

A REPORT DOCUMENTING THE PROCESS FOR DEVELOPING AN INTEGRATED STANDARDS-BASED INSTRUCTIONAL UNIT

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INTRODUCTION

Over the last decade, standards-based reform has become the major improvement effort in schools across the United States, but teachers have not had clear, concise guidance on how to integrate standards into their daily classroom practice. In standards-based classrooms, standards are the starting point for designing units of study. Yet many teachers do not fully understand how to design units in this way — often because textbooks have provided the structure for curriculum units.

This document provides guidance that will help teachers design standards-based units; it incorporates professional wisdom as well as research on learning and instruction (e.g., Marzano, Pickering, & Pollock, 2001; Cotton, 2000; Stronge, 2002). The document also reflects a belief that careful attention to classroom curriculum design — the sequencing and pacing of learning experiences — decreases the likelihood that there will be breakdowns in student learning (Marzano, 2003).

This document describes a process for designing standards-based units of instruction. It also includes suggestions for refining a unit and sharing it with colleagues. The document is organized around five questions:

1. What knowledge will students be learning?
2. What will be done to help students learn the required knowledge?
3. How will one know if students have learned the required knowledge?
4. How can the unit be improved?
5. How can the unit be prepared for use by others?

A description of each question follows.

Question 1: What Knowledge Will Students Be Learning?

The first step in designing a unit is selecting the standards and benchmarks that will be the focus of the unit. This section describes the selection process and the factors to consider when determining the focus for a unit. It also explains different types of standards, how to integrate these various standards into a unit, and how to analyze a benchmark to ensure that all aspects of the benchmark are addressed by instruction.

Question 2: What Will Be Done to Help Students Learn the Required Knowledge?

This section provides guidance for selecting instructional strategies that help students acquire and integrate knowledge by accessing prior knowledge, making connections, organizing information, seeing patterns, and learning the steps of a process or skill. It also addresses how to help students practice, review, and apply knowledge. Equally important, it reminds teachers that unit planning should include attention to strategies that increase student motivation.

Question 3: How Will One Know If Students Have Learned The Required Knowledge?

This section helps teachers focus on gathering evidence of learning before, during, and at the end of a unit. It addresses how to align assessments with the targeted knowledge and how to define criteria for the quality of student work. In addition, this section also addresses how to include feedback and self-assessment in the design of the unit.

Question 4: How Can the Unit Be Improved?

This section provides tools and strategies for individual and group reflection on the effectiveness of the unit in terms of student engagement and progress toward meeting standards. These tools and strategies will help teachers determine how to refine the unit before using it again.

Question 5: How Can the Unit Be Prepared for Use by Others?

This section provides guidance for preparing the unit for sharing with colleagues. It includes suggestions for presenting the unit in ways that make it easy for other teachers to use the unit.

In summary, the process described in this document helps teachers use instructional time more effectively. It encourages teachers to design units that address multiple standards and benchmarks from within or across content areas, making the number of standards and benchmarks seem less overwhelming. In addition, using this process can help teachers design units that provide students with a coherent set of learning experiences. As a result, students will be better able to learn the targeted knowledge and standards-based education will become a reality in classrooms.

QUESTION 1:

What Knowledge Will Students Be Learning?

There are five key actions that can help define the content to be learned:

- Review the standards and benchmarks for the grade or course.
- Determine a focus for the unit.
- Consider how different types of standards might be included in the unit.
- Analyze the benchmarks to determine the knowledge embedded in them.
- Identify ways to share learning goals with students and help them set their own learning goals related to the selected benchmarks.

Review the standards and benchmarks for the grade or course.

The general answer to the question of what knowledge students will be learning is found in state and district standards documents. If teachers are not familiar with the standards documents used in their district, the first step in designing a standards-based unit is reading and discussing those documents. Teachers should become knowledgeable about the standards and benchmarks for their grade or course level as well as those that precede and follow it. For example, a district or state might have a set of science standards like those shown in Exhibit 1.¹

Exhibit 1. Science Standards from McREL's *Compendium*

Earth and Space Sciences

1. Understands atmospheric processes and the water cycle
2. Understands Earth's composition and structure
3. Understands the composition and structure of the universe and the Earth's place in it

Life Sciences

4. Understands the principles of heredity and related concepts
5. Understands the structure and function of cells and organisms
6. Understands relationships among organisms and their physical environment
7. Understands biological evolution and the diversity of life

Physical Sciences

8. Understands the structure and properties of matter
9. Understands the sources and properties of energy
10. Understands forces and motion

Nature of Science

11. Understands the nature of scientific knowledge
12. Understands the nature of scientific inquiry
13. Understands the scientific enterprise

¹ Standards and benchmarks used as illustrations in this document are taken from *Content Knowledge: A Compendium of Standards and Benchmarks for K-12 Education* (3rd ed.) (Kendall & Marzano, 2000).

One reason for reviewing the state or district standards document is to become familiar with the terminology used to describe what students are to learn. In this document, unless otherwise noted, the term “standard” is used to mean a summary description of what students should know or be able to do within a particular discipline. Some districts use terms such as “goals” or “expectations,” rather than “standards.” The term “benchmark” is used in this document to mean a description of knowledge that students should acquire by a particular point in their schooling. Alternate terms for benchmarks used in some districts include “indicators,” learning expectations,” or “performance standards.”

