the three videotaped practice sessions. He spent his third practice session playing through his composition.

When I asked what his goal was for one of the pieces he played, he said, "The main goal was to get it right." This, according to Scott, is the goal for all of the music he plays. When I asked if he had chosen a specific note or musical element to improve within a piece he was working on, his answer was often "no."

Though Scott tended to set vague goals as he chose the music he would play, he was able to develop slightly more specific goals as he identified mistakes within the context of his practice. His general plan of action for each song or exercise that he practiced was to play through it and identify his mistakes, correcting them "on the go." Each time he was able to catch a mistake he would try to determine what he did wrong and attempt to fix the problem. The majority of these 'mini goals' tended to be focused on correcting wrong pitches, though Scott also attempted to fix some incorrect articulations, dynamics, and rhythms. There were no incidences in which Scott attempted to improve his tone quality, even though Ms. Zingerman consistently identified this weakness on the feedback sheets he received after each playing test.

Though Scott did not verbalize definite goals in his practice, some goals may be inferred by the analysis of what he focused on in his practice. In each practice session

and Retrospective Report, I asked all six of the students to tell me what they were focusing on as they played. I also asked the students to tell me which elements of music they tended to focus on the most as they practiced.

Oare *I have 6 words for you to put into priority regarding what you're thinking about in your practice: rhythm, tone, notes, dynamics, style, and articulation. Which of those 6 do you think you put most emphasis on while you're practicing?*

Scott *Number 1 is probably rhythm*

Oare *What's #2?*

Scott *notes articulation and then all the others I pretty much try to work at the same time*

Oare *What would you put last? Tone, dynamic or style?*

Scott *Usually I work on the dynamics after I've got everything else down good. (Scott, Retrospective Report #1)*

Scott later stated that the hardest part in learning a song is learning the rhythm. "Normally a new piece is hard because of the notes and rhythms combined. . . I'll often notice rhythms before I'll notice the notes." (Scott, Focus Group #2). While Scott listed rhythm as his primary concern in his practice, the analysis of the video suggests that he places more emphasis on playing the correct notes. This was demonstrated by the fact that the pulse was often sacrificed in order for him to move the slide of his trombone to the proper position, and by the predominance of instances in which he was able to

identify missed notes, but not detect incorrect rhythms. This difference between Scott's perception and his actions may be due to a lack of rhythmic ability. Though he is more concerned with rhythmic issues, he lacks the requisite skill and knowledge to recognize and confront problems, and he instead focuses on other issues.

It is also interesting to note that Scott places tone near the bottom of his priority list. This is noteworthy because Ms. Zingerman considers tone to be Scott's weakest attribute and she consistently communicates this to him via a feedback sheet every time he takes a playing test. It could be that Scott neglects to set goals to improve his tone in his practice because of its position in his hierarchy of elemental importance.

Assessment

Scott's method of practice could be characterized as a "search and destroy" approach to learning his music. His approach to each new song or exercise that he practiced was to find mistakes and then fix them. When asked what he was thinking about during his practice, he replied, "Mainly, I was thinking about where I was getting stuff wrong." (Scott, Concurrent Report #2).

The vast majority of mistakes Scott was able to identify were note errors, though there were still a number of pitch related mistakes that he either did not detect or simply ignored. He admitted that he was weak in the area of assessment and generally relied on Ms. Zingerman and his father to help him catch mistakes.

Scott did not seem to notice any problems with his tone quality or articulation. Both of these areas in his playing were weak, as the quality of his articulation was attenuated by the lack of air support in his tone. Scott also seemed to not notice that his

pulse tended to be irregular, especially with pieces that he was just beginning to learn. He often played haltingly as he proceeded from one measure to the next, much like an emergent reader sounds as he reads haltingly from word to word, without sense of phrase.

It seems that Scott was most able to catch mistakes in pieces that he could audiate. He made this point within the context of the second focus group session, as he said, "It helps to know what it's supposed to sound like. Because that way . . . if you play it wrong, you hear it more than if you don't know at all what it's supposed to sound like." He seemed to need to hear rhythm more than pitch, possibly because he was able to approximate the pitch without audiation by reading the notes and placing the slide in the correct position.

This necessity to audiate the music in order to identify mistakes seemed to be important for Scott and the other participants. He found that he could gain a better mental picture of "how the music goes" when he heard Ms. Z play it for the class or when he heard a recording of the music. "Last year, our books had the cd's in them. And so you could listen to the line and get it in your head. And then you could play it." (Scott, Focus Group 2).

Once Scott was able to detect a mistake, he often neglected to diagnose the cause of the problem. He was capable of catching mistakes when his slide was in the wrong position and he caught a wrong rhythm when he mistakenly replaced a half note with a quarter note, but he often lacked the technical or musical knowledge or the audiation skill to detect other types of problems. This lack of diagnostic skill made it more difficult to correct his mistakes. The following concurrent report excerpt exemplifies this point.

Scott *Ok. Now that sounded really bad*

Oare *Why?* [He was playing on the wrong partial]

Scott *Because I wasn't playing the right rhythm or notes. It was supposed to be a lot different. I don't know exactly what I did wrong, but I know it was very wrong* (Scott, Concurrent Report 2)

Scott knew something was wrong, but was unable to diagnose that he had not supported his tone with enough air or embouchure strength to play in the proper partials.

Scott often substituted vague self evaluation for self-assessment. Instead of providing himself with specific information regarding what he did right or wrong, many of his comments were "Pretty good," or "That sounded bad" (Scott, Concurrent Report 2). This information provided insufficient information for developing further goals.

Strategies

Scott used a limited range of strategies to try to achieve the goals he had set. The most common strategy he used was to stop as he heard a mistake and then start again just before the mistake occurred in the music. He would continue repeating the music from the same spot until he played it correctly one time, and then he would continue. Each time he made a mistake, this pattern of identification and single correct repetition would start over again.

Though he demonstrated an awareness of a variety of practice strategies, he seldom used them. Through an analysis of video, I recognized one instance of deliberately slowing the tempo for a small section of music. Another, accidental form of

adjusting tempo occurred a number of other times, as he would play through his music haltingly, as if he were decoding the notation. I also recognized one instance in which he hummed his music, three instances in which he analyzed a small section and recognized similarities in form or scale pattern, two instances of isolating a small chunk of notes, one instance in which he referred to a fingering in his book, and one instance in which he used a pencil to write in a reminder. Scott also mentioned that he constantly taps his toe to help him perform rhythms correctly. As I reviewed the video recordings, I noticed that his toe often did not tap, and that many times his foot tap would be unsteady. He does have a metronome to help him, but he stated that he does not like to use it.

Though Ms. Zingerman consistently has her students count rhythm patterns in class using the number counting method, Scott stated that he only "sometimes" counts rhythms at home. His theoretical understanding of rhythm seems to be limited, as does his ability to maintain a steady pulse, and these may be reasons for his lack of counting.

Motivation

Scott's main source of inspiration and motivation seems to come from his father. "I decided to play trombone because my dad and uncle and grandpa all play trombone." (Scott Focus Group #1). He mentioned on numerous occasions during both focus group sessions and during the Retrospective Reports that his dad is often in the vicinity when he practices and helps him. He often relies on his father to help him identify mistakes. According to Scott, "My dad often catches way more than I do. And it gets kind of irritating because he's always like, 'Wait. Go back. No, that wasn't right.'" (Scott, Focus Group 1).

While pleasing his dad is a strong motivation for Scott, he also gets motivation from learning. He enjoys being challenged, as long as the challenge is within his grasp. He especially enjoys the challenge of composition and the opportunity to create something new with his emerging musical skills. Frustration is a negative influence, but he stated that he feels a strong desire to persevere when he encounters difficult music.

Summary

Scott is a likeable boy who enjoys playing in band. As a trombonist, he is a solid section player, but not a strong musician. His ability to set clear goals and to assess his playing is limited and this relates to his progress as a musician. It seems that Scott's ability to audiate the music he tries to play is a key factor in his performance. Ms. Zingerman stated that, "once he's got something, he's got it. It just sometimes takes him a little longer to get there," suggesting that, in effect, Scott learns by ear, using music notation as a form of memory device. While he has a varied repertoire of practice skills in his knowledge base, the set of strategies he consistently uses is limited. It could be that he will begin to utilize more of the strategies he knows as he develops more confidence in their use.

Amy

Amy comes from a split family and has a step-brother who plays violin in the orchestra. She alternates living at each parent's home, causing some distraction with her study routines. Tall and thin with sandy blond hair down to her shoulders and a retainer, Amy is a seventh grade flute player. She is a social young lady who is concerned about

appearance and where she fits in the social scene, especially as it concerns the "hot" boys in the school. According to Ms. Zingerman, "She's very social. Extremely social. And I have a sneaking suspicion that she's going to probably be in choir next year. She's got friends in there."

As a flutist, Amy has difficulty with producing a characteristic tone and using her air appropriately. This causes immense amounts of frustration. Ms. Zingerman describes her by saying,

> *It's hard to say. Technical stuff, she gets pretty well. . . Tone & musicality, are not there. . .She tends to occasionally be a little lost in class. Well, part of it is she's blowing into the tone hole instead of across. And I know she gets frustrated. . . She's actually not going to be in band next year. She's already decided to drop next year. Handed in her uniform and everything. . .She gets frustrated because she'll come in and do her chair test, and it will be – You know. Rhythm will be on, and notes will be on, and she loses all these points on tone and dynamics and such and she gets frustrated with what chair she ends up with.*

Amy's approach to practicing can best be described as time-oriented. Her key concern is to record the required amount of time on her practice sheet, in order to get a good grade.

Oare *So how much time do you practice when you practice?*

Amy *half an hour or 45 or 15, or an hour. Or an hour and a half. It just matters if I fill up the week and I practice more than 3 days*

Oare *so you're practicing for the practice chart?*

Amy *Just to fill up the week.*

Oare *Describe for me what a regular practice session would look like if I were a fly on the wall and watching you.*

Amy *You'd see me watching TV and practicing at the same time It helps me. I have a TV in my room at my dad's house and at my mom's house I have a computer. So I'll practice, and then I'll IM (instant message), and then I'll practice and then I'll IM. Or like I'll watch some TV and then I'll practice, watch TV, practice. . . It all equals a half an hour.*

Oare *So your half an hour takes place over an hour of time?*

Amy *45 minutes. Because I'm multi-tasking.* (Amy, Focus Group #1).

Because this study was conducted in the school, I was unable to provide a natural setting for Amy's practice and she had no TV or computer to distract her. The practice sessions I witnessed demonstrated a general lack of focus toward learning and a large amount of frustration. The general default goal she had for most of her practice with me was to play through the music she had been assigned to play. Her top priority was to play the right notes, because, "That's pretty much what it's about!" (Amy, Concurrent Report #2).

Goals

Like Scott, Amy did not deliberately set goals for her practice. On multiple occasions, Amy made statements such as, "I don't really usually have a goal" (Amy, Concurrent Report #3). Other times, she would give vague comments regarding her goals, such as, "Pretty much, just get what I can done" (Amy, Concurrent Report #1). Because she had no clearly defined goals, most of Amy's practice was simply spent playing through songs and exercises. Little was accomplished to improve her performance. At times, she would circle lines in her book that she needed to practice, essentially setting goals for future practice.

Though Amy tended to set no goals, or vague ones at best, she did stick rather closely to a routine. When asked to describe her routine, Amy said, "Let's see. . .First I do my scales. Then I do a line from the book - until I get it right. And then, I don't hardly ever practice my concert music. It's too hard. And I don't want to" (Amy, Focus Group 1). After Amy played through her assigned music, she consistently played random lines in order to fill the time.

As I analyzed the videotaped practice sessions, Amy did practice her concert pieces, but that may be due to the fact that she had no TV to distract her. It could also be that the quote was taken at a time when the band had just been given new music. Because it was hard, Amy may have chosen not to practice it until she learned how to play it in class. The first practice session occurred two weeks after the focus group, which gave her time to learn the music well enough to feel comfortable to practice it.

Amy's choice of music to practice is greatly influenced by the daily assignments given by Ms. Zingerman. One of the first things Amy practiced was her scales, because Ms. Zingerman regularly assigns scales tests for the class. Though she practiced her

scales, which also included patterns in thirds and tonic-dominant arpeggios, she did not understand why it was important to learn them. I asked if she understood why she should learn her scales. Amy's reply was, "I have no idea why we do it. It's so boring." (Amy, Retrospective Report #3).

The other music that Amy consistently played at the beginning of her practice sessions was the daily assignment from the book. Ms. Zingerman methodically helps her bands work through their band books, assigning a new line on almost a daily basis. Though Amy knew what line to practice, she was unable to be more specific, because, "I'll practice the line she tells us, but then I don't remember what measure or anything or what piece of music to practice. So I'll just practice all of them." (Amy, Focus Group #1).

Amy, more than any other participant, placed an exceptional amount of emphasis on playing the right notes, to the detriment of all other facets of playing. She knew that her tone quality was the greatest weakness in her playing, but gave it a low priority in her practice. This lack of emphasis on tone can be seen in the following focus group excerpt:

Oare *Amy, you mentioned a concern for your tone – your air. Do you ever do anything about it?*

Amy *Nope. No I don't. I don't know how.*

Oare *If you're playing really an easy piece that you have down, do you find yourself focusing on other elements like tone?*

Amy *No. Because I don't practice it if it's easy.*

Oare *What if it's a piece you're playing in band rehearsal? What are you focusing on if it's a real easy piece?*

Amy *I usually don't.* (Amy, Focus Group #2).

Assessment

Amy's emphasis on playing the right notes and on practicing for a grade rather than for improvement had a great impact on her ability to self-assess. The vast majority of mistakes Amy detected were of the wrong note variety. This emphasis on correct notes may explain why she missed a number of wrong rhythms, as shown in the following example:

Table 5: Amy – Practice Session #2

Time	Activities / Comments	Code
13:22	Hey Ho Nobody Home - dotted quarters are incorrect – again.	S: return to tough song A: nondetection – rhythm
13:42	*"I got all the notes. . ."* (turns pages)	A: evaluation – notes
13:49	British Grenadiers - No feel for the initial anacrusis again. Stops after the first phrase	S: return to tough song A: nondetection – meter/rhythm
14:01	*"I'll do my concert stuff now"*	S: puts it off

Many mistakes also seemed to be ignored, possibly due to her desire to play through her songs instead of working toward improving them.

Amy consistently played in a halting manner, much like a beginning reader who spends a great deal of effort decoding words to the detriment of reading phrases. This style of performance results in an underlying pulse that is inconsistent, if not absent altogether. Amy never mentioned this problem in any of her three practice sessions or in her Retrospective Reports. This lack of underlying pulse could also explain why she only detected three of her many rhythmic errors. All of the errors she noticed were simple rhythms, suggesting that her ability to detect mistakes is contingent upon her rhythmic

understanding. One of the examples of rhythmic error detection seems to have been caught and corrected without stopping, as the rhythm pattern in question was repeated later on in the piece.

Table 6: Amy – Practice Session #3

Time	Activities / Comments	Code
14:53	Nocturnal Dances - lots of rests and long notes are cut short, except for the last note of the phrase (2 whole notes)	A: nondetection – rhythm
15:12	Repetition of the section - better rhythm	A: correction on the go

A great deal of Amy's assessment comments were related to her sense of self-efficacy as it related to each song or exercise. She made a number of comments regarding pieces, such as, "Alright, I'm good at that one, so I'll play my F scale." (Amy, Concurrent Report #1). She also wrote evaluative assessments in her book next to various lines. Next to one particular scale, she wrote "fair." As I asked about its meaning, she replied, "Yeah. I'm not very good at it." (Amy, Retrospective Report #2).

Amy seems to have a small repertoire of diagnostic skills. I detected only one example in which she tried to diagnose the cause of her poor tone, which was simply to check that her head joint was placed correctly. When asked, she was unable to clearly list any other factors that could have possibly affected her tone.

Strategies

Because Amy is more focused on putting in her required time than on achievement, she uses few practice strategies. Generally, her approach to each song or exercise she practices is to play through it and then move on to the next activity. When

she makes a mistake, she deals with it quickly and incompletely and moves on. Her most common overt strategy was to write notes to herself on the music. When I asked if she purposely learned things in small chunks or repeated patterns correctly over and over, her simple answer was, "nope."

The correction of mistakes was usually handled in one of two ways. First, when Amy detected a mistake that she felt she should address, she would stop and begin again either from the missed note or from the beginning of the phrase. A single correct repetition was sufficient for her to feel successful and to move on, even if she played the note or phrase incorrectly multiple times before she could play it correctly. She never seemed to think about correcting the mistake and then putting it into the context of a larger section as a way to improve the fluidity of the piece as a whole.

The second strategy she used was to slow down the tempo in difficult spots. Instead of playing a whole section slowly in order to maintain the integrity of the rhythm and pulse, Amy would play what she could at a performance tempo and then slow down greatly in the difficult spots. A typical example of this behavior could be seen when she played the F major scale in thirds. She was relatively proficient with this pattern for the first three pairs of thirds, but then needed to slow down once she reached the altissimo register. In this range, Amy would stall after every two note pattern. As the exercise moved back into her comfortable range, she immediately switched back into a performance tempo. Instead of repeating the exercise in order to improve fluidity, she proceeded on to the next activity.

I recognized many times when Amy became frustrated with an activity. The coping strategy she developed for this was to simply move on to a new song, putting off

her work on the difficult piece until another time when she felt more ready to deal with it. I also noticed a number of times when she came back to particularly tough assignments later on in her practice, obtaining mixed results with her efforts.

Amy mentioned that Ms. Zingerman has the students count rhythms in band quite often, "but barely anybody ever gets it." I asked her if she used that strategy in her home practice and she replied, "No. Because I know we're going to do it in class the next day. So I just figure I might as well not" (Amy, Retrospective Report #3).

Amy seems to reject the process of using theoretical understanding to help her perform rhythms in her music. Instead, she seems to learn by rote, using the music as more of a reminder than as an original source of information. This became apparent when I asked if she was counting the rhythms as she played one of her concert pieces. Amy replied, "No. Just pretending I'm with the band" (Amy, Retrospective Report #3). This strategy of audiating the full band seems to have provided both a rote experience and a sense of pulse for her.

Though Amy exhibited limited use of practice strategies, I found that she had been taught a number of strategies. Amy simply chose not to use them because she believed that they would not help her.

Oare *Has anybody ever shown you how to take just a little bit and to work on it until you could play it, and then take another chunk, and then add?*

Amy *Yeah. Ms. Z, but I don't think of it that way. I think it's just better . . . You learn faster if you do just the whole thing, and just . . . Fix the one part that you're worst at, because then if*

you do it part by part, then you're just going to forget. (Amy, Retrospective Report #2).

Motivation

For Amy, her motivation to practice was primarily extrinsic. Her purpose for practice was to put in her time. This was exhibited when I prompted her to say what she was thinking during her verbal report session, and her reply was, "Just wanting to get it done." (Amy, Concurrent Report #2). Also, much of her choice was based on the assignments Ms. Zingerman gives to the class. This motivation became apparent during her second practice session, as she practiced a particularly difficult assignment. After yet another mistake, Amy stopped, looked at the book in frustration, began to turn the page, and then stopped and began practicing the assignment once again. This battle between her frustration and her knowledge that she needed to practice the assignment demonstrates the influence Ms. Zingerman has upon Amy's practice choices and Amy's emergent control over her emotions and impulses.

Though she dutifully plays through the material she has been assigned, she also demonstrates that she often does not understand the purpose behind the assignments. To Amy, the scales she plays are synthetic, purposeless assignments, while the tunes she plays are authentic learning. This became apparent as we discussed a section in her concert march, "Bells of Freedom." In the piece, the flute part repeatedly plays the first five notes of an Eb major scale over four measures. Amy admitted that through learning the song, her ability to play the scale was improved, though Ms. Zingerman taught the scale prior to handing out the song in order to aid the learning of the song. Once she learned the scale within the context of the song, the scale gained meaning. This seems to

have increased her motivation to practice scales, if only slightly, because she mentioned on a later date that she practiced her Bb major scale because it was the same key as many of her songs.

Radosevich et al. (2004) has stated that, in achievement situations, individuals tend to adopt either a learning goal orientation, through which individuals seek to develop competence and task mastery, or a performance goal orientation through which individuals are motivated to demonstrate ability or to avoid the demonstration of their lack of ability relative to others. This orientation toward avoidance was especially apparent in Amy, as expressed in the following focus group excerpts:

Oare *What would you do if I gave you a piece that was too hard for you?*

Mandy *I'd kill you.*

Amy *I wouldn't practice it. I'd say this is too hard. I don't play it. It's too hard and my brain would hurt.*

Nick *I'd play it. I'd get back in two weeks and play it for you. Done. I'm good.*

Oare *You like a challenge?*

Nick *Yeah! I'd rather do that than something that's at grade level.*

Mandy *I don't want to do something that's super easy, but I don't want to do something that's super hard.*

Amy *So, like something that I can do.*

Oare *So if it's music that's over your head (I move my hand above my head, then chest then knees), right at your level, or too easy. . .*

Amy *Right there (hand is belly button high). Yup*

Oare *Some people, if they have a challenge, are going for it, because they want to prove they can do it. (Nick smiles and nods). Other people see a challenge and they'll run away from it.*

Amy *That's me and Mandy. If I know I can't improve, then I'm not going to do it, because it's just like too hard, and I know I can't do it. So, like if I can't do it, there's no point in practicing, so I just get something else that I can do. (Focus Group #1)*

Nick

Nick was a seventh grade baritone saxophone player who had also been taking piano lessons since third grade. Nick expressed a passion for old time rock and roll music and musicians such as Bob Seeger and Styxx, and said that he played keyboard, sax, and bongos in a garage band. With a medium build, straight brown hair over his ears, and braces, he was bright and easy to talk with, and had a tendency to walk to the beat of a different drummer.

Nick was not prone to focusing on details. Ms. Zingerman describes him as a "bright kid" and as someone who is involved in class and has a strong desire to do well. She said his biggest strength is his attitude, though, "Occasionally, his immature middle school boy tendencies take over and he'll just do dumb things." (Ms. Zingerman Interview). When discussing his musical achievement, Ms. Zingerman acknowledged that he has difficulty with his tone, and attributed this to the fact that he practiced tenor saxophone at home and that the difference in embouchure between the two instruments

causes him to squeak on the baritone saxophone. She also expressed some concern about his consistency in class.

