

# 4 Developing Learning Outcomes, Assessment Tasks, and Scoring Devices

*Brian C. Wesolowski and Phillip Payne*

## Chapter Overview

This chapter is designed to describe the processes by which music educators can develop student-learning **outcomes**, align assessment tasks with stated outcomes, and create scoring devices to collect data within a teaching unit in order to provide detailed, timely, and meaningful feedback and analysis for both students and educators.

## Learning Expectations for the Chapter

- Describe the usefulness of educational taxonomies in the context of music assessment.
- Choose and craft learning outcomes appropriate for various grade levels and music learning contexts.
- Develop an assessment blueprint aligned to a learning outcome.
- Develop a table of specifications aligned to a test.

## Essential Questions for the Chapter

- What are some important educational taxonomies and how can they be used effectively to guide and facilitate assessment practices?
- What are the components to a learning outcome and what part do they play in the assessment context?
- How can an assessment blueprint help facilitate instruction related to a learning outcome?
- How can a table of specifications provide evidence of content validity and support assessment processes?

## Introduction

Over the course of the past half-century, the focus of educational quality has shifted from an educator-centered focus to a learner-centered focus. The foundation of this shift was grounded in the concept that learning takes place within the student. According to Fink (2003), if no change is observed within the student, than no learning has taken place. Therefore, centering efforts on developing instruction to deliver content evolved into developing instruction aligned with specific student-learning outcomes. Clearly articulating student-learning outcomes establishes transparency between the student and educator regarding what the student is expected to demonstrate upon completion of a lesson, unit, course, or program. This chapter focuses on teaching units, at the individual lesson level, and is designed to describe the process by which educators can develop student-learning outcomes, align assessment tasks with stated outcomes, and create scoring devices to collect data as a method for improving the teaching and learning processes. Combined, this process can enhance the clarity and quality of instruction within the music classroom while also allowing for a more rigorous and effective evaluation of student learning.

## Educational Taxonomies

A common method for describing and facilitating the discussion regarding learning processes is through the use of **educational taxonomies**. Merriam-Webster defines a taxonomy as the “general principles of scientific classification” (Merriam-Webster Online Dictionary, n.d.). In the case of educational taxonomies, many researchers have classified learning through a series of sequential lenses. Educational taxonomies are often used to describe *levels* of learning taking place within the classroom. There are several educational taxonomies/frameworks that have emerged within the educational literature that are designed in a hierarchical manner. Examples of these include the Taxonomy of Educational Objectives (Bloom, 1956), the Revised Bloom’s Taxonomy of Educational Objectives (Anderson & Krathwohl, 2001), the Structure of Observed Learning Outcomes (SOLO) taxonomy (Biggs & Collis, 1982), the Gagné Taxonomy (Gagné, 1965; Gagné & Briggs, 1974), the Ausubel and Robinson Taxonomy (Ausubel & Robinson, 1969), the New Taxonomy of Educational Objectives (Marzano & Kendall, 2007), and Webb’s Depth of Knowledge Framework (Webb, 1997). For the sake of brevity and clarity, this chapter focuses on three of the more common taxonomies currently used in today’s educational landscape as a reference for developing and hierarchically structuring learning objectives: (a) Bloom’s Taxonomy of Educational Objectives (Bloom, 1956),

(b) the Revised Bloom's Taxonomy of Educational Objectives (Anderson & Krathwohl, 2001), and (c) the SOLO taxonomy (Biggs & Collis, 1982).

### *Bloom's Taxonomy of Educational Objectives*

Benjamin Bloom (University of Chicago), along with collaborators Max Englehart, Edward Furst, Walter Hill, and David Krathwohl, developed Bloom's Taxonomy of Educational Objectives (1956). This framework is designed in a hierarchical nature that consists of three domains each divided into several categories sequenced from simple to complex. The three domains include the cognitive domain, psychomotor domain, and affective domain.

The **cognitive domain** is divided into six categories sequenced from simple cognitive tasks to more complex cognitive tasks: (a) knowledge, (b) comprehension, (c) application, (d) analysis, (e) synthesis, and (f) creation (see Figure 4.1). The following are some brief explanations of each of the six categories (Bloom, 1956, pp. 201–207):

1. **Knowledge.** The *knowledge* level includes students' abilities to recall specifics and universals, methods and processes, or patterns, structures, or settings (e.g., Students will be able to recognize, recall, identify).
2. **Comprehension.** The *comprehension* level includes students' abilities to understand such that they know what is being communicated and can make use of the material or idea being communicated without necessarily relating it to other material or seeing its fullest implications (e.g., Students will be able to associate, explain, generalize).
3. **Application.** The *application* level includes students' abilities to use abstractions in particular and concrete situations (e.g., Students will be able to classify, graph, modify).
4. **Analysis.** The *analysis* level includes students' abilities to break down communication into its constituent elements or parts such that the relative hierarchy of ideas is made clear and/or the relations between ideas expressed are made explicit (e.g., Students will be able to differentiate, outline, relate).
5. **Synthesis.** The *synthesis* level includes students' abilities to put together elements and parts so as to form a whole (e.g., Students will be able to generate, reconstruct, rewrite).
6. **Evaluation.** The *evaluation* level includes students' judgments about the value of material and methods for given purposes (e.g., Students will be able to contrast, grade, rank).

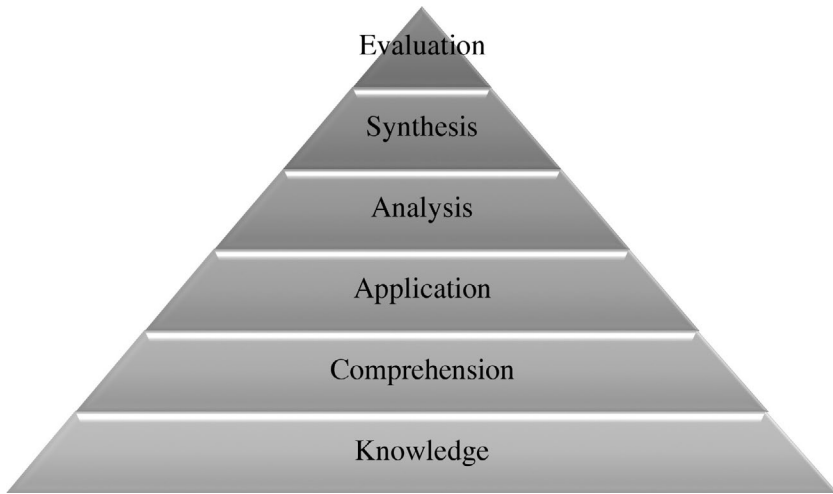


Figure 4.1 Bloom's original cognitive domain

### *Revised Bloom's Taxonomy of Educational Objectives*

In 2001, a group of researchers updated Bloom's original taxonomy to account for new research and development within the profession (Anderson & Krathwohl, 2001). In their revision, they converted the category descriptors from nouns to verbs to better reflect the learning process as experienced by the students. Furthermore, it positioned the student to be more active within the learning process and included two reimagined categories, Evaluate and Create. The researchers felt that the process of creation was more complex than synthesizing already known information. They also provide clearer indications of expectations within each category (Anderson & Krathwohl, 2001). The six revised categories (see Figure 4.2) include:

1. **Remember.** The *remember* level includes students' abilities to recall information such as dates, events, places, ideas, definitions, or theories (e.g., Students will be able to recognize, recall, identify).
2. **Understand.** The *understand* level includes students' abilities to grasp meaning of the information, express it in their own words, and cite examples (e.g., Students will be able to associate, explain, generalize).
3. **Apply.** The *apply* level includes students' abilities to apply knowledge or skills to new situations, use information and knowledge to solve a problem, answer a question, or perform another task (e.g., Students will be able to classify, graph, modify).



Figure 4.2 Revised categories of Bloom's cognitive domain

4. **Analyze.** The *analyze* level includes students' abilities to break down knowledge into parts and show and explain the relationships among the parts (e.g., Students will be able to differentiate, outline, relate).
5. **Evaluate.** The *evaluate* level includes students' abilities to judge or assess the value of material and methods for a given purpose (e.g., Students will be able to contrast, grade, rank).
6. **Create.** The *create* level includes the students' abilities to pull together parts of knowledge to form a new whole and build relationships for new situations (e.g., Students will be able to generate, reconstruct, rewrite).