Determine a focus for the unit.

As teachers review the standards and benchmarks for their grade level, they should examine them from the perspective of the concepts or processes that they encompass. For example, mathematics concepts and processes might include *Data Collection & Sampling, Estimation, or Patterns*. Language arts concepts and processes might include *Informational Genres or Conversation & Group Discussion*. Such concepts or processes provide a focus for the unit. In addition to standards documents, textbooks, district curriculum guides, and student interests can be used to identify concepts and processes that might serve as the focus for a unit.

Consider how different types of standards might be included in the unit.

Most districts’ standards documents focus on content-specific standards — statements that represent knowledge in specific domains of academic content such as mathematics, science, and language arts. Teachers can consider how benchmarks from different content areas might be included in the unit.

Some districts also have defined cross-discipline standards, such as thinking and reasoning or technology, that represent knowledge that is not discipline specific and/or life skills standards, such as the ability to work with others, that represent knowledge that is useful within the workplace. Exhibit 2 provides examples of cross-discipline and life skills standards (see Kendall & Marzano, 2000, for examples).

When selecting standards and benchmarks for a unit, the teacher may choose to include some or all of these different categories of standards. There are some cautions here, however. The number of standards and benchmarks selected for the unit should be appropriate for the time allocated for the unit and be suitable for the students’ ages and abilities. In addition, teachers should select standards and benchmarks that logically connect to the topic and function as a coherent set.

Exhibit 2. Examples of Various Types of Standards

Life Skills Standards

Working With Others

1. Contributes to the overall effort of a group
2. Uses conflict-resolution techniques
3. Works well with diverse individuals and in diverse situations
4. Displays effective interpersonal communication skills
5. Demonstrates leadership skills

Cross-Discipline Standards

Thinking and Reasoning

1. Understands and applies the basic principles of presenting an argument
2. Understands and applies basic principles of logic and reasoning
3. Effectively uses mental processes that are based on identifying similarities and differences
4. Understands and applies basic principles of hypothesis testing and scientific inquiry
5. Applies basic trouble-shooting and problem-solving techniques
6. Applies decision-making techniques

Analyze the benchmarks to determine the knowledge embedded in them.

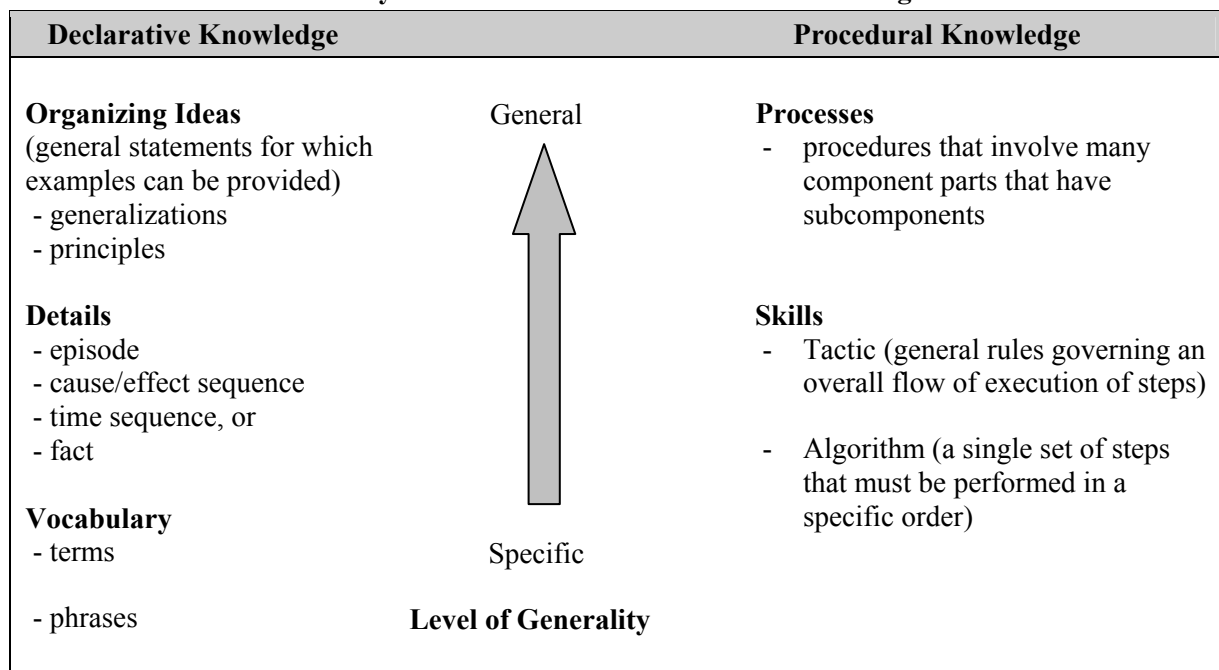
If benchmarks are too general, teachers can analyze, or “unpack” the content of benchmarks to identify the specific knowledge embedded in them. This provides greater clarity about what needs to be taught. Understanding that knowledge can be classified as declarative (concerned with information) or procedural (concerned with skills or processes) can help teachers analyze benchmarks. Declarative knowledge includes vocabulary terms and phrases; details such as facts, time sequences, and episodes; and organizing ideas such as generalizations and principles. Procedural knowledge includes skills (algorithms and tactics) and processes (e.g., reading and writing). As shown in Exhibit 3, each type of knowledge can be organized from specific to general.

