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OBSERVATIONS OF PRACTICE CHARACTERISTICS OF UNDERGRADUATE CLARINET STUDENTS IN PRACTICE SESSIONS AND PRECEDING APPLIED LESSONS

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OBSERVATIONS OF PRACTICE CHARACTERISTICS OF UNDERGRADUATE CLARINET STUDENTS IN PRACTICE SESSIONS AND PRECEDING APPLIED LESSONS

A DOCUMENT APPROVED FOR THE
SCHOOL OF MUSIC

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This document is dedicated to the memory of Dr. David E. Etheridge (1942-2010),
a truly dedicated educator who was constantly inspired by his students
and never stopped searching for new ways to teach them.

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ABSTRACT

This study observed practice characteristics demonstrated in the practice sessions of sixteen undergraduate clarinetists, and examined the relationship between those characteristics and the activities each student experienced in a preceding private lesson. Part I of the investigation observed characteristics of effective practice in student practice sessions within a framework modeled after Duke, Simmons, and Cash in their 2009 study. With few exceptions, results were mostly consistent with those of Duke et al. Data indicated that almost all students (94%) addressed errors immediately when they appeared, most (63%) demonstrated mostly thoughtful practice, and half (50%) appeared to conceptualize the material with appropriate musical inflection. Most students' practice sessions lacked an effective process for correcting errors: while about half (56%) usually identified accurately and isolated problem areas, many fewer (25% or less) exhibited systematic tempo alteration, effective repetition, or a lack of persistent errors.

Part II of the study compared individual practice sessions to the preceding private lessons, and case studies were presented of four students. The two students whose practice exhibited the highest number of effective practice characteristics both engaged in conversations about practicing in their lessons, indicating a possible relationship between students whose lessons consistently incorporate the topic of practicing and those students who demonstrated the most characteristics of effective practice. Several questions arose in the case studies, including whether applied teachers can or should help teach these skills of effective practice, rather than the common occurrence of students figuring them out on their own through trial and error.

Chapter 1

INTRODUCTION

Background and Purpose of the Study

The ability to practice effectively is one all expert musicians must at some point acquire. Perhaps because of the solitary nature of the private practice scenario, many novice musicians find themselves learning effective practicing skills through a trial-and-error approach, often with inadvertent emphasis on error. Indeed, young players, even those of college age, spend time haphazardly playing through music and repeating mistakes.[1] Players who go on to have careers in music eventually recognize that a more efficient approach to practicing exists, but this realization is often self-discovered, and sometimes not until later in life. The skills involved to practice effectively should be taught as part of each music student's education, and the private lesson seems an ideal scenario in which this learning might take place.

Given the significant role that practice plays in the lives of all musicians, one might assume a large quantity of research exists on the topic. While the extant literature does include studies on practice topics such as time allocation, motivation, and overuse injuries, relatively few investigators have examined what musicians actually do when they practice.[2] Only recently have scholars such as Robert A. Duke

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[1] Nancy H. Barry, "A Qualitative Study of Music Lessons and Subsequent Student Practice Sessions," *Contributions to Music Education* 34 (2007): 51-65.

[2] Lisa M. Maynard, "The Role of Repetition in the Practice Sessions of Artist Teachers and Their Students" (PhD Diss., The University of Texas at Austin, 2000), 2.

begun to look at the content of musicians' practice, and examine how certain behaviors affect achievement.[3] The knowledge gained through such studies – that is, what practice characteristics are most effective – is infinitely useful to musicians of all levels. However, this information needs to be communicated to students in the process of learning to practice, ideally through their private instructors.

Private or applied lessons represent opportunities for instructors to provide students regular exposure to effective practice strategies, and scholars have recently begun examining the instruction of practicing in the private-lesson setting. Results of several studies indicate that most private music instructors say they teach effective practice habits to their students.[4] However, few researchers have examined the relationship between student individual practice and private instruction by comparing observations of students' private lessons to subsequent practice sessions. Results of one such study reports that students seemed to use a limited number of the practice strategies discussed, and those used were the strategies that the teacher had the student actively do during the lesson.[5] Certainly, most educational research supports the notion that "students learn by doing," and some researchers insist this is equally true in the private-lesson scenario; that if an instructor wants a student to learn certain habits

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[3] Robert A. Duke, Amy L. Simmons, and Carla Davis Cash, "It's Not How Much; It's How: Characteristics of Practice Behavior and Retention of Performance Skills," *Journal of Research in Music Education* 56, no. 4 (January 2009): 310-321.

[4] Nancy H. Barry and Victoria MacArthur, "Teaching Practice Strategies in the Music Studio: A Survey of Applied Music Teachers," *Psychology of Music* 22 (1994): 44.

[5] Barry, "A Qualitative Study of Music Lessons and Subsequent Student Practice Sessions," 62.

of effective practicing, the instructor must design his or her instruction such that the student actively experiences these exact habits on a regular basis within the lesson.[6] This document explores further the relationship between practice habits and teaching style, and provides insight to private instructors on how to teach students to practice effectively.

In the current study, I looked at undergraduate clarinet students in private lessons and individual practice sessions. I observed practice characteristics and compared the characteristics demonstrated by several students to activities experienced in their lessons. The purpose of this study was to examine the extent to which selected undergraduate clarinetists demonstrate characteristics of effective practice in a practice session, and to investigate the relationship between characteristics observed in practice and activities students experienced in a preceding private lesson.

Need for and Limitations of the Study

In terms of music research, the existing knowledge of practicing and applied teaching pedagogy is relatively young. Although the body of research continues to grow, few studies offer direct and practical solutions to applied instructors, the very individuals most likely to instill effective practice habits in young musicians.

A 2009 study by Duke, Simmons, and Cash examined practice behavior in piano

[6] Robert A. Duke, "Sequencing Instruction" in *Intelligent Music Teaching: Essays on the Core Principles of Effective Instruction* (Austin: Learning and Behavior Resources, 2005): 89-119.

students and its effect on retention after twenty-four hours.[7] Following a retention test, the researchers compared the practice behavior of the three highest-scored musicians and generated a list of characteristics that exemplified their practice approach. Notably, this research provides a valuable list of effective practice characteristics that could greatly benefit teachers and students of all instruments. Ideally, research would build on the study of Duke et al. by (1) observing similar practice characteristics in other instruments and (2) studying the private-lesson scenario to determine whether a correlation exists between practice habits and instructor behavior. The current study contributes to this body of research by utilizing an adapted list of Duke's characteristics of effective practice to observe undergraduate clarinet students, and examines the relationship between selected practice sessions and the preceding private lessons. This research begins to help us understand how our instruction affects our students' practice behavior.

A better understanding of how to teach students effective practice habits could go a long way towards further establishing pedagogical methods for applied clarinet teaching. Research indicates that most, if not all, college music students will teach private lessons at some point in their career.[8] Yet a review of the literature illustrates a distinct lack of applied lesson pedagogy training for students of most instruments in university music degree programs, as well as a lack of research suggesting how to best

[7] Duke, Simmons, and Cash, "It's Not How Much; It's How," 310-321.

[8] Edward Kilenyi, "Doctoral Degrees for Applied Music," *Music Journal* 14 (1956): 22. Quoted in Richard C. Gipson, "An Observational Analysis of Wind Instrument Private Lessons" (Ph.D. diss., The Pennsylvania State University, 1978): 6.

instruct private teachers.[9] As a result, instead of considering the most effective pedagogical methods, many applied teachers base their instruction primarily on how they were taught.[10] Before an effective method of applied clarinet teaching pedagogy can be put into regular practice, further research is required to examine the methods of applied instructors and their students.

In the past thirty years, scholars have begun conducting studies that examine various aspects of applied instruction, but to date research has provided little specific information about the pedagogy of practicing that applied teachers can implement in their studios. The results of the current study will augment the existing research on applied teaching pedagogy, and provide specific and useful information for college clarinet instructors. Further research of this type is needed to offer accessible information to those that can make use of it on a daily basis.

This study includes sixteen undergraduate clarinet students and seven professors from Texas, Kansas, and Arkansas. In order to draw more meaningful conclusions, further research with larger samples in other states and provinces is needed, as well as studies including students of varying instruments and levels. As well, I intended the observed lessons practice sessions to represent typical scenarios for the teachers and students, and for this reason no format or specific material was

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[9] A possible exception is the field of piano pedagogy, for which courses and degrees exist at many universities to train pianists in effective methods of piano instruction. For more information, see Hui-Ju Camille Fu, "A Status and Vision Investigation of US University Piano Pedagogy Programs" (Ph.D. diss., University of North Texas, 2007).

[10] Richard C. Gipson, "An Observational Analysis of Wind Instrument Private Lessons" (Ph.D. diss., The Pennsylvania State University, 1978): 5.

requested. However, more detailed research is required to control some of these variables and provide empirical information about students' practice habits. Finally, the current study conducted an exploratory comparison between those characteristics observed in practice sessions and each student's preceding private lesson. Additional research is necessary to develop a observational instrument that examines examples of instructors "teaching students to practice" in order to accurately assess compare what teachers say, do, and have students do, to what behavior students exhibit in individual practice.

Chapter 2

SURVEY OF RELATED LITERATURE

Introduction

Relative to other areas of music education research, the practice-room venue has not been explored to a great extent. Moreover, the pedagogy of effective practice habits has hardly been addressed at all. This chapter will examine samples of research in the following areas: (1) skill acquisition through practicing, (2) instruction of practice techniques, and (3) applied music instruction, to show the extent of existing knowledge and the need for the proposed study.

Acquisition of Musical Skill

Although little information exists on the pedagogy of practicing, a large amount of research has been conducted on the topic of acquiring skill both outside and within the field of music. A survey of educational psychology research on human learning is beyond the scope of this study. The publications cited here represent only a small sample of numerous pertinent studies regarding skill acquisition, many of which involve intricate frameworks with many criteria for measuring acquired skill. As the primary aim of the current study is to provide practical information for applied instructors, this section will only include research connected with acquiring skill in music (i.e., practicing). The studies addressed below serve to illustrate some fundamental principles governing skill acquisition in music.

Among the many scholars who have addressed skill acquisition is K. Anders Ericsson, a Swedish cognitive psychologist from Florida State University whose research addresses the acquisition of expert performance through "deliberate practice" in various domains, including music.[1] Deliberate practice can be defined as "a very specific activity designed for an individual by a skilled teacher explicitly to improve performance."[2] For the most effective learning, this model describes the following necessary elements: "a well-defined task with an appropriate difficulty level for the particular individual, informative feedback, and opportunities for repetitions and corrections of errors."[3] Ericsson's model indicates that effective acquisition of musical skill involves the clear setting of appropriate goals and feedback, in addition to repetition.

In 1981, Gruson conducted a research study on practicing skills of piano students and expert pianists.[4] She observed and recorded practice sessions and coded behaviors in 20 categories defined in the Observational Scale for Piano Practicing, and

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[1] K. Anders Ericsson, "Deliberate Practice and the Acquisition of Expert Performance: An Overview," in *Does Practice Make Perfect?: Current Theory and Research on Instrumental Music Practice,* edited by Harald Jørgensen and Andreas Lehmann (Oslo, Norway: Norges musikkhøgskole, 1997): 9-51.

[2] Ralf T. Krampe and K. Anders Ericsson, "Maintaining Excellence: Deliberate Practice and Elite Performance in Young and Older Pianists," *Journal of Experimental Psychology* 125, no. 4 (1996): 333.

[3] Ericsson, "Deliberate Practice," 27.

[4] Linda M. Gruson, "Rehearsal Skill and Musical Competence: Does Practice Make Perfect?" in *Generative Processes in Music: The Psychology of Performance, Improvisation, and Composition,* edited by John A. Sloboda (Oxford: Oxford University Press, 2000): 91-112.

compared findings between levels of player. The results include increases for higher-level musicians in practice time, repeating sections, playing hands separately, and decreases in errors and pauses. Analyses also indicated that as musical skill increased, students repeated larger sections of music, and the repetitions were more frequent. Gruson's findings are consistent with the literature, confirming that expert musicians set proximal goals by isolating sections of music (noting that the size of the repeated section increases with more experienced musicians), solve problems, and perform frequent repetitions of correct trials. Additionally, this study is of particular significance to the proposed document in that it observed behaviors in terms of specific practicing strategies.

Further research of music practice by Barry observed practice sessions of seventh- through tenth-grade students, separating them into either a "structured practice" or a "free practice" group.[5] The structured group was given specifically timed instructions such as "silent fingering" and "slow repetition of trouble spots."[6] After eight weeks, the students' performances were assessed, indicating greater improvement in the structured group. Barry's study suggests that systematic routine of structured practice, along with the encouragement of slow repetition, results in higher levels of music performance.

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[5] Nancy H. Barry, "The Effects of Different Practice Techniques Upon Technical Accuracy and Musicality in Student Instrumental Performance," *Research Perspectives in Music Education* 1 (1990): 4-8.

[6] *Ibid.,* 4.

Very little research has investigated effective practice through observation of students' practice sessions. A study by Geringer and Kostka observed 2,000 practice sessions of university-aged music students, and coded practicing behavior in certain categories.[7] The study's main purpose was to compare practice room observations to the results of a survey students took for which they estimated the time they devote to different categories of practicing. While its results are useful towards determining students' perceptions of their practice habits, this study does not address the effect applied teachers may or may not have on the practice habits of college students.

In 2009, Duke, Simmons, and Cash conducted a study examining the practice behaviors and retention of piano students.[8] Seventeen college-level pianists were told to practice a difficult, three-measure passage until they could play the excerpt at a prescribed tempo. Twenty-four hours later, the subjects returned and performed a retention test, playing the passage fifteen times at the target tempo. After ranking the performances in the retention test, Duke and his colleagues reported a significant relationship between retention test rankings and correct performance trials (both complete and partial correct trials) in practice, and a negative relationship with incorrect trials. Correspondingly, they observed no connection between the retention rankings and total practice time, number of overall trials. In other words, the length of time or number of times they played the passage did not result in successful

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[7] John M. Geringer and Marilyn J. Kostka, "An Analysis of Practice Room Behavior of College Music Students," *Contributions to Music Education* 11 (1984): 24–27.

[8] Robert A. Duke, Amy L. Simmons, and Carla Davis Cash, "It's Not How Much; It's How: Characteristics of Practice Behavior and Retention of Performance Skills," *Journal of Research in Music Education* 56, no. 4 (January 2009): 310-321.

performance; rather, the students that performed the best in the retention test demonstrated the most correct trials and the fewest incorrect trials. While these results are consistent with existing research and not surprising, Duke et al. included an interesting second component that proved integral to the current study.

When they ranked the performances in the retention test, the researchers found that "three participants whose retention tests earned the highest ranks were clearly superior to the next-highest-ranked participants . . . distinguished . . . by a more consistently even tone, greater rhythmic precision, greater musical character (purposeful dynamic and rhythmic inflection), and a more fluid execution." Duke et al. analyzed the practice behaviors of these three highest-ranked players, and compiled a list of eleven characteristics that "best characterized their work." Notably, this list provides simple descriptors of effective practice; characteristics that undoubtedly merit testing in other research areas. The current study builds on that of Duke, Simmons, and Cash, by adapting their list of effective practice characteristics to observe clarinet students, and by adding a component not addressed by any of the research mentioned in this section: examining the relationship between the applied lesson and the practice session.

Instruction of Practice Strategies

The shortage of information about how to teach effective practice strategies illustrates an area of music pedagogy that is somewhat unexplored; a void that the current document helps fill. This section will review the relatively few studies that deal with how to teach effective practice habits.

The work of Barry and MacArthur takes steps towards determining how teachers implement practice strategies into their instruction.[9] They developed the *Music Practice Instruction Inventory* and surveyed ninety-four music teachers about teaching students to practice. The results showed many differences among teachers, but there was partial agreement of one item: most teachers said that they "always" or "almost always" discuss specific practice strategies with their students.[10] Another study by Kostka surveyed college-level music teachers and students about practicing, and again nearly all teachers reported that they discuss practice strategies with their students.[11] However, Kostka reported that a large majority of the students (67%) stated that practice strategies were not discussed in their lessons.[12] This points out a discrepancy between what teachers say they do in lessons, and what students think they learn in lessons, and brings up the question: "What is actually going on in lessons in terms of practice strategies?"

In a 2007 study, Barry observed lessons and subsequent practice sessions of undergraduate instrumentalists, and surveyed the instructors and students about

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[9] Barry and MacArthur, "Teaching Practice Strategies."

[10] *Ibid.*, 44.

[11] Marilyn J. Kostka,"Practice Expectations and Attitudes: A Survey of College-Level Music Teachers and Students," *Journal of Research in Music Education* 50 (2002): 145-154.

[12] *Ibid.*, 145.

practicing.[13] Of the many strategies teachers reported using on the questionnaires, few were actually observed in the lessons. Of the strategies that were observed in the lessons, even fewer were observed in the students' subsequent practice session. In fact, the strategies students implemented most in their practice session were those that the teacher had emphasized through action and example. Barry concluded that the biggest influence on students' practice sessions was "what the teachers actually *did and asked the students to do* . . . and not what the teachers merely *said.*"[14] Like Barry's research, the current study utilizes qualitative methodology, but focuses on the presence of effective practice characteristics (as described by Duke et al.) in undergraduate clarinet students.

Applied Music Instruction

Although the current document does not analyze the teaching of applied clarinet instructors in detail, a selected survey of the existing literature illustrates the relatively young body of research on applied music instruction.

Perhaps the earliest study on the topic was conducted by Abeles, who in 1975 surveyed music students about their perceptions of characteristics of effective applied instructors.[15] Several years later, Richard Gipson conducted one of the first studies

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[13] Nancy H. Barry, "A Qualitative Study of Applied Music Lessons and Subsequent Student Practice Session," *Contributions to Music Education* 34 (2007): 51-65.

[14] Barry, "A Qualitative Study," 62.

[15] Harold Abeles, "Student Perceptions of Characteristics of Effective Applied Music Instructors," *Journal of Research in Music Education* 23, no.2 (1975): 147-154.

observing applied lessons and analyzing teacher and student behavior.[16] Gipson created an observational instrument to measure behaviors in the private music studio, and observed 81 college-level private lessons to determine the proportional makeup of lessons and the effect of certain variables (teacher, level of the student, or sequence of lesson) on teacher behavior. Since Gipson's pioneering study, many authors have examined specific teacher behaviors in applied lessons.[17] A study by Duke and Henninger is one example of many that observed teacher feedback in lessons, and another study of Duke's dealt specifically with pace of various teacher behaviors in lessons.[18] While these publications provide useful information about the specific behavior of teachers and students in applied lessons, they do not address the effectiveness of the instruction itself.

Several studies, however, do seek to uncover the fundamental principles of effective applied teaching. Gholson and Cura studied effective teaching based on

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[16] Richard C. Gipson, "An Observational Analysis of Wind Instrument Private Lessons" (Ph.D. diss., The Pennsylvania State University, 1978).

[17] Robert A. Duke,"Teacher and Student Behavior in Suzuki String Lessons: Results from the International Research Symposium on Talent Education," *Journal of Research in Music Education* 47, no.4 (1999): 293-307; Marilyn J. Kostka, "An Investigation of Reinforcements, Time Use, and Student Attentiveness in Piano Lessons" *Journal of Research in Music Education* 32, no.2 (1984): 113-122; Charles P. Schmidt, "Applied Music Teaching Behavior as a Function of Selected Personality Variables," *Journal of Research in Music Education* 37, no.4 (1989): 258-271.