Beyond the cognitive domain, there are two other domains that are equally appropriate to music education. These domains are the psychomotor domain and affective domain. Similar to the cognitive domain, the psychomotor and affective domains are divided into categories from simple tasks to more complex tasks. The **psychomotor domain**<sup>1</sup> (Dave, 1970) includes physical movement, coordination, and the use of fine motor skills. Development at each level is based upon speed, precision, procedures, and technique, all of which require practice and attention to detail (see Figure 4.3). Tasks can range from breathing to complex finger patterns to performing while moving (e.g., marching band or show choir). The psychomotor domain is divided into seven categories:

1. **Perception.** The *perception* level includes the students' abilities to use sensory clues to guide motor activity (e.g., Students will be able to choose, describe, detect, isolate).
2. **Set.** The *set* level includes the students' readiness to act (e.g., Students will be able to display, explain, react, demonstrate).
3. **Guided response.** The *guided response* level includes the students' abilities related to rote learning and guided practice (e.g., Students will be able to copy, reproduce, respond).
4. **Mechanism.** The *mechanism* level includes the students' development of performance habits (e.g., Students will be able to fix manipulate, organize, sketch).
5. **Complex overt response.** The *complex overt response* level describes the students' efficiency of technique (e.g., Same as mechanism, but students demonstrate more efficiency and faster speed).

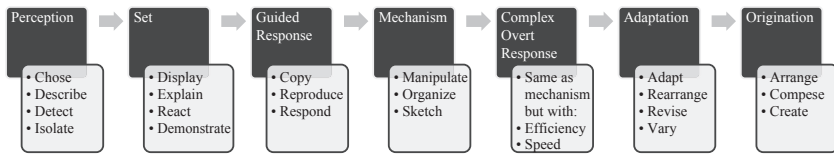


Figure 4.3 Psychomotor domain

- Adaptation.** The *adaptation* level includes the students' abilities to transfer or modify technique to fit a specific situation e.g., Students will be able to adapt, rearrange, revise, vary).
- Origination.** The *origination* level includes the students' abilities to establish new techniques to make current study more efficient (e.g., Students will be able to arrange, compose, create).

The **affective domain**, first introduced by Krathwohl, Bloom, and Masia (1964), is a framework that organizes the process by which students confront issues within their daily lives. The learner evolves from learning a concept, to an awareness of learning that concept, and finally into internalizing the concept in a way that aids in guiding all future actions. This is especially important within music education as it establishes aesthetic value while internalizing the act of making music. Furthermore, addressing the affective domain promotes a deeper level of self-knowledge through the impact on future actions (see Figure 4.4). Among the areas covered by the affective domain are (a) feelings, (b) values, (c) emotions, (d) appreciation, (e) motivations, and (f) attitudes. The affective domain is split into five categories:

- Receiving phenomena.** The *receiving phenomena* level includes students' awareness of surrounding stimuli and observants (e.g., *acknowledge, listens, attentive*).
- Responds to phenomena.** The *responds to phenomena* level includes students' attention and specific reactions to given stimuli (e.g., *assists, conforms, presents*).
- Valuing.** The *valuing* level includes the worth students attach to a specific entity, object, or experience (e.g., *appreciates, justifies, respects*).
- Organization.** The *organization* level includes students' priority of values through comparing and synthesis (e.g., *compares, relates, synthesizes*).
- Characterization.** The *characterization* level includes students' abilities to establish a value system that informs their behaviors and decision-making (e.g., *displays, modifies, solves*).

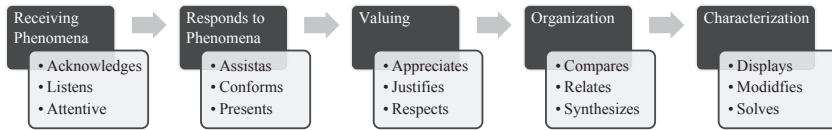


Figure 4.4 Affective domain

The three domains of Bloom's Taxonomies align well with the 2014 National Core Arts Standards of *Create*, *Perform*, and *Respond*. Furthermore, focusing on musical content knowledge (i.e., cognitive domain), skills (i.e., psychomotor domain), and dispositions (i.e., affective domain) can serve as a formidable foundation for learning outcomes across a program, course, unit, or lesson. Throughout the early stages of composing student learning outcomes, consulting Bloom's Taxonomy of Educational Objectives and Revised Bloom's Taxonomy may provide a strong, foundational starting point.

### The SOLO Taxonomy

The SOLO (Biggs & Collis, 1982) taxonomy is diverse in its inclusion of various content and focuses more on the development of structural complexity across abilities of the learner. Additionally, each level of the taxonomy contains similar stages across a variety of tasks (Hook & Mills, 2011). According to Biggs and Collis, students' understanding increases in complexity within a variety of subjects through a series of five levels (see Figure 4.5). The five levels include:

1. **Pre-structural.** In the *pre-structural* level, students are unsure about the lesson and they are simplistic in their approach to the concept (e.g., Students fail, are incompetent, or miss the point).
2. **Uni-structural.** In the *uni-structural* level, students are solely focused on one component of a given concept (e.g., Students will be able to identify, name, follow instructions, recall).
3. **Multi-structural.** In the *multi-structural* level, students successfully internalize and engage in multiple independent components within a given concept (e.g., Students will be able to combine, describe, perform, list).
4. **Relational.** In the *relational* level, students demonstrate a global understanding of a concept by synthesizing the all of the provided concepts into one coherent structure (e.g., Students will be able to analyze, apply, compare/contrast, relate, justify, support, critique).
5. **Extended abstract.** In the *extended abstract* level, students generalize newly internalized conceptual structures to new areas based on their newly attained mastery (e.g., Students will be able to create, generate, reflect, hypothesize).

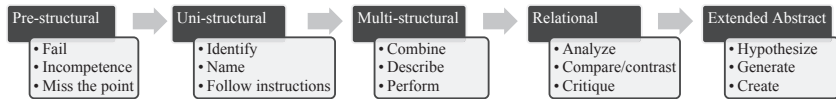


Figure 4.5 The SOLO taxonomy

Supporters of the SOLO taxonomy suggest there are many advantages to designing instruction and courses around these processes. These advantages are in item construction and scoring, more connection to the progression of both student learning and teaching, and most notably that the levels can be applied relative to the development of the student (Hook & Mills, 2011). For instance, a seventh-grade trombone player could be asked to generate melodic ideas for a possible improvisation at a different level of abstraction compared to a college sophomore counterpart. Finally, proponents of the SOLO taxonomy suggest that it is easier to identify, categorize, and create tests through implementation of this framework.

### *Taxonomies and Their Impact on Music Learning*

Payne, Burrack, Parkes, and Wesolowski (2019) describe the emerging process of assessment in music education. They share a process that reflects a cycle of measuring the knowledge and skills of young musicians in school music programs. Within this process is identifying the difficulty and complexity levels at which the students are performing. Given the 2014 National Core Arts Music Standards, students are expected to demonstrate all levels of complexity on a multitude of difficulty levels. Create, Perform, and Respond (processes) fit well within all of the above-mentioned taxonomies. It is the music educator's task to decide which taxonomy best reflects their philosophy of education as well as their beliefs about how students best learn and interact with music. While individual school districts may subscribe to one or the other, being aware of how they coexist and relate to each other is paramount. Consistency in application of these taxonomies is critical for defining, constructing, and implementing a robust and effective assessment protocol within a music program and related curricula.

In regard to Bloom's Taxonomy of Educational Objectives, all three domains are useful within the music program. The emergence of the psychomotor and affective domain alongside the often-cited cognitive domain is essential for music education. Music educators are often focused on developing complete musicians within their programs, which requires more than just the mental perspective of music making. Each day, students are asked to breathe differently, make sounds differently, interpret music, decode gestures, internalize pulse, and perform many other tasks. Unfortunately, these tasks cannot all be evaluated using the cognitive domain



alone. Unlocking the door to the psychomotor and affective domains may be transformational in improving student achievement.

As an example, consider the use of the psychomotor domain for the evaluation of student ability in a beginning band. When a beginning-band instructor is working with young students on new instruments, how can a learning **objective** be written beyond the focus of music reading? Perhaps using learning objectives focused on technique, dexterity, and finger patterns, among others, would be useful to measure and articulate a holistic picture of student learning.

As another example, consider the use of the affective domain for the evaluation of a student's feelingful response to the music performed in an intermediate orchestra. When an intermediate-orchestra conductor is developing musicianship within her program, consider how she could appropriately measure the affective connection of her students to the repertoire. What dispositions could be demonstrated by students that could be measured for connection to the music and students' musicality? The affective domain provides a taxonomy to better define these interactions. O'Toole (2003) notes that educators are often not accustomed to writing these types of learning goals because they are typically difficult to articulate and/or define. Furthermore, they are often long-term in nature and develop slowly throughout experiences within music programs.

Music education assessment can be effectively contextualized through a music educator's implementation of the SOLO taxonomy. Music is not unidimensional. Students must develop knowledge, skills, abilities, and dispositions across a variety of concepts and structures. The strength of this framework is its flexibility. The SOLO taxonomy can allow for varying abilities of learners to operate at high levels of complexity simultaneously. This will allow the music educator to differentiate instruction through well-designed assessments to meet each student at their current developmental level. This is most applicable in large high school non-auditioned ensembles where there is a wide variety of ability levels and engagement in the content. Furthermore, the SOLO taxonomy may also help expose potential teaching opportunities for the educator.