For example, the benchmark “Uses the various parts of a book to locate information” can be unpacked as follows:

Uses the index to locate information

- Uses the table of contents to locate information
- Uses the glossary to locate information
- Uses the appendix to locate information
- Uses the preface to locate information

Exhibit 3. Levels of Generality of Declarative and Procedural Knowledge



The last statement illustrates that learning skills or processes usually requires knowing or understanding some information. For example, students may engage in problem solving, but if they do not know basic mathematics terms and facts, then they are likely to have difficulty solving problems accurately and efficiently.

Another aspect of unpacking is analyzing benchmarks to identify the specific knowledge that may be required for a grade or course. This type of analysis can be thought of as identifying “supporting knowledge.” The questions in Exhibit 4 related to the various levels of declarative and procedural knowledge can be used to identify supporting knowledge.

Exhibit 4: Questions for Determining Supporting Knowledge

Organizing Ideas	Are there any generalizations or principles that are important to this unit?
Details	Are there any essential facts, time sequences, cause/effect sequences, or episodes that students will need to remember and use at a later date?
Vocabulary	Are there any essential vocabulary terms or phrases that would be important for students to learn in this unit?
Processes	Are there any processes and/or subcomponents of processes that students will need to practice?
Skills	Are there any skills (tactics or algorithms) that students will need to practice in order to gain proficiency?

For example, for the benchmark “Understands elements of character development in literary works (e.g., differences between main and minor characters; stereotypical characters as opposed to fully developed characters; changes that characters undergo; the importance of a character’s

actions, motives, and appearance to plot and theme),” a teacher might identify the following supporting knowledge:

- *Organizing idea*: Some characters in stories may be stereotypes. (a generalization)
- *Details*:
 - Knows the general traits and motivations of characters within the literary works being studied
 - Knows ways in which some of the characters in the works being studied change from the beginning to the end of the story
- *Vocabulary*: character development, fully developed character, stereotypical character, minor character, stereotype, character’s motives, character’s appearance

Identify ways to share learning goals with students and help them set their own learning goals related to the selected benchmarks.

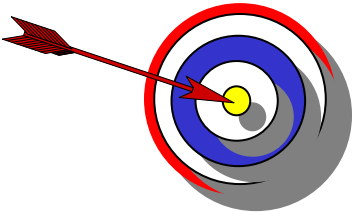
When designing a unit, it’s important to think about how students will be provided with information about the benchmarks they are supposed to learn. Sharing learning goals with students helps them focus their attention on what’s important and make connections between what they are doing and why they are doing it.

Sharing the teacher’s goals is one half of the equation. The other half is providing opportunities for students to set their own learning goals related to the benchmarks, which tends to increase their engagement in learning. For example, one of the learning goals identified by the teacher might be “Understands that topography and natural resources influence the culture of a region.” A student might state a personal learning goal such as “I want to find out how the Gold Rush influenced the music of the time.”

Teachers might design a special form for this purpose, as in Exhibit 5, or ask students to record their goals in a notebook. If students have not had prior experiences with setting their own learning goals, the teacher may have to provide them with guidance and a rationale for doing so. Asking students to identify their own learning goals is one way that teachers can collect evidence early in the unit to determine where students are in their understanding of or proficiency in the benchmarks and/or supporting knowledge. Depending on students’ level of prior knowledge, the teacher might want to change the standards, benchmarks, or supporting knowledge that are the focus of the unit.

Organizing a unit around standards and benchmarks requires a change in the way that most teachers plan. However, beginning the planning process by identifying standards and benchmarks that describe the major concepts or big ideas that students should acquire in the unit can help increase the coherence of instruction. Unpacking the selected benchmarks, and identifying the supporting knowledge embedded in them, helps teachers design learning experiences that address benchmarks in their “full glory.” This means that students are more likely to have opportunities to learn the full range of knowledge required of them.

Exhibit 5. Setting Learning Goals with Students



Our learning goal for this unit is:

Students will understand the basic purposes of government in the United States.

I already know _____

I want to know _____

Specifying the knowledge to be learned in sufficient detail is the first step in unit planning. But to increase the likelihood that students will learn the knowledge, teachers must take the next step — planning how they will help students learn that knowledge. The next section addresses this aspect of unit planning.

QUESTION 2:

WHAT WILL BE DONE TO HELP STUDENTS LEARN THE REQUIRED KNOWLEDGE?

There are three key actions teachers can take to help students learn:

- Align activities with the selected standards and benchmarks.
- Incorporate instructional strategies that help students acquire and integrate knowledge, and practice, review, and apply knowledge.
- Include instructional strategies that increase students' motivation to learn.

Align activities with the selected standards and benchmarks.

It may seem obvious that learning activities should align with the selected standards and benchmarks. In some cases, however, activities are incorporated in units simply because they are readily available from another source, are of personal interest to the teacher, or are fun for students. This is not to suggest that activities should be boring, rather it is acknowledgement that instructional time is limited and teachers need to be purposeful in their selection of activities. For example, in a unit on westward expansion in the United States, an activity that requires students to make a diorama of a mining town might not help students understand how the Gold Rush contributed to westward expansion.