[18] Robert A. Duke and Jacqueline C. Henninger, "Effects of Verbal Corrections on Student Attitude and Performance," *Journal of Research in Music Education* 46, no.4 (1998): 482-495; Robert A. Duke, Carol A. Prickett, and Judith A. Jellison, "Empirical Description of the Pace of Music Instruction," *Journal of Research in Music Education* 46, no.2 (1998): 265-280.

experience and authority by observing a specific teacher known to be a successful pedagogue.[19] Both studies observed renowned violin teacher Dorothy DeLay, and identified characteristics of goal setting and problem solving. In another study, Siebenaler examined teacher and student behavior in piano lessons, and had experts observe and rate the effectiveness of the instruction.[20] Among other conclusions, Siebenaler's results shows a faster pace of instruction associated with effective teaching, but overall, experts were not reliable in identifying effective teaching. This indicates that while there is disagreement among experts of what qualities constitute effective instruction, some teacher characteristics (such as a fast pace) are viewed as more effective than others.

Several other studies report findings consistent with Siebenaler's. Buckner observed lesson behavior in terms of the setting and reaching of short-term (proximal) goals in piano lessons.[21] She found that students of teachers who were active and structured their instruction so that the students performed frequent trials were more successful. In another doctoral dissertation, Colprit observed expert teachers of the

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[19] Kim Neill-Van Cura, "The Applied Music Studio: A Model of a Master Teacher" (Ed.D. diss., Baylor University, 1995); Sylvia A. Gholson, "Proximal Positioning: A Strategy of Violin Pedagogy," *Journal of Research in Music Education* 46, no.4 (1998): 535-545.

[20] Dennis J. Siebenaler, "Analysis of Teacher-Student Interactions in the Piano Lessons of Children and Adults," *Journal of Research in Music Education* 45 (1997): 6-20.

[21] Buckner, Janice Lynne Judy, "Assessment of Teacher and Student Behavior in Relation to the Accomplishment of Performance Goals in Piano Lessons" (D.M.A. Treatise, The University of Texas at Austin, 1997).

Suzuki string method, and identified behaviors of rapid pace, and successful performance trials. With these studies, several themes of effective applied instruction begin to surface: the setting of proximal goals, problem solving, and the need for fast-paced instruction allowing for frequent performance trials.

As the relatively new body of research on applied teaching continues to grow, more light is shed on the mysterious setting of the private lesson, and of what teaching behaviors characterize effective instruction within it. Though the works mentioned above represent only a few of what currently exists on the topic, further research is needed to address other important issues of applied music, including how to teach effective practice habits.

Conclusion

A rather substantial body of existing scholarship concerning acquisition of musical skill helps to reaffirm that which expert musicians know to be necessary components of acquiring skill, including a recent study by Duke and colleagues which outlines characteristics of effective practice. However, studies that actually observe student practice are few, and none examine the possible connection between what takes place in private lessons and students' practice behaviors. Studies of applied music instruction have examined specific behaviors of teachers and students, as well as the principles of effective instruction, but have not looked specifically at practice strategies. In effect, there is a fundamental deficiency of literature dealing with how to teach effective practice habits, which illuminates the need for the current study.

Chapter 3

DESIGN OF STUDY

Introduction

A vast body of educational research exists pertaining to learning music, and scholars continue to study new and more effective ways to teach music to students at various levels. As applied teachers, we may not take advantage of the valuable knowledge gained from this type of research, even though it might directly relate to our day-to-day instruction. If the information were made accessible to the average private music instructor, more teachers (and, in turn, students) would benefit from the important conclusions about the teaching and learning of music drawn from educational research.

For this reason, I conducted a study that employs qualitative methodology to examine clarinet students and their teachers and provides insight into student practice, in hopes that the findings will both contribute to the existing body of research as well as directly benefit private instructors.

The 2009 study by Duke, Simmons, and Cash provided the necessary observational instrument with which to investigate practice sessions.[1] Although adapted slightly for the current study, their list of characteristics of effective practice is the basis for my examination of student practice.

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[1] Robert A. Duke, Amy L. Simmons, and Carla Davis Cash, "It's Not how Much; It's How: Characteristics of Practice Behavior and Retention of Performance Skills," *Journal of Research in Music Education* 56, no. 4 (January 2009): 317.

With this research, I aimed to answer two questions: (1) what practice characteristics are evident in practice sessions of selected clarinet students, and how does this data compare to that of Duke et al.? and (2) is there an apparent relationship between the characteristics present in selected students' practice sessions and the activities they experience in lessons?

Subjects and Setting

This study has two main research components: (1) observation of videotaped practice sessions and (2) observation of videotaped lessons. To obtain a pool of instructor subjects, I compiled a list of about ten notable clarinet professors at universities in surrounding states, and I sent each an email to discern their willingness to participate. From those contacted, seven instructors agreed to take part in the project: all were full-time clarinet instructors (four men and three women) in major universities in Kansas, Texas, and Arkansas. Five of the subjects had attained a Doctorate of Musical Arts degree, one was A.B.D. (and has since completed the D.M.A.), and one had attained a Master of Music.

Each of the seven instructors recruited three students who agreed to have a private lesson and practice session videotaped. After accounting for illness, students not showing up, and one equipment failure, the study counts sixteen student subjects as having participated. The students were all undergraduates enrolled in applied clarinet lessons, and all but one were music majors. Although an attempt was made to observe lessons of only freshman or sophomore clarinet students, student subjects

included eight freshmen, two sophomores, three juniors, one senior, and one "senior plus."

Data Collection

I collected biographical data through two separate means: (1) an interview with each of the instructors (see appendix A: Interview Questions for Instructor Participants) and (2) a short questionnaire completed by fifteen of sixteen student subjects containing demographic information (see appendix B: Questionnaire for Student Participants).[2]

Data from instructor interviews and student questionnaires were recorded using numbers to represent each instructor and corresponding student (i.e., "Instructor A, B, C, etc." and "Student A1, A2, A3, etc."). No names or identifying information were used. I transcribed the interviews with each of the seven instructors, in which demographic information was collected including degrees earned, number of years in current position, other courses they were currently teaching, number of years teaching applied clarinet at the college level, and number of years teaching private lessons. For students, information collected included age, degree program, current year in school, number of years taking private clarinet lessons, and number of years studying with their current instructor (see tables 1 and 2).

[2] The interviews and questionnaires also include general questions about subjects' views on practicing. While their answers provide insight into teachers' and students' thoughts on practicing, the researcher has decided subjects' opinions are beyond the scope of the present study, and should be reserved for future research.

Table 1: Student Subject Demographic Information

	AGE	DEGREE	YEAR	CREDITS	YEARS LESSONS	YEARS w/ TEACHER
A2	20	BME	Soph	1	2	2
A3	18	BME	Fresh	1	9	0.5
B1	19	BM-Perf	Soph	2	3.5	1
B2	19	BME	Fresh	2	5	1.5
C1	18	BME	Fresh	2	6	2
C2	20	BME	Jun	2	9	3
C3	18	BME	Fresh	2	8	0.5
D1	23	BM	Sen +	2	5	4
E1	19	BME	Soph	2	3	2
E2	22	ENG LIT	Sen	1	3	1
E3	19	BME	Fresh	2	1.5	0.5
F1	18	BA	Fresh	1	2	0.5
F3	20	BA	Jun	2	6	1
F4	20	BME	Jun	2	6	1
G1	18	BME	Fresh	2	5	4
G2	19	BME/BM	Fresh	2	4	1
	AVG age: 19.4		Fr=8 So=3 Jun=3 Sen & up =2		AVG yrs of private lessons: 4.9	AVG yrs with current teacher: 1.6

Table 2: Instructor Subject Demographic Information

	HIGHEST DEGREE	Years at current institution	Years college teaching	Approx. # of majors in studio	Other classes taught
A	DMA	9	18	10-12	Music Theory; WW Methods
B	DMA (A.B.D.)	4	9	14	Aural Skills; WW Methods
C	DMA	38	41	20	Clarinet Methods
D	MM	18	18	15-20	Reedmaking
E	DMA	8	13	10-11	Chamber Winds
F	DMA	2	12	12	Clar. Pedagogy; Chamber Mus.
G	DMA	8	9	16	Clarinet Methods

For each student, I videotaped one lesson and the subsequent practice session. The lessons observed were regularly scheduled lessons when possible (thirty or sixty minutes in length), during the semester in the setting of the instructors' regular teaching studio. The lesson observations took place during the first six weeks of the Spring 2008 semester. To cause the least amount of inconvenience to the instructors, I was present to administer the questionnaires and set up the video equipment. Two of the instructors requested that I remain in the room during their lessons; ultimately I was present for six of sixteen lessons.

Following each lesson, the student recorded a thirty-minute individual practice session. In several cases, the student's schedule required that he or she return later to record a practice session, but all practice sessions took place within four hours of completing the lesson. In hopes of observing a typical practice environment, I recorded practice sessions in a location of the student's choosing, and all but one took place in a school practice room (one was recorded in the instructor's studio after hours). I set up video recording equipment and started the tape at the beginning of each practice session, left the room, and returned after thirty minutes to stop the recording. Students were not given any specific instruction about what and how to practice; in most cases, I informally told them to do what they "would normally do."

Observational Instrument and Data Analysis

After recording the footage, I viewed and transcribed videotaped observations of the lessons, and viewed and produced detailed profiles of the videotaped practice sessions. I created an instrument to measure practice characteristics based on a list

published by Duke, Simmons, and Cash in their 2009 article.[3] I consulted with two additional experts in the field (an Assistant Professor of Woodwinds and an Assistant Professor of Instrumental Music Education at state universities) to adapt the list of practice characteristics the study by Duke et al. to suit the present study. A comparison between the list of Duke et al. and the adapted list for the current study is shown in table 3.

Observational Instrument

In terms of organization, I chose to label my characteristics with numbers to differentiate from Duke's items that were designated with letters A through K (and to avoid confusion with my subjects to which I also assigned letters). In addition to this change, we determined that several alterations were necessary to the content of the list:

1. Duke's first characteristic (item A from Duke et al.: "Playing was hands-together early in practice.") was eliminated because of its specificity to piano practice (although we noted that in Duke's list, this item also generally represents the process of learning music with all its components intact as early as possible.)
2. The remainder of the characteristics were altered to include a descriptor of generalization, such as "most" or "usually." Since, unlike the research of Duke et al., practice sessions in the present study include a wide variety of material at various levels of preparation (some sight-reading, some polishing for

[3] Robert A. Duke, Amy L. Simmons, and Carla Davis Cash, "It's Not How Much; It's How: Characteristics of Practice Behavior and Retention of Performance Skills," *Journal of Research in Music Education* 56, no. 4 (January 2009): 310-321.

Table 3: Comparison of Practice Characteristics between Duke et al and the Current Study

Practicing Characteristics of Duke et al.	Adapted Characteristics for Current Study
A. Playing was hands together early in practice	N/A
B. The initial conceptualization of the music was with inflection.	1. Consistent conceptualization of the material is with appropriate musical inflections (articulation, grouping, shape).
C. Practice was thoughtful, as evidenced by silent pauses while looking at the music, singing/humming, making notes on the page, or expressing verbal "ah-ha"s.	2. Practice was mostly thoughtful, as evidenced by silent pauses while looking at the music, making notes on the page, singing/humming, tapping/counting, thoughtfully fingering notes on clarinet, or expressing verbal "ah-ha"s.
D. Errors were preempted by stopping in anticipation of mistakes.	3. Most errors were preempted by stopping in anticipation of mistakes.
E. Errors were addressed immediately when they appeared.	4. Most errors were addressed immediately when they appeared.
F. The precise location and source of each error was identified accurately, rehearsed, and corrected.	5. The precise location and source of most errors was identified accurately, rehearsed, and corrected.
G. Tempo of individual performance trials was varied systematically; logically understandable changes in tempo occurred between trials (slowed down enough; didn't speed up too much).	6. The tempo of individual performance trials was usually varied systematically; logically understandable changes in tempo occurred between trials (slowed down enough; didn't speed up too much).
H. Target passages were repeated until the error was corrected and the passage was stabilized, as evidenced by the error's absence in subsequent trials.	7. Target passages were usually repeated until the error was corrected and the passage was stabilized, as evidenced by the error's absence in subsequent trials.
I. When tempo was changed, the first trial at the new tempo was nearly always accurate.	8. When tempo was changed, the first trial at the new tempo was nearly always accurate.
J. After the initial learning phase, errors were only intermittent; there were no persistent errors.	9. After the initial learning phase on a target passage, errors were only intermittent; there were no persistent errors on passages that had been previously addressed.
K. At least 20% of all starts were complete, correct performances, although not necessarily at the target tempo 120 bpm.	10. There were observable examples of complete, correct performances of an extended passage (one or more phrases), although not necessarily at the target performance tempo.

performance), it was deemed necessary that the presence of characteristics be determined by a judgment that overall, each statement accurately described the practice of each subject.

3. In the second item (item C from Duke et al.: "Practice was thoughtful . . . "), we included two additional non-playing techniques, "tapping/counting" and "thoughtfully fingering notes on clarinet."
4. The ninth item (item J from Duke et al.) was altered to include the phrase "target passage" to again account for the wider array of material played in practice sessions.
5. The final item (item K from Duke et al.) was generalized due to the lack of quantifiable data in the current study, and the term "complete" was replaced with criteria to represent a larger trial. We agreed that since Duke's item K observed "complete, correct performances," its aim was to measure the presence of "large" trials (as opposed to a small, isolated figure), repeatedly performed correctly, and therefore we determined that the instrument for this study should measure "complete, correct performances of an extended passage (one or more phrases)". We did acknowledge that Duke's statement recognizes a percentage (twenty percent) of complete, correct trials, which is not accurately reflected in the present version. However, we ultimately decided that observing one or more examples of repeating a complete, correct performance of a larger trial would provide the necessary information to draw general conclusions.

The adapted list of characteristics examined in this study, along with a brief explanation of each, is as follows:

1. *Consistent conceptualization of the material is with appropriate musical inflection.* Does the student appear to aim consistently for appropriate musical gesture (such as appropriate articulation, shape, grouping, dynamics, etc.), even when working on a technical passage?
2. *Practice was mostly thoughtful, as evidenced by silent pauses while looking at the music, making notes on the page, singing/humming, tapping/counting, silently fingering notes on clarinet, or expressing verbal "ah-ha"s.* Does the student seem to be choosing tasks thoughtfully, and/or employing non-playing practice strategies, rather than (apparently) mindlessly playing through the music?
3. *Most errors were preempted by stopping in anticipation of mistakes.* Does the student generally avoid/minimize errors by preemptive activities, such as stopping or altering tempo (i.e. anticipate and do something to prevent errors, rather than play until an error occurs and react to it)?
4. *Most errors were addressed immediately when they appeared.* Did the student (1) notice most errors, and (2) make an attempt to correct them (even if just to play once and move on)?
5. *The precise location and source of most errors was identified accurately, rehearsed, and corrected.* Did the student usually isolate an appropriate amount of music to address the specific problem and do something to attempt to correct it?
6. *The tempo of individual performance trials was usually varied systematically; logically understandable changes in tempo occurred between trials (slowed down enough; didn't speed up too much).* Did the student usually change the tempo to appropriate speeds at appropriate times to allow for successful trials?

7. *Target passages were usually repeated until the error was corrected and the passage was stabilized, as evidenced by the error's absence in subsequent trials.* Did the student usually repeat the passage enough times to fix the problem?
8. *When tempo was changed, the first trial at the new tempo was nearly always accurate.* Was the student generally skilled in choosing appropriate tempos to allow for consistently correct trials?
9. *After the initial learning phase of a target passage, errors were only intermittent; there were no persistent errors on passages that had been previously addressed.* Did the student's work on target passages generally result in improved execution?
10. *There were observable examples of repeating a complete, correct performance of an extended passage (one or more phrases), although not necessarily at the target performance tempo.* Are there examples in which the student deliberately isolates a passage of one or more phrases and plays it more than once correctly in its entirety?

Data Analysis

After adapting the observational instrument from Duke et al., I viewed the practice session tapes again and using a blank observation form for each subject, recorded which of ten practice characteristics were evident in each practice session (see appendix A, Observation Form). For reliability, I had an additional person (an Assistant Professor of Woodwinds) independently observed the recorded practice sessions using the same observational instrument, and we compared our results. If a discrepancy occurred, the videotape was watched again, and we discussed until a

consensus was reached. With these data I calculated simple percentages that indicated the proportion of student subjects that exhibited each of the various practice characteristics.

Finally, to answer the second research question, I selected several student subjects whose results from the practice session observations I would compare to their preceding private lessons. From the transcribed lessons and repeated viewings of the videotaped lessons, I observed general teaching approaches, noted examples of students experiencing some of the specific practicing characteristics, and looked for connections between what characteristics were present in their lesson and subsequent practice session. These results are presented in chapter 4.

Chapter 4

RESULTS AND DISCUSSION

Introduction and Background

In the study conducted by Duke, Simmons, and Cash, the researchers observed seventeen college-level piano students each in one practice session. Following a retention test of the passage that had been practiced, the subjects were ranked in order of their performances. The researchers found that "three participants whose retention tests earned the highest ranks were clearly superior to the next-highest-ranked participants . . . distinguished . . . by a more consistently even tone, greater rhythmic precision, greater musical character (purposeful dynamic and rhythmic inflection), and a more fluid execution."[1] The researchers examined the practice sessions of these three highest-ranked players, and compiled a list of eleven characteristics that "best characterized their work." This list was adapted for the purposes of the current study, and the resulting ten characteristics were examined in the practice session of selected clarinet students (see appendix A, Observation Form).

The results and discussion presented in this chapter address two questions: (1) what practice characteristics are evident in practice sessions of selected clarinet students, and how does this compare to the data of Duke et al.? and (2) is there an apparent relationship between the characteristics present in selected students' practice sessions and the activities they experience in lessons?

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[1] Robert A. Duke, Amy L. Simmons, and Carla Davis Cash, "It's Not How Much; It's How: Characteristics of Practice Behavior and Retention of Performance Skills," *Journal of Research in Music Education* 56, no. 4 (January 2009): 315.

Part I: Characteristics Evident In Practice Sessions

Results of Part I

Sixteen undergraduate clarinetists were video recorded in one thirty-minute practice session. Two researchers (myself and another expert in the field) independently observed the recordings evaluating each session overall as showing (or not showing) evidence of each of the ten characteristics of effective practice (as adapted from the list presented by Duke et al.).[2] We compared our data, and reached a consensus on the items that were not initially in agreement. Table 4 shows the results of these observations, and the following section summarizes the findings in two categories by examining results by characteristic and then by subject.

Results by Characteristic

In looking at the various characteristics, several stand out as more commonly exhibited by the student subjects. The most prevalent was item 4 (*Most errors were addressed immediately when they appeared*) which was observed in all but one student. The vast majority of students were aware of each error they played, and did something to correct it, if only to play it a second time and move on. The next most observed characteristic was item 2 (*Practice was mostly thoughtful, as evidenced by silent pauses while looking at the music, making notes on the page, singing/humming, tapping/counting, thoughtfully fingering notes on clarinet, or expressing verbal "ah-ha"s.*) which was reported in 10 of 16 students (63%). Item 5 (*In target trials, the*

[2] Duke, Simmons, and Cash, "It's Not How Much," 317.