Given these taxonomies, there are several implications for music education assessment. Each has a connection to music and should be considered when crafting learning objectives for the music classroom. As a music educator, it is important to consider one's music philosophy toward the most appropriate approach and to remain consistent through the assessment design process.

## **Crafting Learning Objectives**

The ability of an educator to write learning objectives is one of the most critical components of assessment in the music classroom. Without a measurable learning objective, developing **valid**, **reliable**, and **fair** assessments

is not possible. Furthermore, well-defined, measurable objectives establish a foundation of effective advocacy of your music education program (Payne et al., 2019). Mager (1984) identified three foundational components of learning objectives: (a) conditions, (b) a performance or action verb (i.e., an observable behavior), and (c) criteria. Identifying and labeling each section ensures an effective, specific, and measurable outcome. When writing objectives, the first step is to start with the end in mind. Envision a student's final demonstration of a student-learning outcome. What should students be able to do at the end of instruction? What behaviors or tasks should they demonstrate? Where and for whom will they perform these tasks? To what level will they perform? These guiding questions will provide the foundation for creating measurable learning outcomes.

### **Conditions**

**Conditions** refer to the situation or context of the learners. This can vary from time limits (e.g., end of class, end of the course, end of the instructional cycle) to ensemble type or any descriptor that provides a context of the situation of the learners. Establishing the conditions allows for more detailed analysis and connection with learning because of the context.

Ex. 1.1 Original: Students will be able to sing through *Loch Lomond* . . .

Ex. 1.1 Revised: By the end of the unit, students will perform *Loch Lomond* . . .

Ex. 1.1 Revised: Given a model, students will match Scottish vowels in *Loch Lomond* . . .

As indicated in the examples above, conditions refer to what the students are provided to successfully complete a task or a time frame in which the task should be completed. These conditions are critical in establishing incremental learning goals leading to meeting course, unit, or program outcomes. When educators clearly define the conditions, it provides them an opportunity to accurately measure, document, communicate, and respond to student learning in a timely and meaningful way.

Within the conditions, both the learning environment and intended learners should also be a focus of consideration. Descriptors of the audience (i.e., the context and learners) can often be included in the conditions. Who is your intended audience? What are their general characteristics? What are their learning styles? If educators do not have answers to these questions, then any objective written will not yield data that will be effective in assessment.

Ex. 1.2 Original: By the end of *class*, the students will . . .

Ex. 1.2 Revised: By the end of *beginning woodwinds class*, the students will . . .

In the example above, specifying the audience as a beginning woodwinds class clearly defines the intended learners and their level of development. Addressing consistent embouchure, constant work on establishing a characteristic tone, developing basic finger patterns, maintaining a consistent air stream, and connecting sounds to music reading skills are among some considerations that will guide the development of outcomes, assessments, and expectations. Defining the audience allows the educator to write learning outcomes and establish criteria to aid in both student learning and growth.

### *Action Verb (Observable Behavior)*

The *action verb* specifies the way students are expected to demonstrate learning. This component involves, and is sometimes referred to as, a measurable, observable *behavior*.<sup>2</sup> Students must be engaged in authentic learning and *actively doing* something. The educator should clearly define what the students are doing by selecting an action verb that focuses on meeting the learning objective as well as the level of complexity. For instance, if an educator chooses the word *compose*, then it can be assumed that higher-level thinking skills are required as creation of new content requires a higher level of cognition than recall. While writing objectives, avoiding passive verbs, connections to ability, or vague descriptors such as *understand* and *perform*.<sup>3</sup> Precisely what the students will do is critical.

Ex. 1.3 Original: Students will *understand compositional techniques of Kingfishers Catch Fire.*

Ex. 1.3 Revised: Students will *compose a 16-bar rhythm track* to accompany warm-ups using a given chord progression and a minimum of two rhythms from *Kingfishers Catch Fire*.

### *Criteria*

*Criteria*, or *degree of mastery*, define the specific change in behavior that is sought by the instructor. To what extent will students demonstrate the specified change in behavior? Criteria can be described and measured in a variety of ways, including ordinal expectations, number of mistakes allowable, and percentage of passing. The educator determines the threshold of acceptance (and in some cases mastery) to set the performance standard. These thresholds will change based upon piloting of assessments or constant review of collected data and student performance. Criteria can then be set for varying levels to provide specific and differentiated feedback for a variety of levels of students within the music classroom.

Ex. 1.4 Original: Students will be able to *successfully perform* Line 75.

Ex. 1.4 Revised: By the end of the lesson, students will demonstrate Line 75 *with fewer than two mistakes in pulse or duration.*

In Ex. 1.4, the educator does not have a clear definition of “successfully”; therefore, it is difficult to indicate when a student has completed Line 75. However, in the revision of Ex. 1.4, the educator has identified pulse and duration as the main focus of this exercise and it is clear as to the expectation of the student and the level to which they are expected to demonstrate the musical example.

### *Checking the Quality of Objective Writing*

Since objective writing is the critical first step in assessment, quality control is paramount. Below are some tips and guiding questions to ensure that you have the most specific, measurable, and effective learning outcomes and objectives:

- *Three parts.* Have the conditions, action verb, and criteria been identified?
- *Use action verbs.* Students are active in the learning process. Connect these action verbs to taxonomies that connect with levels of cognition, psychomotor, and the affective domains. Ensure that a balance of levels within these taxonomies is obvious.
- *Is it measurable?* Are intended outcomes composed of clear and measurable components and actions?
- *Be succinct.* Precision is paramount in creating specific, measurable, and effective learning objectives.
- *Be specific.* Vagueness in verb choice is problematic in designing useful assessments. Avoid verbs like “understand” or passive verbs. Instead, describe what knowledge and skills a student must master in order to gain an understanding of a concept.
- *Student-focused.* All objectives should be centered on student learning.
- *SMART.* This acronym will refine objectives further. Do objectives meet the following criteria: S-specific, M-easurable, A-acceptable, R-ealistic, and T-imebound?<sup>4</sup>
- *Consult given curriculum.* Learning objectives should emerge from course and curricular goals and outcomes. Be sure that objectives are aligned with a curriculum as well as instructional and assessment activities.

### **Preplanning Assessment Processes**

It is important for educators to plan assessment processes prior to instruction in order to ensure valid, reliable, and fair inferences of student learning. As will be described in Chapter 5, there are several considerations for **validity**, **reliability**, and **fairness** in the context of the music classroom.

Many of these considerations can be considered during the preplanning stages of classroom assessment processes:

- *Relevance of testing.* The preplanning of classroom assessment processes ensures that educators are aligning the content covered within the assessment task to national/state standards, the content taught throughout the instructional unit, and detailed learning outcomes of the instructional unit.
- *Levels of thinking processes.* The preplanning of classroom assessment processes ensures that multiple levels of a selected educational taxonomy are addressed, specifically targeting the students' abilities.
- *Differentiation of assessment types.* The preplanning of classroom assessment processes ensures that information about students' knowledge, skills, abilities, or dispositions being tested are collected through differentiated assessment types utilizing multiple scoring tools.
- *Clear communication of expectations.* The preplanning of classroom assessment processes ensures that expectations, outcomes, and uses of the test are provided to students prior to instruction, thereby communicating learning outcome expectations.
- *Transparency.* The preplanning of classroom assessment processes ensures that students have not only a clear interpretation of assessment expectations but also clarity regarding the purpose of the test as well as any related consequences of the assessment process.
- *Student opportunities.* The preplanning of classroom assessment processes ensures that students will have the opportunity to demonstrate their acquired knowledge, skills, abilities, and/or dispositions through differentiation of assessment types.

## Assessment Blueprints and Tables of Specification

The terms *assessment blueprint*, *test blueprint*, and *table of specifications* are often used interchangeably throughout various instructional texts and research literature in the field of applied educational assessment. The following sections will deliberately draw a distinction between an *assessment blueprint* and a *table of specifications* as two important, but separate, tools for planning and implementing testing processes suited for the music classroom.

### *Developing an Assessment Blueprint*

An **assessment blueprint** is a concise plan of action that captures the multiple methods in which an educator intends to formally test students' academic performance in the classroom within a given instructional unit. The assessment blueprint serves as a method for preplanning how the educator will capture and evaluate the multiple streams of knowledge, skills,

abilities, and/or dispositions students demonstrate aligned to expected learning outcomes. The same way educators use lesson plans to plan, guide, and facilitate instruction in the classroom, educators can use assessment blueprints to plan, guide, and facilitate evaluative processes within the classroom.