Another aspect of alignment is ensuring that the nature of the activity is appropriate for the expected level of performance. In other words, if the intent is for students to be able to write essays about particular content, then they will need a variety of experiences that help them learn details, understand multiple perspectives, and identify instances of the generalizations that are the big ideas of the unit. For example, in a unit on the role of the United States in world affairs since World War I, students might gather information about the Great Depression from their text or other sources and represent that information using a graphic organizer. Representing the information in an organized way will help students remember details as well as identify patterns and relationships. If students were asked only to complete a worksheet of multiple-choice questions, it would be much more difficult for them to write a high-quality essay.

Incorporate instructional strategies that help students acquire and integrate knowledge, and practice, review, and apply knowledge.

To help students acquire and integrate knowledge, activities must provide students with opportunities to access prior knowledge; make connections between their new knowledge and prior knowledge; organize information, make connections, and see patterns; provide the steps or component parts of a skill or process; or model the steps or how to engage in the component parts of a process. Strategies that are particularly useful for helping students acquire and integrate knowledge are cues, questions, and advance organizers; summarizing and note taking; and nonlinguistic representations.

In addition to helping students acquire and integrate knowledge, unit activities also should help students practice, review, and apply knowledge. Instructional strategies that are useful for such purposes include identifying similarities and differences, generating and testing hypotheses, and

practicing. These strategies help students clear up confusions and misconceptions they might have about information, correct errors they are making as they perform a skill or process, or engage in projects that help them apply what they have been learning in meaningful contexts.

Teachers should keep in mind that learning a skill requires a fair amount of focused practice and usually students don't have enough opportunities to practice to the point that they've attained proficiency. In the early stages of learning a skill or process, after the teacher has explained and demonstrated the steps or parts of the process, students should practice immediately and often. As students reach some level of proficiency in a skill, practice can be spaced out. For example, in the first week or two, students might practice the skill every day. During the third and fourth weeks, they might practice a few times a week. Depending on the complexity of the skill or process, they might continue to practice once a week or only periodically.

Exhibit 6 provides definitions for the strategies mentioned in the previous paragraphs. It also includes strategies that will be discussed in the next section on motivating students' interest in learning. For more information on research-based instructional strategies, see *Classroom Instruction that Works* (Marzano et al., 2001).

Exhibit 6. Definitions of Categories of Instructional Strategies

Category	Definition
Setting Objectives and Providing Feedback	Helping students to understand the direction for learning, to establish personal goals, and to provide feedback relative to how they are progressing toward their goals
Cues, Questions, and Advance Organizers	Helping students retrieve what they know about a topic using questions that elicit inferences, cues, or hints about what is to come
Summarizing and Note Taking	Helping students distill and/or synthesize information accurately and concisely
Nonlinguistic Representation	Helping students represent and elaborate on knowledge using images rather than words. Representations include mental pictures, physical models, graphic organizers, movements, and pictographs or drawings.
Identifying Similarities and Differences	Engaging students in activities that help them examine similarities and differences among ideas, issues, events, etc., by engaging in mental processes such as comparing, classifying, creating metaphors, and creating analogies
Generating and Testing Hypotheses	Engaging students in activities that ask them to apply knowledge by generating and testing a hypothesis through problem solving, decision making, experimental inquiry, systems analysis, or investigation
Practice and Homework	Providing students with opportunities to deepen their understanding of content and their proficiency with skills
Reinforcing Effort and Providing Recognition	Teaching students about the relationship between effort and achievement and recognizing students for the progress they are making
Cooperative Learning	Using grouping strategies to help students learn

Include instructional strategies that increase students' motivation to learn.

As teachers plan instruction, there are several ways that they can foster students' motivation for learning. Perhaps the most straightforward way is by providing feedback to students on their progress toward standards. This involves clearly specifying the criteria for quality work, letting students know those criteria early in the unit, and giving feedback in terms of those criteria. Providing students with different examples of work — some that exceed the criteria, some that meet the criteria, and some that do not meet the criteria — helps students to develop a better understanding of what they need to do to demonstrate proficiency and to assess their own progress.

Another way to encourage student motivation is to plan ways for students to chart the relationship between their effort and their achievement of learning goals. During planning, teachers might want to identify real-life examples of the relationship between effort and achievement that are related to the unit. Sharing these examples with students helps them understand this connection and reinforces their efforts to work hard. Similarly, providing recognition for achievement of goals, especially through the use of effective praise, can motivate students to put forth their best effort and to work hard even when the task is difficult.

Although some might disagree, assigning homework is another strategy that can increase students' motivation. This is more likely to be true when the homework has a clear purpose that helps students learn the required knowledge. Homework can prepare students for new learning, increase understanding or extend concepts studied, or increase students' accuracy, fluency, or speed in using skills or processes. In planning a unit, it's important to be clear about which of these purposes each homework assignment addresses and to consider what each assignment will require of students (and their families) in terms of time and/or materials. Having a written homework policy helps everyone — students, parents, and teachers — be clear about the expectations for homework and increases the likelihood that assignments will be completed.

The way students are grouped for learning also affects their motivation to learn. This means that part of planning a unit is thinking about how students will be grouped for various activities. Many questions need to be considered, for example:

- For which activities will students work independently?
- For which activities will students work in pairs or small groups?
- How will students be assigned to groups?
- Will the groups remain the same throughout the unit?

