

THE COGNITIVE DOMAIN IN THE TEACHING AND LEARNING OF MUSIC-
THEORETICAL CONCEPTS IN SELECTED COLLEGE-LEVEL MUSIC
THEORY COURSES

THESIS

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by

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INTRODUCTION

This thesis discusses Benjamin Bloom's Taxonomy of Learning Domains – more specifically the Cognitive Domain – as it relates to the pedagogical approaches of teaching basic music theory and their influence on the students' comprehension of music-theoretical concepts. This thesis (1) characterizes the different pedagogical techniques of 'constructing' and 'identifying', (2) considers the students' comprehension and determine which, if either, technique is more effective, and (3) evaluates available and commonly used resources in the teaching and learning of music fundamentals. Constructing and identification are two common tasks used for teaching and learning of most concepts in music theory. Intended learning outcomes describe the kinds of things that students know or can do after instruction that they did not know or could not do before. More specifically, 'constructing' refers hereby to active-learning writing tasks, such as constructing a specific interval above / below a given note or constructing a major triad with the given root. 'Identification,' on the other hand, refers to identifying intervals, triads, etc.

The search for available books and articles discussing Music Theory pedagogy with respect to Benjamin Bloom's Taxonomy of Learning Domains shows that little research has been conducted concerning this issue. Benjamin Bloom and his colleagues were pioneers in the field of academic pedagogy. Using his Taxonomy of Learning Domains and applying it to music theory seems to be a necessary and useful task, so that

students will have a solid foundation in all music theory concepts. Instructors must utilize the methods of Blooms taxonomy to focus on the student outcomes as well as their teaching methods.

The research methodology used in this thesis includes the analysis of commonly used music fundamentals textbooks with regards to the various levels of the cognitive domain. A survey of students enrolled in music theory courses at Texas State University-San Marcos was conducted to measure the perception on whether ‘identifying’ or ‘constructing’ tasks were more difficult and student testing measured the actual success rate of task completion.

This thesis consists of three chapters. Chapter 1 discusses Benjamin Blooms Cognitive Domain in the Taxonomy of Learning Domains as it relates to music theory. A background of the ideas and concepts of the theories and how they specifically apply to music fundamentals is discussed. Chapter 2 is an analysis of commonly used music fundamentals textbooks. The analysis presented is a calculation of the percentage for tasks classified in each of Blooms levels. Chapter 3 is an analytical discussion of the data gathered from the tests and surveys.

The Final Remarks summarize the outcomes and relate these to the overall goal of this research: i.e., how music theory instruction can be improved by appropriately planning the learning sequences and effective student tasks.

1. BLOOM'S TAXONOMY OF LEARNING DOMAINS AND ITS APPLICATION TO THE TEACHING AND LEARNING OF MUSIC FUNDAMENTALS

Benjamin Bloom's Taxonomy of Learning Domains was initially published in 1956 and was originally created in and for an academic context. Taxonomy, according to Merriam-Webster on-line¹, is defined as “the study of the general principles of scientific classification,” or simply a way of classification. The ideas of the Taxonomy of Learning Domains was first discussed and loosely created at an informal meeting of college examiners during the 1946 American Psychological Association Convention in Boston. Subsequent meetings and questionnaires produced more information, and eventually the first publication on the topic, *Taxonomy of Educational Objectives, The Classification of Educational Goals*. (Bloom et al. 1956). Despite the progress of this idea, developmental problems were discussed at the meetings. The primary concern was whether or not educational objectives could even be classified. Another concern was that educators might abandon previous pedagogical methods strictly to obtain desirable outcomes from the list provided in the taxonomy. In addition, many contributors worried that the classification system “might lead to fragmentation of education purposes such that the parts and pieces finally placed into the classification might be very difficult from the more complete objective with which one started.” (Bloom et al. 1956, 5).

¹ See <http://www.m-w.com>

Bloom et al. state: “Use of the taxonomy can also help one gain perspective on the emphasis given to certain behaviors by a particular set of educational plans. Thus, a teacher, in classifying the goals of a teaching unit, may find that they all fall within the taxonomy category or recalling or remembering knowledge. Looking at the taxonomy categories may suggest to him that, for example, he could include some goals dealing with the application of this knowledge and with the analysis of the situations in which the knowledge is used.” (Ibid, 2) Blooms Taxonomy model is in three parts, or “overlapping domains”:

1. Cognitive domain, or intellectual capability (i.e., knowledge or “think”)
2. Affective domain, or feelings, emotions, and behavior (i.e., attitude or “feel”)
3. Psychomotor domain, or manual and physical skills (i.e., skills or “do”)

Each of the three domains in Bloom’s Taxonomy is based on the principle that within each domain the levels are ordered in their degree of difficulty and that each level must be mastered before progressing to the next.

The Cognitive Domain, which is the concern of this thesis, includes those objectives that deal with the recall or recognition of knowledge and the development of intellectual abilities and skills. Under this domain, Bloom distinguished six levels of instructional objectives. The levels are listed in increasing order of complexity, followed by commonly used verbs that represent each level:

(1) KNOWLEDGE: This is the foundation of the Cognitive Domain. Here, knowledge is the act of remembering previously learned facts, either by recognition or recall (identification as opposed to memory). “While it is recognized that knowledge is involved in the more complex major categories of the taxonomy (level 2 and level 6), the

knowledge category differs from the others in that remembering is the major psychological process involved here, while in other categories the remembering is only one part of a much more complex process of relating, judging, and reorganizing.” (Ibid, 62). Verbs that represent “Knowledge” are:

| | | | | | |
|----------|------|-----------|--------|-----------|--------|
| Cite | List | Reproduce | Define | Match | Select |
| Identify | Name | State | Label | Recognize | |

(2) COMPREHENSION: This level involves comprehension of an idea and is simply the ability to understand or grasp the meaning of material. Three types of comprehension abilities are categorized in this level: the translation of an idea, which means students can have one idea and translate the same idea into a different language, into other terms, or into another form of communication; the interpretation of an idea, which means students cannot only identify the ideas, but interpret and understand them and their connections; and also the extrapolation of an idea which means students must make decisions on the ideas presented, draw conclusions and state them proficiently. (Ibid, 89-90). In this level, the emphasis is on grasping the meaning and intent on the material. Verbs that represent “Comprehension” are:

| | | | | |
|-----------|----------|------------|-----------|------------------------|
| Convert | Extend | Paraphrase | Describe | Give examples |
| Summarize | Estimate | Illustrate | Translate | Explain Interpret |

(3) APPLICATION: This level of Bloom’s taxonomy requires the ability for students to use previously learned material in new and concrete situations. ‘Application’ requires students to have ‘comprehension’ of a theory or principle and the ability to apply the theory or principle in the given exercise (see Figure 1).

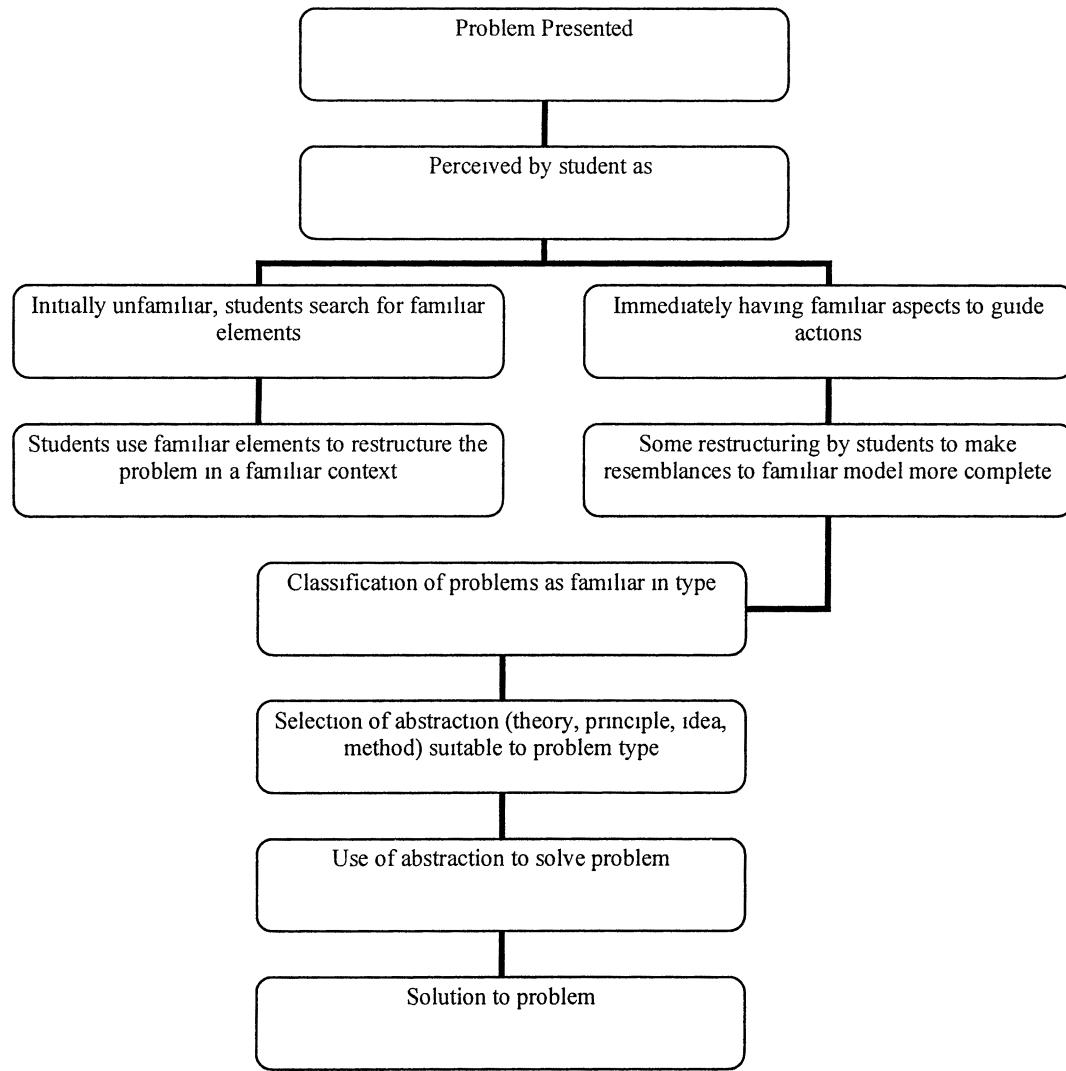


Figure 1. Bloom's Diagram of the Processes Within the “Application” Level. (Bloom et al. 1956, 122).