The exemplar assessment blueprint in this chapter is based upon the structure of the National Core Arts Music Standards (2014). However, it may be adapted to fit any structure most suitable for the policies or practices specific to the educator's state or district. In the example described below, there are many possible methods for assessing the intended learning outcomes of the sample instructional unit. *The focus in this example should not necessarily be the chosen objectives and methods; rather, the focus should be on the documentation methods for the assessment blueprint.*

Figure 4.6 is a sample assessment blueprint that documents all of the artistic processes, artistic process components, anchor standards, and

Author:	John Davidson		
Music Program:	Lincoln Middle School Band Program		
Class:	7th grade Intermediate Band		
Instructional Unit:	Rhythm Identification and Performance for quarter note/eighth note combinations		
All Artistic Process(es) to Be Assessed:	All Artistic Process Component(s) to Be Assessed:	Anchor Standard(s) to Be Assessed:	
Performing	Analyze Present	Analyze the structure and context of varied musical works and their implications for performance.  Perform expressively, with appropriate interpretation and technical accuracy, and in a manner appropriate to the audience and context.	
<b>Performance Standard(s):</b>			
MU:Pr4.2.E.5a Demonstrate, using music reading skills where appropriate, how knowledge of formal aspects in musical works inform prepared or improvised performances.			
MU:Pr6.1.E.5a Demonstrate attention to technical accuracy and expressive qualities in prepared and improvised performances of a varied repertoire of music.			
<b>ASSESSMENT 1</b>			
<b>Purpose of the Assessment</b>	Students will and visually identify rhythmic structures found in the music repertoire.		
<b>Enduring Understanding(s)</b>	Analyzing creators' context and how they manipulate elements of music provides insight into their intent and informs performance.		
<b>Essential Question(s)</b>	How does understanding the structure and context of musical works inform performance?		
<b>Performance Standard(s)</b>	<b>Anchor Standard</b>	<b>Artistic Process Component</b>	<b>Artistic Process</b>
MU:Pr4.2.E.5a Demonstrate, using music reading skills where appropriate, how knowledge of formal aspects in musical works inform prepared or improvised performances.	Analyze	Analyze the structure and context of varied musical works and their implications for performance.	Perform
<b>Scoring Device Name(s):</b>	Rhythm Identification Test		
<b>Type of Scoring Device(s):</b>	True and False Multiple Choice Fill in the Blank		
<b>Student Task(s):</b>	Selected Response		
<b>Item/Criteria Type(s):</b>			

Figure 4.6 Sample assessment blueprint

ASSESSMENT 2			
Purpose of the Assessment	Students will perform rhythmic structures found in the music repertoire in the context of a sight-reading test.		
Enduring Understanding(s)	Musicians judge performance based on criteria that vary across time, place, and cultures. The context and how a work is presented influence the audience response.		
Essential Question(s)	When is a performance judged ready to present? How do context and the manner in which musical work is presented influence audience response?		
Performance Standard(s)	Anchor Standard	Artistic Process Component	Artistic Process
MU:Pr6.1.E.5a Demonstrate attention to technical accuracy and expressive qualities in prepared and improvised performances of a varied repertoire of music.	Present	Perform expressively, with appropriate interpretation and technical accuracy, and in a manner appropriate to the audience and context.	Perform
Scoring Device Name:	Model Cornerstone Assessment: Performance Evaluation (Novice)		
Type of Scoring Device(s):	Rubric		
Student Task(s):	Performance Task		
Item/Criteria Type(s):	1. Rhythm and Pulse Accuracy		
ASSESSMENT 3			
Purpose of the Assessment	Students will perform rhythmic structures found in the music repertoire in the context of the music literature.		
Enduring Understanding	Musicians judge performance based on criteria that vary across time, place, and cultures. The context and how a work is presented influence the audience response.		
Essential Question	When is a performance judged ready to present? How do context and the manner in which musical work is presented influence audience response?		
Performance Standard(s)	Anchor Standard	Artistic Process Component	Artistic Process
Demonstrate attention to technical accuracy and expressive qualities in prepared and improvised performances of a varied repertoire of music.	Present	Perform expressively, with appropriate interpretation and technical accuracy, and in a manner appropriate to the audience and context.	Perform
Scoring Device Name:	Model Cornerstone Assessment: Performance Evaluation (Novice)		
Type of Scoring Device(s):	Rubric		
Student Tasks (s):	Performance Task		
Item/Criteria Type(s):	<ol style="list-style-type: none"> <li>1. Tone Production</li> <li>2. Rhythm and Pulse Accuracy</li> <li>3. Pitch and Intonation Accuracy</li> <li>4. Expressive Qualities/Stylistic Interpretation</li> </ol>		

Figure 4.6 Continued

performance standards assessed in a given instructional unit as well as information specific to each of the scoring devices used. The salient features of the assessment blueprint include:

- **Artistic Processes:** Artistic processes are the cognitive and physical actions by which arts learning and making are realized (National Coalition of Core Arts Standards, 2014). Outside of the context of the National Core Arts Standards, performance standards are commonly referred to as global objectives (Wesolowski, 2015).
- **Artistic Process Components:** Artistic process components are the actions artists carry out as they complete each artistic process

(National Coalition of Core Arts Standards, 2014). Outside of the context of the National Core Arts Standards, anchor standards are commonly referred to as educational objectives (Wesolowski, 2015).

- **Anchor Standards:** Anchor standards describe the general knowledge and skill that educators expect students to demonstrate throughout their education in the arts (National Coalition of Core Arts Standards, 2014). Anchor standards are associated with the verbs embedded within educational taxonomies and provide information related to the cognitive, affective, or psychomotor rigor of each expected outcome.
- **Enduring Understandings:** Enduring understandings are statements summarizing the important ideas and core processes that are central to a discipline and have lasting value beyond the classroom (National Coalition of Core Arts Standards, 2014).
- **Essential Questions:** Essential questions are questions that lie at the heart of a subject or a curriculum and promote inquiry and ultimately an emergence of a subject (National Coalition of Core Arts Standards, 2014).
- **Performance Standards:** Performance standards are the discipline-specific, grade-by-grade articulations/levels of student achievement (National Coalition of Core Arts Standards, 2014). Outside of the context of the National Core Arts Standards, performance standards are commonly referred to as instructional objectives (Wesolowski, 2015). The performance standards, similar to anchor standards, contain verbs embedded within educational taxonomies and provide additional information related to the specific cognitive rigor of each expected outcome. An important feature of performance standards is that they specify a certain level of performance to be classified into a specific category of achievement. In the 2014 standards, these are evidenced by the degrees of proficiency (e.g., novice, intermediate, proficient, accomplished, advanced).
- **Type of Scoring Device(s):** This type of instrument is used to collect evidence of student behaviors, including but not limited to checklists, rating scales, criteria-specific rating scales, rubrics, multiple-choice items, matching items, essays, matching tests.
- **Student Assessment Task(s):** Types of tasks are the specific behaviors expected of the student to perform on the test, including selected responses (e.g., multiple-choice items, true-and-false items, matching items), constructed responses (short-answer items, extended-response items) or performance tasks (e.g., checklist items, rating scale criteria, rubric criteria).



- **Item/Criteria Types:** Item-types describe the type of items used to capture the student behavior (e.g., multiple choice, fill-in-the-blank, short answer) and criteria types describe the evaluative criteria included in a checklist, rating scale, or rubric.

### Assessment Blueprint Vignette

Mr. John Davidson is a middle school band director, and the focus of his instructional unit is rhythm identification and rhythm performance. There is a particular set of rhythms that Mr. Davidson is introducing to the students through the careful selection of ensemble repertoire. The rhythms include various combinations of eighth notes and quarter notes presented in common, 4/4 time. There are ten variations of rhythms in the music on which he would like his students to focus. The primary outcome (e.g., artistic process) is to have the students be able to *perform* the rhythms independently, accurately, and musically within the context of the musical pieces. In order to facilitate an instructional path toward this outcome, he identifies three specific educational objectives he would like to see realized by his students: (a) students will be able to identify the rhythms aurally when performed in the context of a music selection, (b) students will be able to perform the rhythms accurately in the context of a sight-reading exercise, and (c) students will be able to perform the rhythms independently, accurately, and musically in the context of the musical repertoire. These objectives fit into the considerations of two artistic process components from the 2014 Standards: (a) analyze and (b) present. More specifically, the objectives are aligned to two anchor standards: (a) analyze the structure and context of varied musical works and their implications for performance and (b) perform expressively, with appropriate interpretation and technical accuracy, and in a manner appropriate to the audience and context. The three distinct educational objectives described above call for three distinct assessments. Therefore, each of the three assessments is found in the assessment blueprint for this particular instructional unit (see Figure 4.6).

