

Forms and FAQs

The  
Understanding  
by Design  
• **Guide** to •

• **Creating  
High-Quality  
Units**

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## Forms and FAQs

The figures (worksheets and examples) printed in the book are basic to exploring Understanding by Design. Those figures, along with additional worksheets and FAQs, are included in this download.

**NOTE:** To access individual figures, click on the icon for the page with a bookmark. Then click on the title of the form to go directly to that page.

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**Outline of Modules**

Stage 1—Desired Results	Stage 2—Evidence	Stage 3—Learning Plan
Module A: The Big Ideas of UbD		
Module B: The UbD Template		
Module C: Starting Points		
Module D: Developing an Initial Unit Sketch		
Module E: Different Types of Learning Goals	Module F: Essential Questions and Understandings	Module G: Determining Evidence of Understanding and Developing Assessment Tasks
Module H: Learning for Understanding		

Figure A.1

### The Logic of Backward Design

**Purpose:** To illustrate and practice backward-design planning and thinking.

**Directions:** Sketch out a unit idea in the three stages of backward design. Use the driving example as a model. You might find it helpful to start with a simple nonacademic goal—for example, successfully “plan a trip” or “cook a meal.”

Stage 1	Stage 2	Stage 3
<p><b>If the desired end result is for learners to... →</b></p>	<p><b>then you need evidence of the learners' ability to... →</b></p>	<p><b>then the learning events need to...</b></p>
<p>Drive in heavy traffic with aggressive and inattentive drivers without accident or anger.</p>	<p>Handle real as well as simulated driving conditions in which defensive driving is required by traffic and behavior of other drivers.</p>	<p>Help novices become skilled in handling the automobile; help them learn and practice defensive driving in a variety of situations; help them learn to defuse anger using humor and different thought patterns, etc.</p>

Figure A.2

## UbD in a Nutshell

<p><b>Stage 1: Desired Results</b></p> <p>What long-term transfer goals are targeted? What meanings should students make in order to arrive at important understandings? What essential questions will students explore? What knowledge and skill will students acquire? What established goals/standards are targeted?</p> <p><b>Stage 2: Evidence</b></p> <p>What performances and products will reveal evidence of meaning-making and transfer? By what criteria will performance be assessed, in light of Stage 1 desired results? What additional evidence will be collected for all Stage 1 desired results? Are the assessments aligned to all Stage 1 elements?</p> <p><b>Stage 3: Learning Plan</b></p> <p>What activities, experiences, and lessons will lead to achievement of the desired results and success at the assessments? How will the learning plan help students with acquisition, meaning-making, and transfer? How will the unit be sequenced and differentiated to optimize achievement for all learners? How will progress be monitored? Are the learning events in Stage 3 aligned with Stage 1 goals and Stage 2 assessments?</p>	<p><b>The Eight Tenets of UbD</b></p> <ol style="list-style-type: none"><li>1. UbD is a way of thinking purposefully about curricular planning and school reform. It offers a three-stage design process, a set of helpful design tools, and design standards—not a rigid program or prescriptive recipe.</li><li>2. The primary goal of UbD is student understanding—the ability to make meaning of “big ideas” and to transfer learning.</li><li>3. UbD unpacks and transforms content standards into the relevant Stage 1 elements and appropriate assessments in Stage 2.</li><li>4. Understanding is revealed when students autonomously transfer their learning through authentic performance. Six facets of understanding—the capacities to <i>explain</i>, <i>interpret</i>, <i>apply</i>, <i>shift perspective</i>, <i>empathize</i>, and <i>self-assess</i>—serve as indicators of understanding.</li><li>5. Teachers are coaches of understanding, not mere purveyors of content or activity. They design for and support meaning-making and transfer by the learner and they adjust to achieve intended results based on constant monitoring.</li><li>6. Planning is best done backward from the desired results and the transfer tasks that embody the goals. The three stages (Desired Results, Evidence, Learning Plan) must align for the unit to be most effective.</li><li>7. Regular reviews of curriculum against design standards enhance curricular quality and effectiveness.</li><li>8. UbD reflects a continuous-improvement approach. The result of curriculum designs—student performance—informs needed adjustments.</li></ol>
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Figure A.2