Formal groups can be used when students need to process information deeply or to work on extended academic tasks that require each student to assume responsibility for part of the task. Informal groups (e.g., think-pair-share, turn to a partner) can be used to clarify tasks, focus students' attention, or provide time for closure. One caution — working cooperatively involves using skills (e.g., communication, decision making) that need to be taught and practiced. Teachers may need to include time in their plans for students to learn and practice these skills.

One last point about planning for instruction — it's important that the selected activities be arranged in a logical order. Planning activities that help students acquire and integrate knowledge, and following those with activities that help them practice, review, and apply that knowledge, helps with this task. Of course, throughout the unit, students will be in different stages of learning about particular aspects of the topic. This means there might be a mix of types of activities at some points in the unit and the teacher must be sure that the demands on students are reasonable (e.g., students are working on only one major project at one time). Like a good orchestra conductor, the teacher must be sure that all sections are working together and the end result is sweet harmony rather than cacophony.

QUESTION 3:

HOW WILL ONE KNOW IF STUDENTS HAVE LEARNED THE REQUIRED KNOWLEDGE?

There are three key actions teachers can take when planning to gather evidence of student learning:

- Align assessments with the targeted knowledge.
- Provide multiple opportunities for students to demonstrate their knowledge, including opportunities for self-assessment.
- Define criteria for levels of performance.

Align assessments with the targeted knowledge.

It is as important to align an assessment with the targeted knowledge as it is to align activities to the selected standards and benchmarks. Exhibit 7 provides guidance on which assessment types are appropriate for various types of knowledge. For example, if the targeted knowledge is a generalization or principle, then assessment should require students to construct a response. This might mean writing an essay, completing a performance task, creating a product such as a brochure, or making a presentation that requires the application of a complex reasoning process such as comparing or historical investigation.

Provide multiple opportunities for students to demonstrate their knowledge, including opportunities for self-assessment.

Teachers should plan for a variety of assessments throughout the unit and consider both formal and informal assessments for gathering evidence of learning. A chart like that in Exhibit 8 might be useful in this stage of planning. Informal assessments include conversations with students and observations of their comments and questions in class. Performance on homework assignments provides another source of information about how students' learning is progressing through the unit. A caution here — think carefully about how students' development of skills is assessed. Remember that developing proficiency with a skill, particularly a complex skill, requires a significant number of opportunities to practice (about 24 for 80 percent mastery). Teachers will want to be sure that students have had sufficient opportunities to practice, and have been provided with appropriate feedback, before assigning practice for homework. Otherwise students might practice the skill in incorrect ways. Once students can perform the skill correctly, asking them to track their progress in developing speed or accuracy with that skill is an appropriate way to gather evidence of learning from homework.

Exhibit 7. Matching Assessment Type with Knowledge Targets

Target to be Assessed	Assessment Method			
	Selected Response	Essay	Performance Assessment	Personal Communication
Vocabulary	Multiple choice, true/false, matching, and fill-in can sample mastery of vocabulary	Essay exercises can tap vocabulary knowledge	Not a good choice for this target	Can ask questions, evaluate answers, and infer mastery, but may be a time-consuming option
Facts/Details	Multiple choice, true/false, matching, and fill-in can sample mastery of facts and details	Essay exercises can tap knowledge of facts and details	Not a good choice for this target	Can ask questions, evaluate answers, and infer mastery, but a time-consuming option
Organizing Ideas Concepts Principles Generalizations	Higher order multiple choice questions can tap organizing ideas to some degree but not the best choice	Essay exercises can tap understanding of relationships among elements of knowledge	Performance tasks that require the use of thinking and reasoning skills can tap understanding of organizing ideas	Journals, learning logs, interviews, and discussions can provide information about students' understanding of organizing ideas
Skills	Can assess mastery of the knowledge prerequisite to skillful performance, but cannot rely on these to tap the skill itself	Can observe and evaluate skills as they are being performed (e.g., proficiency in carrying out steps in product development)		Strong match when skill is oral communication proficiency; also can assess mastery of knowledge prerequisite to skillful performance
Reasoning Processes	Can assess application of some patterns of reasoning	Written descriptions of complex problem solutions can provide a window into reasoning proficiency	Can watch students solve some problems or examine some products and infer about reasoning proficiency	Can ask student to "think aloud" or can ask follow-up questions to probe reasoning
Dispositions	Selected response questionnaire items can tap student feelings	Open-ended questionnaire items can probe dispositions	Can infer dispositions from behavior and products	Can talk with students about their feelings

Note: Adapted from *Student-Centered Classroom Assessment* (2nd ed.), by R. Stiggins, R., 1997, Upper Saddle River, NJ: Prentice-Hall.

Providing students with opportunities to self-assess encourages self-motivation because it helps them develop a sense of control over their learning. They are better able to judge the quality of their own work and understand what they need to do to improve their performance. Students can assess themselves in a number of ways — for example, by scoring their work using a rubric, reflecting on their work and writing about what they do and do not understand about a topic, or completing a checklist to determine if they have met the requirements of an assignment. As with other skills, teachers need to provide guidance about how to self-assess. One aspect of that guidance is providing clear criteria for levels of performance, which is discussed in the next section.