Across all three assessments and as indicated in the example assessment blueprint, the artistic process to be assessed in this unit is *performing* along with two artistic process components: (a) *analyze* and

(b) *present*. This instructional unit consists of two anchor standards collectively across the three assessments: (a) *analyze the structure and context of varied musical works and their implications for performance* and (b) *perform expressively, with appropriate interpretation and technical accuracy, and in a manner appropriate to the audience and context*.

The purpose of the first assessment is to evaluate students' abilities to *aurally and visually identify rhythmic structures found in the music repertoire*. It is an educator-created rhythm identification test that is selected-response in nature. Specifically, the test will be scored based upon students' responses to various multiple-choice, matching, short-answer, and fill-in-the-blank items.

The purpose of the second assessment is to evaluate students' abilities to *perform rhythmic structures found in the music repertoire in the context of a sight-reading test*. It is an educator-created sight-reading test that is a performance task. Specifically, the test will be scored based upon students' performances of the isolated rhythms and will be scored using the rhythm and pulse accuracy rubric from the MCA Novice Performance Evaluation.

The purpose of the third assessment is to evaluate students' abilities to *perform rhythmic structures found in the music repertoire in the context of the music literature*. It is a performance test of the musical repertoire and is considered a performance task. Specifically, the test will be scored based upon students' performances of the rhythms found in the musical repertoire and will be scored using the tone production, rhythm and pulse accuracy, pitch and intonation accuracy, and expressive qualities/stylistic interpretation rubrics from the MCA Novice Performance Evaluation.

Assessment 2 and Assessment 3 will use the pre-established MCAs to evaluate the quality of student performance achievement. Assessment 1, however, is an educator-created selected-response test. In the case of an educator-created test, a table of specifications can be a helpful tool to craft a quality test aligned to instructional objectives.

### *Developing a Table of Specifications*

A **table of specifications** (see Table 4.1) is a two-dimensional matrix that describes the content, structure, and learning outcomes of a specific assessment instrument. Tables of specification are most prominently used for selected-response tasks and can be beneficial to the educator as a method for aligning objectives, instruction, and assessment. In particular, the table of specifications can be used to describe the types and percentages of items on a test at each level of the cognitive domain, thereby providing a clear picture of the levels of thinking exhibited by the students when taking the test. This, in turn, not only provides an in-depth overview of

Table 4.1 Table of specifications that classifies learning outcomes in relation to content dimension and cognitive process dimension

Cognitive Process Dimension				
Content Dimension	Remembering	Understanding	Applying	Analyzing
Quarter notes	<ul style="list-style-type: none"> <li>• Define a quarter note as quarter notes using visual, music examples</li> <li>• Identify notes as quarter notes using visual, music examples</li> </ul>	<ul style="list-style-type: none"> <li>• Classify quarter notes through visual, music examples</li> <li>• Label quarter notes through visual, music examples</li> </ul>	–	–
Eighth notes	<ul style="list-style-type: none"> <li>• Define an eighth note</li> <li>• Identify notes as eighth notes using visual, music examples</li> </ul>	<ul style="list-style-type: none"> <li>• Classify eighth notes through visual, music examples</li> <li>• Label eighth notes through visual, music examples</li> </ul>	–	–
Quarter note/eighth note combinations	<ul style="list-style-type: none"> <li>• Explain the difference between quarter notes and eighth notes</li> </ul>	–	<ul style="list-style-type: none"> <li>• Solve missing note values in measures based upon remainder of available note values</li> </ul>	<ul style="list-style-type: none"> <li>• Differentiate between a quarter note pulse and eighth note pulse through aural, musical examples</li> <li>• Identify eighth note and quarter note patterns through aural, music examples</li> <li>• Differentiate quarter note patterns, eighth note patterns, and mixed quarter/eighth note patterns through aural, music examples</li> <li>• Analyze measures using the rhythm labeling method taught in class</li> </ul>

student achievement at various cognitive levels but can also provide valuable information for how items perform across various cognitive levels when analyzing classroom assessment data (see Chapter 8).

A table of specifications is displayed as a two-dimensional matrix because it provides the visual relationship between the content knowledge on a test (the rows) and the cognitive processes for each content element (the columns). The content knowledge represents the learning outcomes for the instructional unit. Each of the learning outcomes contains measurable behaviors students should exhibit that are specifically associated with a certain cognitive level. The cognitive levels are the categories of cognitive difficulties (e.g., Bloom's six categories including knowledge, comprehension, application, analysis, synthesis, and evaluation).

### Table of Specifications Vignette

The first assessment documented in the assessment blueprint is an educator-created, selected-response test and is therefore a good candidate to develop with the aid of a table of specifications. In order to develop a table of specifications, it is first important to review both the anchor standards and performance standards of the instructional unit and consider how the purpose of the test fits into the broad educational outcomes of the unit. In the case of this example, the anchor standard for the test is, "Analyze the structure and context of varied musical works and their implications for performance." The educator identifies the ensemble as a novice ensemble, and the performance standard under the artistic process reads as follows: *Demonstrate, using music-reading skills where appropriate, how knowledge of formal aspects of musical works inform prepared or improvised performances.* In particular with this test, the students are being asked to aurally and visually identify rhythmic structures found in the music repertoire. The educator has indicated that the word *identify* is a foundational consideration for what he is trying to assess.

### *Defining Learning Outcomes*

Although the word *identify* is often found in the lower levels of many educational taxonomies, it in itself is too broad of a consideration for the specific skills and abilities underscoring the learning outcomes Mr. Davidson has set forth in his instructional unit. The next step for Mr. Davidson to consider is the specific content elements he would like to test

the students on. He decides that he would like to test the students on the following three content elements:

1. Quarter notes
2. Eighth notes
3. Quarter note/eighth note combinations

He then considers his instructional unit and the specific instructional objectives embedded within the unit. In the context of the test he is developing, he considers how he wants the students to engage with each of the content elements based upon varying levels of cognitive thinking. To address this, he uses Bloom's Cognitive Taxonomy as a guide to define the specific learning outcomes of the instructional unit and related test. A few thoughts come to mind when he considers the six ordering levels and verbs associated with the taxonomy. In regard to the quarter notes element, he would like his students to demonstrate the following knowledge:

By the end of the instructional unit:

1. Students will *define* a quarter note.
2. Students will *identify* notes as quarter notes using visual, music examples.
3. Students will *classify* quarter notes through visual, music examples.
4. Students will *label* quarter notes through visual, music examples.

In regard to the eighth notes element, he would like his students to demonstrate the following knowledge:

By the end of the instructional unit:

5. Students will *define* an eighth note.
6. Students will *identify* notes as eighth notes using visual, music examples.
7. Students will *classify* eighth notes through visual, music examples.
8. Students will *label* eighth notes through visual, music examples.

In regard to the quarter note/eighth note combinations element, he would like his students to demonstrate the following knowledge:

By the end of the instructional unit:

9. Students will *explain* the difference between quarter notes and eighth notes.
10. Students will *solve* missing note values in measures based upon remainder of available note values.
11. Students will *differentiate* between a quarter note pulse and eighth note pulse through aural, musical examples.

12. Students will *identify* eighth note and quarter note patterns through aural, music examples.
13. Students will *differentiate* quarter note patterns, eighth note patterns, and mixed quarter/eighth note patterns through aural, music examples.
14. Students will *analyze* measures using the rhythm labeling method taught in class.

Table 4.1 is a table of specifications that organizes each of the learning outcomes into a 2 x 2 matrix in order to visually demonstrate their relationship to their respective content and cognitive process dimensions.

### *Choosing Appropriate Item-Types*

After considering the levels of cognitive knowledge he wants his students to demonstrate, Mr. Davidson considers the most appropriate item-type to best capture those particular behaviors. For the purpose of this assessment, he considers four types of possible items: multiple choice, matching, fill-in-the-blank, and short answer.

#### *Multiple Choice*

Multiple-choice items are the most versatile item-type for effectively and efficiently assessing learning outcomes at multiple cognitive levels. Multiple-choice items consist of three parts: (a) stem, (b) distractors, and (c) keyed alternative. The stem is the first part of the item that states either the problem or question to be solved. The distractors are the alternative choices that are incorrect. The keyed alternative is the correct answer to the question. Advantages to using multiple-choice items include the versatility in easily addressing the multiple cognitive domains and ability and to broadly represent instructional material, the ability for students to concretely think on the problem at hand (versus thinking about constructing answers), and providing diagnostic insight into students' thinking when they select a distractor. The disadvantages include the inability of a student to formulate their own ideas, ability of a student to easily guess, and the time it takes an educator to construct a high-quality item.