Table 4: Characteristics Present in Student Practice Sessions (in order of most to least characteristics present)

Subject	Characteristics #1	#2	#3	#4	#5	#6	#7	#8	#9	#10	Total Char. Present
F3	x	x	x	x	x	x	x	x	x	-	9
B1	x	x	-	x	x	x	x	-	x	-	7
C1	x	x	-	x	x	-	x	-	x	-	6
E2	-	x	x	x	-	-	x	-	x	-	5
E3	x	x	-	x	x	-	-	-	-	x	5
D1	x	x	-	x	x	-	-	-	-	-	4
F1	-	x	-	x	x	x	-	-	-	-	4
C3	x	-	-	x	x	-	-	-	-	-	3
E1	x	x	-	-	-	-	-	-	-	x	3
F4	-	x	-	x	x	-	-	-	-	-	3
A2	x	-	-	x	-	-	-	-	-	-	2
A3	-	x	-	x	-	-	-	-	-	-	2
C2	-	-	-	x	x	-	-	-	-	-	2
B2	-	-	-	x	-	-	-	-	-	-	1
G1	-	-	-	x	-	-	-	-	-	-	1
G2	-	-	-	x	-	-	-	-	-	-	1
# of subjects out of 16 demonstrating each item	8	10	2	15	9	3	4	1	4	2	
% of subjects demonstrating each item	50 %	63%	13%	94%	56%	19%	25%	6%	25%	13%	

CHARACTERISTICS:
1 Musical Conceptualization
2 Thoughtfulness
3 Errors Preempted
4 Errors Addressed
5 Errors Isolated
6 Tempo Variation
7 Repetition
8 Accurate Tempo Choice
9 Lack of Persistent Errors
10 Complete, Correct Trials of Larger Passages

precise locations and source of errors was usually identified accurately, isolated appropriately, and a correct version was rehearsed) was observed in 56% of student subjects, showing that over half of subjects were able to locate most errors accurately,

and to isolate an appropriate amount of music to work on. Finally, observations of practice sessions showed that item 1 (*Consistent conceptualization of the material is with appropriate musical inflections.*) appeared in 50% of all student sessions, indicating that half the students observed appeared to consistently play with appropriate musical shape, even when working on a technical passage.

It seems equally notable to point out the characteristics that appeared least often. One student out of sixteen (6%) exhibited item 8 (*When tempo was changed, the first trial at the new tempo was nearly always accurate.*). Two students displayed item 3 (*Most errors were preempted by stopping in anticipation of mistakes.*) and item 10 (*There were multiple examples of deliberately repeating complete, correct performances of a passage (one or more phrases), although not necessarily at the target performance tempo.*), indicating that only 13% of subjects were deliberate in minimizing errors and maximizing correct repetitions.

While more that half of subjects showed accuracy in identifying and isolating errors (item 5, as stated above), fewer were observed displaying the characteristics that deal with error correction: 19% of subjects employed systematic tempo variation (item 6: *The tempo of individual performance trials was usually varied systematically; logically understandable changes in tempo occurred between trials (slowed down enough; didn't speed up too much).*), while 25% effectively used repetition (item 7: *Target passages were usually repeated until the error was corrected and the passage was stabilized, as evidenced by the error's absence in subsequent trials.*). Finally, four students demonstrated item 9 (*After having worked on a target passage, errors were only intermittent; there were few persistent errors on passages that had been*

previously addressed.), indicating that 25% of subjects' work effectively corrected errors addressed within the observed practice session.

Results by Subject

Table 4 above shows the number of characteristics present in each subject. One student (F3) clearly stood out as demonstrating the most characteristics, exhibiting nine of ten items. The subject with the next greatest number of observed items demonstrated seven characteristics (B1), followed by one subject with six (C1). Two subjects showed five characteristics each (E2 and E3), for a total of five subjects (31%) that exhibited five or more of the characteristics of effective practice adapted from Duke et al. The remainder of subjects (11 students, 69%) displayed less than half of the characteristics.

Summary of Results of Part I

These results show that overall, selected undergraduate students demonstrated relatively few of the characteristics of effective practice as outlined by Duke et al. Thirty-one percent of subjects exhibited five or more of the ten items, while the remaining students demonstrated less than half of the characteristics. The most frequently observed items in practice sessions were (1) immediately addressing errors (item 4) and (2) practicing thoughtfully (item 2). The least-frequently demonstrated behaviors had to do with avoiding errors: few students were observed (1) choosing tempos that consistently allowed for correct trials (item 8), (2) preempting errors by slowing or stopping (item 3), and (3) performing multiple correct trials of a complete

passage (item 10). These results, and how they compare to those of Duke et al, will be examined further in the following discussion.

Discussion of Part I

The following discussion examines the above results in more detail in order to address the first of two research questions: what practice characteristics are evident in practice sessions of selected clarinet students, and how does this compare to the data of Duke et al.? Using Duke's list as my observational instrument, this portion of the study examines the practice sessions in terms of his characteristics of effective practice, and compares the data to the findings of Duke, Simmons, and Cash.[3] Several elements in the design of the current study differ from Duke's research; therefore where necessary explanation is provided for certain variations.

As above, the information is presented in two main categories: (1) by characteristic, including the most-frequently reported characteristics (items 4, 2, 1, and 5), least-frequently reported characteristics (items 8, 3, and 10), and the remaining characteristics (items 6, 7, and 9) and (2) by subject, including overall patterns and a closer look at four individual subjects' practice sessions (Students F3, B1, F1, C1).

Discussion by Characteristic

This section will further examine the presence of various practice characteristics as presented above, and compare them to the findings of Duke et al.,

[3] Duke, Simmons, and Cash, "It's Not How Much," 317.

which are presented in Table 5.

Most-frequently reported characteristic (items 1, 2, 4, and 5)

An examination of the data of Duke et al. shows some similarities and differences with that of the present study. The purpose of this document is not to compare the effectiveness of practice habits between piano students and clarinet students, so conclusions need not be drawn in that regard. However, a comparison of the current data and that of Duke et al. reveals some consistency among the practice characteristics that are most and least common overall, and also lends some reliability to the present study.

In terms of prevalence, the top two most exhibited characteristics in Duke's study were items B and C, each showing 71% of subjects displaying these behaviors. item E appeared next most frequently, with 59% of subjects. These top three most frequently observed characteristics correspond in the present study with items 1 (*Musical Conceptualization*) at 50%, 2 (*Thoughtfulness*) at 63%, and 4 (*Errors Addressed*) at 94%, (three of the four most frequently observed characteristics in the present study). This indicates a correlation between the most commonly observed characteristics in Duke's research and in the present study. Duke's findings are consistent with my own, suggesting that most students practice somewhat thoughtfully, with attention to musical inflection/conceptualization, and they consistently address errors as they appear.

Table 5[4]: Data of Duke et al.: Characteristics Present in Student Practice Sessions (in order of most to least characteristics present)

Subject (labeled by rank in retention test)	Characteristics											Total Char. Present*
	A*	B/1	C/2	D/3	E/4	F/5	G/6	H/7	I/8	J/9	K/10	
1	x	x	x	x	x	x	x	x	x	x	x	10
2	x	x	x	x	x	x	x	x	x	x	x	10
3	x	x	x	-	x	x	x	x	-	x	x	8
6	x	x	-	-	x	x	-	x	-	x	x	6
4	x	-	x	-	x	x	-	x	-	x	-	5
14	x	x	x	x	x	-	-	-	-	-	x	5
7	x	x	-	-	-	x	-	-	-	x	x	4
10	x	x	x	-	x	-	-	-	-	-	-	3
9	-	-	x	-	x	-	x	-	-	-	-	3
5	x	x	-	-	-	-	-	-	-	x	-	2
8	x	x	-	-	x	-	-	-	-	-	-	2
11	x	x	x	-	-	-	-	-	-	-	-	2
12	x	x	x	-	-	-	-	-	-	-	-	2
15	x	-	-	-	x	-	x	-	-	-	-	2
17	x	x	x	-	-	-	-	-	-	-	-	2
13	-	-	x	-	-	-	-	-	-	-	-	1
16	-	-	x	-	-	-	-	-	-	-	-	1
# of subjects out of 17 demonstrating each item	14	12	12	3	10	6	5	5	2	7	6	
% of subjects demonstrating each item	82%	71%	71%	18%	59%	35%	29%	29%	12%	41%	35%	

* Total characteristics present, omitting Duke's Item A

CHARACTERISTICS:

A Hands together (omitted from current study)
B Musical Infection (corresponds to Item 1 in current study)
C Thoughtfulness (Item 2)
D Errors Preempted (Item 3)
E Errors Addressed (Item 4)
F Errors Isolated (Item 5)
G Tempo Variation (Item 6)
H Repetition (Item 7)
I Accurate Tempo Choice (Item 8)
J Lack of Persistent Errors (Item 9)
K Complete, Correct Trials (Item 10)

[4] Duke, Simmons, and Cash, "It's Not How Much," 317. This data represents the presence of eleven characteristics by Duke et al. that were compiled by examining the practice behaviors of the students with the highest-ranked performances on the retention test.

Item 4: Errors Addressed. For the fourth item (*Most errors were addressed immediately when they appeared*, item E in Duke's study), my data show a much larger percentage (94%) than that of Duke (59%), which merits further explanation. Because of the differences in our research designs, the subjects in both studies were dealing with different practice circumstances; Duke's students were responsible for three measures of music in total, while subjects in the current study could work on as much music as they wished. Not surprisingly, the students I observed often played through very large amounts of music in one long trial, sometimes returning afterwards to address individual errors in more detail. I consulted with another expert in the field, and we independently observed several practice sessions to test my adapted observational instrument. We agreed on two criteria for item 4 (*Addressing errors*): did the subject (1) notice an error, and (2) do something to address it? This included a rather frequent situation in which the student made a mistake, stopped momentarily, corrected the error once, and continued on in the music. I found that almost every student (15 out of 16 subjects) consistently noticed and stopped for errors, and addressed them to some degree, even if just to play the passage correctly once (often after several incorrect trials). Interestingly, the one student who often seemed most unaware of errors had a discussion in his lesson about needing a new eyeglasses prescription, which may account for some of the unnoticed errors.

Duke's corresponding item (E) does not specify the criteria for what constitutes an error being "addressed," but in any case it seems possible that the number of students he observed exhibiting this practice behavior is lower that what I observed due to the limited amount of music in his study. For instance, if a student

made a mistake in bar two of the passage, they could not play much farther before having to return to the problem area, whereas subjects in the current study could (and often did) play through an entire movement before returning to the location of an error.

Item 2: Thoughtfulness. Also observed quite frequently (exhibited in 63% of subjects' practice sessions) was the second item (*Practice was mostly thoughtful, as evidenced by silent pauses while looking at the music, making notes on the page, singing/humming, tapping/counting, thoughtfully fingering notes on clarinet, or expressing verbal "ah-ha"s.*). This finding is relatively consistent with the data of Duke et al., which reported the corresponding characteristic (item C: *Practice was mostly thoughtful, as evidenced by silent pauses while looking at the music, singing/humming, making notes on the page, or expressing verbal "ah-ha"s*) in 71% of subjects.

It seems important to point out the difficulty of identifying "thoughtfulness" as an outside observer. Following our test observations, we discussed the problem of using "silent pauses" and "making notes on the page" as criteria for thoughtful practice. Certainly, long pauses in practice do not guarantee thoughtfulness. And, conversely, some of the most thoughtful practice can take place with hardly any pause in playing. We discussed other observable non-playing behaviors (in addition to singing/humming" as described by Duke) that can indicate thoughtfulness. For these reasons, we determined the criteria of "thoughtful practice" to be: does the student seem to be choosing tasks thoughtfully, and/or employing non-playing practice

strategies, rather than (apparently) mindlessly playing through the music? Despite this clarification, it proved difficult to determine which students were truly thoughtful, and therefore the reported results may not explicitly indicate the presence of this characteristic in student subjects' practice sessions.

Item 1: Inflection/Musical Conceptualization. Another apparent inconsistency might be with Duke's item B (*Practice was with inflection early on; the initial conceptualization of the music as with inflection*), which appeared more frequently (in 71% of his subjects) than the corresponding item in the present research (item 1: *Consistent conceptualization of the material is with appropriate musical inflection*), exhibited by 50% of clarinet subjects. Understanding that the term "inflection" refers to something specific in piano pedagogy, it seems that it does not translate exactly to clarinet playing. Our test observations brought up the issue of how to define "inflection," and we determined the criteria to be: did the student appear to aim consistently for appropriate musical gesture (such as appropriate articulation, shape, grouping, dynamic, etc.), even when working on a technical passage? This described students that, in general, appeared to pay attention to musical details, in contrast to "bashing through," seemingly without any consideration of the musical line.

Item 5: Errors Isolated. As mentioned in the results reported above, another characteristic that was frequently observed in the current study is item 5 (*In target trials, the precise location and source of errors was usually identified accurately, isolated appropriately, and a corrected version was rehearsed.*), which was exhibited by 56% of subjects. Following the test observations, we specified two criteria for this

characteristic: (1) was the student able to narrow down the precise problem area, and (2) did they rehearse a corrected version? This described students who were able to locate the problem, isolate a reasonable amount of music (i.e., not "too much" at once), and attempted to rehearse the isolated passage. However, the "corrected version" they rehearsed was not consistently correct, and did not take into account tempo, the number of repetitions, or whether the errors were effectively fixed (which are addressed in items 6, 7, and 9, respectively). In other words, students that were reported as displaying this characteristic were finding the problem and isolating it, but were not necessarily effective in solving the problem.

In contrast to the relatively large percentage exhibiting this behavior in the current study (56%), the corresponding characteristic in the research of Duke et al. (item F) was noted in only 35% of subjects. An explanation for this inconsistency might be found in the wording difference between Duke's list and my adapted instrument. In the list of characteristics compiled by Duke et al., item F reads: "The precise location and source of each error was identified accurately, rehearsed and corrected." Following our test observations, we found this phrasing problematic (specifically, the word "corrected"), as it did not suggest what evidence would determine whether the error was corrected. We decided that the success of error correction was covered in item J (item 9 in the current study), which states that after working on a passage "errors were only intermittent; there were no persistent errors" (which is discussed in more detail below). It is likely that the high percentage observed in the current study is due to this difference in wording, and the fact that with my item 5, I observed whether students were identifying and isolating problems, rather

than whether or not they corrected the problem.

Summary. Overall, the characteristics that I observed most frequently were items 4, 2, 5, and 1, indicating that over half of subjects noticed and immediately addressed errors, were mostly thoughtful in their practicing, accurately identified and isolated problem areas, and conceptualized the material with appropriate musical inflection. Duke et al. also reported these items (with the exception of item 5) as the most frequently observed characteristics, and, therefore, the two sets of results are generally consistent.

Least-frequently reported characteristics (items 8, 3, and 10)

In looking at the characteristics that were reported the least frequently, there are several worth highlighting. item 8 (*When tempo was changed, the first trial at the new tempo was nearly always accurate*) was observed in 6% of subjects, and item 3 (*Most errors were preempted by stopping in anticipation of mistakes.*) was observed in 13%. The corresponding items in the research of Duke et al. (items I and D) were recorded in 12% and 18%, respectively. This indicates a correlation between the least commonly observed characteristics in the present study and in the research of Duke et al. An examination of my data reveals consistency with Duke's and suggests that relatively few students take action to avoid errors, either by slowing to preempt them, or choosing tempos that allow for correct trials.

Item 8: Tempo Alteration. I observed one student out of sixteen that consistently chose appropriate tempos allowing for successful trials. Unlike most, this

student chose reasonable, sufficiently-slow tempos, and increased the tempo gradually, hardly ever going "too fast, too soon." Many of the remaining subjects displayed approximations of this characteristic, but usually demonstrated one of two common problems that prevented their inclusion in the category. (1) Some students eventually chose slower tempos, but required multiple tries to find a tempo that was slow enough to allow for controlled execution of the passage. Upon discovering an error, these students typically backed up the tempo gradually to find an appropriate tempo, usually with many errors repeated along the way. (2) Other students did consistently choose drastically slower tempos, and rehearsed a corrected, controlled version, but then immediately went back to performance tempo (i.e., did not gradually increase the tempo), which almost always resulted in errors.

Duke's corresponding characteristic, item I (same wording) was observed in only two of seventeen subjects. In fact, the two students that exhibited this practice behavior were the top two ranked students based on the retention test, and two of the three from whom the list of practice characteristics were compiled. My results were consistent with those of Duke et al., which suggest that (1) very few students chose tempos allowing for consistently correct trials, and (2) only the "best" students (as defined by the rank of the retention test) exhibit this behavior in practice sessions.

Item 3: Errors Preempted. The next item observed least frequently relates to the previous. Item 3 (*Most errors were preempted in anticipation of mistakes.*) was reported in two students, 13% of subjects. This characteristic described students who (often after discovering an error) anticipated errors and took various measures to

proactively avoid making them, such as stopping or choosing a much slower tempo. In contrast, the vast majority of students consistently played until they made an error, and reacted to it after the fact. These findings are consistent with the data of Duke et al., which reported that 18% of subjects (3 students) exhibited this behavior. Additionally, two of the three were the top two ranked subjects in Duke's study, again indicating that this particular characteristic describes the habits of someone with effective practice skills.

Item 10: Complete, Correct Trials. Another characteristic observed in only two subjects (13%) was item 10 (*There were multiple examples of deliberately repeating complete, correct performances of a passage (one or more phrases), although not necessarily at the target performance tempo*). This is slightly lower than the findings of Duke et al., in which the corresponding item K was reported in 35% of subjects. This discrepancy may represent another characteristic affected by the adaptation of Duke's list into my observational instrument.

In the study by Duke et al., the final characteristic of effective practice reads: "At least 20% of all starts were complete, correct performances, although not necessarily at the target tempo of 120 bpm."[5] By necessity, we made several obvious changes, such as removing specific metronome marking, and generalizing the measure of occurrences, because of the lack of quantifiable data in the current study. The differences are a result of research design, which is where the current study departs from that of Duke et al. Specifically, my subjects were not limited in what they

[5] Duke, Simmons, and Cash, "It's Not How Much," 317.

practiced, whereas Duke's subjects were confined to three measures of music. In considering the adapted wording for, we agreed that since Duke's item K observed "complete, correct performances," its aim was to measure correct repetitions of "larger" trials (in that case, the entire three-measure excerpt) as opposed to an isolated fragment. After conducting test observations, it became clear that further clarification was needed to accurately represent Duke's characteristic in a practice scenario that included more than three measures of music. I wanted to combat several issues that arose: (1) Often, although students set out to repeat a large segment of music, they made errors that were fixed along the way, therefore not achieving a correct repetition. (2) Sometimes a student would play through a section of music correctly, and then back up and correctly perform part of the same section again. While this could arguably count as repeating a passage, in these cases, the beginning and end of the passage were not usually consistent (i.e., if the passage was correct, the student would move on past the point that had been previously isolated) and therefore he or she did not succeed in correctly repeating a contained passage of music. Consequently, we decided to add the term "deliberately" to represent the subject's attempt to identify (possibly in advance) a passage of which he or she would commence a series of repetitions. With the adapted wording, we observed very few examples of this characteristic, reporting two students as exhibiting item 10. Duke's results present a higher percentage of subjects (35%) demonstrating this characteristic, which is not surprising given the limited context of the practice material.

Other characteristics: items 6, 7, and 9

The three characteristics not yet discussed are item 6 (*The tempo of individual performance trials was usually varied systematically; logically understandable changes in tempo occurred between trials (slowed down enough; didn't speed up too much*), item 7 *(Target passages were usually repeated until the error was corrected and the passage was stabilized, as evidenced by the error's absence in subsequent trials*), and item 9 (*After having worked on a target passages, errors were only intermittent; there were few persistent errors on passages that had been previously addressed*). I observed these practice characteristics relatively infrequently, noting them in 19%, 25%, and 24% of subjects, respectively.