**UbD in a Nutshell** (*continued*)

<p><b>Stage 1 in a Nutshell</b>  <b>A Transfer Goal</b></p> <ul style="list-style-type: none"> <li>• States the long-term accomplishments that students should be able to <i>do</i> with knowledge and skill, on their own.</li> <li>• Answers the questions “Why should I learn this?” “What can I do with this?”</li> </ul> <p>(Modules B, E, &amp; G; UbD2*, pp. 39–43, 78–81)</p> <p><b>An Essential Question</b></p> <ul style="list-style-type: none"> <li>• Is open ended; has no simple right answer.</li> <li>• Is meant to be investigated, argued, looked at from different points of view.</li> <li>• Encourages active meaning-making by the learner about important ideas.</li> <li>• Raises other important questions.</li> <li>• Naturally arises in everyday life and/or in “doing” the subject.</li> <li>• Constantly and appropriately recurs; it can fruitfully be asked and reasked over time.</li> </ul> <p>(Modules B &amp; H, also E &amp; G; UbD2 Chapter 5, pp. 105–125)</p> <p><b>Stage 1: Desired Results</b>  <b>An Understanding</b></p> <ul style="list-style-type: none"> <li>• Cannot be simply transmitted; it must be “earned” by the learner.</li> <li>• Is a meaningful “big idea” or the “moral of the story” of the unit.</li> <li>• Makes sense of otherwise-discrete facts; it “connects the dots.”</li> <li>• Is transferable to other contexts.</li> <li>• Is usually not obvious and may be counterintuitive; therefore prone to misunderstanding.</li> <li>• Is an inference, stated as a specific generalization: “the student will understand THAT . . .”</li> </ul> <p>(Modules B &amp; H, also E &amp; G; UbD2 Chapter 5, pp. 126–145)</p> <p><b>Knowledge and Skill</b></p> <ul style="list-style-type: none"> <li>• Specify what students should know and be able to do as a result of the unit (usually stated in established standards and benchmarks).</li> <li>• Reflect both the targeted knowledge and skill and the enabling knowledge and skill implied in the understanding-related goals (Module E).</li> </ul>	<p><b>Stage 1 in a Nutshell</b></p> <ol style="list-style-type: none"> <li>1. A focus in Stage 1 is making sure that our learning goals are framed in terms of important accomplishments reflective of understanding.</li> <li>2. The goal of understanding has two connotations: (a) making “meaning” of big ideas and (b) autonomous “transfer” of learning to new situations.</li> <li>3. Research shows that students need to grasp the big ideas if they are to make sense of their lessons, and transfer their learning to new lessons, novel problems, and real-world situations.</li> <li>4. “Transfer” refers to the ultimate desired accomplishment: what, in the end, should students be able to <i>do</i> with all this content, on their own, if this and other related units are successful?</li> <li>5. It is important to state the transfer goals explicitly, even if such goals are not explicitly noted in the established standards.</li> <li>6. We must be mindful of potential student <i>mis</i>understandings and transfer deficits. Establishing clear and explicit goals also means predicting possible trouble spots in learning and performance.</li> <li>7. Resist listing all possible knowledge and skill goals that are in any way related to the unit topic. Identify only those goals that you plan to directly assess in Stage 2 and explicitly address in Stage 3.</li> </ol>
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\*UbD2 references *Understanding by Design*, 2nd ed.

Figure A.2

**UbD in a Nutshell** (*continued*)

<p><b>Stage 2 in a Nutshell</b></p> <p><b>Evidence</b></p> <p><b>Performance Task(s)</b></p> <ul style="list-style-type: none"> <li>• Are needed as evidence of understanding because we have to see if the learners can apply their learning to various issues, problems, situations, and contexts.</li> <li>• Reflect the six facets of understanding: explanation, interpretation, application, perspective, empathy, and self-understanding.</li> <li>• Establish real-world contexts, demands, messiness, audiences, and purposes.</li> <li>• Should be written in the GRASPS format to make assessment tasks more authentic and engaging.</li> <li>• Are evaluated using valid criteria and indicators, reflective of not only quality performance but related to the Desired Results of Stage 1.</li> </ul> <p>(Modules B &amp; F; UbD2, pp. 146–171)</p> <p><b>Other Evidence</b></p> <ul style="list-style-type: none"> <li>• Identifies needed assessments of Stage 1 goals; includes conventional tests, quizzes, assignments, and observations to round out the assessment.</li> <li>• Can overlap the performance-based evidence, thereby increasing the reliability of the overall assessment (especially if the performance task was done by a group).</li> </ul> <p>(Module B)</p>	<p><b>Stage 2 in a Nutshell</b></p> <ol style="list-style-type: none"> <li>1. The focus in Stage 2 is “valid evidence”—making sure that what we assess and how we assess follows logically from the Stage 1 goals.</li> <li>2. Assessing for understanding requires evidence of the students’ ability to insightfully explain or interpret their learning—to “show their work” and to “justify” or “support” their performance/product with commentary.</li> <li>3. Assessing for understanding also requires evidence of the students’ ability to apply their learning in new, varied, and realistic situations—transfer—in which they must “do” the subject as opposed to merely answering pat questions.</li> <li>4. The six facets of understanding provide a helpful framework for building appropriate assessment tasks:             <ul style="list-style-type: none"> <li>• Explain: the student generalizes, makes connections, has a sound theory, can put in his own words.</li> <li>• Interpret: the student offers a plausible and supported account of text, data, experience.</li> <li>• Apply: the student can transfer, adapt, adjust, address novel issues and problems.</li> <li>• Perspective: the student can see from different points of view.</li> <li>• Empathy: the student can walk in the shoes of people/characters.</li> <li>• Self-understanding: the student can self-assess, see the limits of her understanding, reflect metacognitively.</li> </ul> </li> <li>5. GRASPS is an acronym to help designers construct authentic scenarios for performance tasks:             <ul style="list-style-type: none"> <li>• <i>Goal</i>: the goal or challenge statement in the scenario</li> <li>• <i>Role</i>: the role the student plays in the scenario</li> <li>• <i>Audience</i>: the audience/client will address the student</li> <li>• <i>Situation</i>: the particular setting/context and its constraints and opportunities</li> <li>• <i>Performance</i>: the specific performance or product expected</li> <li>• <i>Standards</i>: the standards/criteria by which the work will be judged</li> </ul> </li> </ol> <p>(Modules B &amp; F; UbD2, pp. 146–171)</p>
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Figure A.2