#### *Matching*

Matching items include two (or more) lists of adjacent words, symbols, images, or phrases. The purpose of a matching item is for the test taker to recognize, make an association, or classify various options within the two (or more) adjacent item lists. The advantage of using a matching item is

that they are easy to construct and score, they are effective for evaluating knowledge of relationships, and they allow for the use of visual imagery that may be beneficial to younger students or students with certain preferences for visual learning. The disadvantages are that they do not foster higher-order thinking skills, they foster rote memorization and, as students match items, the items toward the end of the list lend themselves to being *giveaways*.

### *Fill-in-the-Blank and Short Answer*

Fill-in-the-blank and short-answer items require a word, number, symbol, or short constructed response answer. The advantages of using this type of an item are its ease to construct, its versatility in assessing students at multiple cognitive levels, and the lower chance of a student guessing correctly. The disadvantages include the educator's sometimes needed subjectivity to the *correctness* of a response.

There are many other item-types, including checklists, true/false, essays, and transformation error correction. Nitko and Brookhart (2011) provide detailed information on item construction suggestions, advantages/disadvantages of various item-types, and considerations toward validity and reliability that may be beneficial to the music educator for developing high-quality items for cognitive tests.

### *Timing*

The next task for Mr. Davidson to consider is the allotment of time he has for the students to take the test and how many items should be written for each learning target. There are some rules of thumb to follow when considering how long it takes for a student to answer a particular item-type. According to Notar et al. (2004):

- True/false: 15 seconds
- A seven-item matching exercise: 60–90 seconds
- A four-response option knowledge-level multiple choice: 30 seconds
- A four-response option application-level multiple choice: 60 seconds
- Any test item that asks students to solve, analyze, synthesize, or evaluate a problem: 30–60 seconds
- Short answer: 30–45 seconds
- Essay: 60 seconds for each point to be compared or contrasted
- Fill-in-the-blank: 30 seconds

Table 4.2 provides a schematic of the total number of items, the percentage of the test the learning target is tested, and the amount of time it is anticipated that each student will spend on each learning target.

Table 4.2 Table of specifications that outlines the dimensions, domains, items, and timing considerations for each learning outcome

<i>Learning Outcomes (SWBAT...)*</i>	<i>Content Element</i>	<i>Domain</i>	<i>Item-type</i>	<i>No. of Items</i>	<i>% of Test</i>	<i>Time (m/s)</i>
<i>Define</i> a quarter note	Quarter notes	Remembering	Short answer	1	1.4%	0:45
<i>Define</i> an eighth note	Eighth notes	Remembering	Short answer	1	1.4%	0:45
<i>Identify</i> notes as quarter notes using visual, music examples	Quarter notes	Remembering	Multiple choice	10	14.9%	5:00
<i>Identify</i> notes as eighth notes using visual, music examples	Eighth notes	Remembering	Multiple choice	10	14.9%	5:00
<i>Explain</i> the difference between quarter notes and eighth notes	Quarter note/ eighth note combinations	Remembering	Short answer	1	1.4%	0:45
<i>Classify</i> quarter notes through visual, music examples	Quarter notes	Understanding	Matching	2	2.9%	3:00
<i>Label</i> quarter notes through visual, music examples	Quarter notes	Understanding	Fill-in-the-blank	6	8.7%	3:00
<i>Classify</i> eighth notes through visual, music examples	Eighth notes	Understanding	Matching	2	2.9%	3:00
<i>Label</i> eighth notes through visual, music examples	Eighth notes	Understanding	Fill-in-the-blank	6	8.7%	3:00
<i>Solve</i> missing note values in measures based upon remainder of available note values	Quarter note/ eighth note combinations	Applying	Fill-in-the-blank	6	8.7%	3:00



<i>Learning Outcomes (SWBAT . . .)*</i>	<i>Content Element</i>	<i>Domain</i>	<i>Item-type</i>	<i>No. of Items</i>	<i>% of Test</i>	<i>Time (m/s)</i>
<i>Differentiate between a quarter note pulse and eighth note pulse through aural, musical examples</i>	Quarter note/ eighth note combinations	Analyzing	Multiple choice	6	8.7%	3:00
<i>Identify eighth note and quarter note patterns through aural, music examples</i>	Quarter note/ eighth note combinations	Analyzing	Multiple choice	6	8.7%	3:00
<i>Differentiate quarter note patterns, eighth note patterns, and mixed quarter/eighth note patterns through aural, music examples</i>	Quarter note/ eighth note combinations	Analyzing	Multiple choice	6	8.7%	3:00
<i>Analyze measures using the rhythm labeling method taught in class</i>	Quarter note/ eighth note combinations	Analyzing	Fill-in-the-blank	6	8.7%	3:00
<b>Totals</b>				<b>69</b>	<b>100%</b>	<b>39:15</b>

\*Students will be able to . . .

### *Balancing Learning Outcomes, Cognitive Rigor, and Test Time*

The test construction process can quickly become daunting when considering the multiple content elements; appropriateness of items; ability of items to validly, reliably, and fairly collect behavioral information; the amount of time it takes a student to engage with a particular item; the levels of rigor in relation to the learning outcomes; and the overall expectations of your students. The benefit of implementing a table of specifications for the test creation process is to have a visual tool to help consider all of these relationships.

Table 4.3 organizes the learning outcomes by cognitive domain. The result indicates that 34% (23 items, 12 minutes and 45 seconds) of the test is remembering items, 23.2% of the test (16 items, 12 minutes) is understanding items, 8.7% of the test (6 items, 3 minutes)

*Table 4.3* Table of specifications sorted by cognitive domain

<i>Learning Outcomes (SWBAT ...)*</i>	<i>Content Element</i>	<i>Domain</i>	<i>Item-type</i>	<i>No. of Items</i>	<i>% of Test</i>	<i>Time (m/s)</i>
<i>Define a quarter note</i>	Quarter notes	Remembering	Short answer	1	1.4%	0:45
<i>Define an eighth note</i>	Eighth notes	Remembering	Short answer	1	1.4%	0:45
<i>Identify notes as quarter notes using visual, music examples</i>	Quarter notes	Remembering	Multiple choice	10	14.9%	5:00
<i>Identify notes as eighth notes using visual, music examples</i>	Eighth notes	Remembering	Multiple choice	10	14.9%	5:00
<i>Explain the difference between quarter notes and eighth notes</i>	Quarter note/ eighth note combinations	Remembering	Short answer	1	1.4%	0:45
<b>Totals</b>				<b>23</b>	<b>34%</b>	<b>12:15</b>
<i>Classify quarter notes through visual, music examples</i>	Quarter notes	Understanding	Matching	2	2.9%	3:00
<i>Label quarter notes through visual, music examples</i>	Quarter notes	Understanding	Fill-in-the-blank	6	8.7%	3:00
<i>Classify eighth notes through visual, music examples</i>	Eighth notes	Understanding	Matching	2	2.9%	3:00
<i>Label eighth notes through visual, music examples</i>	Eighth notes	Understanding	Fill-in-the-blank	6	8.7%	3:00
<b>Totals</b>				<b>16</b>	<b>23.2%</b>	<b>12:00</b>

<i>Learning Outcomes (SWBAT ...)*</i>	<i>Content Element</i>	<i>Domain</i>	<i>Item-type</i>	<i>No. of Items</i>	<i>% of Test</i>	<i>Time (m/s)</i>
<i>Solve missing note values in measures based upon remainder of available note values</i>	Quarter note/ eighth note combinations	Applying	Fill-in-the-blank	6	8.7%	3:00
<b>Totals</b>				<b>6</b>	<b>8.7%</b>	<b>3:00</b>
<i>Differentiate between a quarter note pulse and eighth note pulse through aural, musical examples</i>	Quarter note/ eighth note combinations	Analyzing	Multiple choice	6	8.7%	3:00
<i>Identify eighth note and quarter note patterns through aural, music examples</i>	Quarter note/ eighth note combinations	Analyzing	Multiple choice	6	8.7%	3:00
<i>Differentiate quarter note patterns, eighth note patterns, and mixed quarter/eighth note patterns through aural, music examples</i>	Quarter note/ eighth note combinations	Analyzing	Multiple choice	6	8.7%	3:00
<i>Analyze measures using the rhythm labeling method taught in class</i>	Quarter note/ eighth note combinations	Analyzing	Fill-in-the-blank	6	8.7%	3:00
<b>Totals</b>				<b>30</b>	<b>43.5%</b>	<b>15:00</b>

\*Students will be able to . . .

is applying items, and 43.5% of the items (30 items, 15 minutes) is analyzing items.

Table 4.4 organizes the learning outcomes by content elements. The result indicates that 27.9% (19 items, 11 minutes and 45 seconds) of the test is quarter note items, 27.9% of the test (19 items, 11 minutes and 45 seconds) is eighth note items, and 44.9% of the test (31 items, 15 minutes and 45 seconds) is quarter note/eighth note combination items.