“Research studies have shown that comprehending an abstraction does not certify that the individual will be able to do it correctly.” (Ibid, 122). Emphasis in this level is placed on remembering and solving the problem using the appropriate methods. Verbs that represent “Application” are:

| | | | | | |
|-----------|---------|--------|-------------|---------|------|
| Apply | Modify | Relate | Compute | Operate | Show |
| Construct | Predict | Solve | Demonstrate | Prepare | Use |
| Discover | Produce | | | | |

(4) ANALYSIS: The level ‘analysis’ emphasizes the breakdown of the material into its component parts so that its organizational structure may be understood. “Analysis, as an objective may be divided into three groups, or levels. At one level, the student is expected to break down the material into its constituent parts, to identify or classify the elements of communication. At a second level he is required to make explicit the relationships among the elements, to determine their connections and interactions. A third level involves recognition of the organizational principles, the arrangements and structure, which hold together the communication as a whole.” (Ibid, 145). Verbs that represent “Analysis” are:

| | | | | |
|---------|---------------|-------------|-----------|--------------|
| Analyze | Differentiate | Infer | Associate | Discriminate |
| Outline | Determine | Distinguish | Point out | |

(5) SYNTHESIS: After mastering previous levels, students progress to Level 5, “Synthesis.” This level emphasizes the ability to put parts together to form a new whole. While the previous levels also require the ‘putting together of parts to form a whole’ in an easier manner, Level 5 requires a higher thinking and creating these ‘new wholes’ with materials that students will have to draw upon (i.e., constructing chords one at a time versus composing chords to form a harmonic progression). Verbs that represent “Synthesis” are:

| | | | | | |
|---------|---------|------------|-----------|-----------|--------|
| Combine | Develop | Plan | Rewrite | Compile | Devise |
| Propose | Tell | Compose | Integrate | Rearrange | Write |
| Create | Modify | Reorganize | Design | Organize | Revise |

(6) EVALUATION: The final and most difficult level in the Cognitive Domain is “Evaluation.” This requires student to make value judgments about any specific material for a given purpose and to have the ability to make decisions based on the given material. This requires students to set criteria as well as standards for appraising a situation. This last level can be seen as the culmination of all previous learning levels. Although this is the highest Level in the Cognitive Domain, “it is not necessarily the last step in thinking or problem solving.” (Ibid, 185). Verbs that represent “Evaluation” are:

| | | | | | |
|----------|----------|-------|--------|----------|-------|
| Appraise | Conclude | Judge | Assess | Contrast | Weigh |
| Compare | Evaluate | | | | |

The verbs that represent each level should not be looked at as specific to one level. Some of the verbs can be used in two different levels. For example, ‘modify’ is classified as a Bloom level 3 and Bloom level 5 verb. The classification depends on how the author presents the exercise to the student.

According to Learning and Teaching, one way of looking at the cognitive domain is through the pyramid example. “Knowledge” is thought of as the foundation of the Cognitive Domain, whereby the students gradually works their way up through each level only after mastering the previous level. Each level is dependent upon the previous:

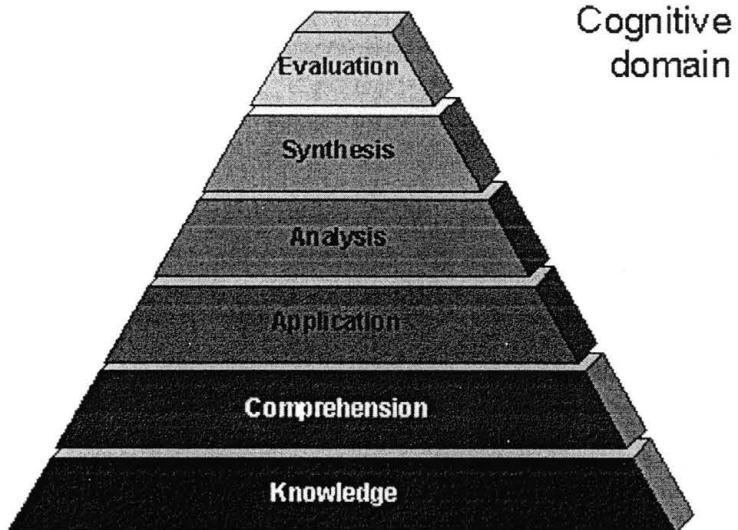


Figure 2. Pyramid example of the Cognitive Domain.²

Instructors do not typically research the specific theories of Bloom's taxonomy in relation to music theory to consider the outcomes of what students learn. This, however, does not mean that students learning outcomes do not need to be considered. Some form of hierarchy for the students learning outcomes needs to be observed so that instructors can learn, from the student outcomes, how to better teach any given concept. An instructor must not think of teaching simply as an activity, but rather as a three-way interaction between the instructor, the material being taught, and students learning (Atherton, 2005).

The learning outcomes of students are both measurable and attainable. The outcomes can be described with verbs that indicate the expected performance. These verbs form the basis of assessment in the course unit, course, and music theory program levels. Bloom's taxonomy is a good source of verbs that can be used to produce expected

²Figure taken from <http://www.learningandteaching.info/learning/bloomtax.htm>, accessed on March 15, 2007.

outcomes. While these verbs should not be used only to produce an expected outcome, they should also be used to guide the instructional techniques. The expected learning outcomes should influence the teaching style as a representative approach for each individual instructor. Blooms taxonomy provides an important foundation for measuring student outcomes as well as guiding instructors to teach accordingly. It is important to remember that student outcomes should influence the teaching style.

Intended learning outcomes can be used effectively in the following ways:

- make them more student-oriented, rather than instructor-oriented,
- focus on learning that results from an activity, rather than doing the activity itself,
- adjust the outcomes to the appropriate course unit, course, and program levels,
- focus on skills and abilities that are prerequisites of the discipline and ensure that these are based on professional standards of excellence, and
- focus on facets of learning that will develop and continue, but that can be assessed at any time.

In music theory, some of the verbs associated with Blooms taxonomy that describe student tasks (i.e., rearrange, write / compose, create – all of them at a very high level of Bloom’s taxonomy) are used more often in higher levels of music theory. In general, Bloom’s verbs can be applied to music fundamentals with specific examples for each of Blooms levels. For example, in Bloom level 1 common exercises are: “Name the following notes” or “Identify the following triads.” Common verbs used to represent Bloom level 2 exercises in music fundamentals are ‘transpose,’ or ‘give examples.’ Exercises that are classified under Bloom level 2 might ask: “ Give examples of a simple-triple time signature.” Verbs that are used throughout music fundamentals textbooks for

Bloom level 3 are ‘construct’ or ‘modify.’ Students can expect the following level 3 exercises: “Construct the following scales with the given tonic.” Another example might be: “Add barlines in the appropriate places so as to match the given time signature.” The most common type of Bloom level 4 exercise is ‘analyze.’ The task might be: “Analyze the following excerpt in terms of harmonies, cadences, and form.” While these types of exercises involve identification, one must remember that this level represents a stage at which the student is breaking down the parts of a musical excerpt so that they may gain a better understanding of the musical excerpt as a whole. This is the essence of “Analysis.”

Bloom level 5 contains several verbs that are commonly found in the teaching of music fundamentals. These are ‘compose,’ ‘write,’ or ‘rearrange.’ Students might find the following exercises, classified as Bloom level 5: “Compose a brief melody in the form of a parallel period.” Bloom level 6 exercises are the highest level that students can achieve. These are not commonly found in music fundamentals. However, examples of this level can be given to students. An exercise classified as Bloom level 6 might be the following: “Compare the following two excerpts and evaluate the differences in terms of style.”

2. AN ANALYSIS OF SELECTED MUSIC FUNDAMENTALS TEXTBOOKS

2.1. A Brief Introduction to the Review Process

As discussed in Chapter 1, Benjamin Bloom's taxonomy should be followed in the correct sequential order. Learning new material out of the suggested sequence can lead to misunderstanding of the material or confusion.

Also, for the purposes of this research, some exercises have included directions such as "Write" or "Indicate", all of which are "Construct" or "Identification" exercises, respectively. The exercise does not depend on the written instructions, but on how the exercise is classified under Bloom's Taxonomy.

According to the CMS 2000 survey, several of the textbooks reviewed here are textbooks more commonly used at universities.

2.2. *Music Fundamentals* by Puopolo

Music Fundamentals (Puopolo 1976) is designed for students who might already have experience with music, but not necessarily music theory. As the title suggests, this book incorporates all music fundamentals, not just theory fundamentals. The author integrates the study of playing different instruments, such as the piano, recorder, ukulele, and autoharp. Several concepts are introduced and discussed in a series of chapters with brief explanations on each topic. The topics are covered in the following order: Tones, Beat, Musical Score, Musical Score Continued, The Major Scale, Construction of Major Scale, Key Signatures, Major Scale Intervals, Intervals Continued, Identification of Intervals,

Chords, Primary Chords, Seventh Chords, Inversions of Chords, Compound Meter, Conducting, Major and Minor Chords, Syncopation, The Minor Mode, Chording in Minor Mode, Elements, of Form in Music, Harmonizing with I, IV, and V7 Chords, Composing a Song, and Transposition. As one can see, the topics discussed in this book range widely from beginner concepts (such as basic rhythm ideas and notation) to more advanced concepts, those of which include conducting and composing. Essentially, the book is comprehensive of all music fundamentals. Each chapter concludes with a set of “Suggested Assignments.” These exercises most often included sight singing exercises and playing piano or recorder pieces, rather than pen-and-paper exercises.

Chapter 1, Tones, begins the book with an explanation of tones. The chapter is very short and includes only 3 identification exercises. Chapter 2, Beat, includes 26 identification exercises and 10 construction exercises. Chapter 3, Musical Score, includes all identification exercises. Chapter 4, Musical Score Continued, consists of 5 identification questions and 14 construction questions. Chapter 5, The Major Scale, consists of only playing the scales on a recorder or piano. There were no pen-and-paper exercises for this chapter. Chapter 6, Construction of the Major Scale, consists of only construction examples. In Chapter 7, Major Scale Continued and More Notation, the exercises include both elements of identification and construction. These types of questions are ideal for the student, since they incorporate different levels of knowledge. Chapter 8, Key Signatures, is divided in half with 14 questions for identification and 14 questions for construction. Chapter 9, Major Scale Intervals, consists exclusively of identification exercises. The chapter is quite short and has brief explanations of intervals. Chapter 10, Intervals Continued, includes 8 identification and 33 construction exercises.