Exhibit 8. Planning for Assessment

Standard/Benchmark	Performance Task	Essay	Product	Observation	Short Constructed Response	Selected Response Quiz or Unit Test	Homework	Self-Assessment
Knows the physical and human characteristics of places on earth			Cluster diagram	During Small-group discussion of chapter 9 of text		Unit test	Assignment #2	
Knows how to use and construct geographic tools			Political map		Map analysis	Map quiz		Checklist for constructing maps
Knows significant people and events in U. S. history			Timeline and analysis		Quiz on chapter 10 in text	Unit test		
Understands how economic, political, cultural, and social processes interact to shape patterns of human population, interdependence, cooperation, & conflict	Debate on U.S. options in Southwest Asia	Unit test question #10					Assignments #4 & #5	Reflection for portfolio entry

Define criteria for levels of performance.

Many students complain that they do not know what the teacher expects until after the first test. But if we want students to produce quality work, then it makes sense to be clear about what good performance looks like before the test. Developing and sharing the criteria for quality work early in the unit helps students understand what is expected of them. In some schools, there are general rubrics for writing (e.g., Six Trait) and mathematics problem solving that all teachers use. This consistency across grade levels helps students internalize the criteria for quality work. Exhibits 9 and 10 provide general rubrics for declarative knowledge and procedural knowledge. These rubrics can be modified for particular content and skills or processes. For more examples of rubrics, teachers might visit online sources such as <http://rubistar.4teachers.org/index.php>

Exhibit 9. Generic Rubric for Information

4	The student has a complete and detailed understanding of the information important to the topic.
3	The student has a complete understanding of the information important to the topic.
2	The student has an incomplete understanding of the topic or misconceptions about some of the information.
1	The student has an incomplete understanding of the topic and misconceptions about much of the information.
0	Not enough information to make a judgment.

Note: From *A Comprehensive Guide to Designing Standards-Based Districts, Schools, and Classrooms*, by R. J. Marzano & J. S. Kendall, 1996, Aurora, CO: Mid-continent Research for Education and Learning.

Exhibit 10. Generic Rubric for Skills or Processes

4	The student performs the skill or process accurately and with fluency. The student understands the key features of the skill or process.
3	The student performs the skill or process accurately but not automatically.
2	The student makes some significant errors when performing the skill or process but can do the basic steps.
1	The student makes many significant errors when performing the skill or process and cannot do the basic steps.
0	Not enough information to make a judgment.

Note: From *A Comprehensive Guide to Designing Standards-Based Districts, Schools, and Classrooms*, by R. J. Marzano & J. S. Kendall, 1996, Aurora, CO: Mid-continent Research for Education and Learning.

In summary, assessment is an integral part of unit planning, not an afterthought. Once decisions have been made about the targets for learning, the next step is to think about how students will demonstrate that learning. Planning for assessment involves thinking about the multiple and different ways that evidence will be gathered during the unit to provide feedback to students about their progress so they can make “mid-course corrections” as well as at the end of the unit to determine the extent to which students have understood and mastered the targeted knowledge.

QUESTION 4:

HOW CAN THE UNIT BE IMPROVED?

There are two key actions that teachers can take to improve their units:

- Gather information about how students are responding to the activities of the unit.
- Reflect on the effectiveness of the unit using formal or informal processes, and revise the unit as necessary.

Gather information about how students are responding to the activities of the unit.

The first three sections of this guide explained some key features to consider in unit development. In the spirit of continuous improvement, however, unit development is never finished. Throughout the unit, teachers should gather information about how students are responding to the learning activities in terms of their level of engagement and how well the activities help different types of students learn the targeted knowledge. One way to gather information is to keep a log such as the one shown in Exhibit 11.

Exhibit 11. Teacher Log Regarding Student Response to Activities

Unit Name: Westward Expansion

Activity: Timeline of Key Events

Notes: Students liked working in small groups to determine key events to place on the timeline. They also liked using the computer to construct the timeline.

Reflect on the effectiveness of the unit using formal or informal processes, and revise the unit as necessary.

Some teachers engage in formal processes, such as lesson study (see e.g., Lewis, 2002), to improve their lessons and units. Others might use protocols to have structured conversations with colleagues about their units. For example, using the New York Peer Review Protocol (McDonald, Mohr, Dichter, & McDonald, 2003), a teacher provides a group of about eight colleagues with a description of the teaching plans for the unit, materials required, the standards and benchmarks addressed, the unit's assessment plan, and samples of student work from the assessments. The group provides feedback to the teacher based on criteria such as the degree of intellectual challenge and power of engagement of the unit, the quality of the assessment plan, and the relation of the activities and materials to the targeted standards and benchmarks. The teacher then revises the unit based on this feedback.

Alternatively, teachers might choose to reflect individually on the success of the unit by asking themselves:

- What went well?
- What did the evidence tell me?
- What would I do differently next time?
- What did I learn?

For a closer examination of the success of the unit, teachers might reflect specifically on the following more detailed questions:

- How effective were the materials (e.g., texts, speakers, internet sites) used in the unit?
- Were the materials more effective for some students than others?
- Were the activities aligned with the targeted benchmarks?
- Did the activities address students' common misconceptions or misunderstanding about the topic?
- Was the amount of time allotted for the various activities appropriate?
- Were the activities more engaging for some students than others?
- Were the assessments aligned with the targeted benchmarks?
- Are there other ways that students could demonstrate their knowledge?
- How useful were the formative assessments for adjusting instruction? Were the assessments given at critical times?
- How well did the rubrics help students understand the criteria for quality work?
- To what extent did the feedback provided to students help them improve their performance?