*Table 4.4* Table of specifications sorted by content element

<i>Learning Outcomes (SWBAT . . .)*</i>	<i>Content Element</i>	<i>Domain</i>	<i>Item-type</i>	<i>No. of Items</i>	<i>% of Test</i>	<i>Time (m/s)</i>
<i>Define a quarter note</i>	Quarter notes	Remembering	Short answer	1	1.4%	0:45
<i>Identify notes as quarter notes using visual, music examples</i>	Quarter notes	Remembering	Multiple choice	10	14.9%	5:00
<i>Classify quarter notes through visual, music examples</i>	Quarter notes	Understanding	Matching	2	2.9%	3:00
<i>Label quarter notes through visual, music examples</i>	Quarter notes	Understanding	Fill-in-the-blank	6	8.7%	3:00
<b>Totals</b>				<b>19</b>	<b>27.9%</b>	<b>11:45</b>
<i>Define an eighth note</i>	Eighth notes	Remembering	Short answer	1	1.4%	0:45
<i>Identify notes as eighth notes using visual, music examples</i>	Eighth notes	Remembering	Multiple choice	10	14.9%	5:00
<i>Classify eighth notes through visual, music examples</i>	Eighth notes	Understanding	Matching	2	2.9%	3:00
<i>Label eighth notes through visual, music examples</i>	Eighth notes	Understanding	Fill-in-the-blank	6	8.7%	3:00
<b>Totals</b>				<b>19</b>	<b>27.9%</b>	<b>11:45</b>

<i>Learning Outcomes (SWBAT . . .)*</i>	<i>Content Element</i>	<i>Domain</i>	<i>Item-type</i>	<i>No. of Items</i>	<i>% of Test</i>	<i>Time (m/s)</i>
<i>Explain</i> the difference between quarter notes and eighth notes	Quarter note/ eighth note combinations	Remembering	Short answer	1	1.4%	0:45
<i>Solve</i> missing note values in measures based upon remainder of available note values	Quarter note/ eighth note combinations	Applying	Fill-in-the-blank	6	8.7%	3:00
<i>Differentiate</i> between a quarter note pulse and eighth note pulse through aural, musical examples	Quarter note/ eighth note combinations	Analyzing	Multiple choice	6	8.7%	3:00
<i>Identify</i> eighth note and quarter note patterns through aural, music examples	Quarter note/ eighth note combinations	Analyzing	Multiple choice	6	8.7%	3:00
<i>Differentiate</i> quarter note patterns, eighth note patterns, and mixed quarter/eighth note patterns through aural, music examples	Quarter note/ eighth note combinations	Analyzing	Multiple choice	6	8.7%	3:00
<i>Analyze</i> measures using the rhythm labeling method taught in class	Quarter note/ eighth note combinations	Analyzing	Fill-in-the-blank	6	8.7%	3:00
<b>Totals</b>				<b>31</b>	<b>44.9%</b>	<b>15:45</b>

\*Students will be able to . . .

Table 4.5 organizes the learning outcomes by item-type. The result indicates that 55.9% (38 items, 19 minutes) of the test is multiple-choice items, 5.8% of the test (4 items, 6 minutes) is matching items, 34.8% of the test (24 items, 12 minutes) are fill-in-the-blank items, and 4.2% of the test (3 items, 2 minutes and 15 seconds) is short-answer items.

*Table 4.5* Table of specifications sorted by item-type

<i>Learning Outcomes (SWBAT . . .)*</i>	<i>Content Element</i>	<i>Domain</i>	<i>Item-type</i>	<i>No. of Items</i>	<i>% of Test</i>	<i>Time (m/s)</i>
<i>Identify</i> notes as quarter notes using visual, music examples	Quarter notes	Remembering	Multiple choice	10	14.9%	5:00
<i>Identify</i> notes as eighth notes using visual, music examples	Eighth notes	Remembering	Multiple choice	10	14.9%	5:00
<i>Differentiate</i> between a quarter note pulse and eighth note pulse through aural, musical examples	Quarter note/ eighth note combinations	Analyzing	Multiple choice	6	8.7%	3:00
<i>Identify</i> eighth note and quarter note patterns through aural, music examples	Quarter note/ eighth note combinations	Analyzing	Multiple choice	6	8.7%	3:00
<i>Differentiate</i> quarter note patterns, eighth note patterns, and mixed quarter/eighth note patterns through aural, music examples	Quarter note/ eighth note combinations	Analyzing	Multiple choice	6	8.7%	3:00
<b>Totals</b>				<b>38</b>	<b>55.9%</b>	<b>19:00</b>

<i>Learning Outcomes (SWBAT . . .)*</i>	<i>Content Element</i>	<i>Domain</i>	<i>Item-type</i>	<i>No. of Items</i>	<i>% of Test</i>	<i>Time (m/s)</i>
<i>Classify</i> quarter notes through visual, music examples	Quarter notes	Understanding	Matching	2	2.9%	3:00
<i>Classify</i> eighth notes through visual, music examples	Eighth notes	Understanding	Matching	2	2.9%	3:00
<b>Totals</b>				<b>4</b>	<b>5.8%</b>	<b>6:00</b>
<i>Label</i> quarter notes through visual, music examples	Quarter notes	Understanding	Fill-in-the-blank	6	8.7%	3:00
<i>Label</i> eighth notes through visual, music examples	Eighth notes	Understanding	Fill-in-the-blank	6	8.7%	3:00
<i>Solve</i> missing note values in measures based upon remainder of available note values	Quarter note/ eighth note combinations	Applying	Fill-in-the-blank	6	8.7%	3:00
<i>Analyze</i> measures using the rhythm labeling method taught in class	Quarter note/ eighth note combinations	Analyzing	Fill-in-the-blank	6	8.7%	3:00
<b>Totals</b>				<b>24</b>	<b>34.8%</b>	<b>12:00</b>
<i>Define</i> a quarter note	Quarter notes	Remembering	Short answer	1	1.4%	0:45
<i>Define</i> an eighth note	Eighth notes	Remembering	Short answer	1	1.4%	0:45
<i>Explain</i> the difference between quarter notes and eighth notes	Quarter note/ eighth note combinations	Remembering	Short answer	1	1.4%	0:45
<b>Totals</b>				<b>3</b>	<b>4.2%</b>	<b>2:15</b>

\*Students will be able to . . .

Based on the resulting analysis, Mr. Davidson now has a clear picture of all the moving pieces of the test design process. He now has the ability to make informed changes to any of the items based upon the number of items representing various content elements, domains, item-types, number of items, percentages, or time considerations. Furthermore, he now can make informed decisions regarding the results of the testing procedure (see Chapter 8) after analyzing the test items.

Note that because Mr. Davidson is creating this test and using it for the first time, he specifically did not set a degree of mastery to accompany each of his instructional objectives. The first time a test is used, it is considered a *pilot test*. A pilot test is a “dress rehearsal” of the test operations that are implemented to determine whether problems with the test exist that need to be addressed (Lavrakas, 2008). In this case, once the test is given to the students and the data are collected, Mr. Davidson can explore item- and person-centered data (see Chapter 8) as well as any validity, reliability, and fairness considerations (see Chapter 5) that may impact the results of the test. After several iterations using the test with his students, Mr. Davidson will have a clear picture of the degrees of mastery students are expected to achieve as well as a better picture of how his instruction affects students’ proficiency in relation to each of the learning objectives.

## Summary

This chapter was designed to describe the process by which music educators develop student-learning outcomes, align assessment tasks with stated outcomes, and create scoring devices to collect data in order to provide timely, detailed, and meaningful feedback and analysis for both students and educators. A common method for examining student learning is through the application of educational taxonomies. Examples include Bloom’s Taxonomy of Educational Objectives, Revised Bloom’s Taxonomy, and the SOLO taxonomy. Educational taxonomies are often used to describe “levels” of learning taking place within the classroom and are a vital resource for crafting student-learning objectives. Employing a balance of multiple levels of thinking within an assessment plan is critical. Clearly articulating student-learning outcomes then creates transparency between the student and educator regarding what the student is expected to demonstrate upon completion of a lesson, unit, course, or program. Effective learning objectives are often described as having three major components: (a) conditions, (b) action verb (observable behavior), and (c) criteria. Conditions refer to the characteristics of the learners including but not limited to modeling, environment, context, and audience. The action verb (or observable behavior) refers to what knowledge, skill, or disposition the students will demonstrate for the teacher. Finally, criteria define the specific change in a specified behavior that is sought by the instructor. Educators are encouraged to preplan assessment processes



prior to instruction in order to ensure valid, reliable, and fair inferences of student learning. There are several components in the preplanning process, including (a) an assessment blueprint, (b) a table of specifications, and (c) final considerations. An assessment blueprint is a concise plan of action that captures the multiple methods in which an educator intends to formally test students' academic performance in the classroom within a given instructional unit and serves as a method for preplanning how the educator will capture and evaluate the multiple streams of knowledge, skills, abilities, and/or dispositions students demonstrate aligned to expected learning outcomes. A table of specifications is a two-dimensional matrix that describes the content, structure, and learning outcomes of a specific assessment instrument and is predominantly used for selected response tasks as a beneficial means for aligning objectives, instruction, and assessment. Final considerations include item selection and construction, timing, and balancing outcomes, rigor, and test time. While the process of assessment can appear daunting, breaking the process down into specific steps to guide the learning of your students will ensure success within both your lessons and programs.