> *That's another inconsistent kid! (ha ha) I wonder, honestly, if there's some focus issue with this child, because sometimes we'll do something in band and it's right on. The rhythm's good and notes are good. Other times . . .he's a finger bobbler. He'll go to hit a note and wiggle around until he lands on the right one. It's like, 'it's in there somewhere. I'll just keep wiggling my fingers until I find it.' He's definitely putting enough air through the instrument, because he's got a big sound. But that finger bobbling thing drives me nuts!* (Ms. Zingerman Interview).

As a practicer, Ms. Zingerman said, "He does not practice a lot at home. And I think if he did, that would probably go away, because he is a bright kid." Nick, on the other hand, says he practices every day, but that a lot of the time he spends is playing his bongos or playing rock tunes he downloads off of the Internet.

Nick's practice can best be described as a value of quantity over quality. The following excerpts may help to paint a picture of Nick at practice:

Table 7: Nick – Practice Session #1

Time	**Activities / Comments**	**Codes**
1:54:	*"I'll start with scales"*	G: scales - routine
1:56	Squeaks, restarts and plays Bb concert scale, 3rds and arpeggio	G: Priorities – Bad Tone! S: Single correct rep.
2:26	*"Ok. Now I'll start with the line that was assigned for today"*	G: Teacher assigned

Table 7 con't

2:39	plays 1 1/2 measures, stops & restarts	S: single rep: beginning
3:06	plays the wrong note in last bar, stops	A: detection note
3:10	*OK. I'm going to do the Victors*	G: play vs practice
3:16	He plays, dropping two beats as he attempts the low notes	A: ignores rhythm mistakes
3:49	Finishes the piece - having dropped beats in 3 spots - notes didn't speak	A: ignored tone issues
3:50	Turns the page looking for something else to play	G: no a priori - choosing whatever he wants
3:50	*I'm going to play my honors band stuff*	G: challenge – non-band
4:15	Chromatic scale -one time with many mistakes	G: play vs practice

This type of practice, in which Nick simply played through songs and exercises, ignoring most of the mistakes or simply stopping and starting again from the mistake, continued. After 20 minutes of practice, Nick had played through 17 different pieces of music. Immediately after the practice session, while the videotape was being prepared for review, the following conversation took place:

Oare *What do you think about this practice session? What went well, what didn't go well? What would you do next time?*

Nick *I'll bring more music next time because I ran out of music. Because I'll probably talk more then.*

Oare *Did anything go any different than usual?*

Nick *Well, usually I have more music, but. . .* (Nick, Retrospective Report #1).

Nick practiced in this way during all three of his sessions with me. He played through between 13 and 17 songs and exercises in each session. Only in the third session did Nick play something through a second time because the first time was not played well enough.

Goals

For Nick, goals are things you "do." Almost every time Nick began to play a piece, he said that he was going to "do" it or "play" it. I asked Nick if his goal in his practice was to improve something in particular, to play for the amount of time that Ms. Zingerman requires, or to play as many tunes as he could, and his reply was, "Kind of like a combination of all three of those, because I need to do the time that she says, but I want to get better at as many songs as I can within that half an hour." (Focus Group #1).

Nick, like Scott, Amy, and the other students, does follow a loose routine. In all three practice sessions, Nick began with a scale. He also played the line out of his band book that was the assignment for the day. Next, he played through his concert music. After that, Nick's choice of music to play was totally random, as he played songs from the book that he enjoyed playing. He said that in his practice at home, he plays through the music that his private teacher assigns him, but he did not remember to bring that music to school on the days he worked with me.

Nick said that he had not learned how to set goals in school. In band, he mentioned that Ms. Zingerman "kind of says at the end of the day, 'oh you got to do these for tomorrow.' But that's all." (Nick, Retrospective Report #1). This may explain why Nick was unable to set a clear goal in any of his practice.

Instead of setting goals, Nick could identify the particularly difficult aspects of a piece of music he was about to play, which did provide a vague focus of direction in his practice. Nick realized that his tone was a continual problem and, in a way, he set a goal to improve it. "I was just trying to get rid of that squeaking noise over anything else throughout the whole thing." (Nick, Retrospective Report #2). Though he did have a goal to improve his tone, he was unable to devise a plan to help him achieve it. Ms. Zingerman has her bands play long tones every day as a way to develop tone, but Nick did not know the purpose of these exercises and was unable to understand that they would help him reach his goal.

Nick felt that he focused his attention more on dynamics and articulation during practice than on any other elements. He said that he focused least on notes, because, "if you put the right fingers down, then you'll get the notes out. So you really don't have to really pay attention to that. And I've really got that down. But with the dynamics, I'm not very good with the dynamics." (Nick, Retrospective Report #1). Though he listed dynamics as his top priority in his playing, analysis of his practice video suggests that this may not be the case. My analysis of the comments he made throughout the study found that Nick's focus depends upon how well he has learned the piece he is playing. Initially, Nick concerned himself with rhythm. Though Nick did seem to have a high concern for playing the dynamics, he described the process of learning a new piece of music by saying, "I'd probably do the thing without worrying about the dynamics much. And then get the rhythm and the notes and everything good. And then do the dynamics. That's probably the last thing I do." (Focus Group #2).

Assessment

Nick's concern for playing through his music rather than practicing it had a profound effect on his ability to assess himself. To him, a successful practice of a song or exercise meant that he played all of the way through it. When asked how he knew when it was time to move on to the next thing in his practice, he replied, "Probably when I'm good enough at that song, or I'm just getting bored with that song." (Nick, Retrospective Report #2).

More mistakes seemed to be ignored than detected. When I would prompt him to tell me what he was thinking during his practice, he would make evaluative comments regarding his performance such as "that was good," or "that was bad," rather than prescriptive comments related to specific items that went well or needed attention. When asked to be more specific, Nick would make comments such as, "Yeah. It was kind of sloppy - that whole piece, pretty much." (Nick Concurrent Report #2). When Nick could audiate the song he played, he was able to assess accuracy more effectively, but he still had trouble being specific. After one such piece, he said, "I did it more like the actual song sounds like that time." (Nick, Concurrent Report #3).

Nick's problem with his tone was a major factor in each practice session and he made comments about it each time. Though he knew it was a problem, he could not diagnose the cause, making comments such as, "I was like really stumbling on the notes. I don't know why, but today I have like bad sound." (Nick, Concurrent Report #2).Even though he made comments about his tone, it did not seem to register in his mind that is was a constant problem that needed to be addressed.

Oare *My question is, as you practiced, was there a general*

mistake that tended to happen?

Nick *key signature.*

Oare *Ok. If I was to categorize all your mistakes, there were key signature mistakes. What other mistakes happened today?*

Nick *Rhythm.*

Oare *Rhythm. Anything else?*

Nick *Articulation.*

Oare *Is that it?*

Nick *Those were the main ones.*

Oare *What else?*

Nick *Um. . . Dynamics, rests, counting.*

Oare *I'm curious. Why haven't you put the notes that didn't speak on your list yet? You even made a comment about it.*

Nick *Yeah. . . Because I forgot about it. I don't know*

(Nick, Retrospective Report #3).

Strategies

I found the fewest number of instances of codes related to practice strategies in the data Nick produced. In this list of codes, I found instances in which he penciled in reminders to himself, slowed the tempo (but only in the difficult spots), and repeated sections multiple times. While the variety in this list seems good, I only noticed each of these codes one time. This lack of strategy use could simply be because Nick took little time to reflect as he practiced. He often began playing a song before the sheet of music

could settle on the music stand, suggesting that he gave little thought to the music before playing it.

The most common strategy code I found within Nick's data was titled "correction on the go." For Nick, this code describes the multiplicity of examples in which he made mental notes to himself to correct wrong notes, rhythms, articulations or dynamics the next time he passed through the song.

Oare *What do you do when you notice a mistake?*

Nick *Keep going, because I'm not going to stop. . .Because if I'm going to do a four line piece, and I mess up on the 3rd measure, I'm not going to stop and do the whole thing again. I'm going to finish it so I can go through it again and notice all the mistakes I made and make sure to fix all of them. Instead of going here and missing the same thing and then the next line.* (Focus Group #1).

This strategy did not seem to work well for Nick, because he played many of the same songs in all three of the practice sessions, and he made many of the same mistakes in the third practice session that he had made in the first. Though the strategy seemed ineffective, Nick was certain that musicians need to play through a complete piece in order to play it well. When asked why, he replied, "Because it's easy if you start by looking on that [wrong] note and you say, 'oh that's what I need to fix.' But if you play the whole thing, then you have to be ready for this note to come up." (Focus Group #2).

Aside from the strategies listed above, Nick had a limited practice repertoire, and he used many of his practice strategies ineffectively. Though Nick understood that

repetition was an effective strategy, he generally repeated something correctly only one time, if at all, and then moved on. On only one occasion did Nick play a pattern of notes correctly three times in a row before moving on. When he would slow down in his practice, it was only at the difficult spots in the music. Because he never mentioned slowing down as a deliberate strategy, it may be that this slowing down was not a strategy at all, but simply a demonstration of his emergent reading and technical skills.

When discussing his tone and control, Nick admitted that he had no strategies to address the problem, stating, "I don't even know one." When asked if he ever thought of playing long tones at the beginning of his practice to remind his embouchure of what they need to feel like, he replied, "Yeah. I could do that. I never thought about that before though." (Nick, Retrospective Report #3). He also seemed to lack a firm understanding of the rhythm counting method taught in class or an understanding of meter. Though he lacks these strategies, Ms. Zingerman has stated that she has consciously taught these strategies, and others, in class, but she admits, "I don't have as organized approach as I probably should." (Ms. Zingerman Interview).

Motivation

Nick seemed to love the idea of making music. He said he practices six or seven days a week on piano, sax, and bongo. He takes lessons on piano and saxophone and he plays keyboards in a garage band. Ms. Zingerman also has stated that he has a terrific attitude and loves band. On the outside it seems that Nick is a highly motivated young musician, but as I studied his actions in his practice, I saw conflicting data. It is through the analysis of the contrasts between challenge and priorities, between approach and

avoid goal orientations, and student choice and assigned music that we may obtain a better understanding of Nick's motivation in music.

Nick expressed on many occasions that he enjoys a challenge. He pursued extra challenges by attending band camp, playing with his garage band, and auditioning for a regional middle school honors band. On the other hand, Nick consistently exhibited sloppy performances with an uncontrolled tone and often a lack of a steady pulse. It seems that his motivation was not to play his music flawlessly.

Oare *You were able to tell me pretty accurately where the mistakes were in each of the pieces you played. Why didn't you go back and fix them?*

Nick *I don't know. Because these pieces are too easy. And yeah. You could say. . . I don't know. . . It's because it's like. They're too easy and I'm getting sloppy with them. That's probably why I'm making mistakes. I need harder music.*

Oare *But yet there wasn't a piece that you played flawlessly. Yeah. . . . . I don't know. Because you get kind of sloppy.*

Nick *Well I do. I get kind of sloppy. . . Like most of these songs I'm good at. And I've mastered. So. . . .* (Nick Retrospective Report #3).

Instead, it seems that Nick may have been more motivated to have people say he can play lots of music than to say that he actually played it well. As a seventh grade student, he already has a reputation as a "band geek" among students such as Amy. This title could

have been caused by his own self-promotion. Or, this lack of motivation to focus on the details may be a developmental issue in which he is not yet capable of taking care of details. He seemed unable to realize that his cognitive understanding of how to play his music does not necessarily translate to performance achievement.

I witnessed both ego-approach and ego-avoid goal orientations at different times with Nick. He stated during our first focus group that he was constantly competing with another of the seventh grade saxophonists. He seemed to enjoy learning challenging music, as long as he felt he could play it. But, if Nick had a low self-efficacy regarding his ability to play a piece, he would avoid it. This can be seen in the following practice session excerpt:

Table 8: Nick – Practice Session #2

Time	**Activities / Comments**	**Code**
10:01	He begins Here We Come A Wasailing in the 2nd phrase, with little mental or physical set up before playing	Mot: avoidance of the 6/8 part he doesn't understand
10:35	Oare *"Why didn't you play the beginning?"*	
10:38	*"I don't like the beginning part. I only like the end."*	Mot: avoidance
10:42	Oare *"Why don't you like the beginning?"*	
10:43	*"I don't know. "*	Met: doesn't know

One reason Nick avoided the 6/8 section of the piece is that he felt uncomfortable with the new time signature. This occurred in a small number of other songs from the book.

Finally, Nick showed varying degrees of motivation based on the music he played. Nick was motivated to focus a small amount on exercises that were to be tested in class. He also reacted productively, though reluctantly, toward the assignments his

private instructor gave him, saying "I have to do it pretty much, because I'll get in trouble if I don't." (Nick Focus Group 2). On the other hand, Nick expressed a desire to play old time rock and roll and stated that he practices that music at home instead of the band pieces.

Summary

Nick likes to play songs his saxophone, but does not seem to practice with a specific goal for improvement. Instead, Nick to plays through his music without giving it much thought. Like the other students in this study, he places greatest priority on producing the correct notes and rhythm, to the detriment of his tone and articulation. This emphasis seems to attenuate his ability to assess other aspects of his playing. Nick has firm beliefs in regard to how he should practice, yet he lacks specific practice strategies that he could use to produce music more effectively.

Mandy

Mandy is the final seventh grade participant. She is girl of medium height and build with straight sandy blond reaching just beyond her shoulders, a mouth full of braces, and glasses. She had played clarinet since sixth grade and began taking clarinet lessons in the fall of seventh grade. Mandy seems to want the identity of being in the "popular crowd," but, according to Ms. Zingerman, "I don't see her as being in the same social group with Amy. I think she's one of those who wants to be in the popular group, but isn't quite. That's how I see it anyway."

Mandy can best be described as a generally nice girl who can be negative toward herself and others from time to time. This behavior became apparent many times during our practice sessions together, through her distaste of songs she had to practice or her lack of motivation to use practice strategies she had been taught, because she was, "lazy with a capital L." (Mandy, Retrospective Report #3).

Along with participating in band, Mandy took private clarinet lessons. She also has been helped with her music in the past by her brother who plays trumpet in the high school band, who Ms. Zingerman describes as an average to below average musician.

As a musician, Mandy is a steady section clarinetist who needs the support of other students around her in order to be successful. According to Ms. Zingerman, Mandy is:

> *Rhythmically very weak . . . It's something her (private) teacher and I have spoken about a couple of times. You'd like to think that you can teach that to every kid. But, I'm not always sure. Pulse is an issue for her. Her performance in class is alright. When she gets her fingerings down then she's OK in the section. She's not going to stick out. . . She practices a lot at home. At least she says she does. And she probably actually is putting those minutes in. But I'm sure she's not focusing on what she's doing.* (Ms. Zingerman Interview).

Ms. Zingerman stressed that Mandy's strength is her ability to play consistently once she learns her part, suggesting that Mandy needs to hear her part multiple times before she is able to hear it in her head. Ms. Zingerman explained, "She's definitely not a

leader. But if somebody's playing her part next to her, she's going to be just fine. It's kind of funny, because big brother was the same way." (Ms. Zingerman Interview).

Mandy described her own practice as "totally random." Though I agree that it lacked clear focus in her choices, there were times when her ability to make effective decisions began to emerge. Other times, it seemed that she lacked the prerequisite knowledge for effective practice, or was unable to discipline herself enough to overcome the urge to only play music that she liked and could be successful playing, as exposed in this excerpt:

Table 9: Mandy – Practice Session #1

Time	**Activities / Comments**	**Code**
4:54	*"I'll play the line we're supposed to play in class."*	G: teacher assigned - #74
4:58	Begins to play in triple meter - the first phrase is ok rhythmically but missed the key	A: non-detection – key
5:10	2nd phrase has problems with meter and rhythm	A: non-detection - meter
5:27	*"I think I played that A too long."*	A: detection – rhythm
5:29	Oare – *"What were you focusing on?"*	
5:32	*"I don't know. . . I don't like 3/4 time."*	Met: don't know
5:40	*"You were playing the 3/4 line and not the 3/8?"*	(Line 74a or 74b)
5:43	*"3/4. I don't even know how to play 3/8!"*	S: knowledge?
5:59	plays it again –it slips into duple meter	A: non-detection – meter
6:08	*"That's weird."*	Mot: external locus
6:44	begins the line again, playing 2 notes	S: repetition - beginning
6:49	*"I missed a quarter note. I'm going to do some other things now."*	A: detection – rhythm Mot: avoidance

Goals

Mandy seemed to have two mental agendas warring with each other during practice. The default goal of the first agenda was, "do your assignments," and the default goal of the second agenda was "avoid failure at all costs." Generally speaking, while Mandy attempted to follow the first agenda, the second agenda won out in each of the three practice sessions.

The key factors for the first agenda were the assignments given by Ms. Zingerman, her private teacher, and upcoming concerts. Mandy began each lesson in the same way as the other seventh grade students, by playing through her scales and her daily assignments instead of deliberately practicing them. This may be due to a lack of specificity in her goals. Each time I asked Mandy to tell me about her goals for each thing she played, the answer was either that she had no goal, or that she wanted to improve "everything." In essence, the target Mandy aimed at was either hazy or nonexistent as exhibited in this exchange:

Oare *What will you do the next time you practice that piece?*

Mandy *Practice it.*

Oare *Just play?*

Mandy *Probably. And probably like slow it down.*

Oare *Anything specific you want to improve on it?*

Mandy *Not really.* (Mandy, Retrospective Report #3).

This lack of goal specificity could possibly be the cause of Mandy's lack of skill in prescribing remedial goals when she was unable to meet the goals set by her teachers'

assignments. Instead of creating secondary goals for the difficult music she played, Mandy would try to meet the larger goal by playing through the music once or twice. If she was unsuccessful, she would simply move on.

The second consequence Mandy encountered due to her lack of specificity was an inability to persevere when she was unable to meet her goal. The less specific her goal, the less time she seemed to spend on the activity. On the other hand, Mandy did persevere with assignments that were to be tested and did spend more time attempting to improve upon them. An example of this occurred during her third practice session with an exercise that was to be tested to determine chair placement within her section. She practiced the piece at the beginning of her practice time and moved on to other assignments. After playing three other assignments, she went back to the first assignment, saying, "I'll try to play my chair test one more time."

The key factors for Mandy's second agenda, "avoid failure at all costs," were avoidance and distaste. Mandy avoided the music she did not like. She had a strong desire to play only the music she liked, and therefore spent little time on the rest, explaining her actions by saying, "I don't like that one," or "it's weird." (Mandy, Concurrent Report 3). It seemed that the music that made it into her list of enjoyable pieces was the music that she could already play successfully. Therefore, Mandy's list was constantly changing. For example, during her first practice session with me, the following series of activities took place:

Table 10: Mandy – Practice Session #1

Time	**Activities / Comments**	**Code**
7:52	*"I think I'm going to try Imperium"*	G: Teacher assigned
8:00	Begins Imperium, playing the intro	

Table 10 con't

8:14	*"hmm. . . Never mind. I don't like that one"*	G: random choice

One month later, during the third practice session, Mandy had this to say:

Table 11: Mandy – Practice Session #3

Time	**Activities / Comments**	**Code**
10:26:00	(After playing the D major scale) – *"I don't like that one. Too many sharps"* – Turns Pages	Mot: efficacy / avoidance / locus
10:30	Oare – *"What do you like?"*	
10:33	*"Lots of things! I like Imperium and Nocturnal"*	Mot: success
10:39	Oare – *"Why?"*	
10:40	*"Because they're challenging, but not too challenging"*	Mot: challenge

One of the side effects of this form of choosing goals and what music to play was that Mandy was more focused on playing her music rather than honing her skills. Because she played through whole songs rather than spending the time to perfect sections within her music, her focus turned more on putting in her time than on improvement.

Assessment

To self-assess one's own performance requires the musical aptitude to audiate the desired result and to accurately acknowledge the specific aspects of performance that do not meet the target, while also requiring the desire to attend to the quality of the performance at hand. Mandy was able to exhibit these requirements in some ways, but was lagging in others. As I analyzed video and audio recordings, I found that Mandy missed nearly the same number of mistakes as she detected. It seemed that four things attenuated her effectiveness with her self-assessment: unclear goals, theoretical misunderstandings, aptitude, and a lack of strategies to fix problems.

Mandy set few goals, and the goals she did set were generally unclear. Therefore, she had no specific aspects of her playing to listen for. Because of this, a number of mistakes related to dynamics, articulation, and rhythm went by unnoticed. The result was a number of undetected mistakes and other mistakes that were detected, but too vague to provide sufficient information to put her on the path to improvement. This lack of focus also resulted in a number of generally negative evaluative comments that led to frustration and were too vague to help guide further goals. After she practiced a piece of music, she also rarely spent time reflecting upon her progress, resulting in a continued lack of goals.

Second, Mandy's tonal awareness was weak, as was her sense of beat and meter. Because of these apparent weaknesses in her musicial aptitude, she was unable to recognize mistakes as she made them. In one particular instance, Mandy began playing a song in the key of Bb major, and she continually played E naturals, never recognizing the mistake. This may be due to an undeveloped aural schema that could consistently hear tonality. She generally was able to decode notation accurately, though her accuracy may have been due more to her decoding ability than her ability to audiate the music.

Mandy expressed little confidence regarding her rhythmic skill, possibly due to a combination of a lack of rhythmic aptitude, as described by Ms. Zingerman, and a novice understanding of rhythm notation. This was demonstrated many times as Mandy was unable to maintain a steady pulse in her practice and did not seem to notice. Mandy did not understand the difference between duple and triple meter, and therefore was unable to perform with a sense of meter. She did not understand the value of a dotted quarter note in relation to the other notes around it or the relationship of notes in a syncopated pattern.

She also had little experience, and even less self-efficacy with 6/8 meter. Because of these deficiencies in knowledge, combined with her weak sense of pulse, rhythm mistakes were the most common type of mistakes to go undetected in Mandy's practice sessions.

Finally, Mandy often seemed to ignore the mistakes that she was unable to prescribe solutions for. When I asked what strategies she knew to help her fix rhythm and tone mistakes if she did catch them, her reply was, "I don't really have a strategy" (Mandy, Focus Group #2). This was especially the case with her tone. During each of her practice sessions, I noticed that she did detect tone problems near the beginning of her practice time. She used no strategies to help her gain control of her tone, so the tone problems continued, but she stopped detecting the problems when they occurred.

Strategies

Though I have decided to present the practice of my participants through the use of four separate themes, it is important to remember that each theme has an effect on the others. The goals one makes are often influenced by an assessment of which musical element deserves the highest priority, and the strategies one chooses are influenced by the chosen goals. The quality of assessment can influence motivation by creating hope or dashing it, while motivation can influence one's goals and the choice of strategies.