Only 19% of subjects (3 students) exhibited systematic tempo variation as observed by item 6. While many other students decreased the tempo, the alterations between performance trials were often sporadic, and not logical. In other cases, student had a very systematic method for varying the tempo, but the tempos chosen were not appropriate (i.e. too fast), resulting in an illogical sequence of incorrect trials. Based on the parenthetical stipulations stated in this characteristic ("slowed down enough; didn't speed up too much"), students' choice of tempo often prevented their inclusion in the group that demonstrated item 6.

It is worth noting that with its parenthetical clause, Duke's corresponding item G evaluated students' choice of tempo to some degree: "Tempo of individual performance trials was varied systematically; logically understandable changes in

tempo occurred between trials (slowed down enough; didn't speed up too much)."[6] Assuming that Duke's characteristic aimed to describe students that not only altered systematically, but also wisely, we decided not to change the wording (with the exception of adding the word "usually"). Following our test observation process, I further clarified the criteria as follows: Did the student usually change the tempo to appropriate speeds at appropriate times to allow for successful trials even if there were a few incorrect trials along the way? This wording allowed us to also recognize students who generally played things slowly "enough" and had an appropriate pace of speeding up, even if they did not tend to choose tempos that allowed for consistently accurate trials the first time (which is included in item 8, as discussed above).

Despite adapting the wording to make item 6 more inclusive, I observed only 3 students (19% of subjects) who met these criteria. This result is slightly lower (but not entirely inconsistent) with that of Duke et al., who observed the corresponding item G in 35% of subjects. In both studies, the data indicate that relatively few students demonstrated a method of tempo alteration that was both systematic and logical.

Another infrequent characteristic was item 7 (*Target passages were usually repeated until the error was corrected and the passage was stabilized, as evidenced by the error's absence in subsequent trials*), which I observed in 25% of students' practice sessions. In other words, only one quarter of all subjects effectively utilized repetition. Following the test observations, we clarified the criteria of this characteristic as follows: Did the student usually repeat the passage effectively enough

[6] Duke, Simmons, and Cash, "It's Not How Much," 317.

to fix the problem? The deliberate use of the word "effectively" in my description aimed to suggest both (1) "enough" repetitions and (2) correct repetitions. As stated above, observations using these criteria showed 25% of subjects exhibited item 7, a result that seems consistent with Duke's corresponding item H, which was reported in 29% of student practice sessions.

Item 7 closely relates to the final characteristic, item 9 (*After having worked on a target passages, errors were only intermittent; there were few persistent errors on passages that had been previously addressed.*). I observed this characteristic in 25% of subjects, which shows a strong correlation with the 25% in item 7. The reason for the correlation is this: item 7 evaluated effective repetition, as evidenced by the errors absence in subsequent trials and item 9 assessed the presence (or lack) of persistent errors. Following our test observations, the necessity arose to differentiate between these two characteristics in terms of the correction of errors. We decided that item 9 confirms the presence of effective repetition as measured in item 7, but does not exclusively suggest repetition as the means of correcting errors. In other words, subjects that demonstrated effective habits of repetition in item 7 would also likely exhibit a lack of persistent errors in item 9, however, subjects that "fixed" the errors as described in item 9 may have done so through means other than strict repetition (i.e., playing slowly, etc.). This seems to accurately reflect what took place in Duke's study between corresponding items H and J: all of the subjects exhibiting item H (effective repetition) also exhibited item J (lack of persistent errors); however, an additional two subjects showed evidence of item J, suggesting that the lack errors (item J) was not necessarily a direct result of repetition (item H) (see Table 5 above for data of Duke et

al.). Despite this differentiation, data in the current study show that the same number of subjects (in fact, the same individuals) exhibited both items 7 and 9. This is somewhat consistent with the results presented by Duke et al. noted above, which report corresponding items H and J in 29% and 41% respectively.

Observations using these criteria revealed an interesting and potentially problematic situation in subjects: many students isolated and played a passage numerous times in a row, sometimes even subjecting the passage to various rhythmic alterations along the way. However, often when these students returned to the passage in context, the error remained. This indicates that it is not the quantity, but the quality of trials that results in successful error correction.

Discussion by Subject

Subjects Overall

An examination of the data reveals a picture of which and how many characteristics my subjects exhibited in their practice sessions, and how the results of the current study compare to that of Duke et al. As described above, Duke, Simmons, and Cash conducted an experiment that included practice sessions as well as a retention test the following day. The authors ranked the retention test performances, examined the top three ranked subjects in more detail, and compiled a list of practice characteristics that were nearly all present in practice sessions of students with the three highest scores on the retention test. In looking at the data, three subjects in Duke's study exhibited all – or almost all – the characteristics on his list. The top two

ranked students on the retention test both demonstrated all ten items, followed by the third-ranked student who exhibited eight of ten practice characteristics.[7] In his article, Duke presents the data with a line drawn after these top three students, to show a separation between them and the remainder of the subjects, who each demonstrated between one and seven characteristics.

In the current study, I observed a similar separation between two students (subjects F3 and B1) and the remaining subjects. Here, I should reiterate that my research did not include a retention test, and my "ranking" system (in Table 4) is based solely on the number of characteristics exhibited by each student, and therefore the effectiveness of my subjects' practice sessions is not measured in the same way as Duke's. However, subjects F3 and B1 stood out from the rest as examples of effective practicing (as outlined by Duke et al.), which is justified both with the number of characteristics observed in each (nine and seven, respectively), and the overall impression we had in repeatedly observing their recorded practice sessions. I will examine subjects F3 and B1 in closer detail later in this discussion. For these reasons, I have grouped these two subjects F3 and B1 into one category (subjects exhibiting the most practice strategies) and will discuss them separately from the remaining subjects. Delineation between subject B1 (who demonstrated seven of ten characteristics) from the next subject (C1, who exhibited 6 of 10 characteristics) was made for the following reasons: First, this delineation is consistent with Duke's findings, as his lower tier of students began with those exhibiting 6 or fewer characteristics. Secondly,

[7] As mentioned in Chapter 3, the original list by Duke et al. included eleven items, but I chose to eliminate the first one ("Practice was hands-together early in practice.") as it had no equivalent behavior for clarinetists.

subjects F3 and B1 were the only two to exhibit all of items 5, 6, and 7; a combination reported as significant in Duke's results, and one that will be discussed further below. Lastly, the practice characteristics demonstrated by F3 and B1 were nearly always unquestioned between the two independent observers, while several of the characteristics subject C1was reported to exhibit were argued (also discussed in more detail below).

Another consistency between Duke's results and my own is revealed by examining the other end of the spectrum of observed characteristic: most students exhibited less than half (fewer than five) of the characteristics of effective practice as outlined by Duke et al. In the current study, 69% of subjects exhibited four or fewer characteristics while a similar number (65%) of Duke's subjects demonstrated four or fewer characteristics. This indicates that, consistent with Duke et al., results of the current study describe a situation in which the large majority of student subjects are lacking a number of characteristics for effective practice in their sessions.

Patterns noticed in characteristics of error correction (Items 5, 6, and 7). In the results reported by Duke et al., three characteristics were all present in the sessions of the top-ranked pianists.[8] Item F (Errors isolated), item G (Tempo Variation), and item H (Repetition) are described by Duke as relating to the subjects' "handling of errors."[9] Duke reports that these characteristics appeared in few of the other subjects' practice sessions, and points out that none of the other subjects demonstrated all three of these characteristics.

[8] Duke, Simmons, and Cash, "It's Not How Much," 318.
[9] *Ibid.,* 318.

It is noteworthy that in the current study, the top two subjects (i.e., the two that exhibited the highest number of characteristics in total) were the only subjects to demonstrate all three of the corresponding items, item 5 (*In target trials, the precise location and source of errors was usually identified accurately, isolated appropriately, and a corrected version was rehearsed.*), item 6 (*The tempo of individual performance trials was usually varied systematically; logically understandable changes in tempo occurred between trials (slowed down enough; didn't speed up too much).*) (see table 4 above). While other students exhibited one or two of these (mostly item 5), no other students demonstrated all three characteristics. This is consistent with Duke's findings, and suggests that the combination of these three behaviors – isolating errors, altering tempo, and repeating effectively – appeared in the subjects whose practicing stood apart from the rest.

Indeed, Duke's study suggests that "the actions taken subsequent to the discovery of errors were major determinants of the effectiveness of practice." As well, Duke et al. point out that, while the top-ranked subjects did not necessarily make fewer errors in the beginning stages of learning the music, they were "better able to correct them in ways that precluded their recurrence." Therefore, as Duke states, "the effective handling of error correction led to a higher proportion of correct, complete performance trials during practice."[10]

These observations cannot be directly translated to the current study, as mine did not include a retention component to test the "effectiveness" of subjects' practicing. However, the consistency of results described above suggests that my

[10] Duke, Simmons, and Cash, "It's Not How Much," 318.

subjects F3 and B1 might have performed well had they been subjected to a retention test. Predicting retention based on the observation of practice sessions remains an interesting topic for future research.

The role of item 9. One observation not outlined by Duke et al. is the role of item J (my item 9: *After having worked on a target passage, errors were only intermittent; there were few persistent errors on passages that had been previously addressed*). In both Duke's and the present study, subjects that demonstrated the error correction combination (my items 5, 6, 7) as described above also exhibited item 9. Not surprisingly, both studies showed that subjects that demonstrated effective handling of errors also displayed a lack of persistent errors.

Additionally, as mentioned above, my results seem to illustrate a relationship between item 9 (Lack of Persistent Errors) and item 7 (Repetition), indicating a connection between repetition and decreased errors. While this observation is not contradictory to Duke's findings, it seems notable, as it is not the topic of repetition that he highlights as most important. Rather, he describes item G (my item 6, Tempo Variation) as a distinctive feature of the top-ranked subjects' practice approach. The relationship I observed between repetition and decreased errors, then, might draw attention to a possible inconsistency with Duke's study, or, at the very least, highlight something he chose not to point out. In any case, it seems to suggest that when it comes to error correction leading to fewer persistent errors, repetition was a slightly more important behavior than tempo, as was suggested by Duke.

Individual subjects

At this point, it is necessary to discuss several of the student subjects' practice sessions in detail. Rather than present a detailed description of each of the sixteen subjects, I will highlight several examples that deserve closer examination. Given the inherent subjectivity, I will attempt to provide explanations for how we reached consensus on particular items as necessary. Practice sessions of the two subjects that exhibited the most characteristics (subjects F3 and B1) will be described, followed by a brief discussion of two other subjects (F1 and C1) whose data does not completely reflect their practice behavior, and therefore merit some further explanation.

Student Subject F3. Nine of out ten practice characteristics were evident in the practice session of Student Subject F3. At the time, Student F3 was a junior working towards a Bachelor of Arts in Music. Not surprisingly, Subject F3 clearly exhibited those characteristics reported with the highest frequency. F3 immediately addressed mistakes (item 4), was thoughtful in practicing (item 2), as evidenced by carefully chosen tasks which worked towards short term goals within the session, and demonstrated consistent musical conceptualization (item 1). With regard to the combination of "error correction" characteristics described above (items 5, 6, 7, and 9), Subject F3 without question demonstrated each of them clearly.

An example of a practice frame that illustrates the presence of item 5 (Errors Isolated), item 6 (Tempo Variation), item 7 (Repetition), and item 9 (Lack of Persistent Errors) is presented in appendix C. In this six-minute frame, the subject isolates a nine-note descending arpeggio that was previously played unevenly. The

subject begins with the metronome set well below performance tempo, and takes the passage through a treatment that included about ninety-eight correct trials and fewer than five errors. Student F3 varied the trials in length, tempo, and rhythm, but each was an accurate approximation of the nine-note target passage.

This extended passage was chosen to illustrate Subject F3's meticulous practice process. She accurately identified the precise problem area, isolated an appropriate amount of music (nine notes, sometimes narrowing to five notes), and rehearsed, thus meeting the criteria for item 5 (Errors Isolated). She also fulfilled the requirements for item 6 (Tempo Variation), as her tempo variation was extremely systematic; beginning at a slow enough tempo to allow for correct repetitions, and speeding up gradually. As exemplified in the excerpt above, Subject F3 clearly was familiar with the practice strategy of repetition, and demonstrated item 7 (Repetition) with enough repetitions to stabilize the passage, which was evidenced by the correct trial in context at the end of the practice frame. In terms of item 9 (Lack of Persistent Errors), this subject had no persistent errors on this passage, or any of the ones she worked on in this manner.

Although Student Subject F3 did not subject every problem passage to this rigorous error-correction procedure, the example above is representative of her overall practice approach. Notably, two of the least-frequently reported characteristics (items 3 and 8) were represented in the practice session of Subject F3. She was one of only two subjects that preempted errors as described in item 3. Consistent with Duke's observation of his top-ranked subjects as described above, Subject F3 did not necessarily avoid all errors, but rather handled them differently than most, taking

proactive steps to prevent an error's recurrence. In the practice frame above, examples of this characteristic include (but are not limited to) (1) choosing an appropriately slow starting tempo, and (2) upon detecting a potential inaccuracy, isolating further (from nine notes down to five) to prevent repetition of the error. Student F3 was one of the only students to consistently demonstrate this behavior, and was, in fact, the only subject who exhibited item 8 (Accurate Tempo Choice). Item 8 describes a detail within the tempo alteration scenario in which the student's tempo choices consistently allowed for an immediate correct trial. Subject F3's very gradual pace of increasing the tempo was appropriate, and allowed for nearly every trial to be correct, as is illustrated in the excerpt above.

It is worth noting that there was one characteristic that Student F3 did not demonstrate: Item 10 (*There were multiple examples of deliberately repeating complete correct performances of a passage (one or more phrases), although not necessarily at the target performance tempo.*). Subject F3 provided numerous examples of deliberately repeating a correct repetition. However, one observes that once she put the nine-note passage back into context of the phrase, she did not perform any correct trials of the phrase. As one of the least-frequently reported characteristics, item 10 eluded most subjects and points out an issue that bears further examination. While many students (including Subject F3) were proficient in isolating small target areas, and some even executed multiple correct repetitions of the isolated passage, almost no subjects isolated a full phrase of music, and deliberately repeated complete, correct performances.

Student Subject B1: Along with Student F3, the subject whose practice approach stood out from the remaining subjects was Student Subject B1. Subject B1 was a sophomore performance major working on a Bachelor of Music degree. Like F3, Student B1 demonstrated the more common characteristics of addressing errors (item 4), thoughtful practice (item 2), and musical conceptualization (item 1). Subject B1 also exhibited the four characteristics that deal with error correction (items 5, 6, 7, and 9).

The transcription presented in appendix C highlights a five-minute practice frame that accurately represents the practice approach of Subject B1. In this excerpt, the student is playing with a metronome sounding subdivided sixteenth notes, and encounters a seventeen-note problem passage that goes into the altissimo range of the instrument. Student B1 breaks the passage into smaller sections (isolating down to a two-note interval), systematically alters the tempo, and executes about thirty-seven correct trials and twelve incorrect trials.

While this subject perhaps does not exhibit the patience of F3, Student B1 undoubtedly demonstrates some of the same practice characteristics. As the excerpt illustrates, Student B1 accurately identified and isolated the problem area (item 5). Although B1 starts with a larger target area than F3, B1 similarly works down to narrow the passage further to isolate the precise error. In terms of tempo variation, overall Student B1 demonstrated "logically understandable changes in tempo" (item 6). It should be noted that where this excerpt shows an immediate return to the initial tempo (without gradually increasing speed), this does not completely represent Subject B1's usual method of varying tempo, as evaluated by the two observers. The

example does, however, provide support of Student B1's effective habits of repetition (item 7), with evidence of repeating a single passage up to eighteen times in a row (fourteen correct). As well, the end of the excerpt shows a successful trial of the target area in context, confirming the "error's absence in subsequent trials" in item 7. Later trials of the same piece included sporadic errors on the target passage in question, but mistakes seemed "intermittent." This describes a typical outcome in the practicing of Subject B1 and, therefore, we reported the presence of item 9 (Lack of Persistent Errors) in her practice session.

One notable aspect of the practice approach of Student B1 is the pace of the sequence of tasks. More than any other student, B1 demonstrated a rapid (yet effective) pace of working from one trial to the next, often incorporating a mini-practice frame within a larger one with no pause in playing. A typical frame, like the excerpt in appendix D, showed a series of repeated trials of various lengths, all strung together in one large rehearsal sequence. While this does not indicate a more effective pace of practicing, it was one feature that distinguished the practice session of Student B1 from the rest of the subjects.

Where B1 did not measure up to F3, however, is in the area of avoiding errors. As described above, Student F3 was one of just a few subjects that preempted errors (item 3) and chose tempos that allowed for correct trials the first time (item 8). In contrast, Student B1 was much more reactive, playing until making an error and then attempting to fix it. This describes the behavior most often observed in the current study; students often had a plan for dealing with errors once they were made (isolation, repetition, etc.), but rarely took any significant measures to prevent errors

the first time.

From this discussion, it seems clear that the practice sessions of Subjects F3 and B1 demonstrate the most characteristics of effective practice as outlined by Duke et al. These were the only two subjects that exhibited all three of the error-correction characteristics (items 5, 6, and 7), a fact that merits their inclusion in a separate group. The results seem to accurately reflect the practice approaches of these two subjects, and emphasize them as the subjects exhibiting the most characteristics of effective practice, and, therefore, possessing the most effective practice habits.

However, it seems not all subjects were represented as accurately. In many instances, subjects displayed certain characteristics some – even much – of the time, but did not so do consistently enough to meet the criteria of the observational items. The opposite scenario also proved problematic: several students demonstrated effective characteristics (and were reported as displaying a certain item), but also exhibited behaviors that stood out as notably ineffective. Our observation data represent those items that each subject "usually" exhibited, and in several subjects do not tell the whole story. It therefore is necessary to highlight Subjects C1 and F1, whose data, for different reasons, do not seem to accurately reflect their practice sessions.

Student Subject F1. A freshman pursuing a Bachelor of Arts in Music, Subject F1 exhibited four of the ten practice characteristics. Like most students, F1 demonstrated thoughtfulness in practicing (item 2) as well as a tendency to immediately address errors when they occurred (item 4). This student was also one of

the 56% of subjects that accurately located and isolated errors. However, Student F1 was one of only four subjects that showed systematic tempo variation (item 6), and in fact is the only subject besides the top two who exhibited this characteristic. This brings up an interesting question: what prevented Student F1 from meeting the criteria for more of the practice characteristics exhibited by F3 and B1?

The answer might be found through a more detailed look into the practice session itself. The practice session of Subject F1 was split almost exactly in half, with the first fifteen minutes devoted to scales and arpeggios, and the second part to a movement of a solo. The work done on scales demonstrated very few characteristics of effective practice: the subject seemed to try to play each scale in its entirety, marking accidentals and correcting errors (once) as they occurred. Although Subject F1 sometimes isolated problem areas in the scales and attempted multiple repetitions, the repeated trials were often incorrect. The subject did not systematically alter the tempo, or even slow down enough to get many successful trials in the scale work. However, in switching to work on a solo, Subject F1's practicing became much more purposeful. The subject began with the metronome set at an appropriately slow tempo and incrementally increased the speed. The student set out to work on a large section (approximately sixty seconds of music), and identified within it several problem areas to work on. With each of these, F1 isolated a small amount of music, systematically slowed the tempo when necessary, and repeated, as illustrated in excerpt in appendix E. In this four-minute frame, the subject works on a fast passage of twenty-one notes. Subject F1 isolates various portions of the passage, systematically alters the tempo, and repeats trials more than once (in this excerpt, the subject performs approximately

nineteen correct trials and five incorrect ones).