Some of the construction exercises use the word ‘change,’ to mean ‘modify’ directing the task completion. Under Bloom’s taxonomy, this can also be classified as level 3, as is ‘construct.’ Chapter 11, Identification of Intervals, consists of identification exercises. However, some of the questions are two-fold in that they include identification and construction elements in each exercise. Chapter 12, Chords, is a concise chapter on the topic and consists of 14 exercises, all of which involve exclusively identification. Chapter 13, Primary Chords, only has exercises at the end of the chapter in the “Suggested Assignments” section. In this section, there are 8 questions, all of which were construction. Throughout the chapter, there are several sight singing, piano, and recorder exercises. Chapter 14, Seventh Chords, consists of construction exercises. Chapter 15, Inversions of Chords, consists of 23 identification and 4 construction exercises. In addition, the author includes several new rhythmic concepts. In Chapter 16, Compound Meter, the exercises consists of clapping rhythms, playing the recorder, and 10 identification exercises in the form of fill-in-the-blank. Chapter 17, Conducting, includes no written exercises. Chapter 18, Major and Minor Chords, includes 29 identification questions, 10 of which were again fill-in-the-blank. In addition to these exercises, there are 8 construction questions, and 8 analysis questions. According to Bloom, ‘analysis’ falls under level 5. Chapter 19, Syncopation, also consists of no written exercises. In Chapter 20, The Minor Mode, the author teaches the la-based minor system. The chapter contains 11 identification and 4 construction exercises. In Chapter 21, Chording in the Minor Mode, there are no written exercises. Only 3 construction exercises are given in the “Suggested Assignment” section. Chapter 22, Elements of Form in Music, consists of 11 identification exercises. Chapter 23, Harmonizing with I, IV, and V⁷, consists of

identification of non-chord tones. There were no written exercises in Chapter 24. The last chapter, Transposition, consists of 5 exercises, all of which involve transposition.

As stated previously, the author includes new elements of rhythm and meter in almost every chapter. For example, in addition to learning about Major Scale Intervals in Chapter 9, the student is also introduced to the new concept of sixteenth notes. The student is also introduced to the new concept of a dot and tie in rhythm, in addition to learning the Major Scale in Chapter 7.

This textbook would be difficult to use in the classroom setting, because there are so few exercises that the student can turn in. This would make it difficult for the teacher to assess how the student is progressing. The exercises mentioned above in each chapter are dispersed throughout. Throughout each chapter, the concept is discussed briefly, followed by sample questions or exercises, after which follows a continuation of the same concept.

2.3. *Music Language and Fundamentals* by Gretz

This textbook, *Music Language and Fundamentals* (Gretz 1990), is tailored for students interested in learning introductory aspects of music theory. It presents these concepts in the following order: The Notation of Pitch, Accidentals, Notation of Rhythm, Rhythmic Patterns, Major Scales, Key Signatures and Melody Writing, Minor Keys, Compound Meters, Intervals, Chords, Chord Inversions and Seventh Chords, Musical Structure and Form, and finally includes a comprehensive review. In addition to these concepts, the author includes additional exercises at the end of each chapter. These are comprised of sight singing exercises, keyboard exercises, and review questions from the materials presented in the chapter. Almost every chapter includes a set of questions dedicated to

identifying mistakes in musical notation.³ For this textbook, each “exercise” is considered the start of new instructions, no matter what the number of individual exercises is.

In Chapter 1, The Notation of Pitch, the students are presented with 21 different sets of exercises. 16 of the exercises are dedicated to identification only, three of the exercises contain construction-only elements, and the other two exercises contain elements of both construction and identification. These types of exercises are excellent learning tools for the students, because they incorporate two different levels of learning. At the end of the chapter, there are four additional sets of exercises for identification as well as four sets of construction exercises located in the additional exercises section.

Chapter 2, Accidentals, is not quite as lengthy as the first chapter. In the chapter, there are only five sets of identification exercises, and one exercise set that includes identification and construction. However, the additional exercise section includes four exercise sets for construction and two for identification, one of which is to identify mistakes in musical notation.

Chapter 3, Notation of Rhythm, is split equally with six sets of exercises for both identification and construction. The other three exercises do not fall into the ‘identification’ or ‘construction’ categories. Other exercises direct the student to ‘discuss’ rhythmic ideas, which is a Bloom level 2 exercise. Chapter 4, Rhythmic Patterns, only consists of one exercise for identification. All other exercises direct the student to sing or clap a rhythm, add barlines to noteheads, compose a rhythm, and analyze a rhythm. These exercises might be difficult for the student in the early stages of

³ For our purposes in this thesis, the sight singing and keyboard exercises were not considered for the data presented.

the learning process. ‘Analyze’ can be classified as Bloom level 4 under Bloom’s taxonomy, while ‘compose’ should be classified as a Bloom level 5 exercise.⁴

Chapter 5, Major Scales, consists of 3 identification exercises, three construction exercises, and one exercise that contains both identification and construction elements. In addition to these, there are three exercises for the student to create a melody. These are Bloom level 5 exercises and will challenge the student. In the additional exercise section, the author dedicates another four exercises for construction and three for composing other melodies.

Chapter 6, Key Signature and Melody Writing, contains seven exercises for identification and three exercises for construction. Also included in the chapter are exercises that direct the students to ‘Rearrange,’ ‘Copy,’ ‘Discuss,’ and ‘Compose.’ For example, Exercise 11 is discussing courtesy accidentals and directs the student to “Discuss the safe accidentals in the following examples. Which accidentals **are** necessary?” This type of exercise is categorized as a Bloom level 2 exercise, and is beneficial to the student. However, the student needs a firm understanding of the material to discuss, i.e. a firm grounding, to complete Bloom Level 1 exercises. The exercises that direct the students to ‘rearrange’ and ‘copy’ are classified as Bloom level 1 exercises, the same level as identification. On the other hand, the exercise that directs the student to ‘compose’ is classified as Bloom level 5. Another Bloom level 2 exercise was found in the additional exercises section. These directions tell the students to ‘Transpose’ the given melodies into a new key.

⁴ This is not to say the student could not complete the task. Rather, the student might find it difficult with the knowledge gained at that moment.

Chapter 7, Minor Keys, includes only identification-based exercises. Some of the exercises require students to use identification skills, aurally rather than written. However, the chapter review and additional exercises include construction-based exercises. There are also two exercises that include both aspects of identification and construction.

Chapter 8, Compound Meters, does not consist of any identification or construction exercises. The first seven exercises instruct the student to clap a given rhythm. Some of the following set of exercises did consist of identification elements. For example, Exercise 10 directs the student as follows: “Read the following poems. Decide on a meter. (Each of these poems can be written in a compound meter.) Add rhythm, notating it below each syllable in the poem. On staff paper, add pitches to your rhythms to make melodies.” In essence, the students have to identify a compound meter to fit the poem, but they also are asked to compose a melody to fit the meter and poem.

In Chapter 9, Intervals, all the exercises in the chapter are identification, although one exercise consists of constructing a scale in addition to identifying all intervals. The additional exercises at the end of the chapter consist of a mixture of both identification and construction exercises. Chapter 10, Chords, follows the same idea as the previous chapter. Although most of the exercises were identification, this chapter did include three construction exercises. In addition to these, Exercise 1 instructs students to identify the root and construct the corresponding triad. Interestingly, Exercises 2 and 3 ask the student to make a given triad fit into the given key signature. Essentially, the student is asked to “modify” the given triad to fit the appropriate key signature. These types of exercises are classified as level 3, the same level as construction.

Chapter 11, Chord Inversions and Seventh Chords, divides the exercises equally between identification and construction exercises with two additional exercises that consist of both identification and construction elements. The chapter review is comprised of three identification exercises and three construction exercises.

Chapter 12, Musical Structure and Form, starts the student with an aural exercise in which the student is asked to identify the cadence by the last chord in the phrase. Exercises 2 and 4 both ask the student to analyze a short excerpt in terms of key, meter, rhythm, pitch, and cadence. The student is asked to ‘Compose’ during Exercise 3, whereas exercises 5, 6, and 7 are dedicated to identification. The final chapter, Chapter 13, is a comprehensive review of all concepts learned. This chapter consists mostly of identification for the student, but also asks the students to discuss some previously learned topics.

In conclusion, this book includes approximately 54% identification exercises, 33% construction exercises, and 8% exercises that include both identification and construction aspects. The other 5% of exercises are dedicated to those exercises which include levels other than those that include identification and construction (i.e., other than levels 1 and 3). Since this textbook dedicates a little over half of its exercises to identification, it allows the student to have a solid foundation when moving to the next stage of music theory. However, several of the chapters either start with, or only include, construction exercises. As stated before, it is crucial that the student move through the stages in the appropriate order. It is important for each chapter to start with identification exercises, then move gradually through Bloom level 2, and on to construction exercises.

2.4. *Rudiments of Music* by Ottman and Mainous

Rudiments of Music (Ottman & Mainous 2004) is a combination of textbook and workbook. This combination allows for exercises to immediately follow an explanation and for students to have quick references if they do not fully understand the material. Throughout the textbook, beginning music theory concepts are introduced. In addition, some elementary harmony concepts are introduced to “bridge the gap between *Rudiments of Music* and comprehensive harmonic studies” (p. xiii). The chapters are divided into topics that discuss pitch, those that discuss time, and those that discuss harmony. Chapters 1, 2, 4, 5, 6, 10, 11, and 14 through 19 discuss all aspects of pitch. Chapters 3, 7, 8, 9, 12, and 13 explain time, meter, and rhythm aspects, while chapters 20 through 23 discuss harmony.

Chapter 1 introduces students to pitch, clefs, and the musical alphabet. All exercises in this chapter are identification. Four of the exercises direct the student to ‘draw’ the appropriate clef in addition to its identification. ‘Draw’ is classified as a Bloom level 1 exercise, the same as ‘reproduce.’ Chapter 2, Pitch: The Keyboard, gives the students another nine identification exercises and only one construction exercise. The next chapter to discuss pitch, Chapter 4, only consists of four exercises, three of which are construction and one identification. Chapter 5, Pitch: Major Scales, includes only exercises that include both aspects of identification and construction. These exercises ask students to write a scale and identify the appropriate half-steps. The author also recommends additional practice in constructing scales. Chapter 6 continues the discussion of major scales and includes four exercises. Three of these are identification, while one incorporates identification and construction. The next chapter that discusses

pitch is Chapter 10, a continuation of major scales. Only two exercises include identification, and the other exercise is for developing piano skills. Chapter 11, Pitch: Major Key Signatures, includes two identification exercises, two construction exercises, and one exercise that contains both elements. The author does not discuss pitch in Chapters 12 and 13. Chapter 14, Pitch: Minor Scales, is brief and only includes one identification exercise and one combination exercise for constructing scales and identifying half-steps. Chapter 15 is a continuation of minor scales. Included are two identification exercises, one exercise for construction and identification, and one other Bloom level 1 exercise. This exercise directs students to ‘indicate,’ which is the same classification category as ‘identify’ or ‘name.’ Chapter 16, Pitch: Minor Key Signatures, continues the discussion of pitch. Only four exercises are included in this chapter for students, three for identification, one for construction. Chapter 17, Major and Minor Key Relationships, includes four exercises, three of which are identification, the other dedicated to aural skills. Chapter 18, Intervals: Major and Perfect, is a lengthy chapter, but only includes three exercises. Two exercises are identification, while the third contains both construction and identification tasks. Chapter 19, Intervals Continued, is the last chapter dedicated to concepts regarding pitch. This chapter includes more exercises than most other chapters. In all, five exercises are dedicated to identification, two exercises are for construction, and one exercise that again includes construction and identification elements. One other exercise directs students to ‘modify’ a given interval. This type of exercise is classified as Bloom level 3, the same level as construction.