Mandy's use of practice strategies is a good example of this principle. Because she entered her practice with either vague goals or no goals at all, she was unable to choose the appropriate strategy at the outset of her practice. When she had no goals, she generally just played through her music, stopping and starting again when big mistakes

happened, or slowing down when the music became hard and speeding back up again when it was easy. When she chose to address what seemed to be her 'default' focus (playing the correct notes), her unsteady tone caused problems. But, since she had no strategies to deal with her tone, she was unsuccessful, causing frustration and engaging her avoidance strategy. If she chose to focus on rhythm, her lack of understanding made it difficult for her to detect mistakes, thereby negating her ability to set remedial goals to address the problem.

Mandy did know of a number of practice strategies that she consciously chose not to use. Her desire to play through the music superseded strategies that took place outside of performance of the music. For example, when asked if she ever played long tones to help focus her tone, she said, "I don't do it consciously or unconsciously. I just don't." (Focus Group #2). When asked if she ever practiced counting a rhythm before playing it, she replied, "not usually." (Mandy, Retrospective Report #1). When asked if she ever practiced saying and fingering the note names of difficult sections, she said, "No. I just won't do it. . . it sounds weird and that's one of the reasons." (Mandy, Retrospective Report #3). This lack of non-performance practice was not always the case. Mandy did stop her play and analyze her music from time to time, as in the following example:

Oare *Do you look for patterns at all?*

Mandy *Just notes.*

Oare *I noticed you analyzed the fingerings on the chromatic scale. You stopped and you figured it out.*

Mandy *Yeah (smiles).*

Oare *Is that a pretty common thing you do?*

Mandy *Yeah.*

The concept of practicing for the purpose of creating habits was new to Mandy. As with all of the participants, when she would repeat some portion of her music, one correct repetition seemed to suffice. Also, along with all of the participants, she used aural imagery of the music as a learning strategy. If she knew what the music sounded like, she was much more accurate. This use of aural imagery was apparent when Mandy said, "When I was playing this, I knew exactly what I was thinking. When I stopped I was thinking like the bass clarinets and the bassoon. . . . .when I stop, they go 'whack whack'. I was thinking that . . . whack whack! (said in time as she was listening to the practice video)." (Mandy, Retrospective Report #1).

As Ms. Zingerman stated, rhythm is a challenge for Mandy, but she is beginning to develop strategies that should begin to help her improve her skill. Mandy stated that she does tap her toe to the pulse, "sometimes when I think I'm going to mess up." (Mandy, Retrospective Report #1). She was capable of keeping a steady beat with her foot when playing simple rhythms, but when she encountered more difficult rhythms such as dotted quarter notes or syncopations, her foot tapping and her sense of pulse stopped. She also stated that she does count rhythm patterns using the counting system taught by Ms. Zingerman, saying, "I'm always counting in my head." Again, this seemed to be true with simple rhythms. When asked to count more difficult patterns, she lacked understanding and therefore was unable to count as she played.

Finally, I found that motivation played a big part in Mandy's use of practice strategies. Mandy would not practice her solo music for me during our sessions, because

she would either leave her music at home or she did not feel comfortable playing the music in front of people yet. During our final practice session together, I asked Mandy if she practiced her solo music by playing straight through it, as she did with her concert music and the music out of her band book. Her response showed that she did have a an understanding of how to break a piece down into more manageable chunks, but that she simply chose not to do it, except when the music had value to her.

Oare *So if you take it down into smaller measures,. . . I haven't seen you do that in the book.*

Mandy *Because I don't want to. Because I'm lazy with a capital L.*

Oare *Then why do you want to do it on this one?*

Mandy *Because I'm going to be playing it for solo (and ensemble festival).*

Oare *Fair enough. So you have more buy in on this one.*

Mandy *Mm hmm.*

Oare *You do consciously do that? Play through this, play through that, and with your solo say, 'now let's get serious?'*

Mandy *Mm hmm.*

Motivation

For Mandy, achieving success and avoiding failure is the key to her motivation. Her "totally random" approach to choosing music to practice was often due to her search for music that she liked. Usually she would play songs she liked over and over. But on numerous occasions, she would play through a few measures of a piece, encounter some

difficulty, and then say, "I don't like that," and turn the page to find another song to play. In some instances, she would return to the music she left later in her practice session, once she felt more able to play it.

Frustration also seemed to play a large part in Mandy's motivation. During her second practice session with me, she chose to begin by playing a difficult assignment and had an especially difficult time producing a steady tone. As we progressed further into our time, her brows became more furrowed, her head began to fall, sighs came more rapidly, and responses became short. She turned the page and began to play scales, but her tone continued to cause problems. Finally, only eight minutes into our allotted time, Mandy said, "I don't know what else to play," and the session ended.

Impending performances seemed to have a positive affect on Mandy's motivation. This can be seen in her more deliberate use of practice strategies in order to prepare her solo for an upcoming solo and ensemble festival. Though she did not practice her chair test excerpt as effectively as she said she practiced her solo, Mandy did play through it more often than other songs that were not to be performed

Finally, the influence of her teachers and parents provided the direction and motivation that she could not yet provide for herself. Mandy consistently practiced the music assigned her by Ms. Zingerman or by her private teacher. Furthermore, the encouragement she received from her parents, suggested by the provision of private instruction, seems to suggest that the adults in her life had a strong influence, whether intrinsically or extrinsically, upon her practice.

Summary

For Mandy, seemingly more than the other participants, the themes in this study are strongly interrelated. Her motivation to avoid failure has a strong effect on the goals she makes and her choice of music. Her lack of focus with her goals led to unfocused practice strategies and vague or negative assessments that had a negative impact upon her motivation. Her practice seemed most focused and she demonstrated more perseverance when she was guided by her teachers' assignments and informed by an aural image of the music she was playing.

Matthew

Tall and thin with braces and a slightly nasal tone in his voice, Matthew played alto saxophone in the eighth grade band. Though he seemed slightly awkward in the focus group sessions, I quickly found that Matthew felt comfortable in our practice sessions together and was open about communicating his thoughts and beliefs on practice. Ms. Zingerman said, "I love him to death. He's the kid who sits next to the chaperone on the trip. I think he relates to adults better than he relates to kids." (Ms. Zingerman Interview).

Matthew usually had a steady tone and seemed to have good control of his fingers, but my field notes were riddled with comments about his lack of a steady pulse. I noticed that this was especially true as he played notes longer than a whole note or non-melodic accompaniment lines within his band music. When describing Matthew as a musician, Ms. Zingerman said,

> *The kid's a scale fiend! . . . I don't know that he has that much of a sense of internal pulse. I know that I've worked on rhythm stuff with him outside of class*

as well as in class with him. . .Now, his performance in class is generally pretty good. That sense of pulse comes into play occasionally. Until he knows a piece, he'll usually lag behind and follow whoever else has the part. But once he's got it, he leads. (ha ha). But he's not the one teaching it to others. He definitely practices at home. And, I think with the minutes based thing we have set up right now, he is very determined that he is going to practice his 30 minutes every day. He makes sure that happens. I don't think he's setting goals hardly at all. Probably just running straight through stuff. (Ms. Zingerman Interview).

Matthew had definite views in how one should practice. During our concurrent and retrospective verbal report sessions, he described his reasoning for the decisions he made much more often and in more detail than the other participants. Often these explanations contained bits of logic that were worded in a confusing manner. For example, he once said, "And depending on the piece, after you're warmed up, you can go back and practice through it to see if it sounds better or different than when you originally started." (Matthew, Concurrent Report #2). At other times, Matthew's comments seemed a bit odd. During the first focus session he explained that he uses the mirror in his practice to look at his hands but not his embouchure because, "I think I heard this from a guy. . . He said if you ever watch yourself on video, you'll see what you are really like or something. It's not good. Don't watch yourself on video." (Focus Group #1).

Ms. Zingerman was accurate to some extent in her assessment of Matthew's practice methods. He did tend to play through his music, but he also seemed to have some

thoughts resembling goals when he practiced. He seemed to focus more on becoming a better player than simply putting in the time.

Goals

Matthew generally did not set specific goals with clear criteria or devise plans of action to reach them, but he was able to say what he would focus on as he began practicing a new piece of music. This focus was quite often on articulation and dynamics, more so than seventh grade participants. When asked what he focused on the most, Matthew said, "I think about tonguing and beat, but fingering, that was more like last year and the year before." (Matthew, Retrospective Report #2). On another occasion, he stated that he tries to focus on everything and admitted that this may cause problems in his playing.

Though Matthew stated that he focused on rhythm the most, he often had troubles maintaining a steady beat and seemed quite surprised the few times I brought up this difficulty. For example, during our final focus group session, I mentioned that he played a song that was written in 4/4 as if it were written in 6/8. His response was, "I played it in 6/8? Wow! Oops! . . . Wow. I don't know how you can play a 4/4 piece in 6/8 and still have it sound good." (Focus Group 2). Therefore, his lack of ability to assess the need most likely had an effect on the goals he set.

Matthew seemed to have a routine in his practice. He started his first two practices by playing scales as his way of warming up. Then he would play his daily assignment, which was from one of his band pieces. This was followed by a difficult piece of music and then a few other pieces he wanted to review. At some point in time he

would "take a break" and either improvise or play a pop tune by memory. His improvisations had no chordal structure or discernable meter and the pop tunes came from a book of movie tunes he owned. He finished up his practice by going back to the difficult piece.

Matthew made a number of comments regarding the need for an aural image to help him know what a piece would sound like. As he began to play a pop song, he said, "Sometimes, if you're playing different songs, it helps to know the words, so you know exactly how it's kind of supposed to sound." (Matthew, Concurrent Report #3). This need for an aural image could explain why Ms. Zingerman stated that he is slow to learn his music, but once he learns it, he plays it well. It was also apparent as he practiced his band music. As an alto saxophone player, Matthew switched back and forth between playing the melodic and harmonic accompaniment lines. I noticed in all three practice sessions that his pulse and musicality were relatively fluid as he played his melodic parts, but he consistently lost his sense of pulse and phrasing when he played accompaniment parts.

Matthew seems to be concerned with earning high grades. Therefore, his learning goals were highly influenced by Ms. Zingerman, as exemplified by her comment that he makes sure he practices enough to get an A on his practice sheets. Also, because scale tests are important in class, Matthew has become a "scale fiend."

This desire to succeed and to show others how well he could play could be seen in many comments he made. When asked to tell me what he thought the hardest part of playing a difficult new piece of music would be, he replied, "What would scare me most at the beginning would not be trying to get the notes and rhythms. What would scare me the most would actually be . . . if I'm going to play it in front of someone. Is this actually

going to sound good, or am I going to mess it up so bad that it doesn't even sound like anything." (Matthew, Focus Group #2).

Assessment

Matthew was quite good at detecting note mistakes, along with problems related to dynamics. Once he identified the mistakes, he was usually able to make quick corrections and move on. On a number of occasions, he seemed to ignore note mistakes and not fix them. When these occurred, he would miss a note and quickly flip his fingers to get the right note to come out and then continue. These little bobbles happened most often as he practiced his scales. Matthew also seemed to ignore a number of problems with his articulation. In a number of instances, he had an excessive delay between the attack of a note and the sounding of the note, causing him to wait for the note to speak which then displaced the pulse.

It is difficult to accurately discern the reasons for his choice to ignore these problems, since he could not give me an answer when I asked. There does seem to be two viable possibilities though. First, Matthew may have simply felt that the mistakes he ignored were simple things that he usually plays correctly and therefore he does not need to work on them. Second, he may have chosen to ignore the articulation problems because he had no ability to diagnose the causes of the problem or no strategy to use to fix it.

Though rhythm was Matthew's first priority as he practiced, he was unable to detect multiple problems with rhythm, pulse, and meter. Between our first and second session, Matthew received extra help with his honor band audition music from Ms.

Zingerman. During this session she spent a large amount of time helping him learn to play the rhythms correctly. This experience seemed to help him understand that he should focus more on rhythm, since after this he often stated that he was attending to rhythm as he played. This extra attention did not seem to help. I still recorded many instances in which he did not seem to recognize that his pulse was undetectable, he was playing in the wrong meter, or he misplayed a wrong rhythm. Even melodic sections in his music that he could play relatively accurately lacked a firm sense of beat.

In one particular instance as we reviewed the video of his practice, I asked if he noticed a mistake he had made. Matthew's reply was, "Yes. I went down to the mezzo forte and I kept the crescendo all the way going to the end." (Matthew, Retrospective Report #3). Aside from the dynamic mistake, Matthew had played a completely wrong rhythm. When I showed the mistake to him, he said, "Yeah. I might be a little bit off." (Matthew, Retrospective Report #2). This inability to detect rhythmic errors may be due to a lack of rhythm aptitude or to a lack of attention to rhythm due to his focus on dynamics. He claimed that he was more able to detect mistakes of this sort when the band played with him, similar to Amy's strategy of hearing the band in her head as she played. An assessment of Matthew's rhythmic aptitude may shed light on his thinking, but this is beyond the scope of this study.

Strategies

Ms. Zingerman's assessment that Matthew most likely plays through his music was quite accurate. Matthew's most common practice strategy was to correct mistakes

"on the go," because he believed that, "if you make a mistake, keep going." (Matthew, Concurrent Report #1).

Matthew also demonstrated the use of slowing the tempo of exercises he played and of repetition in his practice, but he seems to have a misunderstanding of the effective use of both techniques. In order to develop a sense of automaticity in one's performance, multiple repetitions are required to begin creating the necessary neural pathways. Sanders (2004) and Caine (2005) also emphasize the need to learn the same skills in a variety of ways, in this case by slowing the tempo. Though Matthew mentioned repeating things multiple times during our interviews, he would only repeat sections one time correctly before moving on and slow the tempo only in the difficult spots of his music during his practice. In the third practice session, he repeated some spots three times in a row before moving on. I asked him why this was the first time I had seen him do it. He replied, "Well, I'm starting to do more of it now. But for it to get my fullest attention on it, I would probably have to screw up pretty badly on it." (Matthew, Retrospective Report #3).

Matthew also demonstrated some non-playing activities that helped his practice. Again, he mentioned the value of hearing the band play in his head while he practiced. He was also good at noticing when he might transfer past information to inappropriate situations, saying, "It's also a little bit more difficult during songs, because some similar rhythms might be a little different even though they look very similar, you might get tripped up." (Matthew, Concurrent Report #3). Finally, he said that he counted rhythms, once saying, "Count your part carefully if it's one of the few parts in the piece," but he

did not do this out loud, and it seemed there was not enough time for him to have done it in his head (Matthew, Concurrent Report #1).

Motivation

Matthew is a highly motivated young man who is motivated extrinsically and intrinsically. He has a strong drive to do well in school and therefore completes his practice assignments religiously. He seems to have the stereotypical ego approach personality. Ms. Zingerman felt that Matthew does not learn his parts quickly in band, but he works hard at it. He mentioned a number of times that he liked to play hard music because, "it's probably better to make mistakes on the extremely hard piece you have instead of on the easier piece that you might have gotten." (Focus Group #1).

Matthew is also motivated to play music outside of his assigned band repertoire. He has multiple books at home of pop and movie tunes that he plays, "either for fun or I'm actually trying to learn it to perform for someone else and have them go, 'hey that sounds really cool. Can you play that again?'" (Focus Group #1). He was also excited about the opportunities to play in marching band and jazz band. During one practice session, he played the *Theme from the Godfather* out of one of his books. He liked to play the piece because, "I heard this song at a really, really big marching band festival I was watching on TV. It was really good. They were marching all across the field. They even did the puppet hang and the dagger through the heart. That was sweet. I wanted to figure out how I could play this." (Matthew, Retrospective Report #3).

Matthew also enjoys playing with an accompaniment. Because he was unable to play with the band at home when he practices, he mentioned multiple times that he likes

to play with the cd's that accompany the books he bought. When in passing I told him about the *Smart Music*© program, he said, "we don't have internet at my house, so I can't really do it. But it would probably help out a lot. I'd probably be doing those pieces almost every day." (Matthew, Retrospective Report #2).

Summary

Matthew was a go-getter who enjoyed a challenge. Though he had some innate ability and a strong desire to succeed, some of the decisions he made in his practice seemed to hamper his progress. Because he did not set clear tangible practice goals, he often tried to focus on 'everything' and was consequently unable to properly assess his progress or choose appropriate practice strategies. He seemed to realize that he needed to focus on his rhythm as he played, but was unable to detect his mistakes and either chose not to use or had no strategies that would help him with his problem. For Matthew, having an aural image of the music he played seemed to be critical as it helped him to have a target to shoot for, gave him a model to assess progress against and a tool to use as an aid in learning.

Sarah

Relatively short and petite, Sarah has a great deal of ability. Sarah played flute in the eighth grade band, but had significant prior experience playing piano and taking dance lessons before picking up the flute. She also began taking flute lessons as a seventh grader. Her sister is also an accomplished flute player in the local high school band and has served as a model. According to Ms. Zingerman, Sarah is, "Self motivated, as far as

learning on her own. She comes into class totally ready for pretty much anything we have to do. She's probably the closest of any of them to having an idea of how to practice anyway. . . . She takes lessons. The best I can tell, the teacher's pretty good." (Ms. Zingerman Interview).

Sarah was easily the best musician in the group of participants for this study. Hamman and Frost (2000) found that students who study privately tend to be more goal oriented, practice longer, smarter, and more efficiently. They also establish goals and maximize time in shorter, though on task, segments. This, in many ways, seemed to be the case with Sarah.

Goals

Like all of the students in this study, Sarah did not set specific, proximal, appropriately challenging goals as described by Schunk (2001), though she was able to specify broad areas that needed work and choose appropriate elements of performance to focus on. She was also the only student in this study who consciously chose the music she would work on prior to beginning practice.

Sarah had a loose routine she followed in her practice. She began by playing a Bb major scale because, "it's so automatic. And I don't do it for the notes. I do it for warming my flute and lips up." (Focus Group #2). Next she played the two octave scales assigned by her private teacher and then began practicing her assigned etudes and solos. Sarah hardly ever played her band music. This was because her performance level was sufficiently high that she could sight read the majority of their music. In her third practice

session, Sarah did practice her part in the Vaughan Williams *Folk Song Suite* that Ms. Zingerman passed out as the band's challenge piece for the year.

Sarah chose to work on her music in stages. She felt her first priority with new songs was to focus on the notes and rhythm, saying, "When I'm first learning it, notes take up like all of it. And rhythm. When I'm just sight reading it, that's all I'm thinking about." (Sarah, Retrospective Report #2). Once she felt comfortable with this basic level of performance, she would focus on the other aspects of playing, such as articulation and dynamics. It seemed that she continually focused on her tone. She said that her teacher constantly worked with her on developing a full sound.

Assessment

Sarah's ability to assess herself was much more effective than her peers and this allowed her to make some decisions related to remediation. She was able to consistently detect mistakes in all aspects of her technique, and was especially aware of fluctuations in her tone, possibly due to the special emphasis given to tone by her private teacher.

Though Sarah only had a little more than two years experience on flute, she had played piano since she was seven. This extra amount of time making music may have helped her to develop a stronger aural schema than the other students (Hallam, 2001). I detected an inconsistent pulse only for one brief time in her practice. She also had a good feel for meter, although she did not seem to have a solid cognitive understanding of the concept when I asked her about it. Sarah was also able to detect mistakes within major and minor keys, showing that she understood the harmonic context of both modalities.

Sarah was also aware of many of her tendencies in her playing. She often mentioned tonal and rhythmic errors that she consistently made, and therefore had a heightened sensitivity to the detection of these errors when she made them. This development of prior knowledge enabled Sarah to detect mistakes that she could not have detected in the past.

Because of her knowledge of her tendencies, Sarah also developed an understanding of some of their causes. This, then, helped her ability to diagnose the mistakes she made. For example, Sarah had difficulty playing in the correct partial in the upper half of her Bb major scale during her warm-up. As we reviewed the tape, she said, "I think I just have to get warmed-up. Because when I first play the scale it happens a lot." (Sarah, Retrospective Report #1). Later in this interview she again discussed issues with her tone saying,

> *I think it's more of a safety thing. If I'm playing something and I don't want to mess it up, then I pinch it off because I know it'll come out. It won't sound very good, but I know it will come out and not go half and half low and high. Because that's just bad. So, I think I do that just to make sure it works. But it doesn't sound very good. So that's what I should work on.*

Sarah's assessment of when she was ready to move on from the music she practiced seemed to be based on cognitive understanding rather than her kinesthetic ability. In other words, Sarah felt confident that her fingers knew the music when her brain understood what to do, not realizing that motor skills often require more repetition in order to develop automaticity. According to Sarah, "Well, I think - since I'm not

memorizing this or anything - If I can read it, and know what it's supposed to be, then I can play it. And I think I'll be able to play it next time." (Sarah, Retrospective Report #2). This seemed to result in mistakes that consistently happened each time she played particular fingering patterns both as they reappeared in the music and as I observed her in the following weeks.

As I observed Sarah during her third practice session, I noticed a peculiar pattern that may merit further study. It seemed that Sarah's mistakes consistently happened at the beginning of phrases. For example, Sarah began playing an etude that she had been working on for approximately three weeks. She played through the first phrase relatively fluidly with only slight finger bobbles and then began the second phrase, making a mistake in the first measure that caused her to stop. She then began the second phrase and played through it in the same manner as the first, only to make a major mistake at the beginning of the third phrase. This pattern continued throughout the whole piece. It seems that this pattern of making mistakes at the beginnings of major events ran parallel to the pattern I noticed in Steven and Amy as they needed to stop at the beginning of each measure to regroup. Perhaps Sarah's pattern of mistakes is a more advanced version of the less experienced students, in that Sarah is able to take in larger chunks of information than the others, yet still needs to process transitions before she can move on.

Strategies

Sarah's repertoire of practice strategies seemed to be significantly larger than the other five students, especially in working with tone production. Once again, as with the other participants, she consistently repeated spots in her music only one time before

moving on. According to Sarah, "I don't have a set strategy of how many times I play it or anything. I'm not that organized." (Sarah, Retrospective Report #2).

Sarah seemed to own practice strategy precepts as opposed to concepts. She naturally used repetition, adjustment of tempo, analysis, and isolation of problems without consciously knowing what she was doing. When I would ask her what strategies she used at various times, she simply said "I don't know" or gave me a confused look. Many of these strategies were undoubtedly learned from Ms. Zingerman or one of her private teachers, but only through example, not by explicit instruction. Therefore, she was often unable to describe the strategies she used.

Sarah, like each of the participants, lacked an understanding of how the mind and body learns. Therefore, she did not understand the motor skill principles that guide repetition or the cognitive learning principles that support the concept of learning pieces in chunks. When asked her teachers taught her to practice her etudes by learning a small chunk each day and reviewing past chunks as opposed to daily playing through the whole piece, she said, "Well, they probably have, but I don't usually do it. Because I don't think it really works well." (Sarah, Retrospective Report #2).