**UbD in a Nutshell** (*continued*)

<p><b>Stage 3 in a Nutshell</b> <b>Learning Plan and Learning Events</b></p> <ul style="list-style-type: none"> <li>• Should be derived from the goals of Stage 1 and the assessments of Stage 2 to ensure alignment and effectiveness of the activities.</li> <li>• Should highlight student acquisition, meaning-making, or transfer.</li> <li>• Are enhanced when the WHERETO elements are included.</li> <li>• Should be checked/coded against various best practices to ensure maximal engagement and effectiveness.</li> </ul> <p><b>Teaching</b></p> <ul style="list-style-type: none"> <li>• Should reflect the instructional approaches most appropriate to the goals (not what is easiest or most comfortable for the teacher).</li> <li>• Should employ resources most appropriate to the goals (not simply march through a textbook or commercial program).</li> <li>• Be responsive to differences in learners' readiness, interests, and preferred ways of learning.</li> </ul> <p>(Modules B, D, &amp; H; UbD2 Chapters 9 &amp; 10, pp. 197–222)</p>	<p><b>Stage 3 in a Nutshell</b></p> <ol style="list-style-type: none"> <li>1. The focus in Stage 3 is making sure that <i>what</i> we teach and <i>how</i> we teach follows logically from and aligns with the Stage 1 and Stage 2 goals.</li> <li>2. The learning events are designed to address three interrelated goals: acquisition, meaning-making, and transfer.</li> <li>3. Teaching for understanding requires that students be given numerous opportunities to draw inferences and make generalizations for themselves (with teacher support). Understandings cannot be simply told; they have to be actively constructed by the learner.</li> <li>4. WHERETO is an acronym for considering and self-assessing the key elements and logic of a learning plan:             <ul style="list-style-type: none"> <li>• <i>Where</i>: ensuring that the student sees the big picture, has answers to the “Why?” questions, and knows the final performance expectations as soon as possible</li> <li>• <i>Hook</i>: immersing the student immediately in the ideas and issues of the unit, engaging the student in thought-provoking experiences/challenges/questions at the heart of the unit</li> <li>• <i>Equip and Experience</i>: providing the student with the tools, resources, skill, and information needed to achieve the desired understandings and successfully accomplish the performance tasks</li> <li>• <i>Rethink</i>: enhancing understanding by shifting perspective, considering different theories, challenging prior assumptions, and introducing new evidence and ideas; also provides the impetus and opportunity for revising and polishing prior work.</li> <li>• <i>Evaluate</i>: ensuring that students get diagnostic and formative feedback, and opportunities to self-assess and self-adjust</li> <li>• <i>Tailor</i>: personalizing the learning through differentiated instruction, assignments, and assessments without sacrificing validity or rigor</li> <li>• <i>Organize</i>: sequencing the work to suit the understanding goals (e.g., questioning the flow provided by the textbook, which is typically organized around discrete topics)</li> </ul> </li> </ol> <p>(Modules B, D, &amp; H; UbD2 Chapters 9 &amp; 10; WHERETO, pp. 197–222)</p>
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Figure A.3

### What Is “Understanding”?

**Purpose:** To clarify the meaning of *understand* and *understanding*.

**Directions:** Consider, what does it mean to understand something? How do you show your understanding? What are indicators of understanding? Complete the stems in each column to play out the various meanings of the terms *understand* and *understanding*. Consider the terms in general (here) and for particular topics (in Figure A.4). Proceed in either direction between the two exercises.

<ul style="list-style-type: none"><li>• When someone <i>really</i> understands, that person can _____.</li><li>• You know that someone really understands when he _____.</li></ul>	<ul style="list-style-type: none"><li>• When someone doesn't get it (even though she might know a lot or have some skill), what <i>can't</i> she do? _____.</li><li>• You know that someone really doesn't understand when she _____.</li></ul>

Figure A.4

### What Is “Understanding” of Specific Topics?

**Purpose:** To clarify the meaning of *understand* and *understanding* of specific topics or subjects.

**Directions:** Consider, what does it mean to “get” fractions or really understand *Charlotte’s Web*? How does understanding a subject differ from just knowing lots of facts? Complete the stems in each column to play out the various meanings of the terms *understand* and *understanding* as they relate to specific topics for a unit, course, or program. It is up to you to decide whether to begin here or with the more general version of the exercise (Figure A.3).