The following group of chapters are dedicated to the concepts of musical time. Chapter 3, includes an array of exercises. Of the exercises, two are for identification and

three are for construction. One exercise directs students to ‘copy’ a given note. This type of exercise can be found under Blooms level 1, the same level as identification. Another type of exercise directs students to ‘add’ the appropriate stems to note heads. This exercise is classified as Bloom level 2, the same level as ‘illustrate.’ In Chapters 7 and 8, exercises are aural exercises; no written exercises are included in these two chapters. This can be problematic in that students should also be well versed in written aspects of rhythm as well. Chapter 12 continues the discussion of musical time. Included in this chapter are two identification exercises and one exercise that includes a combination of identification and construction. The other exercises are not written exercises. The last chapter to discuss time, is Chapter 13. Exercises in this chapter direct students to ‘rewrite’ various rhythmic patterns. This is a Bloom level 5 exercise, and thus one of the most difficult tasks.

The last four chapters in the textbook are dedicated to aspects of musical harmony. Chapter 20, Harmony I: Chords, Major Triads, starts with one construction exercise. In addition, the chapter includes three exercises that include a combination of construction and identification, and one final exercise for ‘analysis.’ This exercise is classified as Bloom level 5, the same level as ‘rewrite.’ Chapter 21 does not include any written exercises, only exercises to expand piano skills. Chapter 22, Harmony II: The Minor, Diminished, and Augmented Triads, is the last chapter to include written exercises. Among these are five identification exercises, one construction exercise, one combination exercise, and one ‘analysis’ (Bloom level 5) exercise. The last chapter, Chapter 23, like Chapter 21, also instructs students on piano playing skills and contains no written theory exercises.

In this textbook-workbook-combination, approximately 62% of the exercises were Bloom level 1 ('identification' exercises), while only 17% were Bloom level 3 ('construction' exercises), and 16% were combination exercises that included identification and construction tasks. The other 5% of exercises are exercises other than Bloom level 1 or Bloom level 3.

2.5. *Music First* by White

Music First (White 2005) is a text that separates the explanations of the concepts from assignments. For the purpose of obtaining more accurate data for this study, the exercises in this textbook are counted individually. In White 2005, the music theory concepts are divided into the following chapters: Elements of Music: Pitch, Elements of Music: Rhythm, Simple Meter, Compound Meter, The Keyboard, Major Scales / Major Keys, Intervals, Minor Scales / Minor Keys, Chords – Looking at the Musical Background, The Harmonic System, and finally, Introduction to Harmonizing and Composing. Each chapter consists of a few exercises throughout the chapter under sections entitled "Quick Checks." The author also includes several key terms for students to define. These key terms relate to concepts discussed in the corresponding chapter, and defining them are Bloom level 1 exercises. The assignments are grouped together at the end of each chapter.

In addition to these assignments, the text includes an accompanying CD-ROM. This CD does not include additional exercises for students, but does include recordings of all songs in the songbook, which can be found starting on page 265. The introduction also describes the accompanying website for the book (<http://www.mhhe.com/musicfirst5>). This website will be discussed in further detail at the end of this textbook review.

Chapter 1, Elements of Music: Pitch, introduces students to the most widely used clefs, the keyboard, and pitches with their relative position on the keyboard. This chapter requires the definitions of key terms and contains 108 individual exercises for identification and 94 for construction. The text also requires the students to ‘draw’ the designated clefs. This is a Bloom level 1 exercise, the same level as ‘identify.’ Chapter 2, Elements of Music: Rhythm, introduces students to the elementary concepts of rhythm.⁵ The students are asked to define 15 key terms. It is interesting to note that there were no exercises specifically for identification or construction, but there were 8 combination exercises that included both identification and construction tasks. Students are also required to complete ‘rewrite’ and ‘replace’ exercises. Both of these tasks can be classified as Bloom level 5. The directions for the task ‘replace’ instruct the student to “Replace each note with the equivalent rest,” thus to ‘rewrite’ the given pattern of notes.

Chapter 3, Simple Meter, includes only ten identification tasks, while the other tasks require students to ‘give examples,’ ‘define,’ write,’ copy,’ and ‘rewrite.’ As previously mentioned, both ‘write’ and ‘rewrite’ are Bloom level 5 tasks, whereas ‘copy’ is a Bloom level 1 task. ‘Give examples’ is classified as a Bloom level 2 exercise. The last type of exercise found in this chapter is a combination exercise that asks the student to ‘draw and identify,’ both of which are Bloom level 1 tasks. Chapter 4, Compound Meter, consists of 6 construction exercises, 16 identification exercises, and 14 combination exercises that ask the student to ‘draw and identify.’ In addition to the construction tasks, the students are directed to ‘complete’ a given example, which is also

⁵ Most of the exercises throughout this chapter and other chapters discussing rhythmic concepts are dedicated to ear-training and are not considered in the given data.

classified as Bloom level 3. This chapter also includes a number of different tasks not included in Bloom level 1 or Bloom level 3. These include ‘define,’ ‘write,’ and ‘copy.’

Chapter 5, The Keyboard, includes the definitions of 7 key terms, 71 construction exercises, and 10 combination exercises that include both identification and construction tasks. Chapter 6, Major Scales / Major Keys, also does not include any identification exercises. However, there are 24 construction exercises, 12 combination exercises that include both construction and identification tasks, and 8 ‘define’ exercises. Chapter 7, Intervals, includes 63 identification exercises as well as 28 construction exercises. Chapter 8, Minor Scales / Minor Keys, includes only six identification exercises, eleven construction exercises, and four combination exercises. In addition to these, the author includes two ‘transpose’ exercises, which are classified as Bloom level 2.

Chapter 9, Chords – Looking at the Musical Background, consists of 70 identification exercises, 51 construction exercises, and 36 combination exercises that again include both construction and identification tasks. In addition to these exercises, the author also asks students to define 19 key terms. Chapter 10, The Harmonic System, does not include any identification tasks, or any other Bloom level 1 exercise. However, there are 32 construction tasks, 2 ‘compose’ exercises, and 5 ‘analyze’ tasks. Chapter 11, Introduction to Harmonizing and Composing, only includes four identification exercises and two combination exercises.

Before summarizing the data for this textbook, it is important to remember that the exercises presented are counted individually, whereas previously they were calculated as sets of exercises. Approximately 8% of the exercises were combination exercises which include both Bloom level 3 and Bloom level 1 tasks; 46% of the exercises were

tasks found under Bloom level 1; and 38% of the exercises were tasks found under Bloom level 3. The other 8% is dedicated to exercises not found under Bloom level 1 or Bloom level 3. Interestingly, the exercises throughout the textbook do not follow a smooth approach to the teaching and learning of music theory. One should expect exercises starting with Bloom level 1 and then accordingly progress through each Bloom level to harder exercises, such as Bloom level 5 or Bloom level 6. However, as shown, the exercises are quite random and almost every chapter includes several different Bloom level exercises, and, most importantly, the least present is Bloom level 1. Furthermore, the majority of identification exercises were found in the later chapters, and the higher level tasks were found in the beginning chapters.

2.6. *Fundamentals of Music* by Henry

The textbook *Fundamentals of Music* (Henry 2004) is one that distributes the discussion of music theory fundamentals and assignments for students throughout each chapter. In addition to the assignments, the author also added a CD-ROM that includes extra exercises for students and recorded examples mentioned throughout the text. The exercises on the CD-ROM disc are aural exercises; other aural exercises are also included in the text. In Henry 2004, the topics are divided into five separate sections, and those sections are divided into the various chapters. Part I, Notation, is divided into the following chapters: The Notation of Rhythm, The Notation of Pitch, and The Keyboard; Part II, Meter, is divided into two chapters: Simple Meters and Compound Meters; Part III, Scales, Intervals, and Keys, is divided into three chapters: Major Scales and Keys, Intervals, and Minor Scales and Keys; Part IV, Triads, is split into two chapters: Root-Position Triads and Inverted Triads; and finally Part V, Introduction to Music Theory, is

also divided into two chapters: Diatonic Relationships and Basic Concepts of Tonal Harmony. This text is the first one analyzed in this chapter that consists of a majority of written rhythmic exercises. Most other textbooks include dictation exercises or have students clap and / or tap rhythms. At the end of each chapter, students will find a self-test as well as supplementary exercises that further test students on the concepts learned. Furthermore, at the end of each Part, the author includes a “unit review,” which is usually a brief review of concepts learned throughout that Part. For the purpose of this study, the counting of exercises in this textbook is based on sets of exercises.

Chapter 1, The Notation of Rhythm, contains instructions to ‘draw,’ ‘compute,’ ‘complete,’ ‘draw and identify,’ and ‘rewrite.’ ‘Compute’ is classified as a Bloom level 3 exercise, and so is ‘complete,’ which is similar to ‘solve.’ Interestingly, this chapter includes only one Bloom level 1 exercise and no Bloom level 2 exercises, but starts with Bloom level 3 or higher-level exercises. The only Bloom level 1 exercise asks the students to ‘draw’ or ‘copy’ a given clef or note. Interestingly, in the combination exercise that instructs students to ‘draw and identify,’ ‘draw’ is classified as a Bloom level 1 exercise, the same as ‘identify.’ However, in this specific task, ‘draw’ is classified as a Bloom level 3 exercise, the same as ‘show’ or ‘construct.’ The self-test includes one identification exercise, two ‘compute’ exercises, and two ‘rewrite’ exercises. The supplementary exercises include one exercise each for ‘complete,’ ‘compute,’ and ‘rewrite.’ Chapter 2, The Notation of Pitch, follows along the same format of Chapter 1 in that it includes mostly high-level Bloom exercises. Included are ‘draw,’ ‘construct,’ ‘rewrite,’ and ‘identify.’ Each set of direction includes two exercises, with the exception of ‘draw,’ which only includes one exercise. The self-test includes one exercise each for

‘identify,’ ‘construct,’ ‘rewrite,’ and a combination exercise that includes both ‘identify’ and ‘construct.’ The supplementary exercises include one exercise for ‘identify’ and two exercises each for ‘rewrite’ as well as exercises that include ‘identify’ and ‘construct.’ Chapter 3, the last chapter in this section, discusses the keyboard. The exercises in this chapter include four identification, one construction, and three combination exercises. The self-test includes one construction exercise, one ‘modify’ exercise, and three identification exercises, while the supplementary exercises only include three identification exercises. The Unit Review at the end of this section challenges students with four ‘rewrite’ exercises and one identification exercise.