Magill (1998) describes the three stage, Fitts and Posner model of learning motor skills in which the learner passes through cognitive and associative stages before arriving in an autonomous stage, in which the learner develops a level of automaticity. As I observed the process in her learning, it seemed that Sarah proceeded through these stages in her own development. As she practiced the upper range in her chromatic scale, she began to play the top three notes deliberately. When I asked her what she was thinking as she played, she replied, "Really on the lower register and stuff that I play every day, just

the note name. And for some of it even the - within the staff - I'm usually not even thinking about it. . . But when it gets up higher, then I have to think about the notes and the fingers." (Sarah, Retrospective Report #3).

With her piano experience and private lessons on both piano and flute, Sarah has developed a sizable knowledge base to draw from. She uses this knowledge to varying degrees of effect in her practice. When asked if she recognized scale passages and applied her ability to play the scale to the music, she said, "Well, no. I mean like I know basically it's in a range of stuff and (sings a stepwise pattern). But I don't think, "Oh there's a G scale." (Sarah, Retrospective Report #2). She also stated that she recognizes formal structure in the same way, in which she notices similarities but does not consciously label sections as same and different.

Motivation

> *I don't want to go and play a piece that's too easy, because then it feels like you're not good enough. You know? If you get a hard piece and you end up at the recital and you play it fine and you play it right, you feel like you accomplished something. I feel good. So then . . . it makes me feel determined to do it.* (Focus Group #2).

Sarah enjoys a challenge and is motivated when presented with one. Because she is not challenged by her band music, she apologetically stated that she hardly ever practiced it. She stated, "Private lesson stuff always comes first. Because that's what I need to improve on most because it's probably the hardest." (Focus Group #2).

Through her challenge, she can see her growth as a musician. This learning goal orientation seemed to help her persevere and spend longer amounts of focused time on each exercise she practiced. This was apparent as she consistently worked on fewer pieces in each 20 minute practice session than any other participant. Also, because she could identify progress rather than general success or failure in performing her music, she seemed more able to deal with mistakes and frustration. When she repeatedly made the same mistake, she simply stopped, regrouped, laughed at herself, and tried again.

Sarah was also motivated by preparation for performances and admitted that she practices the music she will perform more carefully than etudes or other music that will not be performed. She explained her position, saying, "I'm not saying it's a good thing, but if you're not performing it, then you don't have to practice it as much. I don't." (Focus Group #2).

It seems that, because of her learning orientation, Sarah is able to focus on improvement without worrying too much about the social consequences of her performance. She was able to express her thoughts saying, "If you practice it and you know it, then even if you do mess up, who cares? I mean I don't want to mess up, but I'm not going to be totally upset if I do." (Focus Group #2).

Summary

Sarah was a strong eighth grade flutist with a wide musical background. Still, as a fourteen year old middle school student, she lacked some of the knowledge and metacognitive development that older students have. She was not sequentially taught how to set specific goals, but naturally had a way of understanding what aspects of her music

needed to be focused on. She was accurate in her detection of mistakes and had a small repertoire of strategies at her disposal to help her fix problems with all aspects of her playing. Finally, Sarah's focus on learning and her high self-efficacy allowed her to see progress even when she did not reach her goals, allowing her to easily deal with any frustrations that may occur.

Summary

All six participants in this study have their own unique methods, beliefs and motivations that influence their personal practice, yet they have many things in common. First, none of the students were able to set specific, proximal, and appropriately challenging goals, and only Sarah, and Matthew to a lesser extent, seemed to be able to break their vague goals down into remedial steps. At the same time, the students' were often unable to accurately assess themselves, which made it difficult for them to make further goals. Furthermore, they generally had a small collection of practice tools which were used with varying degrees of success. Finally, student motivation seemed to be dependent upon their goal orientation. Amy and Mandy seemed to have a strong avoidance orientation that resulted in less effort, perseverance, time on task, and deliberate practice than their peers. Sarah seemed to be strongly learning oriented, leading to more of these factors as well as slightly more specific goals.

The participants displayed different levels of music reading abilities. The seventh grade students seemed to be at an emergent reading level in which they were unable to fluently play long phrases. Instead, they seemed to be able to decode their music in a measure by measure manner. Matthew seemed to be slightly further along in his reading,

but still was unable to fluently play long portions of his music, while Sarah was able to play much more fluently than the rest.

Each of the participants mentioned that they needed to have an aural image of the music they were playing in order for them to play it well. It seemed that they needed this aural image for rhythm more than for other musical elements. The tone of the seventh grade students may also have been attenuated by a lack of an aural image of a characteristic tone for their instruments.

The students were influenced by Ms. Zingerman and their private teachers in a number of ways. Daily assignments and regular playing tests helped give students direction in what to practice. Verbal feedback and feedback from test score sheets provided helpful assessment. Teacher modeling of practice strategies facilitated the development of personal practice strategies, and assignments provided external motivation to practice.

By analyzing commonalities among the students in depth, it may be possible to discern more implications for teachers in the field. This analysis and further discussion, interpretations and implications will be provided in chapters five, six and seven.

CHAPTER 5

COMMONALITIES: CROSS-CASE ANALYSIS

The process of practicing a musical instrument is a distinctively individualized activity that is affected by one's clarity, aptitude, prior knowledge, technical skill and personality. The students in this study each approached their practice with a unique set of skills, traits, and understandings resulting in differences in their practice. Though their practice was not the same, there are a number of commonalities among the participants that could be analyzed to illuminate the self-regulating process of novice instrumentalists.

In this chapter, I will present a cross-case analysis of the six participants, examining four emergent themes and highlighting the similarities as well as some key differences I found across the six individual cases. These four themes – goal setting, self-assessment, strategies, and motivation – were analyzed using the constant-comparative method defined by Creswell as the process of "taking information from data collection and comparing it to emerging categories" (Creswell, 1998, p. 57). Three of the themes – goal setting, self-assessment, and strategies –were external to the data, based upon the initial research questions, while motivation emerged from the data.

This analysis will be supported with a number of examples taken from the analysis of video recordings of the practice sessions and of the comments made by the students and their teacher. In total, I collected 18 practice sessions that were each roughly 20 minutes in length, along with 18 Retrospective Reports that were 20 to 30 minutes in length. I also collected data from two focus group interviews and from an interview with Ms. Zingerman.

Goal Setting

> *Goal setting is an integral component of self-regulation. Setting goals is a generic strategy that can be applied in various domains. Effective goal setting requires that people set a long-term goal, break it into short-term, attainable sub-goals, monitor progress and assess capabilities, adjust the strategy and goal as needed, and set a new goal when the present one is attained. This multi-step plan is a key to promoting healthier human functioning, higher motivation and perceived self-efficacy, and self-regulated learning and performance across the life span* (Schunk, 2001).

I aggregated a total of 45 goal oriented code possibilities from the data and winnowed these into a list of 18 secondary codes. From this list of codes, three categories of codes emerged relating to the ways in which the students dealt with goals in their practice. These categories include the types of goals students set, choices they make regarding what they play, and the conflict between playing to pass the time and playing for improvement.

Types of Goals Students Set

Typical student responses regarding their views of goal setting can be seen in the following excerpts from retrospective verbal report sessions:

Mandy Retrospective Report #1:

Oare *Now you are looking around for something to play. Did you have a goal in mind here?*

Mandy *I don't think so.*

Oare *Just play through it?*

Mandy *Yeah.*

Nick Retrospective Report #1:

Oare *Did you have a goal for this? Any specific spot you wanted to clean up?*

Nick *Not really. Just this part right here a lot. Measure 19.*

Scott Retrospective Report #1:

Oare *Why did you pick Bells of Freedom?*

Scott *Because it was in my folder, and it was there. So, I played it.*

Amy Retrospective Report #2:

Oare *As you were doing this, did you have any goals in mind?*

Amy *Pretty much, just get what I can done.*

The ability to set specific, proximal, appropriately challenging goals is a key component of self-regulation (Schunk, 2001). As seen by the previous excerpts, the students in this study set few, if any, goals that conformed to Schunk's criteria. Generally speaking, when the students did set goals, they tended to be vague, lacking specificity, clear criteria, or a plan of attainment. Their general plan of attack seemed to be to choose

something to play, find mistakes as they play through them, and fix them as they practiced.

Once students identified mistakes, they were more able to set goals. Sarah emphasized this concept of "on the go" remedial goal setting by saying, "When I practice, I sometimes mess up somewhere and say, 'oh, I want to get this done.' But before, I don't say I want to get these 6 measures done. It's actually after I practice that I think, 'Oh that was good. I got that one part done.' I think I did accomplish a goal, but didn't set it." (Focus Group #1).

What They Play

The first thing one must do to create a specific practice goal is to choose something to practice. Codes that related to the goal setting of all six participants centered on the music that the students decided to play and these decisions were based on four factors: routine, challenge, concert preparation, and enjoyment.

Routine

All six of the students exhibited some form of routine in their practice that consisted of scale work, work on teacher-assigned material, and, often, performance of music based on student choice. In my analysis I also noticed a glaring omission in all of the students' routines. No practice sessions started with a deliberate focus on tone quality. There were no long tones played by any student in any of the eighteen practice sessions for the purpose of developing tone and only the two eighth grade students mentioned that they listened to and adjusted their tone during their initial scale exercises. Not one of the

seventh grade students deliberately focused upon improving his or her tone quality during their warm-up.

This lack of focus could be attributed to a lack of an aural image of a characteristic tone for their instruments. Because students have not listened to a large amount of instrumental music in their past, they may not have heard enough examples of characteristic tone to have developed an aural goal for how their tone should sound. Ms. Zingerman continually tries to add to the students' aural image through a daily listening activity at the beginning of each class. Sarah, the student with the most characteristic tone on her particular instrument, has an older sister who is also a good flute player. Therefore, Sarah has continually heard a model of a more developed tone than hers since before she started playing flute.

All of the students except Amy mentioned doing something in the form of a warm-up, but none of the students seemed to have a clear and complete understanding of the purpose for a warm-up. Scott described the purpose of a warm-up as, "to get ready to play. Like, mostly get my lips ready and to get rhythms into my head that I might be using." Nick described it saying, "It'll get your instrument warm and your notes set." Mandy said, "It gets your mouth warmed up. Because, depending on what your instrument is, you have to have a different embouchure." (Focus Group #2).

The students have been given daily direction in warm-ups. Ms. Zingerman has a consistent warm-up routine and has her bands begin the day playing various scales in whole notes. She acknowledged that her students often seem to not focus on the purpose of the exercise and said, "I occasionally stop and say, 'hey guys, what were you thinking about when we were doing that? How many of you were on automatic pilot? Raise your

hand. Alright, let's do that again, and really think about your tone, and changing notes at the same time.'" (Ms. Zingerman interview). The purpose of developing tone through long tone exercises as part of warm-ups seems to have been missed by the students.

The effective practice of scales is important in the motor learning of novice instrumentalists, because this activity helps students develop general motor programs that can then be transferred to music of the same key (Sanders, 2004). The students in this study played through various scales as part of their practice in 17 of the 18 practice sessions I videotaped. Upon further comparison of the cases, it became apparent that the students chose to play their scales for slightly different purposes. Matthew, the student Ms. Zingerman called a "scale fiend," played eleven different scales in his first practice session in order to be prepared for the final scale test at the end of the year. Scott and Sarah played scales at the beginning of each practice session because that was what they were taught to do. Amy stated that she had no idea why she was supposed to play scales, but she played them because she was supposed to. Nick played scales that were to be assessed in class and he played other scales seemingly as a way to pass away the time, as did Amy. Mandy practice the fewest amount of scales. The scales she played were the first two scales introduced in her book (Bb and Eb major) and the chromatic scale that was soon to be tested by Ms. Zingerman.

A second consistent piece of each student's practice routine included playing through material assigned by either Ms. Zingerman or their private teacher. The students are given a "daily assignment" to prepare for the next class. According to Ms. Zingerman, "I'll tell them which line we're going to do out of the book, and they can pretty much guarantee we're going to do the scale (for that key) too. And usually what

I'll do with the concert pieces we're working on, I'll assign them a chunk of it and say that's what they're supposed to work on." (Ms. Zingerman interview). These daily assignments occurred consistently and the students were given instruction regarding what they should focus on as they practice. According to Ms. Zingerman, "if I see something that might trip them up, I'll point it out."

The three students who take private instrumental instruction also practiced music assigned them by their private teacher. Sarah does not practice her band music because it is easy for her. Instead, at the beginning of each practice session, she took out her "private lessons notebook" that included her weekly assignments and the concepts to focus on with each assignment. Her assignments consistently include scale work, etudes, and solos. Mandy's teacher assigned lines from her band book and a solo that she played for a solo and ensemble festival.

Challenge

Once the students played through their scales and assignments, their choices of what to practice became more varied. One common factor in their choice of what to play was the desire to be challenged to an appropriate degree. Each student seemed to search for music that fit within their personal comfort level, similar to the concept of flow as explained by Csikszentmihalyi (Csikszentmihalyi, 1991). This comfort level was unique for each student. While Nick stated that he relishes a challenge, Mandy said, "I don't want to do something that's super easy, but I don't want to do something that's super hard." Amy wanted little challenge, declaring that she wanted to play, "something I can do." Sarah stated, "I don't want to play a hard piece and play it bad. But I'd rather play an

OK piece that might be a challenge for me, but I can still play it well. I don't want to do bad at it. But I don't want to play an easy piece" (Focus Group #1).

The students found their challenges in a number of ways. Nick and Matthew were each involved with the challenge of auditioning for a regional middle school honor band and were involved in practicing audition music during their first two practice sessions. Sarah was consistently challenged through the assignments given to her by her private teacher, as she practiced an etude from a high school level method book and a Baroque sonata. Scott found his challenge in composition. Matthew also practiced from a book of pop solos and the Rubank Concert and Contest Collection. Mandy and Amy, the two weakest musicians, seemed to find sufficient challenge in the music from their band book. Amy stated that she had a book of Disney songs, but she had never used it. Mandy also played solos that were assigned by her private instructor, but she would not practice them in our sessions.

Csikszentmihalyi's flow theory describes the consequences of working with material that is not at the optimal challenge level (Csikszentmihalyi, 1991). Performing overly easy tasks often causes boredom and a lack of effort, while performing overly difficult tasks often causes frustration and the tendency to quit. On numerous occasions, both Mandy and Amy physically showed signs of frustration with the music they were attempting to play, and many times, they quit practicing their music and moved on to another task, saying things such as, "Never mind. I'll practice that later," (Amy, Concurrent Report #2). Nick felt that the music in the book was too easy for him and that, "these pieces are too easy. And. . . I don't know. . . it's like –They're too easy and I'm getting sloppy with them. That's probably why I'm making mistakes. I need harder music.

. . . Because you get kind of sloppy. Well I do. I get kind of sloppy. . ." (Nick Reflective Interview #3).

Concert Preparation

The students made many of their choices based upon various performances that were on the horizon. In all but one instance, I witnessed examples of students practicing the assignment that was due for the next rehearsal, the material that was to be tested, concert music, or music that was to be performed as a solo. Scott's last practice session did not focus on performance. Instead, he spent the whole time (aside from the gratuitous Bb major warm-up) playing through the trombone and tuba parts of his composition.

Ms. Zingerman regularly assigns playing tests in her band classes that are either lines selected from the students' band book or scales and scale patterns. It seems that one of her purposes for these tests is to assess how well students can learn music on their own, because she purposely does not work on the test music in class, though she does help them by focusing their attention on items that may "trip them up." All of the students but Sarah spent some portion of their three practice sessions preparing for an upcoming test. Once again, though, they were unable to specifically explain what section of the test or what aspect of playing they planned to improve in their practice.

Ms. Zingerman uses a "feedback sheet" as a way to inform the students of their strengths and weaknesses after they take their tests. This sheet has space for comments as well as numbers of specific comments for each instrument that she can simply check if it applies to the student's performance. This feedback then implies goals for students on their future tests. Though Scott has been given this feedback, he seems to have not done

much with it. According to Ms. Zingerman, he "is inconsistent. He does not keep his air moving. And he gets that comment back on every feedback sheet." (Ms. Zingerman Interview).

All of the participants also regularly practiced solo music or band music in preparation for a concert. Without exception, this practice consisted of simply starting at the beginning of the piece and playing through to the end. Scott even counted all the way through multiple eight measure rests during his practice of a band piece.

While their purpose was to improve their performance of the music, none of the students was able to identify a specific spot in the music that they wanted to improve or describe remedial goals that would help them reach the larger goal of performing the music accurately. When asked, the students commonly stated that they had no goal as they practiced their songs. Matthew provided the closest goal for a concert piece, saying, "Here I'm working on overall key and style to make sure it sounds like it's supposed to and make the harmony parts sound like harmony and that I don't try to take them over." (Matthew, Concurrent Report #2).

Enjoyment

Balanced with a desire for a challenge was a desire to play songs the students enjoyed. These were generally the songs that they already knew and felt like they could be successful at performing. This choice of 'fun' music could be explained in a number of ways. For Mandy and Amy, the choice of fun music was often an avoidance strategy. They chose easier pieces in order to obtain success. Matthew, on the other hand, chose to play something fun as a way to give himself a break. This is in line with Ericsson et al.,

who state that the process of deliberate practice requires an immense amount of concentration that novice musicians can only sustain for short amounts of time (Ericsson et al., 1993).

Time vs. Improvement

To the students in this study, it seems that the key unspoken goal in their practice is to put in the expected time on their instrument. This unspoken goal was actually affirmed by Nick as he declared that his practice goal was, "to play for a half an hour" (Focus Group #1). Because a portion of their grade was based on the time they recorded on their practice sheets, this was a necessary goal, even though the students all recognized that the purpose of practice was to improve their skills.

This emphasis on time in the students' practice may have an effect upon their focus on improvement. When quantity is the factor being measured, the students were not focused on improving quality in their practice. Therefore, improvement oriented goals were not emphasized. Instead, it became apparent that practice could simply become synonymous with playing through music. Quantity of time became equivalent to the quantity of music one "plowed through" in a sitting. This is exemplified by the majority of practice sessions in which students spent an average of less than two minutes on each piece they practiced.

Students were more focused on playing through their music than on improving certain sections. Students commonly stated that they were going to "do" or "play" a certain song or exercise rather than "work on" or "study" their music. Consequently, students began practicing every one of their pieces from the beginning. At no time did a

student begin their practice of a song or exercise by first addressing an issue in the middle of a piece.

Priorities

Generally speaking, the students in this study seldom talked about goals. Student responses to my questions probes about their goals were either, "I don't know," or "I don't have a goal." As I probed further, I found that the students have not been overtly taught about goal setting in any of their classes at school.

Though they had no conscious goals as described by Schunk (2001), they were often able to tell me what element of performance upon which they were focusing. During the first Retrospective Reports, I asked each student to prioritize the amount of emphasis that they tended to give to rhythm, tone, notes, articulation, dynamics & style. Then, as we progressed, I continued to ask what they were focusing on in their verbal report sessions.

The responses I received from the initial question were quite varied. Sarah and Amy felt that they put more thought into playing the right notes than on anything else, while Mandy and Nick felt they put the least thought into notes. Scott, Mandy and Matthew felt they put more thought into rhythms while Nick said he paid most of his attention to dynamics. Sarah rated tone as her third priority while the rest of the participants placed tone in fifth or sixth place.

Through the analysis of the student's verbal report comments, it seems that student priorities are much more similar than originally reported. In essence, all of the students gave top priority to rhythm and notes followed by articulation and dynamics.

Tone and style consistently were given the least emphasis. Amy, Scott, and Mandy paid little attention to any elements aside from notes and rhythms, while Nick also focused on dynamics. Only the two eighth grade participants spent a significant amount of effort on all six elements, suggesting that the ability to focus at a higher level may be related to development.

Sarah, the most accomplished musician of the cohort, also spent by far the most effort attending to her tone quality. The seventh grade participants spent little time focused on tone even though a great deal of the troubles they encountered could be attributed to unsteady tone quality. The importance of developing a steady, controlled tone was emphasized by Ms. Zingerman as she stated, "But tone is always there. Even from the beginning . . . I don't really address it unless there's a problem. I mean if they're playing with a good tone, I don't say, 'let's think about tone.' But if there's something that's annoying me, I'm going to make them stop!" (Ms. Z Interview).

Assessment

I analyzed a total of 936 instances related to assessment from 61 different codes. I then winnowed these into a list of 22 secondary codes. From this list of codes, five categories of codes emerged relating to the ways in which the students used assessment in their practice. These categories include: student evaluation vs. assessment, teacher influence, detection (and non-detection) of mistakes, diagnosis of cause, and deciding when something is learned well enough.

Evaluation vs. Assessment

The purpose of assessment is to provide specific, usable feedback to inform teaching. Good assessments should delineate a target, provide feedback regarding where a student is in relation to a target, and help students close the gap between target and reality (Stiggins, 2001). Evaluations are designed to place value on performance, rank, and sort and do not necessarily provide the feedback required to inform future learning. In short, assessments and evaluations are not synonymous.

At times, the participants in this study evaluated their performance rather than assessed it. A total of 40 instances coded as evaluation revealed comments such as "that was good," or "I'm not very good at it," most of which were made by the seventh grade students. These general, value-laden comments were given rather than comments related to a specific dimension that needed work or was done well. These comments in turn did little to help students set goals to address their performance. Instead, the students set vague goals or set no goals at all.

Teacher Influence

According to Stiggins (2001), well designed assessments include clear targets with defined dimensions of performance, appropriate assessment strategies, student involvement, and effective feedback. Through the use of her feedback sheet, Ms. Zingerman provided an effective source of information for the students. Students were provided with feedback regarding their performance after each playing test. Students were then able to refer back to this sheet during their future practice in preparation for the next tests.

When asked what mistakes he tends to not catch, Nick replied, "rhythm, dynamics. Stuff Ms. Zingerman catches," emphasizing his need for supervision in his self-assessment. The students often used Ms. Zingerman or another more experienced person to help them detect mistakes. Also, Scott often practiced near father and mentioned that he would often detect Scott's mistakes and help him fix them. Mandy mentioned that her brother often helped her catch mistakes when she practiced at home.