<ul style="list-style-type: none"> <li>• When someone <i>really</i> understands _____, that person can _____.</li> <li>• You know that someone really understands _____ when he _____.</li> </ul>	<ul style="list-style-type: none"> <li>• When someone doesn’t get _____, (even though she might know a lot or have some skill), what <i>can’t</i> she do?</li> <li>• You know that someone really doesn’t understand _____ when she _____.</li> </ul>

Figure A.5

## The Best Designs for Learning

**Purpose:** To infer the characteristics of the best designs for learning from your own experiences in order to apply them as criteria for unit design and implementation.

**Directions:**

**Part 1**—Think back to your many prior experiences with well-designed learning, both in and out of school. What was the most effective learning experience you have ever encountered? What features of the learning process—not the teacher’s style or your interests and talents—made the learning so engaging, effective, and helpful for you and others? Consider the challenges posed, sequence of activities, climate established, nature of the activities and assessments, feedback provided, groupings, resources, how learners’ needs were addressed, and other elements.

Briefly describe the learning experience and its salient features here:

**Part 2**—To further consider the qualities of good curriculum design and its effect on learning, we suggest that you reflect upon a few of the best-designed learning experiences you were ever involved in, and generalize from them. If you are using this exercise in a class or study group, we suggest that participants reflect on, share and generalize from their experience in small groups, then as a whole group. *What was the best-designed learning you ever experienced? What is in general true of good design, regardless of the course content or the style of the teacher?*

The best-designed learning...

Figure A.6

## Thinking About “Understanding”

**Directions:** Select one of the following quotations that you agree with or that resonates with you. Explain why you like the quote and, if possible, give an example to illustrate the idea.

1. On *education*: “That which discloses to the wise and disguises from the foolish their lack of understanding.”  
—Ambrose Bierce
2. “Only in education, never in the life of farmer, sailor, merchant, physician, or scientist, does knowledge mean primarily a store of information.” —John Dewey
3. “The most characteristic thing about mental life . . . is that one constantly goes beyond the information given.” —Jerome Bruner
4. “Students develop flexible understanding of when, where, why, and how to use their knowledge to solve new problems if they learn how to extract underlying principles from their learning experiences.”  
—Bransford, Cocking, and Brown, *How People Learn*
5. “Teachers . . . are particularly beset by the temptation to tell what they know . . . Yet no amount of information, whether of theory or fact, in itself improves insight and judgment or increases ability to act wisely.”  
—Charles Gragg, “Because Wisdom Can’t Be Told”
6. “Content should be chosen so as to exemplify the representative ideas of the disciplines. Representative ideas are concepts that afford an understanding of the main features of the discipline. They are not minor or subordinate ideas; they disclose the essence of the discipline. They are elements of the subject that stand for the whole of important aspects of it . . . They are epitomes of the subject.” —Philip Phenix, *Realms of Meaning*
7. “I hear, I forget. I see, I remember. I do, I understand.” —Chinese proverb

**Thoughts:**

Figure B.1

**The UbD Template, Version 2.0**

Stage 1—Desired Results			
<p><b>Established Goals</b></p> <p>What content standards and program- or mission-related goal(s) will this unit address?</p> <p>What habits of mind and cross-disciplinary goal(s)—for example, 21st century skills, core competencies—will this unit address?</p>	<b>Transfer</b>		
	<p><i>Students will be able to independently use their learning to ...</i></p> <p>What kinds of long-term independent accomplishments are desired?</p>		
	<b>Meaning</b>		
	<table border="1" style="width: 100%;"> <tr> <td style="width: 50%;"> <p><b>UNDERSTANDINGS</b></p> <p><i>Students will understand that ...</i></p> <p>What specifically do you want students to understand? What inferences should they make?</p> </td> <td style="width: 50%;"> <p><b>ESSENTIAL QUESTIONS</b></p> <p><i>Students will keep considering ...</i></p> <p>What thought-provoking questions will foster inquiry, meaning-making, and transfer?</p> </td> </tr> </table>	<p><b>UNDERSTANDINGS</b></p> <p><i>Students will understand that ...</i></p> <p>What specifically do you want students to understand? What inferences should they make?</p>	<p><b>ESSENTIAL QUESTIONS</b></p> <p><i>Students will keep considering ...</i></p> <p>What thought-provoking questions will foster inquiry, meaning-making, and transfer?</p>
	<p><b>UNDERSTANDINGS</b></p> <p><i>Students will understand that ...</i></p> <p>What specifically do you want students to understand? What inferences should they make?</p>	<p><b>ESSENTIAL QUESTIONS</b></p> <p><i>Students will keep considering ...</i></p> <p>What thought-provoking questions will foster inquiry, meaning-making, and transfer?</p>	
<b>Acquisition</b>			
<table border="1" style="width: 100%;"> <tr> <td style="width: 50%;"> <p><i>Students will know ...</i></p> <p>What facts and basic concepts should students know and be able to recall?</p> </td> <td style="width: 50%;"> <p><i>Students will be skilled at ...</i></p> <p>What discrete skills and processes should students be able to use?</p> </td> </tr> </table>	<p><i>Students will know ...</i></p> <p>What facts and basic concepts should students know and be able to recall?</p>	<p><i>Students will be skilled at ...</i></p> <p>What discrete skills and processes should students be able to use?</p>	
<p><i>Students will know ...</i></p> <p>What facts and basic concepts should students know and be able to recall?</p>	<p><i>Students will be skilled at ...</i></p> <p>What discrete skills and processes should students be able to use?</p>		