Chapter 4, Simple Meters, begins the second unit. This chapter includes most Bloom level 1 exercises, with the exception of exercises that require students to ‘add barlines,’ which is classified as a Bloom level 3 exercise, on the same level as ‘construct’ or ‘apply.’ The self-test only includes identification and ‘add’ exercises, whereas the supplementary exercises challenge students with three ‘rewrite,’ one identification, and one ‘compose’ exercise. Chapter 5, Compound Meters, includes three identification exercises, one ‘compute’ exercise, three ‘complete’ exercises, two ‘add’ exercises, and two combination exercises that include identification and construct tasks. The self-test includes one ‘add’ exercise, two ‘identify’ exercises, and two combination exercises. The supplementary exercises include one ‘classify’, two ‘rewrite,’ and one combination exercise. In the task presented to the students, ‘classify’ is a Bloom level 1 exercise. The Unit Review includes one identification exercise, one ‘compute’ exercise, and one combination exercise that also includes identification and construction tasks.

The next Part discusses scales, intervals, and keys. Chapter 6, Major Scales and Keys, is the first chapter to present a majority of lower level exercises, such as Bloom level 1 and Bloom level 3. The assignments include six identification exercises, four construction exercises, and two exercises that include both identification and construction tasks. The self-test includes four identification exercises, and only one ‘construct’ as well as one ‘rearrange’ exercise, the latter of which is classified as a Bloom level 5 exercise. The supplementary exercises include three identification exercises, one construction exercise, and one ‘analyze’ exercise (which is also classified as a Bloom level 5 task.)

Chapter 7, Intervals, also includes a majority of lower level Bloom exercises. Found throughout this chapter are seven ‘construct’ exercises, four ‘identify’ tasks, one combination exercise, and two ‘modify’ tasks. The self-test again includes one ‘modify’ exercise, and two exercises for both ‘identify’ and ‘construct.’ The supplementary exercises include a number of different Bloom exercises. One ‘construct’ exercise, one ‘identify’ exercise, one ‘transpose’ exercise (a Bloom level 2 task), and one ‘analyze’ exercise are found. The most interesting exercise is a combination exercise that includes the tasks of ‘identifying and comparing.’ This task of ‘comparing’ is the first one unique to this book and is classified as a Bloom level 6 exercise – the highest possible level. The last chapter of this section, Chapter 8, discusses Minor Scales and Keys. The author includes seven ‘construct’ exercises, two ‘identify’ exercises, two combination exercises that include both construction and identification exercises, and, finally, two ‘spell’ exercises. This last task is classified as a Bloom level 1 exercise. The self-test includes two ‘construct’ exercises, one ‘match’ exercise, and one ‘identify’ exercise, while the supplementary exercises include two ‘identify,’ two ‘construct,’ one ‘analyze,’ and one

combination exercise. The Unit Review presents students with only two identification exercises and three construction exercises.

Unit Four is subdivided into two chapters and discusses triads. Chapter 9, Root Position Triads, begins the section with three identification exercises, three construction exercises, and one ‘spell’ exercise. The self-test only includes construction and identification exercises, with two for construction and one for identification. The Supplementary exercises consist of one ‘modify’ exercise, three construction exercises, one combination exercise, and finally one ‘analyze’ exercise. Chapter 10, Inverted Triads, also has construction and identification exercises throughout the chapter, with four dedicated to construction, two for identification, and two that include both tasks. The self-test and supplementary exercises present students with three construction exercises, three identification exercises, and two combination exercises. The Unit Review is quite brief and only includes two construction exercises and one combination exercise.

The final section is an introduction to more advanced, comprehensive music theory. Chapter 11, Diatonic Relationships, only includes construction, identification, and combination exercises throughout the chapter, self-test, and supplementary exercises. In total, there are seven construction exercises, seven identification exercises, and one combination exercise. Chapter 12, Basic Concepts of Tonal Harmony, is the final chapter in the book and just like in the previous chapter, this one includes only construction, identification, and combination exercises throughout the chapter, self-test, and supplementary exercises. Altogether, there are seven identification exercises, four construction exercises, and five combination exercises. The Unit Review also includes an additional combination exercise, two identification, and two construction exercises.

While the music theory concepts were presented in a logical progression, the exercises progressed in a reverse order. As presented in Chapter 1 of this thesis, the exercises should progress from the easiest level, Bloom level 1, to the hardest level, Bloom level 6. Almost all of the exercises classified above Bloom level 3 were found in the beginning of the textbook with few lower-level tasks, while the last chapters were completely Bloom level 1 and Bloom level 3 exercises. Approximately 34% of the exercises are Bloom level 1, 41% are Bloom level 3, 15% are combination exercises that include identification and construction tasks, and the remaining 10% are exercises not classified under Bloom level 1 or Bloom level 3.

2.7. A Creative Approach to Music Fundamentals by Duckworth

A Creative Approach to Music Fundamentals (Duckworth 2007) is widely used for music fundamentals courses (CMS Survey 2000). It is a model text that includes class work throughout the chapter as well as separate practice exercises at the end of each chapter. At the end of each section, the author includes a review with assignments entitled Focus On Skills. The following concepts are covered throughout the textbook: The Basics of Music, Rhythm I: Simple Meter, Rhythm II: Compound Meter, Pitch, Major Scales, Major Key Signatures, Intervals, Minor Key Signatures, Minor Scales, Pentatonic and Blues Scales, Triads, Triads in Musical Context, Chord Progressions, and Writing a Song. This textbook is accompanied by a CD-ROM that includes additional exercises.⁶

Chapter 1, The Basics of Music, focuses on the beginning aspects of rhythm, pitch, and the keyboard. The class work throughout the chapter includes four ‘draw’ and one identification exercise. The exercises at the end of the chapter include six

⁶ The accompanying CD will be discussed further below.

identification exercises, four ‘locate’ exercises, and one exercise that includes both identify and locate tasks. All exercises found in the chapter are classified as Bloom level 1.

Chapter 2, Rhythm I: Simple Meter, includes one identification and one construction exercises. In the exercises at the end of the chapter, students will find one exercise for ‘adding barlines,’ two identification, and one ‘rewrite.’ The exercises ‘adding barlines’ is classified as a Bloom level 3 exercise. The Focus on Skills review includes one ‘draw’ exercise, two identification exercises, two ‘locate’ exercises, and one combination exercise that includes identification and ‘locate’ tasks.

Chapter 3, Rhythm II: Compound Meter, includes one exercise each for identification and construction in the chapter. The exercises at the end of the chapter include three identification tasks and one ‘rewrite.’ Chapter 4, Pitch, includes several different types of exercises. Students will find one ‘locate,’ three identification, one construction, and two combination exercises that include both identification and construction tasks. The Focus on Skills also includes different types of exercises. Students will find two ‘rewrite’ exercises, one ‘locate’ exercise, one identification exercise, one construction exercise, and one combination exercise that includes identification and ‘adding barlines’ tasks. ‘Locate’ is classified as a Bloom Level 1 task.

Chapter 5, Major Scales, consists of one exercise each of construction, ‘name,’ and ‘rewrite’ throughout the chapter. At the end, there is an array of exercises, one construction, one ‘spell,’ two identification, one ‘rewrite,’ and one combination exercise that combines identification and construction tasks. Chapter 6, Major Key Signatures, includes few exercises. In the “class work” section, there are two ‘copy’ exercises. At the end of the discussion, there are three identification exercises, and one construction

exercise. Chapter 7, Intervals, only consists of identification, construction, and combination exercises that include both identify and construct tasks. Throughout the chapter, there are one identification, two construction, and one combination exercises, whereas the end of the chapter contains seven identification exercises, five construction exercises, and two combination exercises. The Focus On Skills simply consists of five construction exercises and one identification exercise.

Chapter 8, Minor Key Signatures, contains seven identification and three construction exercises throughout the chapter and assignments. Chapter 9, Minor Scales, contains only six construction exercises, but includes more exercises in the assignments section. There are five construction exercises, two identification exercises, five combination exercises that include both construction and identification tasks, and three exercises that include ‘spell’ and identify tasks. Chapter 10, Pentatonic and Blues Scales, is similar to Chapter 8 in that it only consists of construction and identification tasks, three devoted to construction and one combination exercise with construction and identification tasks. The Focus On Skills also consists only of construction and identification exercises, with seven for construction and two for identification.

The final chapters include only identification and construction exercises, with the exception of Chapter 13, which includes one ‘analyze’ exercise. The latter type of task is classified as a Bloom level 4 exercise. Chapter 11, Triads, consists of nine construction exercises, four identification exercises, and one combination exercises that incorporates both of the previous tasks. Similarly, Chapter 12, Triads in Musical Context, consists of five identification exercises and six construction exercises. Chapter 13, Chord Progressions, challenges the students with all previously learned knowledge by having

them ‘analyze’ several short musical phrases. The Focus On Skills combines all these with two identification exercises, three construction exercises, and one ‘analyze’ exercise. Chapter 14, Writing a Song, is only a discussion on the topic and does not include any exercises.

For the most part, the exercises in this textbook follow a logical order according to Bloom’s taxonomy. The majority of the exercises in the beginning of the textbook were based on Bloom’s level 1. However, several Bloom level 1 exercises are found throughout the textbook, including in the last few chapters, which were predominately Bloom level 1 and Bloom level 3, more specifically identify and construct exercises. There are more higher-level Bloom exercises (levels 3, 4, and 5) than Bloom level 1 exercises in the later chapters. Overall, approximately 46% of the exercises were identification tasks or Bloom level 1 tasks, 38% were construction-based tasks or Bloom level 3 exercises, 11% were combination exercises that include Bloom level 1 and Bloom level 3 tasks, and the last 5% were exercises found in levels other than Bloom level 1 or 3. It is important to note that there were combination exercises that include two tasks, both of which were Bloom level 1 (i.e., spell and identify).

The CD-ROM contains additional exercises in the following seven sections: Basics of Music, Pitch, Scales I, Intervals, Scales II, and Triads and Progressions. The students first take a diagnostic test, or a Pre-Test of 10 multiple choice questions, at the beginning of each section to give each student a personalized study guide. Another option for students is to practice the material or take a quiz over any chosen musical concept.

The first concept covered, Basics of Music, coincides with Chapter 1. All of the exercises are ‘identify’. The next, Rhythm, corresponds with Chapters 2 and 3 of the

book.⁷ Pitch, which corresponds with Chapter 4 of the textbook, also only includes identification exercises.