Detection (and Non-Detection) of Mistakes

This was by far the largest code in the data base. As I analyzed the data, I added sub-codes including notes, rhythm, dynamics, articulation, and tone to many of the instances that were labeled detection and non-detection. I also created another code labeled ignored mistakes. I tallied 383 instances in which students detected mistakes. Of those instances, 16 were coded as articulation, 10 were coded as tone, 7 were coded as dynamics, 32 were coded as rhythm, and 186 were coded as notes. I also tallied 184 instances in which students did not detect what I felt were obvious mistakes. Of those instances, 7 were coded as articulation, 12 were coded as tone, 3 were coded as dynamics, 101 were coded as rhythm, and only 13 were coded as notes. Finally, I tallied 88 instances in which it seemed, by the students' expressions, that they may have chosen to ignore mistakes rather than not detected them. Many of these mistakes were tone related issues in which tones squeaked or did not immediately speak.

It must first be stated that the instances in this study could be coded in multiple ways. Therefore the accuracy of the numbers listed above can be questioned. They do, however, point to two items that deserve attention. First, the priorities students place on

the elements of performance seems to affect the elements of performance that they are able to detect. Students placed their greatest emphasis on notes and rhythm while they practiced and consequently detected more note and rhythm mistakes than any of the other elements.

The second point that needs to be made is that there were opposite and similarly large differences between student detection and non-detection of notes and rhythms. Students were much more likely to detect note mistakes than rhythm mistakes and much more likely to miss rhythm mistakes than note mistakes. This is similar to McPherson's findings (1997) and could possibly be due to the nature of the two elements. First, the students played instruments that would produce a relatively accurate pitch simply by pushing the correct keys or moving the slide to the correct spot and creating the correct amount of lip pressure without necessarily audiating the pitch to be made. This ability to produce a pitch without actually audiating the pitch can serve as a support for musicians who need help producing the correct notes.

The process of playing the correct note on some wind instruments can, in effect, be more dependent upon decoding skills and tactile response than on audiation. The non-detected note mistakes that did occur were usually missed key signatures as students played the notes they cognitively knew, and lacked the aural syntax to detect notes outside of the established tonality.

But, while students are provided an opportunity to produce correct notes without audiating pitch, this is not the case for rhythm. They have no such means of support. Students must feel an underlying macrobeat and microbeat in order to perform rhythm patterns correctly (Gordon, 2003). In order for students to perform rhythm accurately,

they must have the skill to decode notation, understand its relation to the pulse, and be able to kinesthetically produce the accurate response in time. Because rhythmic performance does not have the means of visual/kinesthetic scaffolding that tonal performance has, students may not be capable of performing and assessing at as advanced a level. Instead, they may have chosen to focus even more on producing the correct notes, because they had the necessary tools at their disposal to be successful at that.

This point seems to be supported by the data from this study, because the majority of the rhythm mistakes the students were unable to detect were the advanced rhythm patterns, given the material being introduced in the students' band class. The second most common rhythm mistake students could not detect was inconsistent pulse. This can be explained by examining the other factors students dealt with while trying to keep a steady beat. Namely, students were focused on playing the correct notes, and because this may have taken the majority of their attention, they were unable to notice what may have been a simple mistake to catch. It could also be that the students consciously chose to sacrifice a steady pulse in order to allow more time to perform the necessary actions to produce the correct pitches.

Furthermore, the participants seemed to ignore a large number of mistakes, the majority of which were problems with creating a steady tone. As I examined the practice sessions of Mandy and Nick, I noticed that they both detected rhythm problems near the beginning of their practice sessions and made comments regarding the difficulty of "getting the sound to come out." As they went deeper in their practice time, they began to ignore these problems and focused on other issues. This may be caused by a lack of strategies to correct the problem. Because they had no strategies to fix the issue, they

simply ignored the issue and focus their attention on things that they could correct, which was namely note issues.

Diagnosis

In order to diagnose the cause of a problem, one must first have a working knowledge of factors involved in creating the desired product and also an understanding of the factors that can create the problem. Diagnosis requires experience. In order to be effective at diagnosis, the students need to develop an ability to anticipate possible causes in various situations and understand personal tendencies. It is through experience that these skills are built.

The students in this study made relatively few attempts to figure out why the mistakes they made happened. The vast majority of diagnostic instances that did take place came from Sarah and Matthew, the two most experienced students. Nick also was able to diagnose the causes for some of his mistakes, and it should be noted that he was the most experienced musician among the four seventh grade students, given his four years playing piano, and he also had the benefit of a private teacher to help increase the quality of his experience. The only diagnosis I saw from the others was when they checked their instruments to make sure they were in working order.

Though Sarah, Matthew, and Nick were able to demonstrate some diagnostic ability, even they were unable to get to the root of most performance problems. The factor all three of them noticed the most was negative transfer. Typically, each of them could diagnose when they played a pattern or phrase the same way as a similar pattern they had previously played. Sarah noticed this when she said, "I start playing the same

thing over and over. I do that in piano a lot too. . . So if I know one part, I just keep playing it. And it (the music) ends up changing and I don't." (Sarah Retrospective Report #2).

When It's Learned Well Enough

To the students in this study, success seemed to be determined by whether or not they could play the notes of a piece. For the seventh grade students, it did not seem to matter if they played haltingly in a measure by measure matter, as long as the notes were played. For all the students but Sarah, their practice of a song or exercise was generally completed once they reached the end of the piece. This finding is similar to other findings that state that most beginning instrumentalists tend to play through entire pieces, rarely stopping to correct mistakes or practice sections of a piece longer than one measure (Gruson, 1988; Hallam, 1997; McPherson &Renwick, 2001; Pitts, Davidson & McPherson, 2000).

Motor control theory states that initial learning of a new skill requires a great number of repetitions. As the skill develops, it is ideal to have fewer repetitions (Sanders, 2004). Therefore, students ideally should repeat sections of their music a number of times before they move on. Instead, the participants tended to correct mistakes by repeating them correctly a single time and then moving on.

As already stated, a number of mistakes were not addressed at all. Nick especially ignored mistakes he knew he made. According to him, he noted where he made his mistakes and would fix them the next time he played the music. These mistakes never

were corrected though, as many of the same mistakes occurred in each of the three practiced sessions.

Students also decided to move on when they cognitively understood how to correct the mistake, seemingly rationalizing that cognitive understanding is the same as kinesthetic skill. Motor control theory, on the other hand, states that one must progress through stages of verbalization, performance and feedback in a closed-loop mode with many repetitions before one reaches the level of automaticity my participants assumed (Sanders, 2004). The students did not seem to realize the necessity of repetition in their practice.

Finally, the value the students placed on each assignment helped to determine the amount of effort they would put into learning a song or exercise as well as the level of performance they chose to pursue. All of the students seemed to put forth more effort toward practicing songs that were to be tested. Mandy and Sarah also mentioned that they consciously set higher criteria for solos than they do for exercises that would not be played in concert.

Strategies

Students learn more effectively when they are involved in experiences that engage multiple senses by using a variety of strategies during learning (Caine et al., 2005; Nielsen, 1999; Rosenthal, 1988). Hallam (2001b) states that development of these practice strategies and metacognitive skills is directly related to level of musical expertise. Expert musicians creatively plan strategies using imagery and self-assessment as key components of their practice while novice musicians tend to demonstrate a limited number of strategies in their own practice (Hallam, 2001b; Nielsen, 1997, 2004). Barry &

Hallam (2002) believe this is the case partly because novices often have difficulty paying attention to the most important information during new experiences.

These findings resonate well with the findings of the present study. The students in this study were able to discuss a variety of practice strategies, but in the context of their practice they drew upon a limited number of strategies that were generally aimed at the musical element dominating their attention. This meant that, for the most part, practice strategies were aimed at helping the students play the correct notes. Also, the two eighth grade students utilized a wider variety of strategies than the less experienced seventh grade students, suggesting that their experience, maturity and higher level of proficiency may have allowed them to develop a larger strategy repertoire.

Guerrero (2004) suggested that a disconnect may exist between the strategies that novice instrumental students know they should use and the ones the actually do use. Students in this study demonstrated a similar phenomenon. Through interview and focus group data, I was able to record a variety of practice strategies that the students were able to describe and say they used. Though one or more of the participants did employ most of these strategies at some point (with varying degrees of effect), few were regularly used or described during the practice verbal report sessions. It may be that novice musicians must become confident with new strategy first before it can be a consistently used tool in their toolbox of strategies. Matthew described this phenomenon by saying,

> *It's like with experience, (experts) gain more tools to actually use to dig deeper. . . People like us, we just have basically a shovel. And we can basically go down so far before hitting rock. And then we have to find a*

new tool to get through it. The experts, they have drills and dynamite to blast through rocks and all kinds of other stuff. (Focus Group #2).

The students often had vague strategies in mind when faced with a problem that needed to be addressed. For example, when asked how he would address a problem he encountered in his practice, Scott said he would, "work on it more" (Scott, Retrospective Report #2). At other times, students had no strategies at all.

Nick *Right then was when I was really out of breath. I was gasping for air.*

Oare *Do you have a strategy to help you with that?*

Nick *Not really.*

Oare *Don't know one, or weren't thinking of one?*

Nick *I don't even know one.*

Teacher Instruction

Hallam (2001b) emphasizes the imperative that teachers develop methods to aid students in the development of self-regulative skills in conjunction with the development of performance skills. Ms. Zingerman has purposefully taught her students practice strategies, though she admits, "I don't have as organized approach as I probably should" (Ms. Zingerman Interview). New strategies are taught through modeling of strategies as "teachable moments" arise:.

Mostly, we'll talk about practicing when we're doing something in class that is something they should be doing when they're practicing. Like if we

take a section, and we slow it down. Then we gradually speed it up. Then I'll say, "Hey guys, what did we just do?" And now they know the answer, and they say, "We practiced." And then I'll say, "That is really the best way to do something like this. When you're at home, slow it down, don't just plow through it. (Ms. Zingerman Interview)

Though the participants have regularly been given guidance in practice strategies, they were often unable to describe the strategies they have learned. More comments regarding practice strategies they learned came from students who had private teachers. Sarah was especially good at discussing strategies her private teacher has taught her to help with tone and technique, but when asked if anybody had taught her specific practice strategies, she said, "no" (Focus Group #2). Kostka (2002) has also found a discrepancy in student and teacher perception about instruction regarding practice strategies.

Even when students did acknowledge being taught practice strategies, they often did not utilize them. In some instances this was because they did not believe the strategies would work. For example, when asked if her teachers had taught her to learn small amounts each day as she prepares a larger work, Sarah said, "Well, they probably have, but I don't usually do it. Because I don't think it really works." (Sarah, Retrospective Report #2). When Amy was asked if anyone had taught her how to learn pieces by learning them in chunks, she replied, "Yeah. Ms. Zingerman, but I don't think of it that way. You learn faster if you do just the whole thing, and just . . . Fix the one part that you're worst at. Because then if you do it part by part, you're just going to forget." (Amy, Retrospective Report #3).

Strategy Repertoire

All of the students in this study had a small repertoire of strategies that they consistently used in their practice. Often times though, these strategies were ineffective because the students misunderstood learning principles upon which the strategies were based.

I labeled one strategy that was used many times by all participants as "On the Go Correction." This label was used for instances in which students identified mistakes, but obviously made adjustments, or attempted to make adjustments, while still playing. Students often did this, with varying degrees of success, in relation to tone quality problems. For example, when having a particularly difficult time getting a low note to speak, Nick said, "I was just trying to see if maybe it was just that one note. Or if I could keep playing and get it better." (Nick, Retrospective Report #1). Scott also used this strategy after playing a rhythm incorrectly. Since the rhythm pattern was repeated shortly after his mistake, Scott corrected the next iteration of the rhythm, considering this a correction of the original mistake (Scott, Concurrent Report #2).

A second strategy students used was to move to the steady beat by tapping their feet. Gordon (2003) states that macrobeats, microbeats, and rhythm patterns establish rhythm. All three must be audiated concurrently in order to create a fluid, consistent pulse within the music. The students used movement to support this feeling of pulse.

Mandy used this technique inconsistently, saying, "That's because I do that sometimes when I think I'm going to mess up." (Mandy, Retrospective Report #1). Through further observation, I realized that her sense of meter and tempo was related to the difficulty of the rhythm. She could feel a steady pulse when playing easy rhythms, but

her foot would tap inconsistently or not at all when she played rhythms that were new to her, such as dotted quarter note patterns and syncopations. Scott and Amy both had difficulty tapping their toes to a steady beat, but were also more successful when playing simple rhythm patterns or when playing a melodic line. Amy said that she only taps her foot "in class because Ms. Zingerman tells us to." (Focus Group #2).

The students mentioned the use of a metronome to help them audiate the pulse, but each stated that they tend to not use it. According to Scott, "I just get annoyed by it because just keeps going tick tick tick tick tick. . ." (Focus Group #2). All of the participants also mentioned that they often heard the band playing the music in their head while they played. This audiation of an underlying accompaniment helped them keep track as if they were playing with a karaoke machine or computerized accompaniment programs such as Coda's *Smart Music*© and PG Music's *Band in a Box*©.

Students used rhythm syllables with varying degrees of success and frequency. Sarah mentioned that she moves back and forth between using rhythm syllables and simply saying bum. "Well I do both because I do the counting with the numbers, like one and two - when I'm not really positive how it's supposed to be in the measure. So if I know what the rhythm's supposed to be I go bum bum bum and I don't count." (Sarah, Retrospective Report #2). Michael said he counts, "Sometimes in my head, but normally not." (Michael, Retrospective Report #2). For the seventh grade students, rhythm was a problem, and counting did not seem to help.

I asked each of the students to count the rhythms in some of the pieces they practiced and quickly found three problems. First, they did not have a firm understanding of the way in which they should count rhythms that were new to them. Perhaps this

problem will be alleviated with experience. Second, five of the six students often did not maintain a steady pulse while they said the syllables, seemingly lacking an understanding of the relationship of pulse to rhythm. Finally, the students did not understand the concept of meter, therefore causing problems as they tried to count rhythms that were tied over a bar line.

The two most common practice strategies mentioned and used were repetition and slowing down the music. Motor control theory stresses the importance of repetition as one begins to develop automaticity. Sanders (2004) also emphasized the importance of practicing the same motor movements in various ways (change tempi, dynamic, finger pattern, etc.) in order to create a rich base from which to transfer the skills to other situations. It is this principle from which the strategies of repetition and changing the tempo are derived.

Each of the students in this study deliberately used a slower tempo as a strategy in their practice, but they only did this in the difficult spots. Students would start playing through a song at a performance tempo and then suddenly slow down when their technique was not sufficient to successfully play the music. Once they passed through the difficult section, the tempo increased. While the students were able to accurately repeat the finger patterns involved in the music they practiced, they lost a steady tempo, sacrificing correct rhythm for correct notes.

I recorded almost 400 instances in which students used repetition as a practice strategy, but only found a handful of times that students correctly repeated a section more than one time. The standard use of repetition by all six participants was to move forward once a pattern was played correctly one time. In the context of their interviews, they all

stated that they repeated phrases and patterns multiple times, but again their actions did not reflect their words. Gruson (1988) and Hallam (2001) also found that students frequently use repetition of short segments, measures, and single notes as a practice strategy.

Sanders (2004) stated that three correct repetitions of a motor behavior before progressing seems to be the ideal number of repetitions to improve retention and transfer. Students in this study did not seem to understand the value of multiple correct repetitions in learning. Perhaps they do not understand the difference between cognitive and motor learning and therefore believe that having an understanding of what they need to do from a motor skill standpoint is sufficient to produce the desired result.

Gruson (1981) found that more competent practicers used repetition to develop automated skills, leading to less conscious control of motion. Ericsson and Lehmann (1997) stressed that repetition leads to improved performance only if the level of effort put forth by the musician is maintained by attending to more elements of the music being performed. Otherwise, performers may experience mental slips. Nick acknowledged this experience as he stated, "These pieces are too easy. . . They're too easy and I'm getting sloppy with them. That's probably why I'm making mistakes." (Nick, Retrospective Report #3). Sarah recognized this in her playing when she relayed a story of an experience when she began thinking of her friend as she played in a piano recital, saying "I started laughing while I was playing it. It was the weirdest thing ever because I have (the music) so memorized that I didn't think about it at all."

Non-playing

Caine et al., (2005) claim that students increase learning when new patterns are linked to what they already understand. By analyzing the music one plays, she is able to make connections with previous learning (Barry & Hallam, 2002). Geurrero (2004) found that students would often draw on previous musical knowledge while practicing. On the other hand, other researchers have found that novice students are often unable to transfer theoretical knowledge of music to the learning of the pieces they are playing (Barry & Hallam, 2002). I found a number of instances in this study in which students did draw on prior knowledge and other instances when they did not. When asked if she understood why Ms. Zingerman has the students practice scales, Amy said, "I have no idea why we do it. It's so boring." (Amy, Retrospective Report #3). Matthew and Mandy, however, claimed that they did recognize scale patterns in their music.

Aural Image

Hallam (2001b) found that students needed to develop an "appropriate aural schemata" in order to effectively choose appropriate practice strategies and to identify and correct their mistakes. This finding was strongly echoed in the current study. Each student mentioned the need to know what the music sounded like before they played it. They were able to accomplish this in a number of ways. I recorded numerous instances in which students declared that they had prior experience with the songs they worked on, generally by having heard recordings of the music. Other instances mentioned hearing the music modeled by Ms. Zingerman or by peers. Amy and Matthew also mentioned the strategy of not practicing their music at home until they had heard it enough times at

school. When asked how he would learn a difficult piece of music, Matthew explained his strategy by saying, "I might go ask for help, depending on who's around. I might ask, 'what's this rhythm supposed to sound like' and things like that until I finally get a foundation to the music and know what it's supposed to sound like. Because, once you have a little bit of reference there, it makes it a little bit easier to understand." (Focus Group #2).

This need to hear the music before it can be learned could explain Ms. Zingerman's comments regarding Scott, as she said, "Once he's got something, he's got it." (Ms. Zingerman Interview). She made similar comments about Mandy and Matthew. It seems that the students learn their music through a combination of rote learning and reading. Once they are able to hear the music, they use the notation to remind them of the sounds in their head.

This necessity to have the sound in their heads before the notation made sense is especially important for rhythmic learning, because the students have no other tools to help them learn while they were able to rely somewhat on their instruments to inform their pitch. Sarah made the statement that she did not need to hear the music first when she sight read simple pieces for band, but she needed to hear the hard music given to her by her private teacher. As I probed further, it became apparent that Sarah did not need an aural presentation of the easy band music, because it was simple enough that she could already hear it in her head. However, the etudes and solos she played in her private lessons were challenging. She had not yet developed the sight-reading or aural skills to perform that music fluently at sight. Again, this was especially true when dealing with rhythm.

Motivation

As I observed and analyzed data, I found that motivation played a large part in student choices regarding what they played and how they played it. I recorded 262 instances that seemed to be influenced by student motivation. The primary sub-codes within this category were *attribution, avoidance, challenge, choice, ego, frustration, fun, improvement, laziness, locus, performance, success*, and *teacher*. Primarily, I interpreted these actions through the motivational lenses of attribution theory (Maehr et al., 2002) and goal orientation theory (Radosevich et al., 2004; Smith, 2005).

In attribution theory, people tend to interpret their environment in ways that will serve to support a positive self-image. They will generally attribute their successes or failures to the three factors of locus, stability, and control that will enable them to feel as good as possible about themselves. The causes to which persons choose to attribute success and failure have a tremendous impact on the amount of effort they will be willing to put forth in the future. One way in which students attributed external cause to their poor playing was to assume that the causes of their problems were due to their instruments. Mandy blamed her reed, Sarah and Amy checked their head joints, and Nick reminded me that he practiced at home on a tenor saxophone and was therefore not used to the bigger baritone saxophone mouthpiece. Scott consistently demonstrated his positive internal locus by recognizing that his successes and failures were due to his effort. Mandy blamed the fact that she wanted to quit practicing on the external factor of the music she had been assigned, over which she had no control. Amy attributed her lack of success in band to her lack of ability and made the ultimate decision regarding her future effort by choosing to quit band.

Goal Orientation

A central principle of goal orientation theory is that goal orientation influences the affective, cognitive, and behavioral reactions of individuals in achievement situations. When learning goals are set in order to increase competence, people tend to respond to failure by increasing their effort (Radosevich et al., 2004). When students have a performance goal orientation, they either seek favorable judgments or avoid unfavorable judgments in the eyes of themselves and others. These are called ego approach and ego avoid goal orientations. People who generally demonstrate ego avoid goal orientations are likely to avoid challenges unless they are certain they can succeed, and they tend to respond to failure with feelings of learned helplessness (Radosevich et al., 2004). People who generally demonstrate ego approach goal orientations are likely to relish challenges that allow them to show others what they can do.

Goal orientation seems to have played a significant role in the decisions many of the participants made during their practice. Mandy and Amy both tended toward an avoidance orientation in order to avoid failure. Because of this, both students consistently chose to practice pieces they already could play. On many occasions, they ceased practicing exercises that they were having difficulty with and moved on to other activities that would guarantee success. At one point in her practice, Amy had turned to her daily assignment. She made her first mistake in the first phrase and tried to play it again. The third time she made the same mistake she stopped and began to turn the page saying, with a tone of frustration, "Never mind. Never mind. I don't know how to do that. It's too hard. I'll just do my scales." (Amy, Concurrent Report #3).

Matthew, on the other hand, consistently demonstrated a performance approach orientation. He was interested in being able to show others what he could do, as he expressed when he said, "When I practice stuff, I want to learn it to be able to perform it. Because if I'm just practicing something that I'm not going to be able to perform or show off, why am I practicing it?" (Focus Group #2).

Sarah seems to reflect Radosevich's position that adopting different goal orientations at different phases of practice may be beneficial (2004). Sarah's comments often hinted that she was motivated by improvement, but she also chose to put more emphasis on pieces that were eventually to be performed. This was made clear when she stated, "I'm not saying it's a good thing, but if you're not performing it, then you don't have to practice it as much. I don't." (Focus Group 2).

It seemed that each student strived to find and play music that was within their personal ability level. They searched for challenges that were within their range of comfort. Amy said that she wants music that she knows she can play. Matthew and Nick wanted to play challenging music, while Sarah said she wants to play music that is challenging, but not impossible. The differences in the participants' levels of self-efficacy may help to explain the difference in their comfort level, as students with high self-efficacy tend to be more likely to choose more challenging tasks (McPherson and Zimmerman, 2002).