Figure B.1

The UbD Template, Version 2.0 (continued)

Stage 2—Evidence		
Code	Evaluative Criteria	
Are all desired results being appropriately assessed?	What criteria will be used in each assessment to evaluate attainment of the desired results?	<p>PERFORMANCE TASK(S):</p> <p><i>Students will show that they really understand by evidence of ...</i></p> <p>How will students demonstrate their understanding (meaning-making and transfer) through complex performance?</p>
	Regardless of the format of the assessment, what qualities are most important?	<p>OTHER EVIDENCE:</p> <p><i>Students will show they have achieved Stage 1 goals by ...</i></p> <p>What other evidence will you collect to determine whether Stage 1 goals were achieved?</p>

Figure B.1

The UbD Template, Version 2.0 (continued)

Stage 3—Learning Plan		
<b>Code</b>	<p>What pre-assessments will you use to check student’s prior knowledge, skill levels, and potential misconceptions?</p> <p style="text-align: right;"><i>Pre-Assessment</i></p>	
<p>What’s the goal for (or type of) each learning event?</p>	<p style="text-align: center;">Learning Events</p> <p><i>Student success at transfer, meaning, and acquisition depends upon . . .</i></p> <ul style="list-style-type: none"> <li>• Are all three types of goals (acquisition, meaning, and transfer) addressed in the learning plan?</li> <li>• Does the learning plan reflect principles of learning and best practices?</li> <li>• Is there tight alignment with Stages 1 and 2?</li> <li>• Is the plan likely to be engaging and effective for all students?</li> </ul>	<p style="text-align: right;"><i>Progress Monitoring</i></p> <ul style="list-style-type: none"> <li>• How will you monitor students’ progress toward acquisition, meaning, and transfer, during lesson events?</li> <li>• What are potential rough spots and student misunderstandings?</li> <li>• How will students get the feedback they need?</li> </ul>

Figure B.2

**Driver's Education Unit**

Stage 1—Desired Results		
<p><b>Established Goals</b></p> <p>Drive the vehicle safely and responsibly.</p> <p>Negotiate the road correctly.</p> <p>Comply with signals, signs and road markings.</p> <p>Interact appropriately with other road users.</p> <p>Minimize risk when driving.</p> <p>Learn from experience.</p>	<b>Transfer</b>	
	<p><i>Students will be able to independently use their learning to ...</i></p> <p>T1 Drive courteously and defensively without accidents or needless risk. T2 Anticipate and adapt their knowledge of safe and defensive driving to various traffic, road, and weather conditions.</p>	
	<b>Meaning</b>	
	<p><b>UNDERSTANDINGS</b></p> <p><i>Students will understand that ...</i></p> <p>U1 Defensive driving assumes that other drivers are not attentive and that they might make sudden or ill-advised moves. U2 The time needed to stop or react is deceptively brief, thus requiring constant anticipation and attention. U3 Effective drivers constantly adapt to the various traffic, road, and weather conditions.</p>	<p><b>ESSENTIAL QUESTIONS</b></p> <p><i>Students will keep considering ...</i></p> <p>Q1 What must I anticipate and do to minimize risk and accidents when I drive? Q2 What makes a courteous and defensive driver?</p>
<b>Acquisition</b>		
<p><i>Students will know ...</i></p> <p>K1 The driving laws of their state, province, or country. K2 Rules of the road for legal, courteous, and defensive driving. K3 Basic car features, functions, and maintenance requirements (oil changes, etc.).</p>	<p><i>Students will be skilled at ...</i></p> <p>S1 Procedures of safe driving under varied traffic, road, and weather conditions. S2 Signaling/communicating intentions. S3 Quick response to surprises. S4 Parallel parking.</p>	

Source: Goals adapted from the Driving Standards Agency, United Kingdom. © Crown Copyright 2010. www.dsa.gov.uk.