Following this practice frame, subsequent errors in this target passage were only intermittent. This example demonstrates Student F1's ability to isolate errors, take them through systematic tempo variation, and repeat effectively. In fact, parts of this frame nearly meet the criteria of "deliberately repeating complete, correct performances of a passage" (item 10). The student deliberately tried to repeat the complete phrase, but did not succeed in getting more than one completely correct, and we were therefore unable to record the presence of item 10 for Student F1. Similarly, despite the clear evidence of effective repetition in the example above, we were unable to report that Student F1 "usually" repeated target passages until the "error was stabilized" (item 7) in large part due to the ineffective work on scales in the first half of the session. We faced the same challenge with item 9: most of the target passages in the student's solo were, in fact, effectively fixed, but because of the "persistent errors" in the scales, we were unable to report the presence of this characteristic overall. Such observations of Student Subject F1 bring up further questions about the inconsistencies in practicing which will be addressed later in Part II of this chapter.

Student Subject C1: C1 is another subject whose practice session is inaccurately represented by the results, but for the opposite reason as F1. Student C1, a freshman in a Bachelor of Music Education program, was among the subjects with highest number of items we observed, demonstrating six characteristics. All of the most commonly observed characteristics were evident in the practice session of Subject C1: the student addressed errors immediately (item 4), engaged in mostly

thoughtful practice (item 2), consistently conceptualized the material with appropriate musical inflection (item 1), and accurately identified and isolated errors (item 5). In addition, this student overall successfully eliminated persistent errors (item 9), and often did so through series of effective repetitions (item 7). The presence of these last two characteristics seems significant; in fact, other than the top Subjects F3 and B1, Student C1 was the only student to demonstrate three of the four items dealing with error correction (5, 6, 7, 9), as discussed above. This fact makes it seem as though Student C1would be considered among the best group of students (i.e., those exhibiting the most characteristics of effective practice); however, several aspects of the practice session describe a different story.

In the practice session, Subject C1 chose to work on a piece that had not been looked at before. The subject was a proficient sight-reader and got through a relatively large amount of music in the thirty minutes, making many improvements. We observed many instances of isolating errors and the student often executed multiple repetitions of the target trial. However, Student C1 did not demonstrate a systematic method of varying the tempo (item 7), and consequently played numerous incorrect trials that sometimes prevented the error's correction. Notably, Student C1 at no time used a metronome in the practice session, substantiating the lack of systematic tempo variation (item 7). Although the subject did consistently decrease the tempo of a target passage to a manageable speed, Subject C1 seemed in a hurry, and often returned immediately to performance tempo without any proximal increments in between. This sometimes resulted in the error's recurrence in subsequent trials.

I observed two examples of this scenario. The first occurred at 4:40 in the

practice session, when an error was discovered in a fast, legato passage of about fifteen notes. Student C1 isolated the target area, decreased the speed to an appropriately slow tempo, and subjected it to a series of rhythmic alterations (in which the subject systematically lengthened the first, then second, then third (etc.) note of each group of sixteenth notes). After about one minute of work at the slower tempo, the student returned to a faster tempo (close to the original tempo), and played the passage as written. This trial was not incorrect, but some finger unevenness remained. Subject C1 played the passage once more, a little faster, and moved on. About eight minutes later (at 12:40), Student C1 got to this passage in the music again, and played it incorrectly. At this point, the subject took it through a shorter sequence of rhythmic alterations at the slower tempo (about a thirty-second frame), then immediately returned to the faster performance tempo, executing one correct trial and moving on. Later still (at 18:00), the student encounters the same passage and plays it inaccurately (correct notes, but uneven fingers), stops to write in the music, and plays again (correctly) before moving on. Here the student achieved a correct trial on the second attempt at the target passage, which proved to be a common occurrence in this practice session.

The second example of Student C1's inconsistencies with tempo alteration is presented in appendix F. This excerpt describes an extended frame on one rapid passage of twenty-five notes in which the student alternates between slow, mostly-successful trials, and fast mostly-unsuccessful trials. During the five-and-a-half minutes spent on this passage, the subject attempted about eighty trials. In total, approximately fifty-five trials were correct, and most of these were executed at a

relatively slow, controlled tempo. The other twenty-four trials were incorrect, and usually the result of a trial at or close to performance tempo. As one perceives from the excerpt in appendix F, the general method of Subject C1 was to play until an error was made, slow the tempo somewhat, execute several correct repetitions, and then immediately return to performance tempo. In many of Student C1's frames, this method succeeded in eliminating errors. This excerpt, however, illustrates common occurrence in this subject's practice session: often, the sudden return to tempo results in recurrences of the mistake, and the process of slowing down had to begin again.

The end of the excerpt in appendix F describes a later frame in which the student encounters the same twenty-five-note passage and plays it incorrectly, and then commences another frame (of the same music) that includes six correct trials and seven incorrect trials. This indicates that the previous treatment was ineffective in correcting errors, and suggests that the time spent executing eighty trials may have been wasted.

Nevertheless, most of the troublesome passages addressed by Student C1 were effectively corrected, and for that reason he was reported as exhibiting several of the error-correction characteristics. However, the excerpt in appendix F illustrates the lack of systematic tempo alteration (item 6), and perhaps even brings into question two of the other items; item 7 (Repetition) and 9 (Lack of Persistent Errors), both which we reported as being present overall in his practice session. These inconsistencies bear further scrutiny and will be addressed further in the second part of this chapter.

Summary of Part 1

This discussion and the preceding results provide the answer to the first of two research questions: What practice characteristics are evident in practice sessions of selected clarinet students, and how does this data compare to that of Duke et al.? Most students (94%) addressed errors immediately when they appeared, and (63%) demonstrated mostly thoughtful practice. Half of subjects consistently conceptualized the material with appropriate musical inflection. While most students (56%) usually identified accurately and isolated problem areas, many fewer (25% or less) exhibited the other characteristics of error correction (systematic tempo alteration, effective repetition, and a lack of persistent errors). Additionally, the behaviors having to do with avoiding errors were observed in almost no practice sessions (under 14% of sessions). With a few exceptions, these results were consistent with data reported by Duke et al.

In examining student subjects exhibiting the various characteristics, two rose to the top as exhibiting the greatest number of the practice characteristics, demonstrating nine and seven of the items adapted from the list of practice characteristics by Duke et al. Consistent with Duke's findings, most students (69%) exhibited less than half of the items. In terms of individuals demonstrating the error-correcting characteristics (items 5, 6, 7, 9), I observed that only the practice sessions of the two top students (those exhibiting the most characteristics) showed evidence of all four. This was also consistent with the data of Duke et al.

Finally, because of the generalized observational statements (as well as the

highly subjective nature of the research), in some cases the reported data did not accurately reflect all activities that took place in the practice sessions. Instances were presented in which I described two subjects' practice behaviors in further detail (Students F3 and B1), to highlight some inconsistencies in their practice approaches. The next step is to explore the preceding private lesson of each student, and ascertain whether or not a relationship exists between each student's practice behavior and the activities they experienced in their lesson.

Part II: Relationship Between Practice Characteristics and Private Lesson

Introduction

The second component of this study examines the question: Is there an apparent relationship between the characteristics present in selected students' practice sessions and the activities they experience in lessons? I studied the video-recorded private lesson that took place before each student's practice session in an attempt to observe a relationship between an individual student practicing and the instruction he or she received in the lesson.

Due to the obvious differences between behavior in applied lessons and practice sessions, it was determined that my adapted list of practice characteristics did not translate directly to lessons and therefore could not be used as reliable instrument to observe lessons. Among the issues was error detection; in lessons, whether or not to immediately address errors is at the discretion of the instructor, who likely prioritizes which errors to work on. Therefore, recording a presence of item 4 in lessons (*Most errors were addressed immediately when they appeared.*) is not a valid measure of error detection in lessons. For this reason, in Part II of the study I employed a descriptive qualitative analysis from which I chose four individual case studies. Through multiple viewings of the tapes, I transcribed all sixteen lessons, and created a detailed profile of each, informally noting examples of Duke's characteristics of

effective practice.[11] I compared these notes to the results of my practice session observations in Part I and decided to examine the lessons of four student subjects—F3, B1, F1, and C1—in further detail. The following findings cannot be said to represent overall correlations between behavior in lessons and subsequent practice sessions, but present an examination of possible relationships observed in the subjects.

As several of the characteristics observed in practice sessions do not have an equivalent behavior in lessons, I focused the examination on the items dealing with errors correction (items 5, 6, 7, and 9), and discussed the presence of musical conceptualization (item 1) and characteristics of minimizing/avoiding errors (items 3, 8, and 10) where applicable. The following discussion presents observations I made between the lessons and practice sessions of Student Subjects F3, B1, F1, and C1.

Results and Discussion of Part II

Student Subject F3/Instructor F

As described in the results above, the practice session of Student Subject F3 showed evidence of all but one of the characteristics of effective practice as outlined by Duke. In examining F3's preceding private lesson I made observations that show a possible relationship between what Student F3 experienced in the lesson and the behaviors exhibited in the subsequent practice session.

[11] In most cases, the lesson immediately preceded the practice session, but all practice sessions took place within four hours of completing the lesson. Five of sixteen lessons were one hour long, and the rest lasted approximately thirty minutes. With the descriptive methodology employed, it was determined that the length of the lesson did not affect the data.

In this lesson I observed three aspects of Instructor F's teaching that warrant consideration: (1) the choice of appropriately slow tempos, (2) attention to details (musical and technical) within the slow tempo, and (3) discussion of practice habits.

Choice of appropriately slow tempos. Possibly the most notable feature of the instructor's teaching is the manipulation of tempo. Instructor F consistently used the metronome and chose speeds well below performance tempos in which to work. Often, even when Student F3 did not demonstrate specific note or rhythmic errors, the instructor drastically decreased the tempo and had the student rehearse sections with careful attention to detail. The transcribed portion of Student F3's lesson in appendix G illustrates a discussion about tempo and errors. The student had just performed a fast etude in its entirety, and after some discussion the instructor sets a new tempo (about seventy bpm slower) and begins a series of rehearsal frames in which the student plays substantially under tempo. This excerpt also provides an example of Instructor F's consistent musical conceptualization (item 1): at the end of the excerpt (13:57 in the lesson), following a discussion about rhythmic inaccuracies, the student performs the first trial (substantially under tempo). Instructor F's very first comment is about musical conceptualization, reminding the student to "never do the same thing twice."

Attention to detail within slow tempo. Another transcribed portion of the lesson demonstrates a trial in which the instructor isolates a short passage and has the student repeat it multiple times correctly (still under tempo) while incrementally suggesting ways to improve technical execution of the passage (see appendix G, excerpt 2). In

this excerpt, the teacher's sequence of instruction immediately establishes an acceptable product and then builds on it, resulting in eight correct trials (and two incorrect trials) by the student.

This excerpt illustrates effective isolation and repetition, and may therefore be considered evidence of items 5 and 7. It also brings up the point that slow tempos allow for much more than simply playing correctly. Throughout the first part of this lesson, Student F3 experienced the concept of playing a passage significantly under performance tempo, so much so that errors were practically non-existent. In fact, the instructor worked at this tempo on passages that did not even contain errors to begin with. In this way, Instructor F might be said to preemptively avoid errors (item 3).

However, one might observe several inconsistencies between the characteristics demonstrated by Subject F3 in the lesson and practice session. The first has to do with item 10 (*There were multiple examples of deliberately repeating a complete, correct performance of a passage (one or more phrases), although not necessarily at the target performance tempo.*). This was the one practice characteristic not evident in the student's practice session, however excerpt 2 in appendix G seems to clearly demonstrate the exact scenario described: multiple correct repetitions of a phrase under tempo. Although the student's practice session included several instances of isolating a small fragment of a phrase (such as the one addressed in the excerpt), there was no evidence of correct repetitions of a larger section (a phrase or more).

A possible explanation for Student F3's lack of deliberate repetition of a longer passage in practice might exist in the instructor's sequencing approach: in her lesson, Subject F3 was often given a directive to begin an already-correct passage again in a

slightly different way. However, the end-point of the trial is sometimes inconsistent, as the instructor allowed the student to play past the previous stopping point, and therefore they often enter into a new section with a new set of issues. This accurately describes the sequence of tasks that Student F3 demonstrated in the practice session, and may show a relationship between the practice behaviors exhibited and activities experienced in the lesson.

The second possible inconsistency is with item 6 (*The tempo of individual performance trials was varied systematically; logically understandable changes in tempos occurred between trials (slowed down enough; didn't speed up too much*). While there is no question that Student F3's lesson includes tempo changes (slowing down), there were no examples of systematic tempo alteration between trials. In other words, the student experienced practice of passages at a very slow tempo, but did not experience the process of speeding them up. Yet in her practice session Student F3 seemed quite adept at gradually increasing the speed and working the passage back to performance tempo. This brings up a question of where and how the student learned these habits of effective practice, if she does not appear to experience them in her lesson?

Obviously, there are several possible explanations, most of which acknowledge that such conclusions ought not be drawn from a single lesson and practice session. Student F3, a junior, may have experienced the process of reincorporating passages into context in her freshman or sophomore years. Or, the student may have come to the current teacher with effective practice habits in place. In any case, it seems as though Subject F3 already "knew" some practice strategies that she did not experience

in the lesson preceding her practice session.

Discussion of Practicing. The third aspect of Student F3's lesson I present for examination is the effectiveness of talking about practicing in a lesson.

The end of the preceding example (excerpt 2 in appendix G) is also the start of a discussion about practice methods. The conversation continued, and referred to the "Five Time Rule" as a practice strategy. The instructor asked some questions about the student's practice habits and then made several suggestions to the student about how many times to repeat each target passage, and methods of increasing the tempo (see excerpt 3 in appendix G).

In this exchange, the instructor seems to refer to a strategy with which Student F3 is already familiar (the "Five Time Rule"), suggesting that such strategies had been established in earlier lessons. Indeed, it seems possible that Instructor F's curriculum introduces practice strategies early in students' freshman year, as evidenced by the presence of such topics in lessons observed with other students.[12] The fact that Subject F3 is a junior confirms the likelihood of previous exposure to (and perhaps active experience of) the process of systematic tempo variation as described in the lesson.

Obviously, the observations in the current study do not provide evidence that Student F3 possessed effective practice skills before the recorded lesson took place. However, the results clearly indicate that the student demonstrated a characteristic in her practice session that she did not experience in her lesson, but one that was discussed. This seems to conflict somewhat with the findings of Barry, whose study

[12] The lesson of Student Subject F1, a freshman, will be discussed further in this chapter.

also observed behavior in lessons and subsequent practice sessions.

Barry reported that while student practice habits were influenced to some degree by their teacher's advice, it was "what the teachers actually *did and asked the students to do* during the lessons [that] seemed to have a more profound influence upon their students' practice than what the teachers merely *said.*"[13] This relationship remains uncertain and warrants additional research.

In sum, I observed a relationship between the practice characteristics in Student F3's practice session and the activities she experienced in the preceding lesson. Most notably, the instructor worked at tempos that were relatively very slow (thereby preempting many potential errors), and had the student engage in multiple correct repetitions while refining technical and musical details. In the lesson I did not observe examples of the same systematic tempo alteration (that is, gradually speeding the tempo back up) that I reported in the subsequent practice session. However, a discussion took place in which the teacher reminded the student about this process, which may have influenced the student's decision to practice this way. One characteristic that I observed in the lesson and not the practice session was correct repetitions of a complete phrase (item 10). This might be a result of the instructor's tendency to cover a large amount of music and elide one rehearsal frame into the next, as the student may not accurately perceive them as individual goals.

[13] Nancy H. Barry, "A Qualitative Study of Applied Music Lessons and Subsequent Student Practice Session," *Contributions to Music Education* 34 (2007): 62.

Student Subject B1/Instructor B

The practice session of Student Subject B1 represented the second of two subjects I observed demonstrating the most characteristics of effective practice. Like F3, Student B1 exhibited the four characteristics related to error correction (items 5, 6, 7, and 9), and also appeared to consistently conceptualize the material with musical inflection (item 1). In examining the presence of these characteristics in the preceding private lesson, several were observed that may suggest a possible relationship with the subsequent practice session.

In this section, I will look at three prominent aspects of Student B1's lesson: (1) the explicit discussion of practicing in the lesson, (2) use of systematic tempo alteration, and (3) the juxtaposition of discussion vs. fast-paced rehearsal frames.

Discussion of Practicing. The overwhelming impression I received from observing the lesson of Student B1 was the large role played by the topic of practicing. A large portion of the lesson (more than half) was devoted to discussions of scheduling practice time, setting goals within practice sessions, and specific problem-solving practice strategies. Instructor B brought up a computer file of Student B1's "semester goals," launching an extended discussion about the student's weekly practice schedule. It seems notable to point out that not only did the instructor talk about reserving specific times each day for practice, but had the student actually write it in her schedule while the instructor watched and offered advice on time management. This conversation then turned to how to organize an individual practice session, and Instructor B offered advice on how to prioritize what to work on.

Additionally, the instructor frequently asked the student questions about practicing and problem solving; including questions about what strategies the student had attempted to employ in addressing certain issues. This teaching approach achieves (at least) four goals: First, it establishes practicing as a common topic within the private lesson scenario. Second, it opens a window into the student's practice habits, and presents an opportunity to provide valuable feedback on how they typically address a problem. Third, asking students to provide solutions encourages them to think for themselves, and consider how to solve problems (a habit that is often absent in lessons, and a necessity of effective practicing). Finally, the subsequent discussion provides specific practice strategies that students can put to use when they are working alone in a practice room.

An excerpt from the lesson of Subject B1 is presented in appendix H and shows an example of one such discussion. It begins with Instructor B asking the student how she had practiced a passage, goes through a rehearsal frame that includes specific practice strategies, and ends with an explanation of how and why to use this particular practice tool. This excerpt shows numerous examples of practice discussion and activities and clearly illustrates the role that practicing and practice strategies plays in the Student B1's lesson.

Systematic Tempo Alteration. One of the least-frequently reported characteristics in the observed practice session was item 6 (*The tempo of individual performance trials was usually varied systematically; logical understandable changes in tempo occurred between trials (slowed down enough; didn't speed up too much.*).

Subject B1 represents one of only three students (19% of total subjects) that demonstrated this behavior. An examination of the preceding lesson reveals examples of this characteristic, suggesting a relationship between the lesson and practice session.

Similar to the lesson of Student F3, this lesson showed consistent metronome use, as well as examples of the student playing multiple correct repetitions of target passages substantially under tempo. However, Subject B1's lesson showed more evidence of systematic tempo variation. In other words, Student B1 not only experienced playing at a very slow tempo, but also experienced the process of gradually increasing the tempo.

The second excerpt presents a rehearsal frame in which the instructor models and the student responds in a "back-and-forth" manner (see excerpt 2 in appendix H). In this example, the instructor did not use the metronome, but began at a manageable tempo that was substantially below performance tempo, and through modeling, directed the student to gradually speed up the tempo.

This excerpt provides evidence of isolating an area (item 5), systematically altering the tempo (item 6), and effectively repeating a target passage (item 7), all of which Student B1 exhibited in her subsequent practice session.

However, other characteristics demonstrated in the lesson were not observed in the practice session of Student B1. For instance, the above example shows the instructor choosing each tempo in such a way that the student almost always played a successful trial (item 8). As well, the slow tempo and the appropriately limited size of the target passage seemed to proactively prevent many errors from occurring (item 3).

Neither of these traits (item 8 or 3) were consistently present in Student B1's subsequent practice session, although it seems notable that she demonstrated attempts (albeit unsuccessful) at choosing appropriate tempos. The concept of avoiding errors is one area that seems to come with experience, as is evident in the tendency of Student B1 (and countless other young musicians) to "back up" to an appropriately slow tempo, with many incorrect trials along the way. In this case, it seems that Student B1 has an effective model in her instructor, but has yet to figure out how to choose appropriate tempos.