Scales I coincides with Chapters 5 and 6 of the textbook. Between these two chapters, there are 35 ‘modify’ exercises, ten identification exercises, and ten construction exercises. As stated previously, ‘modify’ is classified as a Bloom level 3 exercise, the same level as ‘construct.’ Students are given each note in the octave, and asked to modify the written notes with sharps, flats, naturals, or any other accidental needed. The next section, Intervals, corresponds with Chapter 7 of the textbook. Here, students are given ten identification exercises and 15 construction exercises. Scales II corresponds with Chapters 8, 9, and 10 from the textbook. Students are given ten identification exercises, ten construction exercises, and 95 ‘modify’ exercises. While this is a large number of ‘modify’ exercises, 45 of these exercises are ascending and descending minor scales, in all their forms (harmonic, natural, and melodic), 40 of the exercises are specifically for ‘modifying’ pentatonic scales, and ten exercises for ‘modifying’ blues scales. These ‘modify’ exercises are the same as previously mentioned exercises in the Scales I section.

The final section is dedicated to Triads and Progressions, which corresponds with Chapters 11, 12, 13, and 14 from the textbook. The exercises here tally to 30 construction exercises, 20 identification exercises, and 25 ‘analyze’ exercises, the latter of which are classified as Bloom level 4 exercises. The CD-ROM did not contain any exercises, written or aural, related to Chapter 14.

⁷ All exercises in this section are aural exercises and are not considered in this thesis.

The software marks each answer as either correct or incorrect. Overall, the program keeps track of the percentage of correct answers. Students who would like to redo the exercises will receive the same questions, but in a different (random) order.

In conclusion, there were only three different levels of exercises on the accompanying CD-ROM: Bloom level 1 exercises, Bloom level 3 exercises, and Bloom level 4 exercises. More specifically, the only type of Bloom level 1 exercise was ‘identify’; the only types of Bloom level 3 exercises used were ‘construct’ and ‘modify’; and the only task classified as Bloom level 4 was ‘analyze’. In total, there were approximately 30% Bloom level 1 exercises, 62% Bloom level 3 exercises, and 8% Bloom level 4 exercises.

2.8. *Introductory Musicianship* by Lynn

Introductory Musicianship (Lynn 2007) is another widely used textbook in introductory music theory courses (CMS Survey, 2000). The textbook is split into nine units, with assignments grouped together at the end of each unit, as well as a Review Test for each Unit. The music theory concepts are split into the following Units: The Basics; Rhythmic and Melodic Exercises – Easy; Scales, Keys and Modes; Intervals; Rhythmic and Melodic Exercises – Intermediate; Chords; Rhythmic and Melodic Exercises – Difficult; Melodic Writing and Transposition; and Chord Progressions and Harmonization. Unit 2, Unit 5, and Unit 7 do not include any written exercises, only class exercises of clapping / tapping the beat and melodic writing exercises.⁸

Unit 1, The Basics, includes the basics of pitch and rhythm for students. The assignments include two identification exercises, nine construction exercises, five

⁸ For the data collection in this thesis, each exercise might include any number of individual exercises. Each set of exercises begins with a new set of directions.

combination exercises that include ‘identify’ and ‘construct’ tasks, four ‘add barlines’ exercises, and one ‘complete’ exercise. As previously stated, the ‘add barlines’ task is classified as a Bloom level 3 exercise. For the Review Test, there are two identification exercises, six construction exercises, one ‘compute’ exercise, one ‘add barlines’ exercise, and one ‘complete’ exercise. This wide array of exercises gives students an opportunity to test their knowledge in various ways.

Unit 3, Scales, Keys, and Modes, includes three identification exercises, 15 construction exercises, one combination exercise that includes ‘identify’ and ‘construct’ tasks, and one combination exercise that includes ‘compose’ and ‘construct’ tasks. The latter of these includes two high levels: Bloom level 3 and Bloom level 5. The Review Test includes eight construction exercises and two combination exercises with ‘identify’ and ‘construct’ tasks. Unit 4, Intervals, includes 18 construct exercises, two identification exercises, and two combination exercises that include both previous tasks. The Review Test for Unit 4 only includes four construction exercises, three identification exercises, and two of the same combination exercises.

Unit 6, Chords, contains 30 construction exercises, three identification exercises, four combination exercises that include ‘identify’ and ‘construct’ tasks, and two combination exercises that include ‘identify’ and ‘rewrite’ tasks. The Review Test incorporates the same types of exercises with ten for construction, three for identification, two for ‘identify and rewrite’ and one ‘identify and construct’.

Unit 8, Melodic Writing and Transposition, includes a wide variety of exercises. Found throughout the assignments are two ‘complete’ exercises, two ‘write’ exercises, eight ‘compose’ exercises, four ‘transpose’ exercises, one construction exercise, and two

combination exercises that include both ‘identify’ and ‘construct’ tasks. The Review Test includes only two ‘transpose’ exercises, two combination exercises, and one construction exercise. Most of these exercises are a higher level in Bloom’s taxonomy. ‘Write’ and ‘compose’ are both Bloom level 5 exercises, while ‘transpose’ is only a Bloom level 2 exercise and ‘complete’ is a Bloom level 3 exercise.

The final Unit, Unit 9 – Chord Progressions and Harmonization, also includes a wide array of exercises, several of which are combination exercises. There are four construction exercises, three identification exercises, three ‘analyze’ exercises, one ‘identify and label’ exercise, five ‘compose and identify’ exercises, and one ‘identify and rewrite’ exercise. The Review Test also includes the same exercises with three construction exercises, two identification exercises, one ‘analyze’ exercise, and one of each combination exercise. ‘Analyze’ is classified as a Bloom level 4 exercise.

In conclusion, this textbook offers a wide variety of exercises to test the students’ knowledge. The majority of exercises are Bloom level 3 exercises – approximately 60%. 11% of the exercises were classified under Bloom level 1, 19% were combination exercises that included two different Bloom levels, and the last 10% were exercises that fall under levels other than Bloom level 1 or Bloom level 3. Also of important note, all assignments at the end of each Unit begin with a Bloom level 3 exercise, most often a ‘construct’ task. This might be problematic for students to start at Bloom level 3, rather than Bloom level 1.

2.9. Concluding Remarks: A Comparison of Textbooks

According to Bloom’s Taxonomy of Learning Domains, specifically the cognitive domain, students should progress through each level when learning a new concept. Each

chapter should start with Bloom level 1 and progress through each level until the material is completely understood. After analyzing numerous textbooks and websites, several textbooks do not follow the logical progression in which the student should learn the material. For example, many textbooks include numerous level 3 tasks towards the beginning of a Unit where level 1 tasks should be. Students might have the ability to complete the task, but they will lack the appropriate learning sequence, and thus, a complete understanding of the musical concept. Several of the textbooks analyzed did not dedicate single chapters to the numerous concepts of rhythm and its notation. Instead, the authors included small sections of rhythm into each chapter. This can create confusion for the student as it is harder for the student to follow the concept if it is broken across several different chapters. In addition to learning a new concept, such as scales, chords, or intervals, some authors include elements of rhythm.

Table 1. Percentages of Student Exercises in Common Music Fundamentals Textbooks⁹

| | Vito Puopolo 1976 | Gretz 1990 | Ottman & Mainous 2004 | White 2005 | Henry 2004 | Duckworth 2007 | Lynn 2007 |
|-----------------------|-------------------|------------|-----------------------|------------|------------|----------------|-----------|
| Bloom Level 1 | 31% | 54% | 62% | 46% | 34% | 46% | 11% |
| Bloom Level 2 | >5% | >1% | >5% | >8% | >10% | >5% | >10% |
| Bloom Level 3 | 54% | 33% | 15% | 38% | 41% | 38% | 60% |
| Bloom Level 4 | >5% | >1% | >5% | >8% | >10% | >5% | >10% |
| Bloom Level 5 | >5% | >4% | >5% | >8% | >10% | >5% | >10% |
| Bloom Level 6 | 0% | 0% | 0% | 0% | >10% | >0% | >0% |
| Combination Exercises | 10% | 8% | 16% | 8% | 15% | 11% | 19% |

⁹ In this table, combination exercises are those that include two different Bloom levels.

These results show that many music fundamentals textbooks contain mostly Bloom level 1 exercises and Bloom level 3 exercises. It is also interesting to note that Bloom level 2 exercises often make up less than 10% of all tasks and that a few textbooks include exercises higher than Bloom level 3. The last three levels in Blooms cognitive domain are not commonly found in music fundamentals textbooks. As stated in Chapter 1, to have a concrete knowledge of any concept students should master each level before progressing to the next. Therefore, each textbook should contain a higher percentage of Bloom level 2 exercises before progressing to Bloom level 3 exercises. However, there are not many possibilities for exercises to be classified as Bloom level 2. Some authors have incorporated Bloom level 2 exercises with verbs such as ‘transpose,’ ‘define,’ ‘discuss,’ and ‘give examples,’ so there is the possibility of textbooks to include Bloom level 2 exercises. But, these types of tasks are often overlooked and are more difficult for instructors to correct.¹⁰ Exercises such as ‘identify’ and ‘construct’ are easier for instructors to grade, since they have a concrete correct answer.

The following gives commonly found examples of questions found in the analyzed textbooks for each level of Bloom’s taxonomy:

Knowledge:

Identify the following scales.

Label the half steps and whole steps of the following given scales.

¹⁰ While it is important to remember that the student outcomes are of high importance, the instructional technique should also be considered.

Comprehension:

Transpose the following melody into the new given key.

Convert the given rhythm into the new time signature.

Application:

Construct the following intervals.

Modify the given notes so that they form a harmonic minor scale.

Analysis:

Analyze the harmonic progression in the following excerpt.

Point out the dominant seventh chords in the following excerpt.

Synthesis:

Compose a brief melody in the form of a parallel period.

Write a harmonic progression using one dominant seventh chord and using a perfect authentic cadence.

Evaluation:

Compare the two excerpts in terms of melodic form.

Evaluate the following progression for harmonic and melodic errors.

Many authors might think that there is no need for students in an introductory music theory course to exceed beyond Bloom level 3 tasks. To the contrary, students should have all levels of exercises in the course and have a textbook that provides the

foundation to all music fundamentals concepts. Students should be able to successfully complete Bloom level 6 exercises for any musical concept in a music fundamentals course.

3. IDENTIFICATION VERSUS CONSTRUCTION IN STUDENT SURVEYS AND TESTS

Students enrolled in Essential Musicianship, an introductory music fundamentals course at Texas State University, were given a survey¹¹ to measure their perception of which tasks are more difficult: ‘identify’ or ‘construct.’ In addition to this survey, students were also given a construction-test and an identification-test to measure the actual percentage of correct answers. Furthermore, students were given a test that measures the percentage of correct answers for a specific music concept (in this case, the musical concept was intervals) before and after learning the concept. After giving these tests to music students in music theory classes and after statistically evaluating the results, I can show the following:

- First, that “identification” is the easier task, compared to “constructing”
- Second, that students can easily complete “identification” tasks when they are able to “construct”
- Third, that students cannot necessarily “construct” when they are able to “identify”, and
- Lastly, that constructing is more effective for the comprehension of music theory concepts

¹¹ All surveys and tests given for the collection of data in this thesis were written in a joint effort by Dr. Nico Schüler and Elizabeth Lee.