I asked each of the students what they would do if Ms. Zingerman gave them a difficult solo to play for the next solo and ensemble festival and received different reactions. Amy said, "I'd say this is too hard. I don't play it. It's too hard and my brain would hurt. So, like if I can't do it, there's no point in practicing, so I just get something

else that I can do." Nick confidently said, "I'd play it. I'd get back in two weeks and play it for you. Done. I'm good." (Focus Group #1). When I asked the eighth grade students, the following conversation took place:

Sarah	*Like way too hard, or you could work it out if you tried hard?*
Oare	*It's over your head, but not beyond you.*
Sarah	*I would just work it out and do it.*
Matthew	*I would probably work it out too.*
Oare	*When you got out your instrument to practice, would that be one of the first things that you would practice, or would it stay in the back of the folder?*
Sarah	*Wait. Is solo & ensemble soon? It seriously does depend!*

While each of the students tended to lean more strongly toward one of the three goal orientations, they each showed some signs of each orientation at some point in the study. Sarah, who seemed to be more learning oriented, mentioned avoiding a section of a piece she practiced because of its difficulty and also showed a hint of ego-approach as she said, "I don't want to go and play a piece that's too easy, because then it feels like you're not good enough." (Focus Group #1).

According to Radosevich (2004), students who are predominately learning goal oriented are more able to adjust their goals downward when confronted with challenges they are unable to meet than are students who are performance oriented. Sarah demonstrated an emerging form of this goal adjustment when confronted with a difficult section in her etude, but I was unable to identify this type of behavior in any of the other

students. This is most likely due to the students' low development of goal setting skills in the first place.

The result was that the students had to deal with failure without the benefit of readjusting their sights on more realistic targets. Many times, this resulted in various signs of frustration. While all students showed some degree of frustration through their body language or tone of voice, Amy and Mandy showed more frustration than the rest with multiple sighs, furrowed brows, curt words, and insults aimed at the music. When Sarah became frustrated, however, she simply stopped for a few seconds, laughed at herself and went on.

There could be a number of reasons for the difference in behavior between Sarah and Amy and Mandy. Because Sarah is older, she may have the benefit of an extra year of development in her executive functions, helping her to control her emotions more (Caine, 2005). Also, because of her learning orientation, she may be able to see progress toward the goal while the other two girls only see failure in reaching their goals.

Students were also extrinsically motivated when they practiced. The most obvious extrinsic motivation came from Ms. Zingerman. Weekly practice sheets were required in her band class with minimum amounts of practice expected to earn a grade. Students were also expected to prepare their daily assignments and to prepare for tests. They also were motivated to prepare for various performance opportunities from band concerts to solo and ensemble festival to studio master classes with their private teachers.

Finally, all of the students spent some time playing music of their own choice. Amy stated, "After I've done all that, usually I practice stuff out of the book. Just anything I like." (Amy, Concurrent Report #1). Michael began improvising just after

playing a particularly taxing piece of music during one of his practice sessions. He explained by saying, "Sometimes it's nice to give your lips and fingers a break just by doing something fun." (Michael, Concurrent Report #1). Other times, students played music not being played in band, such as Matthew's book of movie theme songs. During each of the eighteen practice sessions I viewed, students took some time to play some music of choice seemingly as a form of relaxation. This could be due to the position given by deliberate practice theorists who state that, because deliberate practice is a mentally taxing activity, it can only be undertaken for short periods of time (Ericsson & Lehmann, 1997). This point may suggest that students and teachers should be aware of this need and consciously plan both deliberate and enjoyable practice into their routines. This may help focus students toward improving specific aspects of playing, while allowing them to play at times in a more relaxed state.

Chapter Summary

I studied six unique individuals in this study, each with their own unique personality, goals, and experiences. Therefore, I obtained a wide variety of actions and responses related to the practice of young novice instrumental musicians. Though there was a wide variety in terms of responses and orientations among participants, it seems that a number of commonalities can be found that fit within the categories of goal setting, assessment, strategies, and motivation.

Students set few specific goals with clear criteria or plans of attainment. This tendency influenced their concept of practice as being a process in which one simply "runs through" songs with no clear purpose. Students were able to state their focus more

clearly when they had an aural image of the music they were playing. The musical elements that received the highest amount of attention from the students tended to be notes and rhythms. The priorities students gave to musical elements influenced both the goals they set and their ability to assess. The students' band teacher and private teachers also influenced the type and quality of goals set by the students.

Students often self-evaluated rather than self-assessed, and spent little time reflecting on progress and what they needed to do next. Their concept of success seemed to be predicated on whether or not they could play the notes of a piece in a measure by measure scheme, instead of being able to fluidly play complete pieces. They were able to detect mistakes of all kinds, but were much more astute at catching note mistakes. The students missed detecting rhythm mistakes more than any other. This could be due to a lack of understanding in regard to the linked relationships between macrobeat, microbeat, rhythm and meter. Students were also more capable of detecting mistakes when they had a strong aural image of the music they were playing. When this failed, they relied on the error detection skills of their teachers.

Because their band grade was affected by the amount of time they practice as opposed to their achievement in their practice, some of the students focused more on time and simply played through their music rather than strive for improvement. This led to the students attempting to correct mistakes in the context of playing through the music rather than isolating them. They seemed to have knowledge of a larger strategy repertoire than they were prone to use, which may be due to the developmental process and to a lack of knowledge of key principles of learning. The most common strategies used were repetition and playing through music slowly, though neither strategy was consistently or

effectively employed. Finally, students admitted that they were more likely to use effective strategies when practicing music they were preparing for performance.

The goal orientation of each student also had an effect on the specificity of goals and on the music students chose to practice. Students who exhibited more of an improvement orientation were able to practice longer, persevere through challenges more, and choose improvement-oriented music more than ego avoid students. Students who had lower self-efficacies and ego avoid orientations tended to avoid difficult music and give up more easily. Students dealt with frustration in multiple ways that had an effect upon their ability and motivation to correct problems. Students were able to show more effort and perseverance when playing assigned music. They also demonstrated a desire to play music at their comfort level and to play fun music as a way to relax after concentrated practice.

CHAPTER 6

SEWING IT UP: THREADS AND IMPLICATIONS

The previous two chapters provided within case and cross case analyses of the practice habits of six individual novice band students. The analysis looked at practice through the themes of goal setting, self-assessment, strategy use, and motivation. In this chapter I will suggest implications for instrumental music education based upon these four themes. I will then discuss three further threads that weaved themselves into each of the four themes, and then suggest further educational implications. These threads include the use of an aural image in practice, teacher influence, and the spiraling development of practice skills. Finally, I will propose a model of the development of effective practice skills for novice instrumentalists and argue for the development of a sequential curriculum for developing practice skills to be weaved into all levels of American instrumental school music programs.

Motivation

Summary

Student motivation is a key ingredient in practice. The students in this study who exhibited more motivation to learn seemed show less frustration, set slightly more clear goals, and persevere longer on each activity than those who did not focus on learning. Students who exhibited more of an avoidance goal orientation seemed to get frustrated easily, persevere less, and choose less challenging music. Student seemed to be more motivated to practice effectively when they were playing music that would eventually be performed or when playing music that they liked. They also emphasized a need to have

music that challenged them at their own, individual level, without being too easy or too difficult.

Student motivation seemed to effect and be effected by other key factors in practice. Student goals and motivation were closely linked as they related to individual goal orientation. Next, because practice grades were based on quantity of practice instead of quality, the students naturally seemed to focus on putting in the time without focusing on improvement. The practice strategies they chose were based partly upon the degree of effort they were willing to invest. Also, the quality of each student's self-assessment provided information that created either hope or discouragement.

Other factors also had an effect on student motivation in practice. Ms. Zingerman and private instructors influenced motivation extrinsically through the assignments they gave. The aural examples provided by exemplary individuals and groups, such as marching bands, jazz bands, rock artists, the high school band, and their private teachers, also gave students the encouragement to emulate their models. Finally, the physiological development of each student's own mental executive functions have an impact on motivation as students become more capable of using reason, engaging in risk assessment, moderating emotions, and working with longer time horizons (Caine, et al., 2005).

Implications

These findings may imply a number of suggestions that teachers could consider as they attempt to improve student motivation in relation to effective practice. First, teachers could focus the emphasis of their practice assignments on individual improvement rather

than the quantity of practice or performance in relation to others. Students in this study and other studies (Radosevich, et al., 2004; Smith, 2005) seem to practice more effectively when they are focused on individual learning. When students put more of their emphasis on the simple passage of time with their instruments in hand, or the demonstration of their proficiency to others, they had a tendency to play through their music rather than break it down and improve it.

Second, students may develop greater motivation when they have a modicum of control over their own assessment and goals. Stiggins (2001) states that by providing students with clear goals and performance criteria, and then involving them in their own assessment, they begin to attribute their success and failure to their own effort. By teaching students to set clear goals and how to assess themselves using descriptive rather than evaluative comments, they may develop a better understanding of what must happen in order to meet their goals. This, in turn, will improve motivation by developing an internal locus of control and allowing students to attribute their success or failure to their own actions and effort.

Finally, student motivation in practice may be improved when teachers differentiate instruction through the music they ask students to practice. The students in this study seemed to be more motivated when they worked on challenging music that was within their level of performance. By providing music for students that is not too difficult or too easy, teachers may help students to reach an optimal level of flow which will then act as a magnet for learning new skills with increasing difficulty or challenge (Csikszentmihalyi, 1991). This can be facilitated by involving students in chamber ensembles with other students who have similar skill levels. Student groups could be

formed and given opportunities to play their chamber music in local solo and ensemble festivals, during school concerts, and in small venues within the community. This type of opportunity can provide an appropriate challenge for students who may find the school band music either too easy or too difficult for their current ability.

Goals

Summary

The students in this study tended to set vague goals, essentially limiting their goals to simple statements of what they would play next. Students were generally unable to identify specific sections within the pieces they were playing that they planned to improve, and often could only focus on notes and rhythms as they played through their music. Because their goals were vague, the students were unable to set remedial goals to help them progress toward larger ones.

These limitations in their goal setting abilities had an effect on many other areas of student practice. Students had been assigned time-oriented practice sheets and, therefore, focused on putting in their time instead of setting clear learning goals. On the other hand, the daily assignments given by Ms. Zingerman provided goals and extrinsic motivation to work toward the goals. Also, the lack of specific goals had an effect on the practice strategies students chose. The choice of appropriate strategy is often based on the performance skill that is being addressed. But, since students did not identify what aspect of performance they were trying to improve, the students generally used few strategies. Finally, since the students often set unspecific goals, the criteria upon which they

assessed themselves was vague. Therefore, students were often unable to make assessments that would inform their learning.

Other factors also had an influence on student goal setting. Primarily, the presence of an aural image served as an important element in informing students of their performance goals. Also, students who had more musical experience seemed to have developed a more complex aural schema that helped them to anticipate musical problems and focus on correcting them. Next, Ms. Zingerman was able to influence student goals through her daily assignments and by informing her students of key performance elements that should be focused on in practice. Ms. Zingerman was also able to suggest long term improvement goals for students through the feedback sheets they received after every playing test. Finally, the more experienced students seemed to be slightly more able to create goals than the less experienced students. This could be due to their larger body of knowledge which allowed them to have a clearer image of their desired outcome. Also, the older students may also have physiologically benefited simply by having more highly developed executive functions that helped them plan and organize their thinking and think critically about desired outcomes.

Implications

Self-regulated learning relies in part on well developed goal setting abilities (McPherson & Zimmerman, 2002). A number of suggestions can be made that may help teachers develop this skill in their students. First, traditional music practice cards can be altered to place more emphasis on quality than on quantity. Teachers can create practice assignments that ask students to work toward defined weekly performance goals or ask

students to create goals of their own. Other practice assignments can provide students with long term goals, such as the preparation of a concert piece, and ask the students to break the goals into a number of remedial goals. Students can then keep track of their progress toward meeting the goals. By simply by changing the focus of an established teaching tool such as practice sheets, teachers can help students learn to set clear, proximal, and appropriately challenging goals for themselves.

Second, since students seem to need an aural image to use when practicing, perhaps band teachers should consider using more directed listening activities within their band classes. These activities can ask students to place special emphasis on different aspects of playing, depending on the teacher's learning objectives. For example, Ms. Zingerman used a daily listening activity at the beginning of each class. During this activity, students were asked to determine what type of performance group the music was written for, the purpose of the music, and the time period in which it was written. Teachers could also use this listening time to focus student attention on describing tone quality in specific instruments or identifying specific rhythms, meters, or tonalities in the music they listen to. Students could also be asked to physically show the beginning and ending of phrases, perhaps with rudimentary conducting gestures, or to identify form or simply show the pulse and meter of the music they listen to.

These listening activities can also be applied to the context of rehearsals. Often, in the name of preparing for a concert, teachers do the listening for the students. Since music is an aural art form, listening should be a key component in a child's musical development. Students should be led to identify sections that are not together or out of tune. They can be taught to listen for the form of the music they play and identify who is

playing the melody or an accompaniment line. They can listen to professional recordings of the concert music they are playing and discuss specific aspects of the performances that they can bring out in their own playing. Teachers can, and should, engage their students in a multitude of ways that encourage them to listen to themselves and to others.

Third, the students in this study all spent the most focused part of their practice time working on the daily assignments given by Ms. Zingerman. By consistently providing daily direction like this, teachers can model goal setting skills for their students. This activity can even be taken a few steps further by giving students specific criteria for their assignments and by teaching students to develop a set practice routine. Ms. Zingerman stated that she often gave her students specific criteria to strive for in the assignments she gave, but these criteria were seldom mentioned in the context of the data collection. Therefore, it may be appropriate for students to write down their assignments, along with the key areas of focus, just as they keep track of their assignments in other classes. This activity could be incorporated into the practice sheet activities suggested above.

Finally, the students in this study spent the majority of their effort working on the notes and rhythms of the songs they practiced. They each mentioned the process of learning music in stages, starting with the notes and rhythms and proceeding to the more musical aspects of performance. In practice, they seemed to feel that once they could play the notes and rhythms, their song was learned, neglecting the musical aspects of their pieces. Students must be taught and encouraged to strive for a deeper understanding and more musical performance as they learn their pieces. While this may be a developmental issue, teachers can do things to help students strive toward musicality. For example,

teachers could graphically show students where they are in the process of learning their music. Once they have learned the notes and rhythm of a piece, they have reached the end of the first stage, but by graphically showing progress, students will see that there is more to be done in preparing their piece. I have used a target with four concentric circles to symbolize the process of music preparation for my students. As they reached each stage of preparedness, we colored in the appropriate circle to visually show them where they were in the process and what they had left to do.

Strategies

Summary

Expert musicians use a wide range of practice strategies and create new strategies for specific purposes (Hallam, 2001a; Nielsen, 1999; Ericsson, et al., 1993). Rohwer and Polk (2006) also found that adolescent instrumental students who use a larger repertoire of practice strategies than other students were able to improve more while practicing a new musical exercise. Matthew perceptively expressed this concept as he explained that experts have multiple tools they can use for each situation while novice musicians only have a few tools in their toolbox to choose from. Each participant in this study truly did own a small 'toolbox,' and only a basic understanding of how to properly use each tool. They each had a slightly different number of tools that they had not yet learned to use properly. Each of the seventh grade students had particularly few strategies for tone development. This could be caused by a lack of a strong aural image of an ideal sound for their instrument.

The strategies the students used are linked closely with the other emergent themes. Students knew a few strategies but used them infrequently. This lack of motivation to use the strategies could have been due to a lack of desire to put forth the necessary effort or to a lack of confidence in the strategy. Also, the lack of clarity in student goals made it difficult for them to choose appropriate strategies. Finally, the strategies that the students chose had a direct effect on their improvement and on the feedback that student self-assessment could provide.

Many of the strategies the students used were modeled by their teacher. Ms. Zingerman stated that she often modeled practice strategies in the context of working on music in class. This aural example of practice strategies seems to have been more effective than simply telling the students how to use the strategies. As the students gained in experience, they were able to develop more strategies to use.

Implications

From these findings, a number of suggestions can be made for instrumental music teachers. First, it seems that the participants in this study needed to have a greater understanding of how they learn music to compliment the practice strategies they have been taught. It is important that students are taught a variety of strategies that address a range of performance issues and given guided practice to learn how to use the strategies effectively. Ms. Zingerman acknowledged that she had modeled strategies in class, but never overtly discussed the strategies and their proper use with her students. She also recognized that overt teaching of the strategies may be an appropriate teaching strategy to use in conjunction with finding 'teachable moments.'

Students should also learn the basic learning theories that support the strategies in addition to the strategies themselves. Teachers may find it helpful to overtly teach the basic premises of how learning takes place and why certain strategies work, and then immediately integrate new strategies into rehearsal. New strategies could be introduced and demonstrated over time as appropriate. Teachers can encourage students to become more deliberate in their choice of strategies by asking them to record the strategies they use on their practice sheets. As a result, they will begin to develop a larger toolbox along with a better understanding of how to use these "tools" effectively.

Next, the participants in this study used what knowledge they had developed as musicians to help them in their practice. Hallam (1997) found that expert musicians used musical analysis as a practice strategy more than novice musicians because they had a more developed base of knowledge to draw from. This finding suggests that band teachers should deliberately teach form, history, and music theory along with performance skills in order to provide students with the requisite knowledge to begin to analyze their music and find patterns that may help them in their practice. They should then model how this information can be used to aid in the learning of new music.

Finally, the findings from this study have enormous implications regarding how band students are often taught to read music. It seemed that the students put a great deal of emphasis in attempting to learn their music by ear before the notation they were reading made sense. This finding runs parallel with the philosophies of the major general music education methods such as Kodaly, Dalcroze, Suzuki and Music Learning Theory, that state that music should be learned from sound to sight. Gordon (2001) explains this by stating that students learn four hierarchical vocabularies of music. In this hierarchy, a

student's listening vocabulary is larger than his speaking/performing vocabulary. This vocabulary, in turn is larger than, and informs his or her reading and writing vocabularies.

Perhaps an effective strategy for band teachers to use would be to first provide recordings and live models of the music that their bands will perform. Teachers should remember that students will be able to hear and perform a wider array of material than they can truly read. Students can then be taught to associate the sounds they play with the notation they read. Students can constantly expand their performing abilities by ear while their reading abilities are gradually nurtured through daily reading activities of music that is below their performance capabilities. Gradually, over time, as Gordon has pointed out, students' reading and writing vocabularies can grow to become as large as their listening and performing vocabularies.

This type of teaching strategy can be enhanced through the use of technology. Teachers can record band rehearsals and allow the students to listen in class, or post the sound files on websites. They can also provide teacher-generated recordings of band music and/or lesson materials over the web. Computer programs such as *Smart Music*© are capable of providing students an aural image of their band music while they practice at home. The program can also act as a form of a hybridized rote/reading tool as students play songs from their band books. While they play the music generally by ear, the program follows the music on the screen with a large cursor. Therefore, the students are able to see the notes go by as they hear and play the music, giving them experience associating the sound with the symbol.

Assessment

Summary

Accurate self-assessment is another key ingredient to effective self-regulation. I found that the participants in this study were much more likely to detect note mistakes than rhythm mistakes, and, accordingly, much more likely to not detect rhythm mistakes than note mistakes. Once students did detect their mistakes, they were often unable to diagnose their underlying causes. This lack of ability to diagnose could be based in large part on the students' lack of experience and knowledge. Further, their lack of ability to detect mistakes could be based on their lack of a strong aural image of what their performances should sound like.

Students who can accurately self-assess are able to identify aspects of their playing that are strong or weak and other aspects that are improving. By identifying their success, they become more motivated to improve. Their self-assessments also inform the goals they set, as students learn what aspects of their playing need the most attention. Finally, through self assessing, students can begin to understand the effectiveness of strategies they choose.

Student self-assessment is affected by other factors as well. First, their ability to audiate the music they are assessing affects assessment, as students are able to compare their performance with an ideal mental model. The students' teacher in this study also had an effect as she informed students of what to listen for in their playing at home. Ms. Zingerman was also helpful as students used her to detect mistakes that they could not hear. Finally, the ability to detect and diagnose mistakes again is partially contingent

upon their musical development, as they apply their accumulated knowledge and experience to assess new situations.

Implications

There are five things that teachers can do to help them improve student ability in self-assessment. First, by providing detailed feedback sheets, such as the one used by Ms. Zingerman, teachers can provide specific feedback that students can then use in their practice. Second, by giving clear performance criteria before each test, teachers can help students begin to assess themselves and make adjustments to their performance as they prepare. Third, teachers can encourage independence by having students assess themselves and their peers in class. Fourth, teachers can suggest that students utilize parents, peers, or musically experienced siblings in their home practice as listeners to help them identify areas of their performance that need work. This strategy can also be facilitated with technology, such as using the assessment tool found in *Smart Music*© or by recording oneself. Finally, teachers can utilize practice sheets as a way to encourage self-assessment, by asking students to assess their progress toward the goals they set.

Further Threads

As I analyzed the data, three more themes began to emerge that seemed to be linked inextricably to each of the other themes. These new themes weave among and throughout all of the data in such a way as to suggest the presence of a second dimension of themes that ties the first dimension of themes together. These three new threads of themes are described as the *teacher influence* in learning, the influence of an *aural image*

on learning, and the *spiraling development* process adolescent learners move through as they gain in expertise. I will describe how each theme weaves itself into the context of instrumental music practice and suggest implications for teachers.

Teacher Influence

Summary

According to McPherson (2005), "Despite the importance for children to develop an armory of task-appropriate strategies to aid their performance, evidence suggests that school teachers do not sufficiently emphasize this in their teaching, particularly during the early years of schooling." Similarly, Hallam (2001a) found that it is possible for teachers to teach their students to practice effectively, once the students have developed a minimum level of proficiency on their instrument. The results of this current study also suggest that the teacher and other more experienced people in a young musician's life had a positive influence on helping students develop effective practice habits.

The students in this study experienced numerous forms of scaffolding from Ms. Zingerman that helped them work in the upper range of their zone of proximal development. First, Ms. Zingerman pointed out that she consciously uses 'teachable moments' to train her students how to practice within the context of band rehearsals. She helps them set goals by giving them daily assignments and directing their attention to areas that need to be focused on within the assignments. Ms. Zingerman also uses daily listening activities as a way to help her students develop an aural schema of Western art music.

Ms. Zingerman teaches her students how to use scaffolding tricks that they can apply to their own home practice. She consistently instructs her students to feel pulse and meter by moving to the music. She reminds them to use metronomes as a way to help them feel beat. She teaches them to count rhythm patterns in class and encourages them to do so at home. She models practice strategies such as repetition, adding small chunks together, and slowing down the tempo of difficult spots. She admitted, though, that she does not train her students how to analyze their music to help them find similar or repeated patterns that they can associate to prior learning.