Juxtaposition of discussion vs. fast-paced rehearsal frames. The second excerpt (excerpt 2 in appendix H) brings up another topic worthy of discussion; the pace of instruction. In reading the example above, one notes a rapid pace of events, with relatively little verbal instruction. Although this was the only frame of this type in Student B1's lesson, overall it fairly represents one element of Instructor B's teaching approach.

As mentioned above, the lesson of Subject B1 included long segments of discussion, most often about practicing. However, when the student was asked to play, the rehearsal frames developed at a fast pace, and they worked quickly towards the goal, with relatively little talking (exemplified in the preceding excerpt). This seems significant, as Student B1 demonstrated a similar pace in the practice session, as described earlier in this chapter. Of course, this type of behavior might just as likely be a result of an individual student's personality and learning style, but it seems a notable feature of both the student's and instructor's approach to learning.

This comparison of the practice session and lesson of Student B1 suggest several possible correlations. The topic of practicing played a large role in the lesson, and several discussions took place about how to schedule practice time, organize and prioritize within individual practice sessions, and solve problems by employing specific practice strategies. Additionally, the use of systematic tempo alteration may have an influence on this aspect of the student's practice habits, as well as allowing for correct repetitions of target trials (although the skill of choosing appropriate tempos to preempt errors is one the student has not yet fully acquired). Finally, the pace of the playing activities in the lesson is mirrored in the student's practice session, although no solid conclusions may be drawn from this observation. Overall, it seems as though Student Subject B1 is highly influenced by the teaching style of her instructor, which is reflected in the characteristics of effective practice observed in her practice session.

Student Subject F1/Instructor F

As mentioned earlier in the chapter, Student Subject F1 represents several students whose data did not seem to accurately reflect their practice approaches. Student F1 demonstrated many effective practice characteristics in the practice session, and one concept in particular (that of tempo) seems to relate to the activities experienced in the preceding private lesson. However, the practice session also included a fair amount of ineffective practice behaviors (preventing several characteristics from being positively recorded), the reason for which may also be traced back to her lesson.

Tempo. Student F1 experienced numerous activities in the lesson that meet

much of the criteria of Duke's characteristics of effective practice. Like the lesson of Student F3 described above, this lesson included a lot of detailed work at very slow tempos. Indeed, it seems a prominent theme in Instructor F's teaching approach is to choose tempos well below where the student is currently working, and simultaneously address issues of technique and musicality. The instructor reiterates this concept throughout the lesson, at one point expressing to Student F3: "I do care more about beautiful accuracy than the tempo." Another point in the lesson showed them working on small details of phrasing and dynamic when the Instructor F reminded the student: "Remember, that's the beauty of practicing things slowly, is getting everything just, like, really dialed in." At the same time, though, the instructor does not promote the concept of slow practice as drastic action, and instead makes no comment as the metronome is placed on the stand set to subdivided eighth notes and they get to work.

The excerpt in appendix I shows one example of Student F3 playing under tempo. This approach allows for accurate error correction and provides opportunities for multiple correct repetitions. The opening statement by the teacher is a good example of preempting errors, as the instructor immediately directs the student to change the tempo, rhythm, and remove the ornaments to get to the center of the issue. As with Student F3, the instructor does not speed up the tempo here (although there are examples of it elsewhere in this lesson), but discusses the method for doing so, referring again to the "Five Time Rule" with which both students seemed familiar. This process of starting quite slow, and gradually working up the tempo was observed in the practice session of Student F1, the only student besides the "top" two subjects to demonstrate this characteristic (item 6).

Inconsistency between lesson and ineffective practice. As mentioned earlier in this chapter, Student F1 did, in fact, also demonstrate 7, 8, 9 in her practice session, but not consistently enough for the observers to mark the characteristic as present overall. In the scale portion of her practice session, Student F3 exhibited very few effective practice characteristics, taking scales at an uncontrolled tempo, allowing many errors to occur, and not demonstrating effective error-correction tactics when addressing them. This seemed inconsistent with the second half of her practice session, which included many slow repetitions with the metronome, and accurate error identification and isolation. In examining the lesson for a possible explanation, I noted that the work they did on scales was quite similar to other frames, with controlled tempos and attention to details of technical execution, as evidenced by the second excerpt in appendix I. This excerpt shows a successful frame of scale work in which Student F3 experiences many correct repetitions at a slow tempo, with attention to efficient finger motion and sufficient air speed. The instructor even draws attention to the work they had done, insisting that this was "the type of practice [that makes one] a goddess." Yet, the subsequent practice session showed a much different (and less effective) approach to scale practice.

Explanation of ineffective practice. Acknowledging that any theory is pure speculation, I propose one possible explanation for why Student F3 did not practice scales in the controlled manner experienced in the lesson and that was demonstrated later in the same practice session: the student was not explicitly instructed how fast to play the scales.

Subject F3 seems to be a conscientious student who follows the teacher's instructions to the letter. The student listened when told to follow the "Five Time Rule," as evidenced in the practice session by the numerous slow repetitions done with a target trial in the solo. As well, the practicing of scales in thirds included attempted reinforcement of each scale before beginning, suggesting that the student remembered this strategy from the lesson. While Instructor F seems to be quite meticulous with metronome use during work on etudes and solos, providing specific numeric tempo markings (often very slow) in writing for the student to work with, the instructor did not provide the same instructions for how to practice scales. The scale work in the lesson was not with the metronome, and there was no mention of tempo with regard to scales. It seems that, although Subject F3 experienced playing scales in a controlled manner, the student was unable to recreate that phenomenon in the practice session.

This inconsistency (the student doing what was said rather than what they had done) seems somewhat illogical, and conflicts with the research, which suggests that students are more likely to practice in ways they have experienced than do what they were merely told to do.[14] But in this case, it seems possible that it was the explicitness of the instructions (specific starting tempo and the "Five time Rule") that allowed Student F3 to demonstrate good practice habits with the solo, and the lack of these instructions that prevented similarly effective behavior in the scale portion of the practice session. In other words, Student F3, a freshman, was perhaps not a proficient practicer at all, but was able to demonstrate many characteristics of effective practice in those areas where clear tempos and instructions were provided by the instructor.

[14] Barry, "A Qualitative Study," 62.

This brings up another interesting point: the importance of providing specific instructions to students. The majority of the teachers in this study seem to give assignments based on material rather than goals, that is, many instructors told students to "work on" a piece rather than providing expectations for what they would like the student to do with the material. Student F3 may provide evidence that students respond well (perhaps better) to instructions on *how* to practice. The aim of the current study is certainly not to judge the effectiveness of student practice in relation to written practice goals. However, while this student adhered so closely to the instructions given, Subject F3 faltered in the one area about which direction was not given. The pedagogical topic of effectively presenting practice assignments is another that warrants further study.

Student Subject C1/Instructor C1

The practice session of Student Subject C1 showed evidence of many of Duke's characteristics of effective practice. This student accurately isolated problem areas, and, overall, demonstrated effective repetition. However, as was discussed above, Student C1's practice session also included several examples of ineffective practice that deserve further examination. In examining the preceding private lesson, I made several observations that may shed light on the student's inconsistencies, most of which had to do with the performance-oriented teaching approach of Instructor C.

As mentioned in the previous discussion, Student C1 is a proficient at sight-reading and demonstrates technical facility in playing very fast passages with relative control. Subject C1 perhaps represents the "talented student" that many teachers

encounter in their studio. In the practice session, Student C1 exhibited many effective practice characteristics, as evidenced by the noticeable improvement on the material worked on. This is not surprising as one might assume that a skillful student reached that level through proficiency in the practice room. However, as outlined in Part I, I observed several characteristics that were lacking in Student C1's practice session, such as an absence of systematic tempo alteration (item 7) and the recurrence of several errors (item 9). These practice irregularities lead me to question whether a relationship could be observed between Student C1's practice habits what took place in the preceding lesson.

Performance-Oriented Approach. The private lesson of Subject C1 revealed several examples that may provide insight into the practice habits demonstrated later. The following excerpt presents a frame in which the student is about to perform a difficult passage. The instructor gives some advice that would potentially preempt errors in performance, by establishing a rhythmic pulse within performance tempo. However, the student's performance contains many errors, repeatedly attempting to execute the passage up to tempo, and demonstrating some of the problems observed in his practice session (see appendix J).

This example shows the student, in a very short time period, attempting to play a passage up to tempo, making multiple errors, and reacting by trying to quickly correct each one, most of the time, unsuccessfully. The student seems somewhat surprised and generally frustrated that runs are not materializing, and seems to keep "looking" for them to appear under his fingers (as evidenced by him looking at the

clarinet and his fingers and asking, “What am I doing?”). This frame shows similarities to the one from Student C1’s practice session in appendix F.

Of course, as most teachers might acknowledge, it is often appropriate to allow students to experience a performance-type scenario (even if it results in incorrect trials), to provide the student an opportunity to “try out” what they have practiced. It seems that this represents the general teaching approach of Instructor C in this lesson.

The structure of Student C1’s lesson was not rigid, and in fact the instructor began the lesson by reminding the student that he wanted the student to decide what he wanted to work on, perhaps suggesting that the student has control over his own objectives week to week. As well, the topic of preparation for performance reappeared throughout the lesson. Examples of this include the recommendation to memorize the opening passage (see the preceding example), and the goal assigned to the student after working on the first movement: “I'd like to have it really good and performable by next lesson."

Indeed, the lesson seemed to include many opportunities for the student to perform passages. While the instructor’s comments showed he held the student to a very high standard of technique and musicality, they often were not followed by student experimentation. In other words, the teacher seemed to assume that the student would “fix” many of the issues during private practice time.

The second example (excerpt 1 in appendix J) presents a rehearsal frame from the lesson in which the student works on the same opening passage he had experienced problems with in the previous excerpt. The student performs approximately nine trials on the passage including seven correct trials. However, most

of these "correct" trials were uneven, suggesting that the tempo may have been too fast and/or the student did not have full technical control of the passage. These observations possibly relate to those made in the preceding discussion about Subject C1's practice session, and might be explained by an overall performance-oriented approach.

The second excerpt from the lesson (appendix J, excerpt 2) an example of the performance-oriented approach in the lesson. While the student does experience several controlled trials while the instructor taps a pulse, there is no systematic tempo variation (with or without a metronome), and in fact, no example of decreasing the tempo. As well, following a particularly controlled trial, the instructor comments that the student was too slow.

Problem: Inability to perform correctly the first time. While the material differs, this frame closely resembles ones I observed in the subsequent practice session: although the student frequently isolated and repeated problem passages, the fast tempo often prevented consistently controlled trials. In each case, the student eventually achieved the desired effect on a target passage, however in several instances (one, in particular, see appendix F) the mistake recurred when he returned to the passage later.

This brings up a problem that seems quite common in novice musicians: the inability to produce a correct trial the first time. Many musicians may recall this very experience from their youth: having repeated a passage numerous times, and which had seemingly been "fixed," only to have it fall apart in performance. I observed what

I interpreted to be this scenario in the lesson of Student C1, as evidenced by the preceding excerpt in which he seemed to "search" for the notes in his fingers. It is possible that the performance-oriented approach he experienced in his lesson contributed in some part to the same tactics he employed in the practice room.

Certainly, a lack of multiple slow, correct performance trials is not a shocking observation in a practice session of a college freshman. Additionally, the current research does not suggest that this student's practice habits represent a serious problem in musical development; like many musicians, this Student C1 has likely since figured this out without help, through trial and error. The question is whether or not we as teachers can help students like C1 come to these realizations sooner. The answer, of course, remains uncertain, and is yet another interesting topic for future research.

Summary of Part II

I observed interesting relationships through an exploratory comparison between four students' practice sessions and the preceding private lesson. Looking at only one lesson and one practice session per student provides a limited glimpse of the students' and instructors' approaches to practicing, and therefore no firm conclusions may be drawn from these observations. However, the ideas that surfaced through the second part of this investigation deserve further examination

Student F3's practice session showed the most characteristics of effective practice of all the students. The main connection I drew between the lesson and practice session of Subject F3 was the use of very slow practice with a metronome.

Both scenarios included extended frames of detailed work at a speed substantially under performance tempo, which seems to generate accessibility to other areas of effective practicing (such as effective repetition, and preempting errors). Interestingly, one process she employed in the practice session (the "Five Time Rule") was not observed actively taking place in the lesson, but was verbally discussed. This brings into question the idea that students mostly use practice strategies they actively experience in lessons (rather than how they have been told to practice). However, without observing further lessons it is impossible to know whether this characteristic is a "normal" part of the instruction received by Student F3. Also of note in Student F3's lesson were conversations about practicing and practice strategies. This proved to be a major feature in the next lesson described in the chapter, Subject B1.

Next to F3, Student B1's practice session exhibited the most characteristics of effective practice. In addition to experiencing systematic tempo alteration, it is notable that the topic of practicing was a substantial theme in the lesson of Subject B1. This points to a possible relationship: the two students whose practice sessions showed the most characteristics of effective practice both discussed and experienced practicing in their lessons. This observation shows evidence for making "how to practice" a topic of discussion in the applied lesson.

The relationship between the discussion of practicing in the lesson and what takes place in the practice room was also observed in footage of Student F1. Like F3, Subject F1 experienced very slow practice in her lesson, and also engaged in discussion about executing correct repetitions (the "Five Time Rule"), both of which were observed in her practice session. However, Student F3, a seemingly

conscientious student, also demonstrated some conflicting practice behavior, which might be explained by looking at the specifics of the assignment given by her teacher: Instructor F had given exact metronome markings and directions for how to practice the solo, but seemed not to provide the same explicit instructions for the student's scale assignment. Possibly as a result, the scale portion of the student's practice session showed little evidence of effective practice characteristics (suggests that the apparent practice skills may have been a result of the specific instructions she received). This brings up an interesting topic for further discussion: if a student has not yet acquired the skills of effective practicing, can the teacher encourage him or her to simulate these characteristics by providing specific instructions on how (most notably, how fast) to practice? Exploration of this question, while valuable, is beyond the scope of this study.

The last subject I selected for an in-depth examination was Student C1, who represents an entirely different issue that I suspect is common in college studios. In the practice session, this student demonstrated proficient technical capabilities and talent in learning music quickly, and exhibited six of ten characteristics of effective practice (the third highest number observed among students). C1's lesson, however, included little to no mention of practicing, and few examples of Duke's characteristics. In other words, I observed no evidence that Student C1's effective practice habits were influenced by his lesson. Certainly, previous private lessons and teachers could have equipped the student with such skills. However, this student also demonstrated examples of ineffective practice (namely, playing too fast, too soon), examples of which I observed in his lesson. This does not suggest that Instructor C caused these

ineffective practice habits in the student, but perhaps brings up the question of what teachers can do to prevent this type of behavior students' practice. This question remains among others, one that is left unanswered in the current study and a topic worthy of further research.

Chapter 5

CONCLUSION

Overview of Results

This study observed the practice characteristics demonstrated in the practice sessions of sixteen undergraduate clarinetists, and examined the relationship between those characteristics and the activities each student experienced in a preceding private lesson.

The first part of the investigation observed student practice sessions and collected data within a framework modeled after Duke, Simmons, and Cash in their 2009 study, which compiled a list of eleven characteristics of effective practice.[1] With a few exceptions, results were mostly consistent with that of Duke et al., and indicated that most students (69%) exhibited less than half of the items. In terms of the individual practice behaviors, almost all students (94%) addressed errors immediately when they appeared, and most (63%) demonstrated mostly thoughtful practice. As well, half of subjects appeared to consistently conceptualize the material with appropriate musical inflection. In terms of error detection and correction, it is notable that while most students (56%) usually identified accurately and isolated problem areas, many fewer (25% or less) exhibited systematic tempo alteration, effective repetition, or a lack of persistent errors. Additionally, the behaviors having to do with minimizing or avoiding errors were observed in almost no practice sessions (less than

[1] Robert A. Duke, Amy L. Simmons, and Carla Davis Cash, "It's Not How Much; It's How: Characteristics of Practice Behavior and Retention of Performance Skills," *Journal of Research in Music Education* 56, no. 4 (January 2009): 310-321.

14% of sessions). The two students whose practice sessions demonstrated the highest number of characteristics (with 9 and 7 items reported) were the only two subjects that showed evidence of all four items dealing with error correction. Therefore, the results of Part I indicate that most students' practice sessions lacked an effective process for correcting errors, a process which Duke found was a major determinant of the effectiveness of practice.

Additionally, because of the generalized nature of observational statements, I found that in some cases the reported data did not accurately reflect all activities that took place in the practice sessions. Instances were presented in which I described two subjects' practice behaviors in further detail, to highlight some inconsistencies in their practice approaches.

In the second part of the study, I compared each student's practice session to the preceding private lesson, and chose four subjects of whom I presented individual case studies. Although impossible to draw overall conclusions, it is notable that the two students whose practice sessions exhibited the highest number of effective practice characteristics both (in addition to experiencing activities of effective practice in their lesson) also engaged in conversations about practicing in their lessons. This indicates a possible relationship between students whose lessons consistently incorporate the topic of practicing and those students who demonstrated the most characteristics of effective practice.

Several other questions arose in the case studies, including the importance of specific practice assignments, and whether applied teachers can or should help teach

these skills of effective practice, rather than the common occurrence of students figuring them out on their own through trial and error.

Implications for Teachers and their Students

As mentioned, the students observed did not demonstrate many of the characteristics that Duke et al. showed were determinants of the effectiveness of practice. These results of Part I have potentially far-reaching implications for musicians. Students of all levels may benefit from this study in examining their own practice habits in terms of Duke's characteristics. Indeed, merely introducing the existence of effective practice behaviors to students who have not considered it is a step in a good direction towards building successful habits.

More significantly, these findings have several implications for applied teachers at the college level (and, perhaps, all levels). First, these results indicate that most of the students probably do not exhibit effective practice behavior. As well, instructors could realize that they may be, in fact, largely unaware of the practice behavior of their students. Finally, the results of Part II may encourage instructors to consider the relationship between the behavior demonstrated in the lesson and the practice session, and implement discussions and experimentation of practicing into every lesson. Another possible implication for teachers is that, if we want students to practice slowly with a metronome, we should (1) have students experience this activity in the lesson, and (2) provide them with explicit instructions for how to practice (i.e., how many repetitions) including precise tempo markings. It is hoped that teachers of all levels of student will benefit from these findings by examining how their students

practice, whether through videotaping or regular discussion and experimentation in their lessons.

Recommendations for Further Research

Although the concept of private practice is important in the development of all musicians, the body of research measuring the effectiveness of practice habits is relatively small, and even smaller is the study of how to teach effective practice skills. Certainly, more research is needed like that of Duke and his colleagues that measures the effectiveness of specific practice behaviors by examining the retention of skills acquired in the practice session. Such research would help to compile a definitive list of practice behaviors that consistently lead to improved performances.

Next, further research is needed to help establish an effective method for teaching students good practice habits, especially to do with error correction. As Duke points out, "it is rare in published methods to see examples of systematic instruction in problem solving and error correction."[2] This represents a void in the standard method books used by beginning students, which could be remedied through further research of how best to teach students to practice.

While the current study explored the relationship between the presence of practice characteristics in lessons and subsequent practice sessions, more empirical research is needed that (1) adapts Duke's list of characteristics to private lesson behaviors, (2) looks at a larger sample size, (3) controls some variables by looking at lessons/practice sessions covering material in similar stages of preparation (i.e., not

[2] Duke, Simmons, and Cash, "It's Not How Much; It's How," 319.

brand new, not polishing for performance), (4) analyzes the frequency of certain behavior and reports results in statistical terms, and (5) expand the subjects beyond the current demographic, to other instruments and levels.