According to Bloom's taxonomy, it should be expected that the data collected would show the students completed the identification with a higher percentage of correct answers. From this, one can deduce that construction exercises are more difficult for the student to complete correct. If it is understood then, that construction exercises require more thought, but give the students more of a complete understanding of a concept, why are the majority of textbooks and on-line resources dedicated to identification exercises? This is not to say that all on-line resources and music theory textbooks only use identification for exercises. However, the majority of the questions drawn from either source (on-line or textbooks) are dedicated to identification. In textbooks, it is easier (and faster) for the instructor to grade identification exercises. And as for on-line sources, one explanation is that identification exercises are easier to program.

Taking this explanation into consideration, it is expected that construction tasks, which belong to Bloom level 3, will be harder to complete than identification tasks, which are listed as Bloom level 1. However, the collected data shows that while this is the case in most areas, students perceive identification equally hard as construction or identification harder than construction in some instances. The research results show that students with less training with regard to a specific task can complete the lower-level task (identify) better than the higher level task (construct or compose). While these results seem logical, the problem of lower-level learning vs. higher-level learning has usually not been applied to the teaching of written music theory, specifically when an overall learning assessment is based on a lower-level tasks (such as multiple-choice "identify") instead of higher-level tasks, or when music theory textbooks (such as Theodore Lynn's

Introductory Musicianship: A Workbook, Lynn 2007) ask, in their student worksheets, for “constructing” first, before “identifying”.

The research results show that the student success in completing lower- and higher-level tasks is close to identical when the subject matter has been thoroughly introduced and all tasks have been practiced sufficiently.

Conclusions for

- the design of placement tests,
- the design of final exams / proficiency exams, and
- the instructional design

will be discussed and examples will be provided.

The design of diagnostic, or placement tests, is quite debatable. However, to more accurately judge the actual knowledge a student contains in the field of music theory, they must be able to successfully complete higher level tasks (Bloom Level 3 and higher), not just lower level tasks (i.e., Bloom Level 1 and 2). A success rate with higher level tasks proves that students can not only identify and comprehend musical concepts, but they can also apply musical concepts in real-world applications. The same idea should be applied to proficiency and comprehensive final exams. These exams should test the students ability to have a high level of thinking in any music theory concept. In fact, lower level tasks should not be included. If these exams are to measure a students understanding of all music theory concepts, they should include higher level tasks to prove the students’ understanding.

Instructional design of music theory is also influenced by this taxonomy. The logical progression of teaching should move through each level of Bloom’s taxonomy. If

students are taught *only* to construct scales, then they will have a higher rate of success when they are required to construct scales versus identify scales. This, however, does not mean that students have a higher understanding on the concept. To have a truly firm foundation in music theory concepts, an instructor should take into consideration that moving through each level of Blooms taxonomy is a necessary task.

The survey was designed so that students were given a question with identification and construction variables, and asked to judge for themselves whether the identification or construction task was more difficult. The student was asked to complete the survey at one specific time and is based on the students *perception* of the tasks. The following survey was given to students:

Survey

Construct a major 3rd above the given note: Identify the following interval:



Of the two tasks above, circle the one task that was more difficult!

*

*

*

Construct a Mm 7th chord above the given note: Identify the following chord type:



Of the two tasks above, circle the one task that was more difficult!

*

*

*

Write the key signature for B-Major:



Identify the following key signature (major):



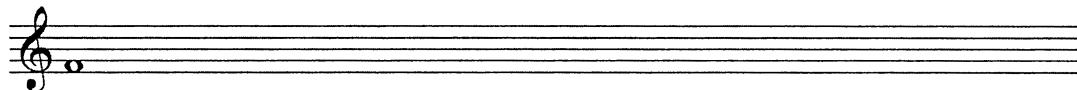
Of the two tasks above, circle the one task that was more difficult!

*

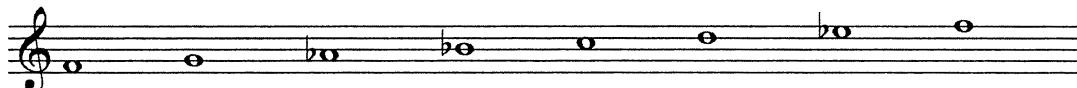
*

*

Write an ascending F-Dorian scale:



Identify the following mode:



Of the two tasks above, circle the one task that was more difficult!

The total number of students who completed the key signatures, intervals, and chords sections was 37. It is important to note that only 35 students completed the modes section. This was due either to limited time or misunderstanding of the question. The numbers in bold in Table 2 represent the concept that were perceived as being harder.

Table 2. Student Perception of the Difficulty of Construction and Identification Tasks

| | # of students who rated construction harder | # of students who rated identification harder |
|----------------|---|---|
| Key Signatures | 30 (81%) | 7 (19%) |
| Modes | 19 (51%) | 16 (43%) |
| Intervals | 29 (78%) | 8 (22%) |
| Chords | 29 (78%) | 8 (22%) |

Interestingly, students rated *almost* the same percentage of difficulty in constructing and identifying for the concept of modes, with 51% rating construction more difficult, and a close 43% rating identification more difficult. The other three concepts were perceived as being harder by a much larger margin. After examining my teaching methods, I found that I was more likely to focus on how to construct modes, rather than how to identify modes; therefore, more students perceived a greater difficulty with identifying modes.

In a second experiment, a test was given to 46 students in the form of their comprehensive final exam. The test assessed students over musical concepts learned throughout the semester and was given in two parts: Part I was construction-based and Part II was identification-based. This collection of data focused on the actual percentage of correct answers for both identification and construction tasks. The following are the parts used for this study:

Part I

2 Write the following key signatures:



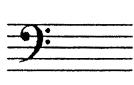
D^b Major



E Major



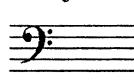
A Major



B^b Major



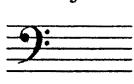
d minor



d[#] minor



f minor



g[#] minor

3. Notate the key signature and the following descending scales.



e minor (melodic)



a[#] minor (harmonic)

4 Notate the specified ascending scales using accidentals, not key signatures.

relative melodic minor of E Major parallel harmonic minor of B^b Major

5 Notate the following intervals by adding a note ABOVE the given note.

m3 p4 M7 m6 m3

6. Each given note being the THIRD of the chord, write the following triads and seventh chord in root position.

Major triad Mm 7th Chord dim triad fully dim. 7th Mm 7th chord Aug. triad ø 7th chord

7. Construct the following intervals BELOW the given note. The answer should be notated in the BASS clef.

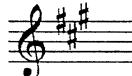
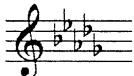
a12 M10 A13 M9

8. Notate the following scales ascending and using accidentals

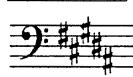
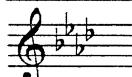
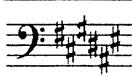
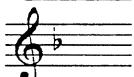
Dorian scale, starting on E Lydian scale, starting on B^b

Part II

2. Identify the following key signatures:



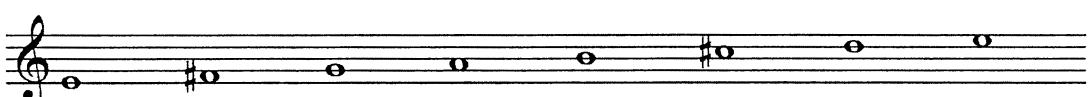
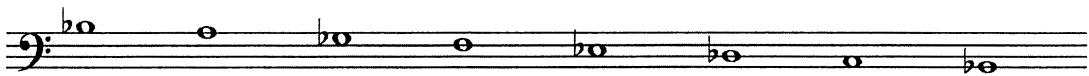
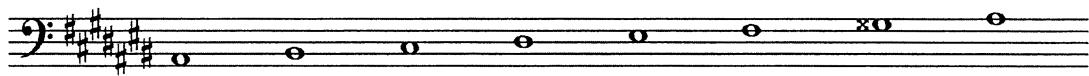
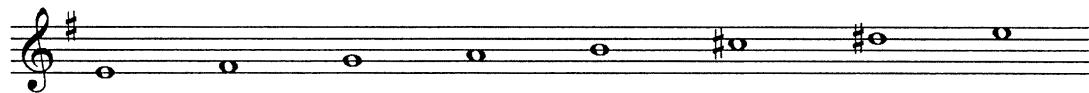
MAJOR: _____

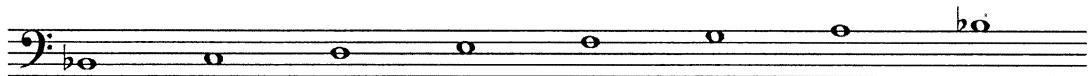


minor: _____

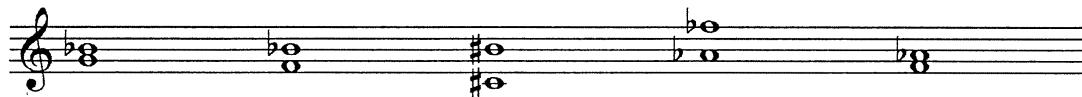


3. Identify the following scales

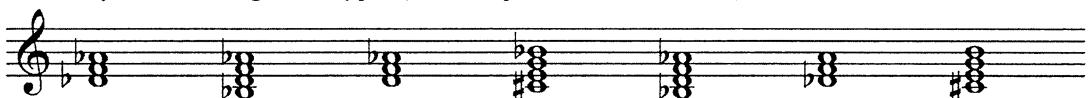




4 Identify the following intervals



5. Identify the following chord types (for example, "minor 7th chord")



6. Identify the following intervals.

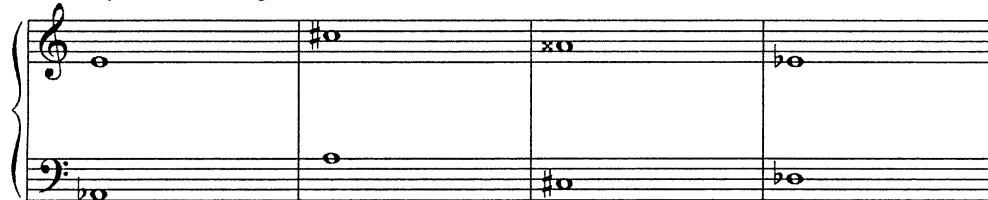


Table 3 contains the total number of incorrect answers, by all students, in both parts (identification and construction) of the test:

Table 3. Number of Incorrect Answers From Test Given To Essential Musicianship Students

| | # of incorrect answers on Part I – Construction | # of incorrect answers on Part II – Identification |
|----------------|---|--|
| Key Signatures | 30 (8.1%) | 18 (4.8%) |
| Minor Scales | 102 (55.4%) | 66 (35.8%) |
| Modes | 27 (29.3%) | 87 (94.5%) |
| Intervals | 56 (13.5%) | 45 (10.8%) |
| Chords | 93 (28.8%) | 40 (12.4%) |

Again, the numbers highlighted in bold show the number of incorrect answers was higher in the constructing category (with the exception of modes) proving that constructing is not only *perceived* to be harder, but *is* a harder task for students to complete successfully.