Reflecting on a unit and its use will help determine how to refine the unit before using it again. Students will benefit and so will other teachers who use the unit.

QUESTION 5:

HOW CAN THE UNIT BE PREPARED FOR USE BY OTHERS?

There are two key actions teachers can take to prepare their units for use by others:

- Prepare a detailed cover page.
- Present the unit in an organized manner, including all of the essential elements.

Prepare a detailed cover page.

To ensure that the fruits of their labors don't go unappreciated, teachers can take several steps to prepare their unit for sharing with others. The first step is to prepare a cover page that includes the following information:

- A clear concise title for the unit that describes the content
- The grade or course for which the unit was designed, noting any special attributes of the class (e.g., advanced, self-contained special education, multi-age)
- A time frame for the unit (in terms of the number of lessons, periods, weeks, or hours)
- Prerequisites for the unit
- A narrative description of the unit
- Name and contact information for the author(s) of the unit

Present the unit in an organized manner, including all of the essential elements.

Most teachers appreciate good ideas shared by other teachers. But often, the good ideas come with insufficient information to be put to effective use. Presenting the unit in an organized manner is part of helping others use it effectively. Some teachers find it useful to present the unit using “visual maps,” such as that shown in Exhibit 12. Others present the information in chart form as in Exhibits 13 and 14.

Regardless of the form of presentation, the information provided to others should clearly identify the standards and benchmarks that are the focus of the unit, describe the activities that are aligned with the standards and benchmarks, and identify the resources that are needed for each activity. The activities should be arranged in a logical order to make sure that students have opportunities to acquire and integrate knowledge and then to practice, review, and apply the knowledge. The author should provide information about instructional strategies and the assessments, indicating which are used for formative purposes and which for summative purposes, and attach the associated rubrics and checklists.

To complete the picture, the author should be sure to include an annotated bibliography and any appendices associated with the unit. Appendices might include tips for teaching the unit or suggestions for modifications to activities or assessments. Now it's time to share the wealth!