As well, it is hoped that the current study works towards establishing a curriculum for the pedagogy of applied lessons. Most performers' careers will at some point include private instruction of their instrument, and it seems logical that their college education should include some formal instruction on how to effectively teach private lessons. This type of training seems to be lacking in pedagogy classes for performers, and further research is needed to test instruction of pedagogical approaches in applied teaching.

Finally, it is my opinion that more research like the current study is necessary that examines issues of applied teaching through systematic experimentation, and, further, presents it in a way that is accessible to private music teachers. This type of information is needed to help bridge the gap between the fields of music performance and music education. Hopefully, more performance-based researchers will attempt to look for answers to the problems that we face each day in our studio.

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APPENDIX A
Questionnaire for Student Participants

Questionnaire – Undergraduate Clarinet Applied Students
NOTE: All information will be kept confidential

PART I – Background Information

A. ID # _____ B. AGE _____ C. GENDER (circle)
FEMALE / MALE

D. DEGREE PROGRAM _____

E. CURRENT STANDING ☐ Freshman ☐ Sophomore ☐ Junior ☐ Senior ☐ Senior plus

F. How many credit hours of applied lessons are you taking this semester?
_____

G. How many years of private lessons have you had on your major instrument (including pre-college)? _____

H. How many years have you been studying with your current studio teacher?
_____

I. What is your career goal?

J. Do you think your career will involve teaching private clarinet lessons?

(circle one) Yes / No

PART II – In Your Lessons

The following questions refer to lessons with your current applied clarinet teacher. For each question, *circle the number* that best corresponds with your answer:

1. Lessons with my current teacher include instruction on how to practice effectively.

Strongly Disagree 1 2 3 4 5 Strongly Agree

---

2. My teacher gives me my weekly assignments in writing.

Never 1 2 3 4 5 Always

---

3. My teacher requires me to keep a written practice log.

Never 1 2 3 4 5 Always

---

4. Upon leaving a lesson, I know exactly what goals I am to reach before the next lesson

Strongly Disagree 1 2 3 4 5 Strongly Agree

5. Upon leaving a lesson, I know exactly HOW to reach my goals before the next lesson

Strongly Disagree 1 2 3 4 5 Strongly Agree

---

6. My teacher sets specific time requirements for the number of hours I must practice per week.

Never 1 2 3 4 5 Always

---

7. Each day, I am expected to practice:

1	2	3	4	5
less than 30 minutes	30 min.	1 hour	2 hours	3 or more hours

What is the most useful thing you have learned from your teacher about effective practicing? *(explain)*

PART III – In the Practice Room

The following questions refer to your practice habits outside of lessons.
For each question, *circle the number* that best corresponds with your answer:

8. I have effective practice habits outside of lessons.

Strongly Disagree	1	2	3	4	5	Strongly Agree

---

9. On average per day, I practice:

1	2	3	4	5
less than 30 minutes	30 min.	1 hour	2 hours	3 or more hours

---

10. I plan my practice time into my weekly schedule.

Strongly Disagree	1	2	3	4	5	Strongly Agree

---

11. I put in more than one practice session per day.

Strongly Disagree	1	2	3	4	5	Strongly Agree

---

12. I keep a written practice log

Strongly Disagree	1	2	3	4	5	Strongly Agree

---

13. For each practice session, I know exactly what goal(s) I am trying to accomplish.

Strongly Disagree	1	2	3	4	5	Strongly Agree

---

14. Once I correctly perform a passage I am working on, I usually repeat it:

1	2	3	4	5
Once	Twice	3-5 times	6-9 times	10 or more times

When practicing, how often do you…?		*(circle the number)* Never Often 1 2 3 4 5 Always
15.	**…use a metronome**	1 2 3 4 5
16.	**…play substantially (more than 35%) under** performance tempo	1 2 3 4 5
17.	...isolate a certain phrase	1 2 3 4 5
18.	...isolate several measures	1 2 3 4 5
19.	...isolate a single measure	1 2 3 4 5
20.	...isolate certain notes/intervals	1 2 3 4 5
21.	...alter the rhythm (i.e. change sixteenths into dotted-eighth-sixteenth)	1 2 3 4 5
22.	...alter the articulation (i.e. add or remove slurs and or/accents)	1 2 3 4 5
23.	...alter the grouping or rhythm (i.e. change sixteenth notes into triplets)	1 2 3 4 5
24.	...alter or fluctuate the tempo (i.e. switch between fast and slow tempos; "5 and 1" method)	1 2 3 4 5
25.	...remove or add notes (i.e. play "framework" without notes in between)	1 2 3 4 5
26.	**…sing the passage**	1 2 3 4 5
27.	**…finger the notes without playing**	1 2 3 4 5
28.	**…speak or clap the rhythm**	1 2 3 4 5
29.	**…use the "Five-and-One" Method** (as described in Hadcock's *The Working Clarinetist*)	1 2 3 4 5
30.	**…another practice technique: (**describe)	1 2 3 4 5

Thank you for participating!

APPENDIX B
Interview Questions for Instructor

1. How long have you been teaching at (Institution Name)?

2. How long have you been teaching applied clarinet at the college level?

3. What is the highest degree you have attained?

4. How many music majors are there at your university?

5. On average, how many music major clarinetists are registered for applied lessons in your college studio?

6. In addition to clarinet, what else do you teach?

7. Do you feel your own college/university training adequately prepared you to teach applied music? Why or why not?

8. On average, do you think your clarinet students have effective practice habits? Why or why not?

9. What do you do to help your students learn effective practice habits? (Include descriptions of practice requirements/practice log, written goals, specific format, practice strategies during lessons, etc.)

10. Do you have a curricular plan for your studio that outlines semester/year/degree plan? Describe.

11. What is the most important concept in effective practicing that you try and instill in your students?

12. How do you feel your students learn best?

13. Are there any other thoughts you'd like to contribute regarding teaching students to practice?

APPENDIX C
Excerpt from Practice of Student Subject F3

(4:24) after having played passage several times correctly, but with uneven rhythm, sets the metronome substantially slower; plays nine-note arpeggio correctly, repeats correctly 5 times at this tempo; alters rhythm to a "dotted-eighth, sixteenth" rhythm, plays this accurately twice; reverses the rhythm to a "sixteenth, dotted-eighth" rhythm, plays this accurately twice; (5:05) increases the speed on the metronome by two "clicks" (approximately 4-8 bpm), plays passage once correctly; increases the metronome by one more click, plays correctly, repeats three times correctly; plays two correct repetitions each on the two rhythmic alterations described above; plays as written correctly, repeats once correctly; (5:57) increases metronome tempo several clicks, plays passage as written correctly, repeats four times correctly; plays two correct repetitions each on the two rhythmic alterations described above; (6:30) increases metronome tempo several clicks, plays twice correctly; increases metronome tempo one click, plays passage correctly, repeats but has a slight coordination problem between tongue and fingers on the second half (last five notes) of the passage; isolates further to just the last five notes, repeats five times correctly; now isolates the first five notes, repeats five times correctly; (7:16) puts back into context of the nine-note passage, plays as written correctly, repeats once correctly; plays two correct repetitions of the passage with the first of the two rhythmic alterations described above, plays once correctly with the second rhythmic alteration; plays passage as written, three times correctly;) (7:47) increases metronome tempo several clicks, plays once correctly; isolates the last five notes, plays correctly four times; plays entire nine-note passage once correctly, begins again but makes an error and stops after three notes; plays whole passage again once correctly;) (8:15) increases metronome tempo several clicks, plays with first altered rhythm, correctly, begins to repeat last trial, but stops after three notes (presumably because of finger/tongue coordination); isolates the first five notes, plays with the first altered rhythm accurately, repeats twice correctly; isolates the last five notes, plays with the first altered rhythm accurately, repeats once correctly; puts back into context of the nine-note passage and plays the passage with the first altered rhythm, correctly, then repeats four times correctly; changes to the second rhythmic alteration, plays first four notes this way and stops (rhythm was slightly uneven); begins again, plays first six notes and stops; begins again, plays nine-note passage correctly with the second rhythmic alteration; (8:54) plays entire passage as written correctly, repeats once correctly; increases metronome tempo several clicks, plays entire passage correctly once; begins with first altered rhythm but stops after 4 notes; isolates first five notes and plays with first altered rhythm correctly three times; isolates last five notes, plays with first altered rhythm, correctly twice; puts back into context of nine-note passage and plays with first altered rhythm, correctly, repeats once correctly; (9:28) begins passage, as written, stops after six notes (finger/tongue coordination error), plays passage again, as written, correctly, repeats five times correctly; (9:48) increases metronome tempo one click, plays passage as written, correctly, begins a repetition, but stops after three notes, begins again, plays passage

correctly once; plays entire passage with first rhythmic alteration correctly, repeats twice correctly; changes to second rhythmic alteration , plays first four notes and stops, begins again and plays correctly; returns to first rhythmic alteration and plays once correctly; (10:15) plays entire passage, as written, correctly five times; (10:34) puts nine-note passage back into context of the phrase: begins four bars earlier, at the beginning of the phrase and plays the entire phrase at this tempo; nine-note passage is correct and clean; plays through to the end of the phrase and moves on.

APPENDIX D
Excerpt from Practice of Student Subject B3

(27:13) gets to altissimo notes, makes mistake, stops; isolates a five-beat section of sixteenth notes (seventeen notes in total) and plays once, makes a mistake on the very last note; tries passage again, it is better but does not fully correct the previous note error, stops; decreases the tempo of the metronome slightly (about 10 bpm), writes something in music; (27:56) plays five-beat passage again at the slower tempo, correctly; tries to repeat, but makes an error; tries again, previous error corrected but makes another error three notes later; isolates further to a five-note group (notes 9-13 in passage) that encompassed the previous two errors, repeats this figure eighteen times in total (including fourteen correct trials and four incorrect trials); (28:50) in reaction to some unevenness, isolates further still to a three-note group (notes 10, 11, 12), plays once incorrectly, once correctly, then repeats at half speed correctly once; goes back to previous tempo and plays three-note passage twice correctly, then makes an error on the third trial, stops; isolates further still to two notes (notes 11 and 12) and performs a rhythmic "noodle," resulting in six correct trials; short episode of false starts (seems unsure where to start), then puts back into context of the three-note group, plays this passage ten times (including eight correct trials and two incorrect trials); three more false starts; (29:23) puts back into context of a nine-note passage (notes 9-17), and plays once correctly; puts this back into context of the full seventeen-note passage, repeats correctly twice (although still somewhat uneven) (end frame 29:38)...(31:55) increases the tempo of the metronome to its original speed (but without the subdivisions), starts from the beginning of the piece; the target area was executed correctly, and she continues on.

APPENDIX E
Excerpt from Practice of Student Subject F1

(18:53) Encounters a troublesome passage (twenty-one fast notes coming off of a tied note), stops in anticipation of mistake; tries again, plays the first three notes and stops (the third note doesn't speak); plays the whole passage again correctly; (19:10) without changing the metronome, plays the whole phrase at half-speed, correctly; repeats once correctly this way, but stops on the ninth note through the moving note passage; isolates further to a five-note passage, plays correctly, repeats correctly once at half-speed; (19:57) puts back into context of an eight-note passage, and plays faster without changing metronome, at a tempo somewhere between half-speed and with the metronome, correctly; puts into context of a twelve-note passage, and plays faster, now with the metronome, correctly; repeats correctly and moves on to second part of group; (20:18) plays two incorrect trials, then isolates the last thirteen notes of the run, repeats twice correctly; (20:51) puts back into larger context of the whole phrase, stumbles; isolates the last thirteen notes again, plays correctly; puts back into larger context of the whole phrase, plays correctly; isolates further to the last thirteen notes, and without changing the metronome, plays at half speed correctly; repeats this once correctly; plays faster without changing the metronome, at the "middle" tempo between half-speed and with the metronome, correctly; repeats this once correctly; (21:52) plays faster, now with the metronome, but makes an error and stops; plays again, correctly; repeats twice correctly; (22:14) puts back into context of the whole phrase, almost correct but error; plays again, almost correct but different error; goes on, adds a bar to finish the section (frame ends 22:48).

APPENDIX F
Excerpt from Practice of Student Subject C1

(19:45) Makes an error on a passage of 25 slurred sixteenth notes (five beats in compound meter), stops; tries again, incorrect; isolates one note from the middle of the passage and plays several times (trying out various resonance fingering combinations); (20:10) Plays the last thirteen notes, incorrect, stops; says "left hand" and writes in music; plays a seven note passage, incorrect, stops; writes in music; (20:26) decreases the tempo, alters the rhythm (lengthens first note of each group of six sixteenth notes), plays entire passage (25 notes) correctly once; plays same passage at same tempo, but with second rhythmic alteration (lengthens the second note of each group), plays correctly once; (20:42) isolates further to the first seven notes, plays as written, at performance tempo, once correctly; decreases tempo again, plays this seven-note passage with altered articulation (tongues each note), plays once correctly; writes in music; (21:09) attempts the passage up to performance tempo, but stops after the nineteenth note (no error, but did not seem controlled); decreases tempo, plays first seven notes with first rhythmic alteration, correctly; begins passage again with first rhythmic alteration, plays entire passage (25 notes) this way, correctly; (21:25) changes to the second rhythmic alteration (lengthening the second of each group of six notes), plays three times incorrectly, then plays once correctly; changes to a third rhythmic alteration (lengthens the third note of each group of six), plays entire passage correctly, once; isolates last five notes of passage, plays correctly twice at this slow tempo, then returns to faster performance tempo and plays this five-note passage five times, correctly; (22:00) plays entire passage with a different rhythmic alteration (long-short), uneven but correct; decreases tempo slightly, repeats last trial, stops on the nineteenth note; begins passage again, as written, slightly faster, correctly; increases speed to performance tempo, isolates further to the last seven notes, plays once, correctly; (22:17) tries the whole passage as written, up to performance tempo, stops (in anticipation of mistake, as the passage was not controlled); plays again with the first rhythmic alteration (lengthening first note), still at performance tempo, correct; (22:30) isolates again to the last seven notes, decreases the tempo again, and takes this passage through the complete series of rhythmic alterations (lengthening first, second, third, fourth, fifth, sixth notes, then "long-short" rhythm), plays each once; (22:46) returns to performance tempo, plays this seven-note passage six times (the first five of which were uneven); now isolates the preceding seven notes, takes them through the complete series of rhythmic alterations (one correct trial on each rhythm); (23:11) goes back to the beginning and attempts the entire (25 note) passage again at performance tempo, makes error, stops; tries again, incorrect, stops; (blows water out of tone hole); tries entire passage again at performance tempo, incorrect; isolates last thirteen notes again, decreases tempo, plays once correctly, once incorrectly, then once correctly; (23:37) returns to performance tempo, plays this thirteen-note group about eight times (seemingly with an attempted sequence of rhythmic alterations, although the pattern is inconsistent), with several errors, but most of these trials correct but inaccurate; plays the thirteen-note group as written at

performance tempo, correctly once; (24:03) puts back in context of the entire passage at performance tempo, incorrect; tries twice more, incorrect both times; (24:14) decreases tempo, plays entire passage correctly once; begins again with “long-short” rhythmic alteration, incorrect; begins again as written, incorrect, stops; begins again with altered articulation (tonguing every note), incorrect; attempts same trial, nearly correct (stops on the penultimate note); (24:36) decreases tempo, plays again with articulation, correctly; returns to performance tempo, begins again with articulation, incorrect; attempts same trial, incorrect; third attempt at this trial is correct; (pauses to wipe mouth); (24:57) begins entire passage again, as written, at faster performance tempo, correct; plays passage six times (four incorrect and two correct); (25:12) returns to slower tempo, plays correctly once; returns to performance tempo, plays entire passage correctly twice; (nods head and turns page) (frame ends 25:29)...(28:38) during a run-through, gets to same target passage, plays incorrectly; tries again, incorrect; (writes in music); starts one phrase before target passage, plays correctly (though still uneven); plays incorrectly four times; isolates last seven notes, plays once correctly; isolates last four notes, plays once correctly; tries entire passage again, nearly correct; isolates last seven notes again, slightly slower, correct; (29:29) returns to performance tempo, plays passage twice correctly (frame ends 29:38).

APPENDIX G
Excerpts from Lesson of Student Subject F3

Excerpt 1

Following a performance trial in which the student played a full etude (in 3/8 time, eighth-note at approximately 192 bpm).

T: (8:18) "Okay. Cool. The ending ... the ending was really good. Um ... so here's the thing. I mean ... no ... there's not a tempo marked on this. And look, this is a great tempo ... I know we talked about this last week ... that this would be a really ideal tempo to take, eventually?"

S: "Mm-hm." Changes reed.

T: "But, if you need to get this thing recorded? Why don't you just take it a little bit slower, and ... I know, the breathing. It's nice to be able to get through that first phrase without having to take a breath. But, it's better to get through it, and not make any mistakes." Laughs.

S: "Yeah, I know. Well ... and that was an exceptionally hard reed. I wasn't aware it was one that was so hard."

T: "It was a pretty good sound. Um ... okay ... lemme ... I'll ... ah ... go back and do this with metronome, you know, slowly, in eighths, once again ..."

S: "Mm."

T: Pulls stand closer. "And, god, this always like, kills me with this ... I always have to, like, fix it." Writes in music. "Like, big time. Looks like you already fixed it, too." (Refers to a typographical error in the book.)

S: "Yeah."

T: "Not in three-four!"

S: Laughs

T: (9:05) Points to music. "Okay, so ... you are rushing a little bit between, your last slurred note and the note after it. You go ..." Sings six notes (to demonstrate student's performance). "... you take off right here, between the third and fourth note." Sings several measures (to model a steady tempo). "And, as you know, this becomes the phrase ... kind of off-kilter, just a little bit." Sings several bars (emphasizing the first note of each measure, to point out the melodic direction of the phrase). "Can we try it ..."

Instructor asks to work on student's reed. Off-task for approximately five minutes.

T: (13:57) Snaps and sings to model a slow tempo with subdivided eighth-note pulse (eighth note at approximately 112 bpm). "Try it like that."

S: Begins (substantially under tempo), plays about ten seconds (correctly).

T: Interrupts student: "Yeah ... yeah, remember, never do the same thing twice." Writes in music. "So let's get ... let's do ... one ... two ... three ... on these, eventually going to this." Points. "Do it again."

S: (14:14) Begins again, plays about 30 sec.

Excerpt 2

S: (19:04) Begins playing next section with trills (correctly).
T: Interrupts student (after about 10 sec.): "Good. So much better. Go back and do it without the ... trills again" (seems to be referring to last lesson, as they had not worked on this section yet).
S: Plays phrase without trills (correctly).
T: "Good, now add the little *nachtschlag* in there ..."
S: (19:25) Plays same phrase with trills (correct, but trills are slightly uneven).
T: "Good. And be a little bit ... rougher with this key up here." Fingers top side trill key. "Show it who's boss. Make sure it gets down all the way."
S: Plays same phrase again.
T: Interrupts student: "Good." Plays several notes (tests reed). Plays first trilled figure (six notes total), repeats twice. "Just do that for me and stop. More time on the first B-flat."
S: Plays six notes (once) (correctly).
T: "Good, and then this ... it's a little bit jerky ..." Plays figure (to demonstrate). "... right now. Don't make the first three notes so fast." Plays figure three times (to model smoothness).
S: Plays once (correctly).
T: "Good." Makes 'shhh' noise (to model tongue position). "Now really cold air."
S: Plays once (correctly).
T: "Good." Makes 'shh' sound again twice. "Just like if you were spitting something off your tongue."
S: Makes error, corrects it, and finishes figure (correctly).
T: "Good!" Plays first several bars. "You know, just ..." Makes 'shh' sound. "... really cold air up to that A-flat."
S: Begins playing, makes error, fixes, continues to play rest of phrase (10 sec.).
T: "Good. And, so, before we put it away, can you do it, like, the super-slow ... remember, the last time you practice you want it to be, like, the slowest time ... ever. Do that super-slowest time ever and then let's put it away. Do it twice."
S: (20:49) Begins at begins of etude (substantially under tempo]. Stops at section break (after 2 minutes playing), breathes to continue.