The same test was given to 14 students in the final semester of theory, Theory IV, as an unannounced test. With this test, Part I (Construction) was given on one day, and Part II (Identification) was given on the following class day. The data is shown in Table 4.

Table 4. Number of Incorrect Answers From Test Given to Theory IV Students

| | # of incorrect answers on Part I – Construction | # of incorrect answers on Part II – Identification |
|----------------|--|---|
| Key Signatures | 5 (1.3%) | 1 (0.2%) |
| Minor Scales | 25 (13.5%) | 20 (10.8%) |
| Modes | 14 (15.2%) | 14 (15.2%) |
| Intervals | 30 (7.2%) | 14 (3.3%) |
| Chords | 23 (7.1%) | 6 (1.8%) |

This data shows that the construction portion of the test still yielded more errors than the identification portion. However, the data also shows that the concept of modes is equally hard in construction and identification. Even with the higher level of knowledge in music theory, the concept of modes is one of the hardest to grasp.

In comparing the results displayed in the two tables (3 and 4), we can easily see that students in Theory IV have a lower percentage of incorrect answers in music fundamentals concepts. By comparing the order of difficulty in concepts for Essential Musicianship students, the concepts as construction tasks rank in degree of difficulty, shown from easier to harder, as follows: (1) Key signatures, (2) Intervals, (3) Chords, (4) Modes, and (5) Minor Scales. For identification tasks, students show that from easier to harder, the tasks rank: (1) Key signatures, (2) Intervals, (3) Chords, (4) Minor Scales, and

(5) Modes. Looking at the results for Theory IV students, the results are similar. By ranking the tasks from easier to harder for construction and identification tasks we see for both: (1) Key signatures, (2) Chords, (3) Intervals, (4) Minor Scales, and (5) Modes. These changes in degrees of difficulty from Essential Musicianship to Theory IV might easily be explained. Students in Essential Musicianship learn how to construct and identify intervals as a fundamental base. As students progress through each level of theory, these concepts are still there, just in different contexts. For example, ‘identify the following interval’ as one exercise becomes mentally identifying an interval within the context of a seventh chord or melodic structure.

In a third experiment, another test was given to students that measured their knowledge of a musical concept, in this case intervals, *before* and *after* the concept was taught. The short test, which includes identification and construction tasks for each type of simple and compound intervals, was given to 52 students in two separate sections of Essential Musicianship.¹² The results show percentages of correct answers both before and after students learned the concepts. The following is a copy of the test given to students:

¹² It should be noted that the two separate sections of Essential Musicianship were taught by two separate professors and are more representative since the teaching methods varied. One professor focused mostly on construction of intervals, while the other professor taught identification in conjunction with construction. The textbook used in both sections is *Introductory Musicianship* (Lynn 2007), and students completed all exercises in the Unit with the majority of the tasks being construction before taking the test after studying the Unit. Thus, students had more practice in construction of intervals versus identification of intervals, despite the teaching methods.

Interval Diagnostic Test

1. Complete the following intervals by adding a note ABOVE the given note.

A musical staff in G clef (treble clef) with five vertical measures. The first measure has a note on the fourth line. The second measure has a note on the third line. The third measure has a note on the second line. The fourth measure has a note on the fifth line. The fifth measure has a note on the fourth line. Below each measure is its corresponding interval label: m6, m3, m2, p5, and p4 respectively.

2. Construct the following intervals BELOW the given note. The answer should be notated in the BASS clef.

A musical staff with two staves: a treble clef staff above and a bass clef staff below. The treble staff has four vertical measures. The first measure has a note on the fourth line. The second measure has a note on the fifth line. The third measure has a note on the fourth line. The fourth measure has a note on the third line. Below each measure is its corresponding interval label: m9, p12, A14, and m10 respectively.

3. Identify the following intervals.

A musical staff in G clef with five vertical measures. The notes are: a note on the fourth line, a note on the second line, a note on the third line, a note on the fifth line, and a note on the fourth line. Below the staff are five blank horizontal lines for identification.

4. Identify the following intervals.

A musical staff with two staves: a treble clef staff above and a bass clef staff below. The treble staff has four vertical measures. The notes are: a note on the fourth line, a note on the fifth line, a note on the fourth line, and a note on the third line. The bass staff has four vertical measures. The notes are: a note on the second line, a note on the third line, a note on the second line, and a note on the first line. Below each staff are four blank horizontal lines for identification.

Table 5 compares the percentages of correct answers to questions related to the concepts of simple and compound intervals with the tasks of identification and construction. Each

task, identification and construction, represents 50%, or half, of the test. It is expected that identification is the easier task and that there should be significant improvement in the percentage of correct answers after learning the concept. The students showed a slightly higher percentage of correct identification tasks, both before and after learning intervals, although the difference between construction and identification is slightly greater after the concept was taught. However, statistically the differences between identification and construction are insignificant.

Table 5. Comparison of Correct Answers for Identification and Construction Tasks (Simple and Compound Intervals)

| | Before Teaching | After Teaching |
|---|-----------------|----------------|
| Construction (Simple and Compound) | 8.33% | 37.28% |
| Identification (Simple and Compound) | 8.65% | 38.56% |

For the following four tables, each concept (i.e., identifying simple, identifying compound, constructing simple, and constructing compound intervals) represents 25% of the test. Table 6 illustrates the comparison of identification and construction for one concept on the test: simple intervals. Identification yielded a slightly higher percentage of correct answers before the concept was taught, and identification results are about equal to construction results after the concept was taught.

Table 6. Comparison of Correct Answers for Identification and Construction Tasks (Simple Intervals only)

| | Before Teaching | After Teaching |
|--------------------------------------|-----------------|----------------|
| Construction (Simple Intervals) | 5.86% | 21.53% |
| Identification (Simple Intervals) | 6.73% | 21.92% |

Table 7 shows the comparison of identification and construction of compound intervals.

The results show that construction produced a slightly higher percentage of correct answers only before the concept was taught. After the concept was taught, identification produced a higher percentage of correct answers, although these differences between identification and construction, both before and after teaching the concepts, are statistically insignificant. An explanation of the slightly higher success rate for constructing compound intervals before the teaching unit might be that some students, having no experience with intervals, simply did not complete the test and stopped before the identification portion, even though there was no time restriction.

Table 7. Comparison of Correct Answers for Identification and Construction Tasks (Compound Intervals Only)

| | Before Teaching | After Teaching |
|--|-----------------|----------------|
| Construction (Compound Intervals) | 2.04% | 14.90% |
| Identification (Compound Intervals) | 1.32% | 15.98% |

Table 8 only shows the percentage of correct answers for the identification of simple and compound intervals. Here, we see that simple intervals are easier to identify than compound intervals by a large margin.

Table 8. Comparison of Correct Answers for Identifying Simple and Compound Intervals

| | Before Teaching | After Teaching |
|--|-----------------|----------------|
| Identification (Simple Intervals) | 6.73% | 21.92% |
| Identification (Compound Intervals) | 1.32% | 15.98% |

Similarly, Table 9 shows that simple intervals are much easier to construct than compound intervals.

Table 9. Comparison of Correct Answers for Constructing Simple and Compound Intervals

| | Before Teaching | After Teaching |
|--------------------------------------|-----------------|----------------|
| Construction (Simple Intervals) | 5.86% | 21.53% |
| Construction (Compound Intervals) | 2.04% | 14.90% |

Before teaching the concept, the statistics showed that identification of compound intervals was the hardest of the four tasks, followed by construction of compound intervals, then construction of simple intervals, and lastly identification of simple intervals was the easiest task (see Figure 3). After teaching the concept, the tasks are ranked from hardest to easiest as follows: construction of compound intervals, identification of compound intervals, construction of simple intervals, and finally, identification of simple intervals. From this, we can deduce that construction is still the more difficult task, while compound intervals are the more difficult concept.

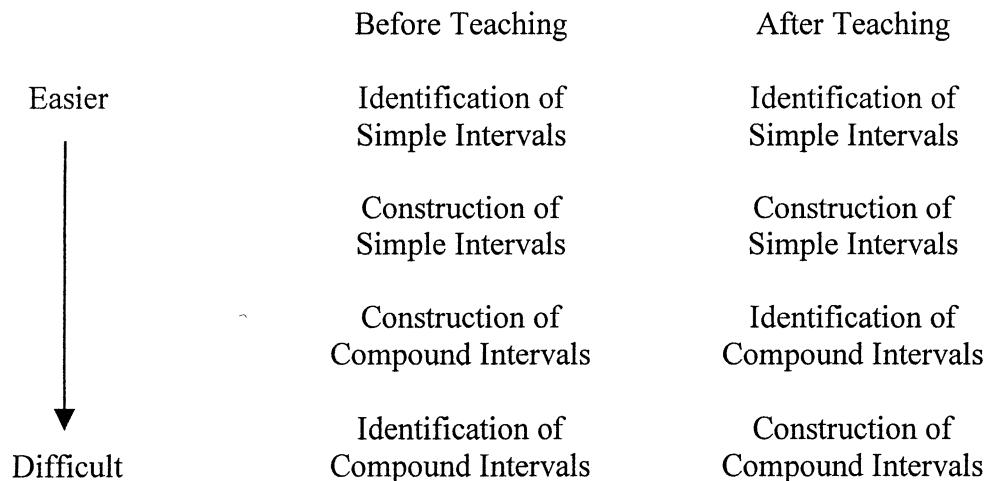


Figure 3. Ranking of Concepts and Tasks of Intervals Before and After Teaching

As stated before, it should be expected that students will show improvement in the percentage of correct answers after learning any musical concept. In this case, students did show considerable improvement. Several students improved 100% after not being able to successfully answer any task on the test before learning the concept.

Table 10. Comparison of Overall Scores Before and After Teaching

| | Before Teaching | After Teaching |
|----------------|-----------------|----------------|
| Overall Scores | 16.98% | 75.85% |

FINAL REMARKS

The data presented has shown that identification is an easier task to complete than constructing; that students can easily complete identification tasks when they complete construction tasks correctly; that students *cannot* necessarily construct when they are able to identify; and most importantly, it has shown that constructing is more effective for the comprehension of music theory concepts.

From the data presented, we can clearly see that construction tasks are more difficult for students. However, we should not back away from assigning these tasks. Bloom's Taxonomy states that construction, which is classified under level 3, is the ability for the student to use previously learned material in new and concrete situations. This step is crucial for the student to fully understand all music theory concepts. It is also very important that the professors examine their teaching techniques so that they proceed from identification concepts to construction concepts in music theory classes. The need to focus on active learning, or construction-based tasks, rather than passive learning, or identification-based tasks, is crucial for the students to have higher success.

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