Figure B.2

**Driver's Education Unit** *(continued)*

Stage 3—Learning Plan																											
Code	Pre-assessment of driving knowledge, skill, understandings, and attitudes using surveys and simulators			Pre-Assessment																							
	Learning Events			<i>Progress Monitoring</i>																							
<b>T</b>	<p><i>Student success at transfer, meaning, and acquisition depends upon ...</i></p> <p>Applying their learning, first off-road, then on-road. All instruction is carried out and formatively assessed under a five-level system of increased autonomy:</p> <ul style="list-style-type: none"> <li>• The skill is introduced.</li> <li>• The skill can be carried out under full instruction.</li> <li>• The skill can be carried out correctly only when prompted.</li> <li>• The skill can be carried out correctly with occasional prompting.</li> <li>• The skill can be carried out consistently without any prompting.</li> </ul>			<ul style="list-style-type: none"> <li>• Formative assessment and informal feedback by instructor as student tries to apply skills learned while driving off-road.</li> <li>• Look for common misconceptions and skill deficits, including                             <ul style="list-style-type: none"> <li>◦ Failure to check mirrors and peripheral vision.</li> <li>◦ Inaccurate responses to changing road conditions.</li> <li>◦ Failure to accurately perceive speed of other cars during merges and turns.</li> </ul> </li> </ul>																							
<b>M</b>	<p>Interpreting road conditions and the status of the automobile. Reflection and generalizations are promoted via discussion of the essential questions after each virtual and real-road experience. Written self-assessment is required after each driving experience. Expert driving is modeled via video and the driving instructor, and the driver generalizes about good (vs. poor) driving.</p>																										
<b>A</b>	<p>Learning the key skills of driving, the rules of the road, and basic car facts. Experience and equipping via direct instruction and video simulators are provided, including how to handle wet roads, dry roads, darkness, daylight, highway, city, country. Instruction on key laws and rules of the road, and practice tests are used.</p> <p>Separate skill development and real-world practice in</p> <table border="0" style="width: 100%;"> <tr> <td>Car Check</td> <td>Circles</td> <td>Safety Checks</td> <td>Pedestrian Crossings</td> </tr> <tr> <td>Controls and Instruments</td> <td>Highways</td> <td>Starting Up, Moving, and Stopping</td> <td>Turns</td> </tr> <tr> <td>Safe Positioning</td> <td>Reversing</td> <td>Mirrors</td> <td>Parking</td> </tr> <tr> <td>Signals</td> <td>Emergency Stopping</td> <td>Anticipation and Planning Ahead</td> <td>Darkness</td> </tr> <tr> <td>Use of Speed</td> <td>Weather Conditions</td> <td>Other Traffic</td> <td>Rules and Laws</td> </tr> <tr> <td>Intersections</td> <td>Security</td> <td>Passengers</td> <td>Loads</td> </tr> </table>				Car Check	Circles	Safety Checks	Pedestrian Crossings	Controls and Instruments	Highways	Starting Up, Moving, and Stopping	Turns	Safe Positioning	Reversing	Mirrors	Parking	Signals	Emergency Stopping	Anticipation and Planning Ahead	Darkness	Use of Speed	Weather Conditions	Other Traffic	Rules and Laws	Intersections	Security	Passengers
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Intersections	Security	Passengers	Loads																								

Source: Skills modified from the Driving Standards Agency, United Kingdom. © Crown Copyright 2010. www.dsa.gov.uk.