Exhibit 12. Visual Map of a Unit

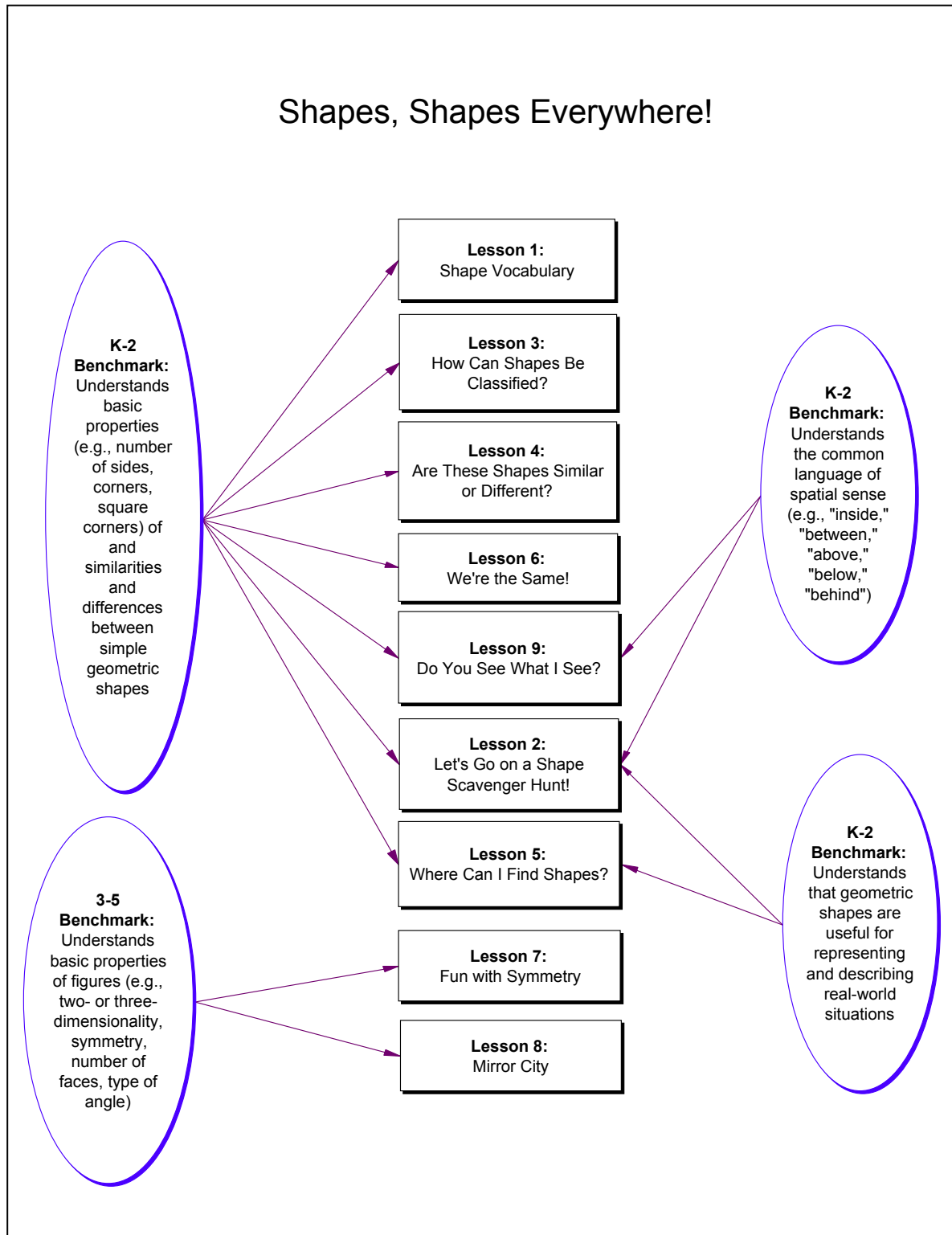


Exhibit 13. Chart for Displaying Standards and Benchmarks Represented in a Unit

Type	Standards	Benchmarks
Content-specific	Uses the general skills and strategies of the reading process	<ul style="list-style-type: none"> • Understands that characters have specific traits that distinguish one character from another • Applies the reading process to simple historical fiction • Understands that reaction to a text will change throughout a text • Predicts before reading and uses the text to confirm/disconfirm predictions
	Uses the general skills and strategies of the writing process	<ul style="list-style-type: none"> • Writes compositions that show an awareness of purpose
	Gathers and uses information for research purposes	<ul style="list-style-type: none"> • Uses graphic organizers to gather and record information
Cross-discipline	Understands and applies basic principles of presenting an argument	<ul style="list-style-type: none"> • Uses facts from books, articles, and databases to support an argument
	Applies decision making techniques	<ul style="list-style-type: none"> • Analyzes important decisions made by people in the past in terms of possible alternatives they were considering
Life skills	Demonstrates perseverance	<ul style="list-style-type: none"> • Persists in the face of difficulty

Exhibit 14. Chart for Organizing Information in Part of a Unit

Standard: Uses the general skills and strategies of the reading process			
Benchmark: Understands that characters have specific traits that distinguish one character from another			
Supporting Knowledge	Research based strategies	Selected Activities	Resources
<ul style="list-style-type: none"> - Organizing ideas - Details - Facts - Vocabulary - Processes - Skills 	<p><u>Acquire and Integrate</u></p> <ul style="list-style-type: none"> - Cues, Questions, Advance organizers - Summarizing and Note Taking - Nonlinguistic Representation 	<ul style="list-style-type: none"> - Give students advance organizers that show different characters. Read a short story to them, and ask them to individually record words that describe what each character in the story is like. - Introduce character labels and have students work in small groups to determine how they would label each character from the story. Have them share their results with at least two other groups. - Have students read the first chapter in <i>The Cabin Faced West</i>, identify the characters in the story so far, and create a nonlinguistic representation for each character that depicts his/her traits. Ask them to share their representations with a partner. As students continue to read through the chapters, ask them to add to these nonlinguistic representations. - Ask various students to share with the entire class how creating the nonlinguistic representation helped them gain a better understanding of each character. - Provide verbal feedback on nonlinguistic representations while observing partner groups. - Have students work in small groups to make comparisons among the various characters in the story. Ask them to share their comparison with one other group. 	<p>Short story including several different types of characters</p> <p><i>The Cabin Faced West</i></p> <p>Paper for nonlinguistic representation</p> <p>Graphic organizer for comparison</p>
<p>Understands that although the characters may have some traits in common, they usually don't have all traits in common.</p> <p>There are specific labels for characterizing characters based on certain traits</p> <ul style="list-style-type: none"> - protagonist - antagonist - dynamic character - static character <p>A character trait is a characteristic or behavior of an individual that is typical, enduring, or habitual</p>	<p><u>Practice, Review, and Apply</u></p> <ul style="list-style-type: none"> - Practice - Identifying Similarities and Differences - Generating and Testing Hypotheses <p><u>Enhancing Motivation to Learn</u></p> <ul style="list-style-type: none"> - Providing Feedback - Reinforcing Effort - Providing Recognition - Homework - Cooperative Groups 		
<p>Evidence of Student Learning</p> <ul style="list-style-type: none"> - contents of nonlinguistic representation of characters (formative) - notes on student presentations of nonlinguistic representations (formative) - graphic organizer for comparison of characters (formative) - observations of group work (formative) 			

SUMMARY OF STEPS FOR DEVELOPING A STANDARDS-BASED UNIT

1. What knowledge will students be learning?

- Review the standards and benchmarks for the grade or course.
- Determine a focus for the unit.
- Consider how different kinds of standards might be included in the unit.
- Select standards and benchmarks that address the focus.
- Analyze the benchmarks to determine the knowledge embedded in them.
- Identify ways to share learning goals with students and assist them to set their own learning goals related to the selected benchmarks.

2. What will be done to help students learn the required knowledge?

- Align activities with the selected standards and benchmarks.
- Incorporate instructional strategies that help students acquire and integrate knowledge, and practice, review, and apply knowledge.
- Include instructional strategies that increase students' motivation to learn.

3. How will one know if students have learned the required knowledge?

- Align assessments with the targeted knowledge.
- Provide multiple opportunities for students to demonstrate their knowledge, including opportunities for self-assessment.
- Define criteria for levels of performance.

4. How can the unit be improved?

- Gather information about how students are responding to the activities of the unit.
- Reflect on the effectiveness of the unit using formal or informal processes, and revised the unit as necessary.

5. How can the unit be prepared for use by others?

- Prepare a detailed cover page.
- Present the unit in an organized manner, including all of the essential elements.

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