Ms. Zingerman uses numerous methods to motivate her students to practice. The most obvious form of extrinsic motivation she uses to motivate her students to practice is in the form of weekly practice sheets in which part of each student's grade is based upon the number of minutes they practice in a week's time. Students are also motivated to practice because of the daily assignments she gives and the periodic playing tests she assigns. Finally, Ms. Zingerman helps motivate her students by involving them in chamber ensembles. In this way, she can choose appropriately challenging music for each child to allow them to work at their individual skill level.

Ms. Zingerman also encouraged student practice through her use of evaluative cycles that include both formative and summative forms of assessment tools. She uses the feedback sheets to identify students needing extra help. She then schedules special private tutoring sessions for these students either with her or with her student teachers. Ms. Zingerman also assigns tests, that serve to clarify the criteria that students need to focus on as they prepare for the evaluations. Then, as students take the tests, she provides

clear feedback through the use of feedback sheets. Students can then use the information they receive from the feedback sheets to help them prepare for their next tests.

Implications

Numerous researchers emphasize the necessity for teachers to help students learn to practice (Barry, 1990; Hallam, 2001; Pitts, et al. 2000b; McPherson & Zimmerman, 2002; McPherson, 2005). This study has identified ways in which Ms. Zingerman encouraged improved student practice through motivation, goal setting, strategy development, assessment and by providing aural images. Based on the findings of this study and other research, more strategies can be developed that teachers can use to help students develop effective practice skills.

The first implication for teachers is that they should deliberately describe and model practice strategies within the context of band classes. Students should then be encouraged to use them in their own practice. One obstacle in this use of new strategies is that students often forget the strategies. This can be alleviated in a number of ways. First, teachers can allow students time to practice using specific practice strategies during band class. For example, after teaching students how to use the strategy of slowing down the tempo of difficult technical passages, a teacher can give the class time to practice using this strategy on a specific section of music. Though the band room may become somewhat noisy for a few minutes, the students can productively begin to cement a new skill in their memories as the teacher provides extra guidance for those who need it. Teachers can also help students remember new strategies by writing them into the students' practice sheets and asking them to record every time they use the strategies over

the grading period. Students can also develop a list of practice strategies that they can continually refer back to during their home practice.

Second, teachers must help students understand why practice strategies are effective by teaching the basic tenets of learning that support the strategies. The students in this study were aware of some strategies, but they chose not to use them because they felt, based on their own ideas of how people learn, that the strategies were ineffective. Perhaps if they learned the reasons behind the strategies from a brain-based perspective they would have been more motivated to try new strategies. For example, a teacher can begin to discuss the concept of transfer with his students by describing how the brain naturally looks for things that are the same. By finding similar items, the brain can transfer prior knowledge to new situations, making them easier to learn. Then the teacher can demonstrate the use of this concept in learning a new piece of music and provide multiple opportunities to practice in class.

Next, teachers can encourage student motivation and enhance the development of an aural image through the use of technology in student practice. As stated previously, computer programs such as *Smart Music*© can be highly motivational for students. By filling in the missing lines in a song, this program can allow students to hear and play the music as it is intended, with all the parts present. This is much more enjoyable than playing single melodic or harmonic lines. Furthermore, *Smart Music*© can play accompaniments to lines in beginning band books while showing the notation for the line and following the music with a cursor. This method of developing eye tracking scaffolds emergent reading by helping students hear how written notation sounds. Also, the current version of *Smart Music*© (10.0) allows students to download recordings and then play

along with them. Students can now play along with their band music at home and hear how their parts fit into the context of the piece as a whole. Students may also play along with other songs they do not have music for, and learn to play these songs by ear, thereby developing their aural acuity. Because *Smart Music*© has the capability of changing tempo tempo of previously recorded music, it can help students develop their technique to play songs that are initially too fast.

Finally, teachers should think of traditional practice sheets in a new way. In many band classes, practice sheets serve as a means of encouraging students to spend time in their practice and as an objective source for deriving band grades. Teachers must begin to think of these records as a means for teaching students to become independent learners rather than simply as a motivational tool. Just as teachers in other disciplines do not use the same assignments year after year, band teachers should not use the same practice sheets year after year, or even month after month. Instead, new practice sheets can be introduced periodically that emphasize slightly different aspects of practice. For example, when a teacher is instructing students in the use of goals, practice sheets can be assigned that ask students to write their practice goals for the week or to describe the short term and long term goals they set for each practice. Later, teachers can ask students to assess their progress as they work toward weekly goals. Still other practice sheets can simply be reflective papers in which students describe what they accomplished in their practice. The key point is that teachers should use practice sheets as a developmental tool to guide their students toward independent practice.

Aural Image

Summary

Principle number 6 of the twelve brain-based learning principles promoted by Caine, et al. (2005) emphasizes that students need to have experiences that provide exposure to the overall nature of the subject. In other words, students must first experience the end product before they can effectively learn to create said product. This is much like the whole-part-whole learning approach espoused by Gordon (2003) and others. In music, the experience of the whole can be a recorded or live performance of a piece of music that will soon be learned or a model of a characteristic tone. The details or "parts" are taught as students pursue their urge to create or understand something of larger significance to them.

Music is an aural art form and therefore, students must be exposed to aural examples of the types of music they will perform. Every one of the students in this study made multiple comments regarding their need to have an aural image of some type while they played their instruments. This aural image provided the students the type of preliminary learning advocated by teachers of the Suzuki method who stress that listening to the music one is to learn allows the student develop a musical mother tongue much like they develop language (Suzuki & Suzuki, 1983). As I analyzed the data from this study, students used aural imagery to enhance self-motivation, provide targets that they could strive to achieve, and use as an exemplar from which to assess themselves.

Teachers often consciously deny their students access to aural images, believing that this scaffolding technique impedes independence on the students' part. This may be

true when no remedial reading activities are provided. On the other hand, without the provision of an external aural image, students will not develop an internal aural image necessary for independent performance. By providing an aural goal and concurrently providing the necessary skills to independently attain those goals in the future, teachers may encourage student literacy development.

Gordon (2003) has coined the term 'audiation' to describe the ability to comprehend the music one hears inside their head, and he stresses that audiation is the key goal of music education. In effect, audiation refers to an internal aural image. Gordon describes audiation for instrumentalists by saying, "When students are hearing what they just played and are simultaneously hearing what will come next as they are playing, they are audiating, because they are making instant generalizations about music syntax and style" (p. 274). Students must first be able to audiate in order to express what they hear through an instrument. Otherwise, they are simply imitating the music they hear without understanding.

Audiation affects a student's ability to understand pulse and meter as well as melody and harmony. According to Gordon, "Students will not learn to play in tune any better than they can audiate tonally, nor will they learn to play in a consistent tempo with appropriate meter any better than they can audiate rhythmically" (2003, p. 275). A lack of audiation skill for the students in this study may have been a key factor for students' inability to maintain a steady beat and produce a characteristic tone.

All four of the seventh grade students had difficulty playing with a steady, characteristic tone quality. A lack of audiation of tone prior to attempting to play may have been a large factor in their difficulty. Gordon (2003) believes that if students are

able to audiate tone quality before they produce a sound, they will automatically learn how to produce the tone quality on their instrument that they hear in their head. Whether this is the case or not, it seems that it is important for novice instrumentalists to listen to a number of exemplary models on their instrument in order to develop an appropriate aural image of an ideal characteristic tone. Because students do not normally listen to band instruments as they listen to music at home, the participants had little experience listening to expert musicians playing their instruments. Ms. Zingerman has addressed this issue in class through the use of daily listening activities, but she has not specifically directed student attention to tone quality during these experiences.

The students used their instruments to serve as a type of audiational *crutch*, allowing them to produce generally accurate pitches without first hearing them. Instead of audiating pitch and tonality, they were able to use their decoding skills as a second, albeit weaker, means of informing their fingers of what keys to push. Students who relied more heavily on this crutch than others seemed to play in more of a note to note manner than in patterns and were often less able to identify phrase structure or detect when they played in the wrong key. When they heard the music in their head first, they were able to play more accurately and fluently.

While the students had their instruments to help facilitate tonal audiation, they had no such help with rhythmic audiation. This lack of a scaffolding tool could explain McPherson (1994) and Elliott's (1982) findings that students are more likely to detect tonal errors than rhythmic errors. Maintenance of a steady pulse was a difficulty for five of the six participants, but they seemed to have more success maintaining the beat when they listened to the rest of band in their head while they played.

Gordon emphasizes that rhythm audiation is learned through movement, and that students must be able to move to both the pulse and the subdivision of the pulse in order to audiate rhythm. It should be noted that the participants in this study seemed to have more difficulty maintaining a steady pulse when they were not moving to the beat in some way. Further difficulty arose when they encountered rhythms such as syncopations that required a strong feel of subdivision. Students seemed to stop moving when these rhythms became difficult for them.

Aural imagery also had a strong influence on the reading capabilities of the students. In essence, though they had music in front of them, much of the music they played was learned by rote. This explains why Ms. Zingerman said of the participants that, "once (they've) got it, (they've) got it" (Ms. Zingerman interview). In other words, the students first needed to learn the music by rote before they could play it, using the notation to help in the process.

The participants generally needed to physically hear what their music sounded like before they could perform it. It seems that the notation served as a reminder for them more than a source of information. Sarah noted that she did not need this aid when she sight read simple band music but did need it for the more difficult music she played in her private lessons. She seemed to have developed the ability to audiate simple notation and therefore did not need the physical presence of the music to inform her performance. Therefore, it could be that her reading vocabulary is developing more slowly than her performance vocabulary. As the students gain more experience with patterns they are capable of playing, they gradually learn to audiate the patterns at sight without first needing an aural model.

This finding seems to support Gordon's (2003) description of how one learns to read music. Students first learn 'by ear' through what Gordon calls the aural/oral level of discrimination, as they develop a performance vocabulary of rhythm and tonal patterns. Then they gradually begin to associate these patterns to notation during the symbolic association and composite synthesis levels of discrimination learning. After developing a sizable vocabulary of known patterns that they can read, they begin to infer unknown patterns in the generalization level of inference learning. Gordon states that students who cannot read with fluency often are simply decoding the actual notes rather than audiating the music that the notes represent. This is similar to language readers who sound out words but are unable to pronounce them correctly or understand their meaning.

This is not congruent with the way that most beginning instrumentalists are taught. Instead, most beginning instrumental books approach music learning from sight to sound rather than sound to sight. Students first learn how to play the notation on the page, hearing the target sound after having seen it on the written page.

Implications

The theme of *aural imagery* weaves its way through all of the other themes in the study. Therefore, I have previously made a number of suggestions related to aural imagery within the context of other themes. There are four more implications related to aural imagery that can be presented in regard to the development of beat competency, reading skills, and fluency of performance.

First, Gordon (2000, 2003) stresses that students must move to music in order to develop their rhythm audiation skill. He states that, "To audiate rhythm, students must be able to move rhythmically, because when they engage in rhythm audiation they move unconsciously" (2003, p. 38). Instrumental music teachers should engage their students in activities that help them feel the pulse and subdivisions of the pulse. Rhythm patterns then fit on top of this temporal foundation. This type of movement can be carried out as they engage in listening activities or during rehearsal of their band music. While students listen to recordings, the teacher can engage the students in movement sequences that show tempo, meter, or melodic rhythm. As students become more proficient, they can begin to show tempo and meter at the same time. In rehearsal, sections that are not playing can show tempo and meter while the other sections are playing. This activity serves as a metronomic aid to the performers, an audiation development activity for the beat keepers, and as a way to maintain students' attention when they are not playing.

This type of movement should also be used as bands learn to read rhythm patterns in their own music. Students need to constantly feel pulse and subdivision as they perform rhythm. Therefore, teachers should engage their classes in such activities as marching or patting their laps while performing rhythms using rhythm solfege. These activities will help students to maintain a steady pulse as they perform with their instruments.

Second, the band method book that Ms. Zingerman uses is filled with numerous folk tunes and famous themes from Western art music that one would assume students should already know. In the past, students were exposed to these traditional songs in their homes and in the community. When they encountered the songs within the context of

their beginning band classes, they already had an aural image of the music they were about to play. This seems to no longer be the case. Scott made this point clear during one of our interviews, as he stated that he knew few of the pieces in his book. Without this pre-existing aural image, students do not have the readiness to begin to learn their music.

Teachers can address this lack of a pre-existent aural image in two different ways. First, they can expose students to the music found in their band books through singing the traditional folk songs and themes and by listening to recordings of the Western art music in their original forms. The second option is to include music in beginning band books that students know, such as popular songs and themes from movies and TV shows.

Next, teachers need to have their students sight read simple songs and patterns daily. Gordon has emphasized that true music reading demands that a person can audiate the music before they play it. He also stated that students' reading vocabulary develops after their performance vocabulary. Though they may be capable of performing complex material, their sight reading and audiation capability may lag far behind. Therefore, teachers should help students learn to associate the patterns they can already audiate and play to the notation that represents these patterns. More difficult music, intended to increase students' performance vocabulary, should then be learned at first by rote, using the notation as a visual reminder. Sight reading skills will increase as students build a larger vocabulary of tonal and rhythmic patterns.

Finally, students need to listen to a large variety of music in order to develop a sense of musical syntax. Gordon emphasizes that musical literacy is based on a strong listening foundation. Students must first establish a strong aural schema before they can make sense of performance, reading, or writing. In the past, this listening vocabulary was

established in the home and in the community through singing and listening to the music found within society. Today, students are exposed to less instrumental music than in the past and it has become more important that students regularly listen to music in the school.

In order to help students develop a rich aural schema, teachers need to engage students in guided listening lessons that focus students' attention on various aspects of music by:

- asking students to describe the sound they hear to focus on tone quality.
- asking students to move fluidly to the music, changing direction as new phrases begin to focus on phrasing.
- asking students use different movements to show when new sections begin to identify form.
- leading students in discussions that describe the music they hear by identifying instrumentation, melodic and harmonic characteristics, and formal organization, to focus on style.

By critically listening to music, the students will begin to develop the aural schema necessary to understand the music they will play.

Development

Summary

Caine, et al. (2005) state that learning builds on previous learning as well as changes in the brain, that are altered by experience. McPherson (2005) emphasized that children who used effective music practice strategies as beginners were more likely to

succeed than peers. As I analyzed the accumulated data from this project and other research literature, it became apparent that the development of the participants' practice skills seemed to spiral forward in conjunction with their musical knowledge, technical skill, and cognitive development.

First, each student accessed prior knowledge to inform their practice. For example, Mandy knew how to finger Eb on her clarinet, but she did not know how to finger D#, so she looked up the fingering in the back of her book. After a short time of thinking, she said, "oh! I just figured out something. The notes that are sharp on the way up the chromatic scale and the notes that are flat on the way down are the same fingering" (Mandy, Concurrent Report #1). This new information helped her to navigate the chromatic scale much more easily thereafter. As their knowledge base developed, the students were more able to address mistakes and other difficulties that arose during practice.

Next, the influence of technical development on practice skills became apparent as I observed Sarah play her chromatic scale. While she could play the lower octave almost fluidly, she began to play more haltingly the higher she went. In our Retrospective Report she described how she could simply look at the lower notes and play them, while she needed to tell herself the names of the notes in the moderately high range and even had to remind herself of the fingerings of the notes in the extreme range. This is an example of the development of automaticity described by Sanders (2004). Sarah had to verbalize the fingerings of the newest notes, describing in her mind each movement she had to make to create the desired pitch. When she played the lower notes that had become automatic, all of the separate component movements had been condensed into a single

thought. As Sarah's technique improved, she was able to spend more of her mental capacity on other aspects of her practice, thereby improving her practice efficiency.

Other examples of the relationship between technical development and practice skills were apparent. First, Mandy, Scott, Nick, and Matthew each tapped their feet to the pulse at different times in their practice when the music consisted of simple rhythms that they had learned to audiate, but they stopped tapping when they encountered relatively new rhythms that they could not yet audiate. Next, students learned new alternate fingerings that gave them more options to choose from when deciding how to play certain passages. Also, as the students became more aware of the factors that effect tone and articulation, they were more able to diagnose possible causes of problems. Finally, as students developed their audiation skills, they became more able to detect errors. This point was made by Matthew, when he stated that in order to catch some mistakes, he had to mess up badly before he could recognize them.

Finally, physiological maturity seemed to play a part in the students' ability to practice. This was apparent as I asked students to tell me what they were thinking in their practice. Their answer was often "I don't know." This lack of metacognitive ability and other examples of short attention span are likely simply symptoms of the students' age and will develop over time. This was also apparent in comparing the seventh grade students to the eighth grade students, as I noticed that the two eighth grade students seemed to demonstrate more control over their practice choices. Matthew and especially Sarah were able to deliberately choose music that they wanted to improve and were less prone to impulsive changes of plans than the seventh grade students. They also seemed to have more definite ideas regarding how they should practice than did the seventh grade

participants. These differences may be due to a number of reasons, but one possible reason could be due to the physiological development of their executive functions, which allows people to moderate impulsivity and emotion, plan and organize thinking, work with longer time horizons, and access working memory. According to Caine, et al. (2005) these functions reside in the frontal portion of the brain and continue to develop throughout the teenage years.

Implications

Caine, et al. (2005), state that teachers can improve their students' learning by considering individual differences in maturation and development. Differentiation is necessary because everyone learns at his or her own individual rate and sequence. Therefore, teachers need to be aware of where their students are in their development musically, technically, and physiologically in order to know where to take them next. Providing chamber ensemble opportunities for all band students is one way in which teachers can provide for this differentiated instruction.

The participants in this study practiced more when Ms. Zingerman provided scaffolding devices such as identifying trouble spots in music the students were to practice and modeling practice strategies. There are a number of other ways teachers can help students develop proper practice skills. First, teachers could help students develop a knowledge base upon which they can build. Students should learn to identify key signatures and to recognize scalar and arpeggiated passages in order to associate knowledge from past experiences to new situations. They should know about form and

style characteristics in order to know how to apply them appropriately to new music. The more they know about music, the more meaning they can bring to their practice.

Teachers also need to help students know more about how they learn. By understanding key concepts related to brain based learning such as patterning, association, repetition, and chunking, students will have a better grasp of how to use practice strategies effectively. This understanding will help motivate students to control their impulsivity and planning as their executive functions develop.

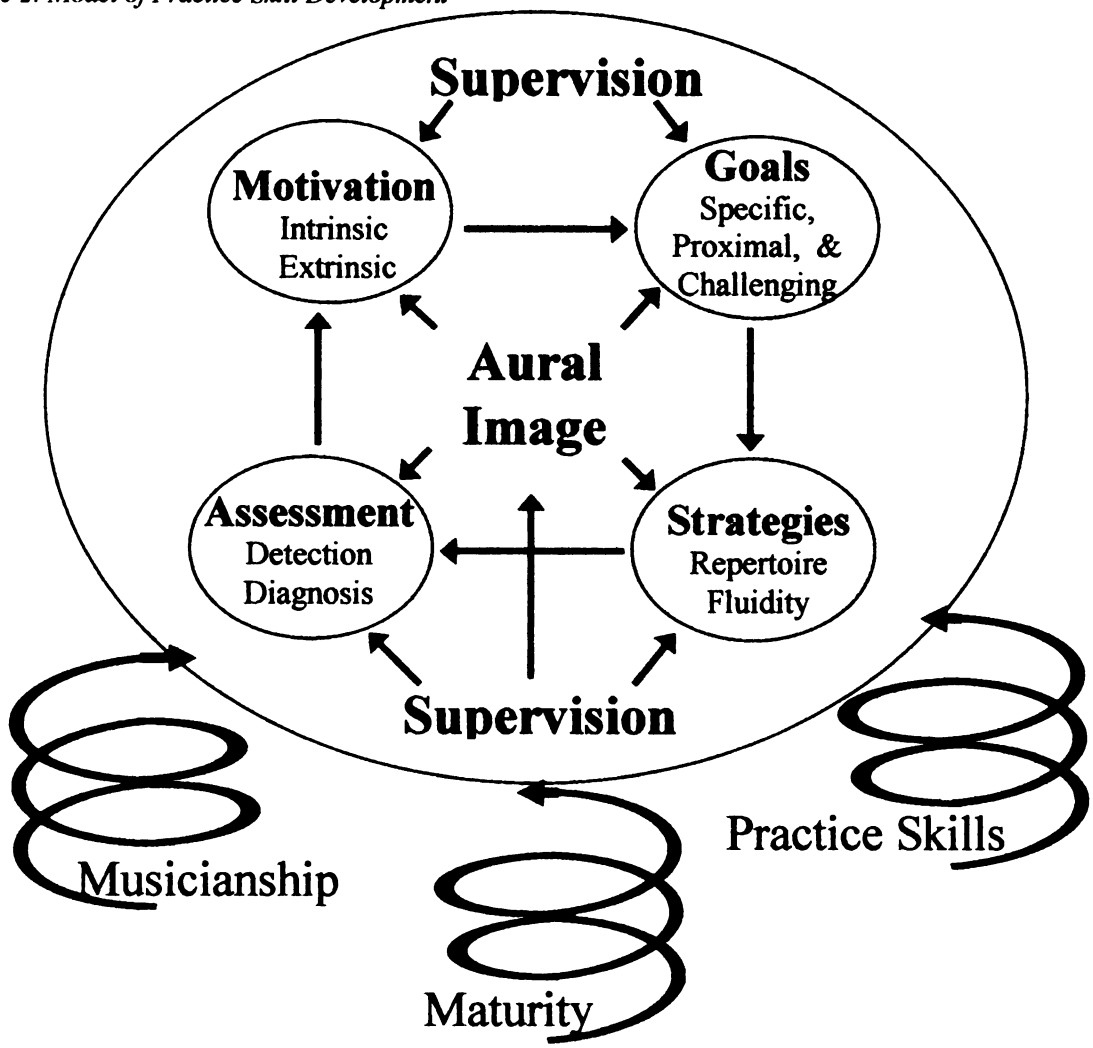
Teachers can also help students to develop a 'toolbox' of practice strategies. Just as different tools have different purposes, different practice strategies are more appropriate for some situations than they are for others. Teachers can facilitate the development of a toolbox by demonstrating the strategies, explaining how they work and giving the students opportunities to practice using the strategies with their guidance. To help students remember the strategies, teachers can create lists of practice strategies, along with their appropriate use, and post them on the walls or place them in the students' music folders. They can further facilitate the use of these strategies by requiring students to describe which strategies they use in their home practice.