Figure B.3

### Unpacking Standards for Stage 1

Stage 1—Desired Results		
<p><b>Established Goals</b></p> <p>Common Core English Standards (Reading)</p> <p><i>Key Ideas and Details</i></p> <p>1. Cite textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.</p> <p>2. Determine a central idea of a text and how it is conveyed through particular details; provide a summary of the text distinct from personal opinions or judgments.</p> <p>8. Trace and evaluate the argument and specific claims in a text, distinguishing claims that are supported by reasons and evidence from claims that are not.</p>	<b>Transfer</b>	
	<p><i>Students will be able to independently use their learning to . . .</i></p> <ul style="list-style-type: none"> <li>• Cite textual evidence (and inferences drawn from the text), with no teacher prompting or scaffold, to support an analysis of what a newly encountered nonfiction text says.</li> <li>• Determine a central idea of a text and provide a neutral summary, without evaluation, of it; then, evaluate it.</li> </ul>	
	<b>Meaning</b>	
	<table border="1"> <tr> <td style="width: 50%;"> <p><b>UNDERSTANDINGS</b></p> <p><i>Students will understand that . . .</i></p> <ul style="list-style-type: none"> <li>• The text presents an argument, not just facts and opinions.</li> <li>• The reader’s first job is to follow the argument; then, you can critique it.</li> <li>• Key aspects of the argument may only be implied and thus need to be inferred.</li> </ul> </td> <td style="width: 50%;"> <p><b>ESSENTIAL QUESTIONS</b></p> <p><i>Students will keep considering . . .</i></p> <ul style="list-style-type: none"> <li>• What’s the author’s point? How does he support it? How valid is the support?</li> <li>• How would I best summarize the text?</li> <li>• Do I agree with the author?</li> </ul> </td> </tr> </table>	<p><b>UNDERSTANDINGS</b></p> <p><i>Students will understand that . . .</i></p> <ul style="list-style-type: none"> <li>• The text presents an argument, not just facts and opinions.</li> <li>• The reader’s first job is to follow the argument; then, you can critique it.</li> <li>• Key aspects of the argument may only be implied and thus need to be inferred.</li> </ul>
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<b>Acquisition</b>		
<table border="1"> <tr> <td style="width: 50%;"> <p><i>Students will know . . .</i></p> <ul style="list-style-type: none"> <li>• The text well enough to provide an accurate retelling of what the text says.</li> <li>• Key vocabulary in the text.</li> <li>• The elements of a valid argument.</li> </ul> </td> <td style="width: 50%;"> <p><i>Students will be skilled at . . .</i></p> <p>Providing a neutral summary.</p> <ul style="list-style-type: none"> <li>• Tracing the logic of an argument.</li> <li>• Evaluating the strength of an argument in a text.</li> <li>• Using reading strategies to identify main ideas and author purpose.</li> </ul> </td> </tr> </table>	<p><i>Students will know . . .</i></p> <ul style="list-style-type: none"> <li>• The text well enough to provide an accurate retelling of what the text says.</li> <li>• Key vocabulary in the text.</li> <li>• The elements of a valid argument.</li> </ul>	<p><i>Students will be skilled at . . .</i></p> <p>Providing a neutral summary.</p> <ul style="list-style-type: none"> <li>• Tracing the logic of an argument.</li> <li>• Evaluating the strength of an argument in a text.</li> <li>• Using reading strategies to identify main ideas and author purpose.</li> </ul>
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The Understanding by Design Guide to Creating High-Quality Units

Module B: The UbD Template

Figure B.4

**Unit Design Standards**

**Key:** 3 = Meets the standard; 2 = Partially meets the standard; 1 = Does not yet meet the standard

Stage 1	3	2	1	Feedback and Guidance
1. The listed transfer goals specify desired long-term, genuine accomplishment.				
2. The identified understandings reflect important, transferable ideas.				
3. The identified understandings are stated as full-sentence generalizations—“Students will understand that . . .”				
4. Essential questions are open-ended and thought provoking.				
5. Relevant standards, mission, or program goals are addressed explicitly in all three stages.				
6. The identified knowledge and skill are needed to address the established goals, achieve the targeted understanding(s), and support effective transfer.				
7. All the elements are aligned so that Stage 1 is focused and coherent.				
Stage 2				
8. The specified assessments provide valid evidence of all desired results; that is, Stage 2 aligns with Stage 1.				
9. The specified assessments include authentic transfer tasks based on one or more facets of understanding.				
10. The specified assessments provide sufficient opportunities for students to reveal their attainment of the Stage 1 goals.				
11. Evaluative criteria for each assessment are aligned to desired results.				
Stage 3				
12. Appropriate learning events and instruction will help learners				
a. Acquire targeted knowledge and skills.				
b. Make meaning of important ideas.				
c. Transfer their learning to new situations.				
13. The WHERETO elements are included so that the unit is likely to be engaging and effective for all learners. (See Figure A.2 online for explanation of WHERETO.)				
Overall				
14. All three stages are coherent and in alignment.				
15. The unit design is feasible and appropriate for this situation.				

Figure B.5

**Social Studies Unit Before UbD**

<b>Topic</b>
Topic: Westward Movement and Pioneer Life Social Studies—3rd Grade
<b>Activities</b>
<ol style="list-style-type: none"> <li>1. Read textbook section—“Life on the Prairie.” Answer the end-of-chapter questions.</li> <li>2. Read and discuss <i>Sarah Plain and Tall</i>. Complete a word-search puzzle of pioneer vocabulary terms from the story.</li> <li>3. Create a pioneer-life memory box with artifacts that reflect what life might be like for a child traveling west or living on the prairie.</li> <li>4. Prairie Day activities—Dress in pioneer clothes and complete seven learning stations:             <ol style="list-style-type: none"> <li>a. Churn butter</li> <li>b. Play 19th century game</li> <li>c. Send letter home with sealing wax</li> <li>d. Play “dress the pioneer” computer game</li> <li>e. Make a corn-husk doll</li> <li>f. Try quilting</li> <li>g. Do tin punching</li> </ol> </li> </ol>
<b>Assessments</b>
<ol style="list-style-type: none"> <li>1. Quiz on pioneer vocabulary terms from <i>Sarah Plain and Tall</i></li> <li>2. Answers to end-of-chapter questions on pioneer life</li> <li>3. Show-and-tell for memory box contents</li> <li>4. Completion of seven learning stations during Prairie Day</li> <li>5. Student reflections on the unit</li> </ol>