Excerpt 3

T: (22:40) Interrupts student: "Good. Hey, (F3) ... when you, ah ... so, when you do this ... you don't ... you do the five-time rule, on stuff? What do you use, like, three times? At the same tempo and then speed it up?"
S: "What, like ...? Oh, um ..."
T: "Like, when you slow it back down ... how many times do you do it before you allow yourself to speed up?"
S: "Um ... two or three times."
T: "Do it, like ... do it five now. I think you're getting fast ... too soon. And don't do the whole thing. Are you trying to, like, run through the whole thing? Every time?

Yeah, go with ... you know ... take, like ... say you're gonna do a line, or a phrase or something, and some of this stuff, you don't have to practice as much as other stuff in here. Um, cause it's great ... cause, your only problem is speeding it up, because it's fantastic at this tempo."

S: "Mm-hm."

T: "So, I think what you've been doing is speeding it up too fast. So, make sure you go back, do it five times in a row ... until you can do it, like, five times in a row without a mistake, then, speed it up to ... you know, gradually, until you make a mistake, and then go back to the original tempo, do it five times in a row, and then no matter where you are at the end, do it two times, like, excruciatingly slowly, and then, like, put it away. But the last time has to be the slowest time out of the whole day. Okay. Good. Well, this is going fantastically."

APPENDIX H
Excerpts from Lesson of Student Subject B1

Excerpt 1

S: "...I just don't have them up to tempo ..."
T: "Okay, so let's talk about that. How've you been practicing it?"
S: "This?"

T: "Yeah."
S: "Um, I took it slow, and then I just played the triplets ... and I tongued each triplet ..."
T: "Okay. Good."
S: "... and then, I just took it ... like, I played ... made sure that I could play each ... cause they're not all the ... all different, so there's only two different ones here, and then there's two different ones here, so I made sure I could play each of these at least about six or seven times through without messing up, and then I'd take it up."
T: "And ... so how far are you taking ... like, what's the ... what tempo did you start at?"
S: "Um, I started at eighty."
T: "And then how much did you go up?"
S: "I went to hundred twenty, I think?"
T: "In one day?"
S: "Yeah."
T: "Good! Okay, so that was one day? How long did that take you?"
S: "Um, that was probably about ... thirty, forty minutes."
T: "Okay. Now, if you take that one-twenty ... could you play it at one-twenty right now?"
S: "I have no idea."
T: "And when you're talking about one-twenty, you're talking about per eighth note?"
S: "Yeah. Definitely not the quarter note." Laughs.
T: "Okay!" Laughs. "I just wanted to make sure."
S: "Yeah, I'm that good!" Laughs.
T: "Okay. Okay, so you're ... okay. Um, can I actually hear that? I know it's on a different clarinet, but let's just use yours right now."
S: "Okay."
T: "Now, we did two days of this, but can you actually add in ...?" (Refers to a scheduling activity they had begun previously.)
S: "Fill in ...?"
T: "Yeah. And you like colors, so you can color it in."
S: Turns on metronome. "I don't like the loud one, it's really annoying ..."
T: "Well, I ... I just wanted to show you it could get louder!"
S: Begins to play, stops after first two notes. Laughs. Begins again, plays triplet

passage (all accurate, except the last one.)
T: “Okay, good. Lemme hear this one one more time.”
S: Plays last group.
T: “Is that the different one?”
S: “It’s kind of like here, it’s, like ... yeah, that’s the ... it starts at ... er, it starts on an F, but it, like, the tongue part is on the A, and then it has the C-sharp is in there too. Instead of just tonguing it on, um, F.”
T: “Okay. Can you do that for me again?” Turns on metronome.
S: Plays
T: “Good. Okay. Now, actually, you’re doing very well on the first part, and sometimes this is the part that’s actually the problem.”
S: “Right.”
T: “Okay? So, could ... this time, I want you to not tongue anything except that one ... which is ... you’re supposed to do anyway, so ...”
S: “Okay.” Begins again without tonguing groups. Stops after one group: “I’m dragging.”
T: “Okay, so what’s happe ... yeah, and ... and it’s really uneven.”
S: “Yeah right. Yeah.”
T: “Okay? Let’s actually do ... what ... what are some things that you can do to fix that?”
S: “Um, well, take it down ... take the tempo down. And then, um, well, finger exercises between all of the notes, and then also tonguing different besides just the triplets.”
T: “Good. Now ...”
S: “And playing different rhythms.”
T: “Yes. And, actually, different groupings is what I was ...”
S: “Right.”
T: “Okay. So now ... the reason why I would have you do different rhythms ... at this point in the game, you could do those different rhythms, for example, if you were teaching or something ... you can use those rhythms to help someone get evenness. For you it should tell you where the problem is ...”
S: “Right.”
T: “So let’s try this with the first note long, second note short.”

Excerpt 2

T: “Let’s try this.” Plays to demonstrate a new rhythm (four even notes leading to a longer fifth note), repeats. Gestures for student to play.
S: Plays (correctly).
T: Plays again (slightly faster).
S: Plays (correctly).
T: Plays again, adding one note (five notes leading to a sixth).
S: Plays, adding one too many notes. “Oops.”
T: Repeats previous demonstration, six notes.
S: Plays (correctly, but uneven).

T: Plays to demonstrate a new rhythm, long-short.
S: Plays (correctly).
T: Plays to demonstrate a new rhythm, short-long.
S: Plays (not getting accent on the grace-note downbeats).
T: "Ahh." Demonstrates again (showing accent).
S: Plays (correctly).
T: "Good. Now, we're gonna tongue every last triplet." Demonstrates articulation slowly.
S: Plays (correctly).
T: Plays again (slightly faster), makes mistake. "Sorry." Demos again.
S: Tries, makes mistake, stops.
T: Demonstrates again, emphasizing articulation.
S: Plays (correctly).
T: Plays again, adding one note.
S: Plays (correctly).
T: "Uh-huh! Faster."
S: Plays (correctly).
T: "Again."
S: Plays (faster, and correctly).
T: "Good. Now can you add the next triplet?"
S: Plays (correctly).
T: "Yeah! Good, again?"
S: Plays (correctly, but with slight hesitation)
T: "Good."
S: Plays again (correctly, without being asked).
T: "Good. Very good. Now, can you imagine you're tonguing them?... as you play..." Plays to demonstrate (all even notes).
S: Plays (correctly).
T: "Yes! That was so much more even!"
S: Laughs.
T: "Good! Do it again! Do it again faster." Demonstrates faster tempo.
S: Plays (slightly less even).
T: "Did you tongue in your head?"
S: "No."
T: "Okay, I heard this note..." Points to music. "... the B, actually...more than the other ones. Okay, so make sure you're thinking about the C."
S: Plays again (correctly).
T: "Good! Again."
S: Plays again (correctly).
T: "Faster." Sings to demonstrate tempo, while tapping pulse on own leg. Continues tapping pulse while student plays.
S: Plays (correctly).
T: Keeps tapping.
S: Repeats correctly (without being asked).
T: Continues tapping. "Good."

S: Repeats correctly, twice more (it seems as though she shifted the pulse so the first three notes were pickups to the fourth."
T: "Good. And you can either start with the F on the beat or off the beat. I mean, you can practice it both ways, actually. That's very good, (name). It's much better! Can you go faster?" Taps faster pulse, sings to demonstrate new tempo.
S: Plays (correctly).
T: Continues tapping, looks at student, eyebrows raised. "Yeah!"
S: Laughs.
T: Still tapping. "Again?"
S: Plays again (correctly).
T: Stops tapping. "Now. Let's say you have ... is this the hardest part in here? Or are there others?"

APPENDIX I
Excerpts from Lesson of Student Subject F3

Excerpt 1

S: (25:02) Begins playing movement, plays for about 45 sec.
T: Interrupts student: "Good. Okay, (F1), great dynamics. Let's ah ..." Turns on metronome. "... let's do this in eighths ... so we can finish this ... rhythm ... let's do a little bit slower ..." Sings beginning few notes (to model tempo). Puts metronome on stand (tempo is substantially slower). "So ... still ... you're still not doing this rhythm *quite* perfect ..." Points to music, sings melody while counting. "You are coming off this note a little bit too soon onto this. So I wanna go back and do a different exercise first, though?" Picks up clarinet. "Let's do it, like, straight eighths first." Plays opening figure without dotted rhythm. "Try, and leave the gracenote out."
S: Plays (squeaks between registers).
T: "Okay, listen to it for a second?" Plays. "Definitely go to that D."
S: Plays again (slight squeak in same place).
T: "Good. There's a little sep ... between the G and the E-flat, one of your index fingers, or your register key is going down late? Can you pay really close attention to your indexes, and that register key, so it gets down right away." Shows fingering on own clarinet. "Just go from G to E-flat."
S: Plays interval three times (better).
T: As student plays. "Good, (F1). Good. Good. Now, do it again in context, just like that."
S: Plays first note, stops. Begins figure.
T: Points to student's fingers. "Ah ... okay, good." Interrupts student: "Do it again ..." Inhales audibly.
S: Plays again.
T: Interrupts student. "Good! Okay ... now just go ..." Plays opening four notes with written rhythm. "... just do that for me."
S: Plays first several bars.
T: As student plays: "Good! Great, that is so good." Points to music. "Put a slight tongue, right here, on the second E-flat, so you hear a little bit of space." Inhales audibly and plays whole first phrase (to model articulation).
S: Plays first phrase.
T: "Good. (F1). I can't believe how fast you fixed that rhythm, that's great. So practice it like this, and same thing we do with everything: speed it up slowly ... go back ... as soon as you make a mistake ... slow it back down ... do it a billion times ..." Turns off metronome. "Actually, do it five times. Every time, before you, like, change the metronome clicks ..."
S: "Mm-hm, five times?"
T: "... remember five times. Five time rule. Good. Hey, this is good."

Excerpt 2

(This frame is conducted without the metronome, but the teacher has previously established a controlled tempo, about 120 bpm, with each note getting one beat.)

S: (5:50) Begins F major in thirds (correctly).

T: "Do the scale again first."

S: Plays scale.

T: Turns to camera. "(F1) is really great." Laughs.

S: Laughs.

T: "This is so much better! My gosh! Remember last semester, the scales were, like, a challenge and the fing ... and the fingers look so good! It's just ... making sure you energize them for right now. Um ... now? You can even do it smoother than that, though. There's still, like, some fluctuations with your air? Keep your air just pressing in between all these notes." Points finger towards floor.

S: Plays F major scale one octave (correctly).

T: "Listen for a second ..." Plays note, stops, sucks reed. "Ah." Plays scale. "Just absolutely pressing through that with the air." Takes reed off.

S: Plays scale again (correctly).

T: "Good. Now, (F1), go back, do the thirds now, and make the thirds that smooth." Gets up, picks up reeds, sits back down.

S: Plays F major in thirds, one octave (correctly).

T: "Great. Let's go back and do F-sharp now. Do the scale first for me."

S: Plays F-sharp major, one uneven fingering, stops, corrects, and continues to second octave.

T: Interrupts student: "Good. But, do this exercise when you just do ... do one octave of the scale and then stop." Puts reed in mouth. Picks up clarinet.

S: Plays scale again, one octave (correctly).

T: "Good, and really do ... play it like you mean it."

S: Plays again (correctly).

T: "Good."

S: Plays again (correctly).

T: "Good, go back and do thirds now, and make 'em that smooth."

S: Plays thirds, one octave (correctly).

T: "Good. (F1), this is the type of practice that's gonna make you a goddess. This is good. Okay? Just keep going on this stuff."

APPENDIX J
Excerpts from Lesson of Student Subject C1

Excerpt 1

T: (16:17) "But, you know, you've gotta memorize that ..."

S: "Mm-hm."

T: "You just do. And it isn't because you have to go on, it's because you don't wanna have to think about it. Go ahead and turn the page."

S: Turns page.

T: "Because what happens is, we get all tied up in ..." Sings first seven notes of movement two. "... and we lose the feeling of triplets. So let's get that in our mind." Snaps fingers in eighth note pulse (dictating the tempo, about eighth note = 120 bpm), and sings opening line of movement two.

S: (17:08) Begins movement (at or slightly above tempo instructor set), incorrect (misses seventh note, altissimo D in opening figure), stops; Starts again, incorrect (makes same mistake); Isolates seventh note (altissimo D) and plays that note twice; puts into slightly larger context, playing three notes leading up to the seventh note (D), correctly. (17:12) Begins movement again (first seven-note figure not incorrect, but uneven and not controlled), goes on (plays through two errors) for about fifteen seconds. (17:27) Begins new figure (starting on low D), incorrect (fumbles left to right fingers in first five notes), stops. Plays again, incorrectly. Leans closer to the music, isolates first three notes and plays them staccato. "Okay." (17:33) Tries figure twice more unsuccessfully, stops. Looks at clarinet. "What am I doing?"

T: "I don't know." Laughs.

S: (17:38) Smiles. Plays first three notes again, correctly, stops. Starts at the beginning of this figure, plays through one error (missed note in run) and continues. Makes mistake on next arpeggiated figure (group of seven, starting on low F), stops. Isolates eight-note figure (group of seven followed by arrival note) plays (at tempo, correctly, but not controlled) and stops. Plays three low Fs in a row and then plays figure again from the bottom (fast, correct, but not controlled) and continues.

Excerpt 2

T: (19:53) "Okay. Now ... that's much better. Now, close your eyes and play the opening seven notes."

S: "Hmh."

T: "Now, I said close your eyes. You can look at 'em first, but I want you to think of ..." Sings opening figure while tapping pulse (about the same tempo as when they began, but perhaps very slightly slower).

S: Plays first seven notes while instructor taps eighth-note pulse (cleanly, but

tongues first altissimo D).

T: "Thank you. But it's not tongued."

S: "Oh."

T: "The next D is, so that's what we're gonna do, we're gonna play the next eight notes." Sings to model first eight notes of movement two.

S: Plays, altissimo D does not speak. Plays again again (successfully).

T: "Yeah, and you can use the little finger to make the D speak a little quicker? You don't have to ..."

S: Plays slurred octave Ds, using pinky finger on altissimo D. "Yeah."

T: "... yeah, but it's not speaking as well as it should.

S: "Okay."

T: "Do it again ... don't ... don't move your ... don't close your mouth ... close your teeth when you get into the high note, blow through it so you can you play the low note with the same embouchure. Ready, go." Taps pulse.

S: Plays (correctly and controlled) as teacher taps pulse.

T: (20:35) "Yeah..."

Short discussion on student's embouchure.

T: (21:12) "Okay, now, so you know you can play that, so there's no worry about it, is there?"

S: "Uh-uh ... I just got nervous."

T: "Just play by memory ..." Sings end of first movement into beginning of second movement.

S: "What's that? The whole thing?"

T: "Just ... the last few notes of the ... the first measure." (Possibly meant to say, "the first movement")

S: Plays last figure of first movement and plays directly into second movement (with no break).

T: Interrupting student: "No ..." Puts hand on student's shoulder. "Let the breath prepare you. Look ..."

S: "I have a breath? Or, does it just ..."

T: "Yeah, oh yeah ..."

S: "Okay."

T: "... you have a breath. It's says ... it says, you know, attacca, but, ah ... it's ... there is a breath. And, if you breathe in style, and in rhythm ..." Turns page back over to first movement. "Like, see, you've been playing here ... just play this, just do that for me, so you don't have to think about it. Play it for me."

S: Plays last figure of first movement.

T: Turns page and speaks while student is playing end of movement one. "Think of this breath now ..." Cuts off note and conducts breath into second movement.

S: (21:58) Continues into second movement (opening figure is almost correct, but still not even).

T: Interrupting student: "Good. Now do it again and set the D. You went ..." Sings first three notes (to model student rushing through). "Go ..." Sings figure again (with a longer first note. "Play off of it."

S: Plays again (longer first note and the opening seven-note figure is correct, but makes error on the subsequent note).

T: Interrupting student: "Now, don't take so much time, but have that same definition."

S: Plays figure again (correct notes but not even).

T: Interrupting student: "Good. And the reason it doesn't work is you're rushing the first triplets." Models rhythm of opening triplets while tapping eighth-note pulse.

S: While instructor taps pulse, plays (successfully).

T: Interrupting student: "Yeah ... tempo ... you were a little slow. Ready, go." Snaps fingers in eighth-note pulse (faster than previous trial)

S: (22:31) Plays again, faster (not controlled), stops.

T: "Right. And on the downward skip, tongue this note for me, too." Points.

S: "Mm-hm." Writes in music.

APPENDIX K
Institutional Review Board Approval Letter

The University of Oklahoma

OFFICE FOR HUMAN RESEARCH PARTICIPANT PROTECTION

IRB Number: **11924**
Approval Date: **November 26, 2007**

November 27, 2007

Angela Carter
Department of Music
2369 Heatherfield Lane
Norman, OK 73071

RE: Observations of Practice Strategies in College-Level Applied Clarinet Lessons and Subsequent Individual Practice Sessions

Dear Ms. Carter:

On behalf of the Institutional Review Board (IRB), I have reviewed and granted expedited approval of the above-referenced research study. This study meets the criteria for expedited approval category 6, 7. It is my judgment as Chairperson of the IRB that the rights and welfare of individuals who may be asked to participate in this study will be respected; that the proposed research, including the process of obtaining informed consent, will be conducted in a manner consistent with the requirements of 45 CFR 46 as amended; and that the research involves no more than minimal risk to participants.

This letter documents approval to conduct the research as described:

Consent form - Subject Dated: November 26, 2007 Revised - Instructor
Consent form - Subject Dated: November 26, 2007 Revised - Student
Protocol Dated: November 19, 2007 Revised
Survey Instrument Dated: November 12, 2007 Questionnaire - Undergrad Clarinet Applied Student
Survey Instrument Dated: November 12, 2007 Coding Instrument for Practice Session
Survey Instrument Dated: November 12, 2007 Coding Instrument for Lessons
Survey Instrument Dated: November 12, 2007 Interview Questions for Instructor
Other Dated: November 12, 2007 Recruitment email
IRB Application Dated: November 12, 2007

As principal investigator of this protocol, it is your responsibility to make sure that this study is conducted as approved. Any modifications to the protocol or consent form, initiated by you or by the sponsor, will require prior approval, which you may request by completing a protocol modification form. All study records, including copies of signed consent forms, must be retained for three (3) years after termination of the study.

The approval granted expires on November 25, 2008. Should you wish to maintain this protocol in an active status beyond that date, you will need to provide the IRB with an IRB Application for Continuing Review (Progress Report) summarizing study results to date. The IRB will request an IRB Application for Continuing Review from you approximately two months before the anniversary date of your current approval.

If you have questions about these procedures, or need any additional assistance from the IRB, please call the IRB office at (405) 325-8110 or send an email to irb@ou.edu.

Cordially,

Lynn Devenport, Ph.D.
Chair, Institutional Review Board