A Model of the Development of Practice Skills

I used a model of the practice process that I developed in a prior study (Oare, 2006) as an external organizer during my coding process. This model described a cyclical process of practice that moves from motivation to goal setting to strategy use and then assessment. I noticed in developing this model that aural imagery and teacher supervision played some part in the process. It seems that the basic premise of the model worked well

for the present study, but the value of aural imagery and teacher influence has taken on much greater importance than my earlier understanding, and a sequential dimension of development over time has been added as well. The value of having an aural image in all aspects of practice, along with the importance of supervision and structure, seems to be an overarching factor in practice that permeates the other themes. Also, it is apparent that the development of effective practice skills happens over time. This spiraling process is dependent upon the synergistic development of at least three factors: mental and emotional maturation, the development of technical skills, and the continued acquisition of musical knowledge and insight. I then developed a revised model reflecting these changes (see figure 2).

Figure 2: Model of Practice Skill Development



Conclusions

In this chapter, I have presented numerous implications that flow from this study. Primarily, the results suggest that students need to be taught how to practice in conjunction with being taught how to play their instruments. Specifically, I have suggested that teachers overtly teach their students how to set goals, choose appropriate practice strategies, and assess themselves as they play. Students must be encouraged to focus on quality rather than quantity in their practice in order to promote a learning goal orientation over performance orientations. I have also suggested a number of ways in which teachers can help students develop a strong aural image of the music they are to play.

Finally, the results of this study suggest that the novice musicians may proceed through a developmental process of learning to practice that is based on the simultaneous development of musicianship, practice skills, and individual maturity. Just as teachers lead their students through a sequence of technical skills to develop their musicianship, it seems appropriate that teachers develop a sequence of practice skills to help students develop self-regulation. This has not yet been done in music education, although it is being recommended by a growing number of researchers (Barry & Hallam, 2002; Chafin & Imreh, 2001; Ericsson, et al., 1993; Hallam, 2001; Jørgensen, 2003; Leon-Guerrero, 2004; McPherson, 2005; Sloboda, et al. 1996).

CHAPTER 7

SUMMARY, CONCLUSIONS AND SUGGESTIONS FOR FURTHER RESEARCH

Summary

With the intent of improving music teaching and learning, the purpose of this study was to discover how students use goal setting and self-assessment within their personal practice sessions and how these aspects of self-regulation affect strategy choice and motivation. The insight gained from this study regarding student use of goal setting and self-assessment will serve to inform teachers about ways in which they can help students make more effective use of their practice time and reach their musical potential.

Specifically, the research questions for this study were as follows:

1. What goal setting and self-assessment comments do novice, adolescent instrumental musicians make during instrumental practice?
2. What goal setting and self-assessment strategies do novice, adolescent instrumental musicians use during instrumental practice?
3. Are there differences in practice strategies found among students when they are deliberately involved in goal setting or self-assessment compared to times when they are not setting goals or self-assessment?

4. What strategies do students use to address various technical aspects of performance (rhythm, notes, articulation, etc.)?

I chose to explore this topic by using a multiple case study approach. This allowed me to probe deeply into the thought processes of a small number of students and to compare their responses. I obtained participants by recruiting the help of a highly respected local band teacher. She then aided in recruiting six of her students for the study. Four students were in seventh grade and two were in eighth grade. Three of the students were taking private lessons on their instruments at the time of the study. I collected observational data through videotape as each student practiced for me and thought aloud on three separate occasions at roughly two week intervals. I collected further data through focus group interviews and interviews with the band teacher.

In order to begin to understand what the students were thinking as they were engaged with their practice, I chose to use concurrent and retrospective verbal reports, or verbal reports, as my main data source. This approach has been used by a number of researchers as a verifiable method of accessing participant thoughts and memory in the process of practice (Chaffin & Imreh, 1997, 2001; Geiersbach, 2000; Leon-Guerrero, 2004; Nielsen, 1997, 1999). I triangulated my data by collecting five forms of data: a) concurrent verbal reports while students practiced, b) retrospective verbal reports, enhanced with video observation, immediately after students practiced, c) observation of practice video, d) student focus group sessions, and e) an interview with the students' band teacher. Further verification was provided by member check with the teacher and

peer review with a fellow doctoral student versed in qualitative inquiry and an experienced instrumental music teacher.

From the analysis of data, seven themes emerged that seem to interweave to inform student practice. Four themes work synergistically together to inform individual practice in a cyclical manner while three more themes influence all areas of practice from outside of the cycle. From this analysis, I proposed a model depicting the spiraling development of practice skills based on the interconnectedness of motivation, goal setting, strategy choice, self-assessment and an aural image, supported by structure and supervision provided by mentors

Conclusions

It must once again be stressed that the data I analyzed came from a small group of children in a single educational setting and, therefore, cannot be generalized to wider populations. The information gained by the reader can only be applied to other teaching situations in so much as the findings seem to apply to his or her own unique setting. However, a number of suggestions have been made based upon the results of this study that teachers may find helpful. The four seminal suggestions are:

1. Encourage students to strive for quality instead of quantity in their practice. This can be accomplished by teaching students how to set clear, proximal and appropriately challenging goals and how to critically assess themselves to develop new goals. Traditional practice sheets used in different ways could serve as effective tools in facilitating student development. Students can record daily or weekly goals and assess their progress toward reaching their

goals as well as recording practice time,. At first, this must be done with teacher guidance, but as students gain in experience, they can begin to take on more of the responsibility themselves.

2. Help students develop a large repertoire of practice strategies. This must be done by providing students with a basic understanding of how they learn and then by modeling practice strategies based upon these understandings. For example, one of the reasons students played all the way through their music instead of learning it in small chunks was that they were not aware of the concept of chunking. By teaching this concept and demonstrating different ways to apply it to practice, teachers will provide students with the necessary skills to apply the concept to new situations. Teachers may also use practice sheets to facilitate the development of a practice strategy repertoire by helping students develop a menu of strategies to choose from and then asking them to record the strategies they use to address specific goals.
3. Encourage students to learn new, more advanced music in part by rote in order to allow their technical skills to advance while their reading skills develop. The participants in this study needed to know how the music sounded before they could play it. They used the notation as a means of reminding them of the music they played because their reading skill lagged behind their performance skills. By allowing students to develop a large technical vocabulary, they will begin to associate the rhythmic and tonal patterns they know to the symbols representing them, developing a larger reading vocabulary in the process.

4. Engage students in directed listening. By continually engaging students in listening to and identifying various aspects of music, they will begin to develop an aural image of their musical goals and of a model to which they can compare themselves as they self-assess. Teachers should engage their students in listening activities that encourage multiple forms of critical listening using recordings and live performance. Furthermore, students should be led to show their understanding of specific aspects of music through movement and critical discussion.

Suggestions for Further Research

This research examined the practice habits of novice, adolescent instrumentalists. Further study of the factors that impact self-regulated learning in instrumental music would be helpful in providing teachers with the necessary tools for developing independent learners. It would be worthwhile to replicate this study with novice and intermediate level instrumental students at other grade levels and to conduct longitudinal studies that can shed light on the development of practice habits of individual musicians over time. These projects may help researchers begin to understand the developmental process involved in the attainment of self-regulated practice skills.

This study found that the students who most often demonstrated learning goal orientations tended to practice more effectively. Radosevich, et al. (2004) and Smith (2005) also studied the effect of goal orientations on student achievement, finding a positive effect for learning goal orientations. Further research is needed to identify ways

that teachers can foster learning goal orientations in order to improve the quality of student practice rather than assess practice quantity.

Researchers in the past have stressed the need for educators to develop methods to teach students effective practice skills (Barry, 1990; Barry & McArthur, 1994; Barry & Hallam, 2002; Ericsson, et al. 1993; Hallam, 2001; McPherson, 2005; Sloboda, et al. 1996). The findings from this study suggest that students do not have requisite skills in goal setting to inform independent practice. Further research should be undertaken that analyzes the effect of various types of directed goal setting and strategy instruction on the effectiveness of instrumental practice.

McPherson and Zimmerman (2002) stress the importance of self-assessment within their model of self-regulation, while Ericsson, et al. (1993), stress the position of self-assessment within their model of deliberate practice. Hewitt (2001) also suggests that self-assessment may have an effect on student performance, implying that self-assessment informs student practice in some way. The findings from the current study agree with other studies, suggesting that students have difficulty accurately assessing themselves, though this difficulty may be due to a lack of training in self-assessment (Bergee, 1993, 1997; Bergee, M. J., & Cecconi-Roberts, L., 2002; Hewitt, 2001, 2001, 2005). Because self-assessment has been identified as a key component of practice, further studies should be undertaken that replicate Hewitt's original study after students receive training and practice in self-assessment.

Finally, I identified a number of ways in which students used an aural image to inform their music reading and practice skills. Further investigation is needed in the area of emergent reading in beginning instrumental music. Research projects of this sort could

investigate the impact of computer programs such as *Smart Music*© or *Band in a Box*© on practice and on reading. Other studies may examine the effect of tonal and rhythm aptitude on self-assessment.

Epilogue

During a focus group interview, Amy reminded me of the age-old adage, "*Practice Makes Perfect,*" implying that students become better musicians only by putting in a lot of time practicing their instruments. As she said this, I was reminded of a beginning student of mine who "practiced" for one and a half hours every day but was still among the weakest musicians in the band. Practice alone must not make perfect. Instead, students must learn how to practice smarter and more effectively, not necessarily longer.

Music teachers have developed instrumental music curricula that sequentially teach students rhythm skills, technical skills and musical understandings. Few have considered developing curricula that sequentially teach practice strategies. Instead, it is assumed that students naturally know how to practice effectively and efficiently. This incorrect assumption may ultimately lead to slower rates of improvement and increased student attrition rates from band.

By learning how people learn music and then applying this knowledge to their own practice, novice instrumentalists can improve their rate of progress. This success, in turn, may tend to increase student motivation, leading to stronger bands and higher retention rates. Eventually, with effective teaching, students will develop into self-regulated learners. Many students put their instruments away after they graduate from

high school, never to play them again, due in part to a lack of musical independence. By teaching students how to learn on their own, more students may feel inclined to continue playing.

One of the key goals in contemporary education is to create a generation of life-long learners. By training students to practice effectively, music teachers can reach their goal of creating a generation of life-long musicians.

APPENDIX A

"Goals and Self-Assessment in the Middle School Learner: A Study of Music Practice Habits"
Parent Consent Form

November 21, 2006

Dear Parents,

My name is Steve Oare, and I am a doctoral student in music education at Michigan State University. A major component of doctoral studies is conducting research related to improving teaching. With your consent, I would like to enlist your child's help in a research study concerning the decision making process middle school students go through when they practice. With greater knowledge of the underlying beliefs and thought processes of young students' practice habits, I believe we can design improved methods of teaching students how to use their practice time wisely.

I would like to videotape your child three times while he/she practices and then interview him/her immediately afterward while reviewing the video. I will also interview him/her in a small group setting with the other participants twice about the decisions made during the practice. This would mean he/she will be excused from class a total of 5 times. The practice and two interviews will take place in a practice room during your child's regular band period and will require no extra time outside of class. Finally, data regarding your child's musicianship and practice will also come from interviews I will have with Ms. Zingerman. The collection of data will be complete in five class times over a two month period and we will have a short debrief session on my findings with the whole group of participants. As a benefit, in the process of completing this project, your child may learn a number of new skills that will improve the quality of his/her personal practice time. At the same time, there are no known risks associated with participation in this study aside from the initial jitters some may have when being videotaped.

Your child's participation is strictly voluntary but participants are asked to consistently practice at least four days per week. He/she may refuse to take part at all without penalty. He/she may also drop out of the study at any time without penalty. As per GLPS safety policy and since I do not work for the district, a school employee will be asked to observe during our interview times. The results of this study may be presented in various forms (i.e. research article, poster), and through various venues (i.e., publications, conference presentations). Responses will not be identified in any way in the reporting of my study results. All audio and/or video taped data will be stored under secure conditions and will be destroyed at the end of my study. No names will be stored with these data.

If you have any questions about this study, please contact Dr. Mitch Robinson, at (517)355-7555 or mrob@msu.edu. If you have any questions or concerns regarding your rights as a study participant, or are dissatisfied at any time with any aspect of this study, you may contact Peter Vasilenko, Ph.D., Director of Human Research Protections, (517)355-2180, fax (517)432-4503, e-mail irb@msu.edu, mail 202 Olds Hall, Michigan State University, East Lansing, MI 48824-1047.

Thank you for considering allowing your child to participate in this research. Please sign the attached consent form if you are willing to participate and return it to Ms. Zingerman.

Sincerely,
Steve Oare

"Goals and Self-Assessment in the Middle School Learner:
A Study of Music Practice Habits"
Parent Consent Form

I voluntarily agree to give my consent for (please print)
_____ to participate in this study. I understand he/she will be excused from class on five separate occasions to be videotaped and interviewed while practicing and to participate in two focus group sessions.

Signature _____

Date_____

Relation to participant: _____

APPENDIX B

"Goals and Self-Assessment in the Middle School Learner: A Study of Music Practice Habits"

Student Assent Form

October 21, 2006

Dear Students,

My name is Steve Oare, and I am a doctoral student in music education at Michigan State University. A major component of doctoral studies is conducting research related to improving teaching. With your consent, I would like to enlist your help in a research study concerning the decision making process middle school students go through when they practice.

I would like to videotape you three separate times while you practice and then interview you about the decisions you made during your practice time while we both watch the video of your practice. You will also be interviewed in two small group sessions. You will be excused from class a total of 5 times. Finally, I will ask Ms. Zingerman to give me a "teacher's perspective" about your musicianship and achievement in order to complete my data.

The only people who will ever see the video or hear the interviews will be myself and my teachers who are involved with the study. The practice and interview will both be done in a practice room during your regular band period and will require no extra time outside of class. Because I am a visitor to your school, district policy requires that an adult employee should be present during our interviews. The collection of data will be completed over a two month period and we will have a short debrief session shortly after I collect the data.

Your participation is strictly voluntary. You may refuse to take part without penalty and you may refuse to drop out without penalty. I will identify you with a different name (of your choice) so that your responses will not be identified to you in any way.

The results of this study may be presented in various forms (i.e. research article, poster), and through various venues (i.e., publications, conference presentations). Your responses will be kept confidential, and you will not be identified in any way. All audio and/or video taped data will be stored under secure conditions and will be destroyed at the end of my study. No names will be stored with these data.

Thank you for considering participation in this research. Please sign the form below if you are willing to participate and return it to Ms. Zingerman.

Sincerely,

Steve Oare

****

I (please print) _____ voluntarily agree to participate in this study.

Signature _____ Date_____

APPENDIX C

"Goals and Self-Assessment in the Middle School Learner: A Study of Music Practice Habits"

Teacher Consent Form

November 26, 2006

Dear Ms. Zingerman,

As you know, I am a doctoral student in music education at Michigan State University. A major component of doctoral studies is conducting research related to improving teaching. With your consent, I would like to enlist your help in a research study concerning the decision making process middle school students go through when they practice. With greater knowledge of the underlying beliefs and thought processes of young students' practice habits, I believe we can design improved methods of teaching students how to use their practice time wisely.

I would like to videotape six to eight of your students three times while they practice, followed immediately afterward by a reflective interview while viewing the video, and then interview them in a small group setting twice. The practice and two interviews will both be done in a practice room during your regular band period and will require no extra time outside of class for them. Each student will need to be excused from class a total of 5 times. Finally, I would also like to interview you in order to obtain more data regarding your students' musicianship and practice. I would like to collect the over a two month period and then have a short debrief session with you and with the students on my findings with the whole group of participants. As a benefit, in the process of completing this project, your students may learn a number of new skills that will improve the quality of their personal practice time. I also believe that this data may help you to plan new ways of teaching your students how to practice. At the same time, there are no known risks associated with participation in this study aside from the initial jitters some may have when being videotaped.

Your participation is strictly voluntary but ask that the students who volunteer to consistently practice at least four days per week. You may refuse to take part without penalty and your privacy will be protected to the maximum extent allowable by law. You may drop out of the study at any time without penalty. Responses will not be identified in any way. The results of this study may be presented in various forms (i.e. research article, poster), and through various venues (i.e., publications, conference presentations). Responses will be kept confidential, and neither you or your students will be identified in any way. All audio and/or video taped data will be stored under secure conditions and will be destroyed at the end of my study. No names will be stored with these data

If you have any questions about this study, please contact Dr. Mitch Robinson. If you have any questions or concerns regarding your rights as a study participant, or are dissatisfied at any time with any aspect of this study, you may contact Peter Vasilenko, Ph.D., Director of Human Research Protections, (517)355-2180, e-mail irb@msu.edu, mail 202 Olds Hall, Michigan State University, East Lansing, MI 48824-1047.

Thank you for considering your participation in this research. Please sign the attached consent form if you are willing to participate and return it to me.

Sincerely,
Steve Oare

"Goals and Self-Assessment in the Middle School Learner:
A Study of Music Practice Habits"
Teacher Consent Form

I voluntarily agree to participate in this study. I understand I will be interviewed in regard to my students' musicianship and practice and that I will excuse my students from class on five separate occasions to be videotaped (3 times) and interviewed (twice) in two focus group sessions.

Signature _____

Date_____

APPENDIX D
Student focus group questions

For the 1st focus group session only:

- Please tell me how long each of you have played your instruments.
- Do you play any other instruments?
- Do you take private lessons? If so, how long have you taken them?
- Are there any other musicians in your families?

For both focus group sessions:

- How many days per week do you practice, on average? How many minutes do you practice each session?
- What is the hardest part of practicing?
- Do you have a practice routine?
- Describe for me what a regular practice session would look like if I were to watch you practice at home.
- If I gave you this piece of music (students will be given a sheet of music) and asked you to learn it, how would you go about learning it?
- Does anyone help you practice at home? If so, who? How do they help you?
- How do you set goals in practice? What types of goals do you set? When do you set them?
- What do you do when you notice a mistake?
- What types of mistakes do you tend to notice?
- Have you ever recorded yourself playing your instrument? If so, what did you notice about your playing?
- What are your strengths as a musician?
- What are your weaknesses as a musician?
- Some researchers say people deal with goals and motivation in 3 types of ways. Some look at a goal as a learning opportunity, some see it as a way to show themselves or others that they are capable, and some look at it as something to avoid if it seems too challenging.

For the 2nd focus group session only:

- Have your practice habits changed at all since the first time I interviewed you? If so, how?
- What would you like to learn that you believe would help you to become a more independent learner/musician?

APPENDIX E
Teacher interview questions

Please give me your impression of _____'s (student's) musicianship.

Please give me your impression of _____'s (student's) home practice

Please give me your impression of _____'s (student's) musical potential.

Tell me about _____'s (student's) musical strengths and weaknesses.

What types of instruction (i.e., lessons and experiences) have you provided that helps students learn how to practice effectively?

What training have they had in goal setting and self-assessment in music?

Has the school or the district as a whole made any plans to emphasize goal setting or self-assessment for students?

APPENDIX F
School Permission Letter

October 24, 2006

Steve Oare
1315 Chartwell
Xxxx Xxxxxxx, XX #####

Dear Mr. Oare,

I have carefully read the study and procedures for conducting the study entitled, "Goals and Self-Assessment in the Middle School Learner: A Study of Music Practice Habits." I understand that student participation is voluntary and may be withdrawn at any time during the study.

We have one music teacher at the middle school level interested in participating. I give permission for Ms. Zingerman and her classrooms to participate in this study.

Respectfully,

Xxxx xxxx , Principal
Xxxxx Middle School
Gxxxx Lxxx, XX

CC: Tamara Zingerman

APPENDIX G
Code Structure

Example: *A: detection - note*

(This code sequence means that the data suggests the participant assessed (A) by detecting a note mistake.)

Primary Code	Secondary Codes	Ternary Codes*
Motiva-tion (Mot)	attribution	
	avoidance	
	blame	
	challenge	
	Choice	
	ego approach	
	frustration	rhythm
	fun	
	goal avoid	
	improvement	
	interest	
	lazy	
	locus	
	performance	
	success	
	T assigned	
	test	

Primary Code	Secondary Codes	Ternary Codes*
Develop-ment (Dev)	attention span	
	aural acuity	not hearing wrong notes
	experience	band
	beat competency	
	chunking	verbal to kinesthetic
	self-discipline	known strategy and action
	emergent pulse	
	emergent reading –	meas to meas note to note
	emergent strategy	repertoire
	Emergent technique	
	knowledge	alternate fingerings
	desire over need	
	teacher scaffolding	

Primary Code	Secondary Codes	Ternary Codes*
Assess-ment (A)	analysis	
	analysis	form
	articulation	
	consistent mistakes	
	on the go	
	detection	articulation note
	diagnosis	accidentals articulation
	efficacy	notes / tone
	evaluation	specific not specific
	ignores mistake	note

Primary Code	Secondary Codes	Ternary Codes*
Aural Image (AI)	recorded:	
	accompaniment with the band	
	audiation	
	hearing & playing	balance
	beat competency	
	difficulty	
	emergent reading	
	model	peer model teacher model
	reading	skill
	rote learning	

	reflection	yes / no
	nondetection	articulation
	tendencies	
	vague	

	real song vs book	
	past experience	

Primary Code	**Secondary Codes**	**Ternary Codes***
Goals (G)	a priori	
	articulation	
	assessment	
	breathing	
	challenge	flow
	choice	
	composition	
	concert music	
	dynamics	
	ego approach	
	Focus	articulation dynamics
	fun	
	improve vs fun	
	improve vs time	
	improvisation	
	memorization	
	no goal	
	no plan	
	notes	new note
	peer model	
	play through vs improve	
	Priorities	articulation tone
	random choice	
	return to tough stuff	
	routine scale	
	specificity	
	teacher	
	Teacher assigned	chair test
	tone	
	vague	

Primary Code	**Secondary Codes**	**Ternary Codes***
Strateg-ies (S)	analysis –	negative patterns positive transfer
	assessment	
	book	
	chunking	
	consistent practice	
	consolidation	practice knowledge
	continues playing	
	correct on the go	mental note
	S: dovetail	
	environment –	different instr. TV
	pulse	foot tap
	isolation	
	knowledge	fingerings
	repertoire	limited strategies
	long tone	
	memorization	
	metronome	
	mirror	
	reflection	No
	no strategies	
	non-playing	analysis counting
	pencil	
	avoidance	
	reflection	
	repetition	at the measure at the note
	repetitions	incorrect repetition
	multiple correct repetitions	at the measure from the phrase
	return to tough music	
	Routine	
	self instruction	
	sing	
	single correct repetition	at the measure from the top
	teacher	model –
	teacher model	isolation

	teacher suggested	doesn't do it
	tempo	at tough spot
	transfer	
	understanding is good enough	
	vague	

** The codes listed in the ternary column are examples of types comments that were made. Ternary codes in this study were meant to be open for a great deal of variation. The intention was for these codes to contextualize the primary and secondary codes. Some primary secondary codes were not assigned lower level codes

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