## **Activities and Worksheets**

### ***Class Activity 4.1: State Your Case!***

Your administration has approached you about revising the local district curriculum. Among the topics under review is the learning taxonomy for the district moving forward. They have asked you to produce a white paper describing the strengths and weaknesses of each taxonomy and provide an expert opinion for which taxonomy best fits the learning of your music students, citing specific examples. Once this is complete, your professor will have you complete one (or more) of the following:

- Submit your findings in written form.
- Present your findings in a school board setting.
- Participate in a one-on-one interview similar to working with an administrator.

### ***Class Activity 4.2: What Composes a Complete Musician?***

In pairs, develop a list of activities that your students encounter within your program on a regular basis. This should include all activities that promote comprehensive musical development. Once lists are complete, trade lists with the group to your left and (a) review the list, (b) add any items you feel were omitted, (c) combine any that are similar, and (d) eliminate any that are redundant. Once these edits are complete, review your edits with your neighbors and compile these tasks into a master list.

Once the list is complete, separate these tasks into the following categories:

<u>Knowledge</u> (Cognitive)	<u>Skill</u> (Psychomotor)	<u>Disposition</u> (Affective)

### *Class Activity 4.3: Critical Thinking in the Music Classroom*

Using the task list developed in *Class Activity 4.1*, have your group develop a list of action verbs that are necessary to successfully demonstrate complete musicianship. Once this list is compiled, organize the action verbs into the levels of thinking. Write a short rationale for inclusion of verbs in each category.

<u>Knowledge</u>	<u>Understanding</u>	<u>Application</u>	<u>Analysis</u>	<u>Synthesis</u>	<u>Creation</u>

### *Class Activity 4.4: Developing Your Objectives*

Select one of the activities above about which you will compose a learning objective. Use the formula below (ABCs of learning) to create a specific learning outcome for your students.

Audience:		(For whom is this objective intended?)
Behavior:		(What are you asking your students to do? What action are you seeking to develop or improve?)
Conditions:		(What are the parameters? What is given? What is the time frame?)
Degree:		(What will be your indicators that learning has occurred? What are your expectations for learning?)

Write your complete objective here. Circle your action verb, underline your conditions, square your degree, and include your audience in parentheses at the end.

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***Class Activity 4.5: Developing an Assessment Blueprint***

Using Figure 4.6 as a model, develop an assessment blueprint for a mock instruction unit. Include at least two assessments for the instructional unit: (a) a performance assessment and (b) a cognitive test. In the assessment blueprint, include the following considerations:

1. Class/student level
2. Instructional unit
3. Artistic process(es) to be assessed
4. Artistic processes component(s) to be assessed
5. Anchor standard(s) to be assessed
6. Performance standard(s) to be assessed

For each of the two individual assessments, provide the following:

1. Purpose of the assessment
2. Enduring understanding(s)
3. Essential question(s)
4. Performance standard(s)
5. Anchor standard(s)
6. Artistic processes component(s)
7. Artistic process(es)
8. Scoring device name
9. Type of scoring device
10. Student task(s)
11. Item/criteria type(s)

***Class Activity 4.6: Developing a Table of Specifications***

Using Table 4.1 as a model, develop a table of specifications for a mock cognitive test. In the table of specifications, include the following considerations:

1. Learning outcomes
2. Content elements
3. Domains

4. Item types
5. Number of items
6. Percentage of the test
7. Time considerations

## Notes

1. Retrieved from [www.nwlink.com/~donclark/hrd/Bloom/psychomotor\\_domain.html](http://www.nwlink.com/~donclark/hrd/Bloom/psychomotor_domain.html).
2. Ensure that behavior here is the learning actions of the students and should not be confused with behavior within the context of classroom management.
3. Understanding and performing are often used in long-term outcomes based on their inherent duality in functioning both as a noun and a verb (Wiggins & McTighe, 2005). Therefore, understanding and performing are more appropriate to include in program or course level (i.e., global objectives and/or educational objectives; Wesolowski, 2015).
4. Adapted from Doran (1981).

## References

- Anderson, L. W., & Krathwohl, D. R. (Eds.). (2001). *A taxonomy for learning, teaching, and assessing: A revision of Bloom's Taxonomy of Educational Objectives*. Boston, MA: Allyn & Bacon.
- Ausubel, D. P., & Robinson, F. G. (1969). *School learning: An introduction to educational psychology*. New York, NY: Holt, Rinehart & Winston.
- Biggs, J. B., & Collis, K. (1982). *Evaluating the quality of learning: The SOLO taxonomy*. New York: Academic Press.
- Bloom, B. (Ed.). (1956). *Taxonomy of Educational Objectives, the classification of educational goals: Handbook I: Cognitive domain*. New York: McKay.
- Dave, R. H. (1970). Psychomotor levels. In R. J. Armstrong (Ed.), *Developing and writing behavioral objectives*. Tucson, AZ: Educational Innovators Press.
- Doran, G. T. (1981). There's a SMART way to write management's goals and objectives. *Management Review*, 70, 36.
- Fink, L. D. (2003). *Creating significant learning experiences: An integrated approach to designing college courses*. San Francisco, CA: Jossey-Bass.
- Gagné, R. M. (1965). *The condition of learning and theory of instruction*. New York, NY: Holt, Rinehart & Winston.
- Gagné, R. M., & Briggs, L. J. (1974). *The principles of instructional design*. New York, NY: Holt, Rinehart & Winston.
- Hook, P., & Mills, J. (2011). SOLO taxonomy versus Bloom's taxonomy. *HookED Wiki*. Retrieved from [http://pamhook.com/wiki/SOLO\\_Taxonomy\\_versus\\_Bloom's\\_Taxonomy](http://pamhook.com/wiki/SOLO_Taxonomy_versus_Bloom's_Taxonomy)
- Krathwohl, D. R., Bloom, B. S., & Masia, B. B. (1964). *Taxonomy of Educational Objectives: Handbook II: Affective domain*. New York, NY: David McKay Co.
- Lavrakas, P. J. (2008). Pilot test. In *Encyclopedia of survey research methods*. Thousand Oaks, CA: Sage Publications. doi:10.4135/9781412963947
- Mager, R. F. (1984). *Preparing instructional objectives* (2nd ed.). Belmont, CA: Lake Publishing.

- Marzano, R. J., & Kendall, J. S. (2007). *The new Taxonomy of Educational Objectives*. Thousand Oaks, CA: Sage Publications.
- Merriam-Webster Online Dictionary. (n.d.). *Taxonomy*. Retrieved from [www.merriam-webster.com/dictionary/taxonomy](http://www.merriam-webster.com/dictionary/taxonomy)
- National Coalition of Core Arts Standards. (2014). *National Core Arts Standards: A conceptual framework for arts learning*. Retrieved from [www.nationalartsstandards.org/sites/default/files/NCCAS%20%20Conceptual%20Framework\\_0.pdf](http://www.nationalartsstandards.org/sites/default/files/NCCAS%20%20Conceptual%20Framework_0.pdf)
- Nitko, A. J., & Brookhart, S. M. (2011). *Educational assessment of students*. Boston, MA: Pearson.
- Notar, C. E., Zuelke, D. C., Wilson, J. D., & Yunker, B. D. (2004). The table of specifications: Insuring accountability in teacher made tests. *Journal of Instructional Psychology*, 31(2), 115–129.
- O'Toole, P. (2003). *Shaping sound musicians*. Chicago, IL: GIA Publications.
- Payne, P., Burrack, F., Parkes, K. A., & Wesolowski, B. (2019). An emerging process of assessment in music education. *Music Educators Journal*, 105(3), 36–44.
- Webb, N. (1997). *Research monograph number 6: Criteria for alignment of expectations and assessments on mathematics and science education*. Washington, DC: CCSSO.
- Wesolowski, B. C. (2015). Tracking student achievement in music performance: Developing student-learning objectives for growth model assessment. *Music Educators Journal*, 102, 39–47.
- Wiggins, G. P., & McTighe, J. (2005). *Understanding by design*. Alexandria, VA: Association for Supervision and Curriculum Development.