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Figure B.6

**Social Studies Unit**

Stage 1—Desired Results		
<p><b>Established Goals</b></p> <p>Students pose relevant questions about events they encounter in historical documents, eyewitness accounts, oral histories, letters, diaries, artifacts, photographs, maps, artworks, and architecture.</p> <p>Trace why their community was established, how individuals and families contributed to its founding and development, and how the community has changed over time, drawing on maps, photographs, oral histories, letters, newspapers, and other primary sources.</p>	<b>Transfer</b>	
	<p><i>Students will be able to independently use their learning to . . .</i></p> <ul style="list-style-type: none"> <li>• Seek out, compare, and critique different historical accounts.</li> <li>• Compare the lives of pioneers on the prairie and “pioneers” today, on their own.</li> <li>• View interactions of civilizations, cultures, and peoples with greater perspective and empathy.</li> </ul>	
	<b>Meaning</b>	
	<p><b>UNDERSTANDINGS</b></p> <p><i>Students will understand that . . .</i></p> <ul style="list-style-type: none"> <li>• Many pioneers had naïve ideas about the opportunities and difficulties of moving west.</li> <li>• People move for a variety of reasons—for new economic opportunities, greater freedoms, or to flee something.</li> <li>• Successful pioneers rely on courage, ingenuity, and collaboration to overcome hardships and challenges.</li> <li>• The settlement of the west threatened the lifestyle and culture of Native American tribes living on the plains.</li> <li>• History involves making sense of different “stories.”</li> </ul>	<p><b>ESSENTIAL QUESTIONS</b></p> <p><i>Students will keep considering . . .</i></p> <ul style="list-style-type: none"> <li>• Why do people move? Why did the pioneers leave their homes to head west?</li> <li>• How do geography and topography affect travel and settlement?</li> <li>• What is a pioneer? What is “pioneer spirit”?</li> <li>• Why did some pioneers survive and prosper while others did not?</li> <li>• Whose story is it?</li> <li>• What happens when cultures interact?</li> </ul>
	<b>Acquisition of Knowledge and Skill</b>	
<p><i>Students will know . . .</i></p> <ul style="list-style-type: none"> <li>• Key facts about the westward movement and pioneer life on the prairie.</li> <li>• Pioneer vocabulary terms.</li> <li>• Basic geography (travel routes of pioneers and location of their settlements).</li> <li>• Key factual information about Native American tribes living on the plains and their interactions with the settlers.</li> </ul>	<p><i>Students will be skilled at . . .</i></p> <ul style="list-style-type: none"> <li>• Using research skills (with guidance) to find out about life on the wagon train and prairie.</li> <li>• Expressing their findings orally and in writing.</li> </ul>	

Figure B.6

**Social Studies Unit** *(continued)*

Stage 2—Evidence	
Evaluative Criteria	<i>Students will show their learning by...</i>
<ul style="list-style-type: none"> <li>• Historically accurate</li> <li>• Well crafted</li> <li>• Revealing and informative</li> <li>• Good detail</li> <li>• Clear explanation</li> <li>• Mechanically sound</li> </ul>	<p><b>PERFORMANCE TASK(S):</b>            Evidence is needed of student ability to generalize from the pioneer experience. Ideas:</p> <ul style="list-style-type: none"> <li>• Create a museum display, including artifacts, pictures, and diary entries, depicting “a week in the life” of a family of settlers living on the prairie. (What common misunderstandings do folks today have about prairie life and westward settlement?) Explain how geography and topography affected pioneer travels and settlement.</li> <li>• Write 1 letter a day (each representing a month of travel) to a friend back east, describing your life on the wagon train and the prairie. Tell about your hopes and dreams, then explain what life on the frontier was really like. (Students may also draw pictures and explain orally.)</li> <li>• Formal oral presentation to teacher, parent, or aide: museum docent speech at an exhibit of 19th, 20th, and 21st century pioneers. How are we pioneers? How are modern pioneers like and unlike the people on the prairie?</li> <li>• Imagine that you are an elderly tribal member who has witnessed the settlement of the plains by the pioneers. Tell a story to your 8-year-old granddaughter about the impact of the settlers on your life. (This task may be done orally or in writing.)</li> </ul>
<ul style="list-style-type: none"> <li>• Well argued</li> <li>• Well spoken</li> </ul>	<p><b>OTHER EVIDENCE:</b></p> <ul style="list-style-type: none"> <li>• Oral and/or written response to one of the essential questions, using pioneer vocabulary in context.</li> <li>• Drawing(s) showing hardships of pioneer life.</li> <li>• Test on facts about westward expansion, life on the prairie, and basic geography.</li> <li>• Explanation of memory box contents.</li> <li>• Quiz on facts about Native American tribes living on the plains.</li> </ul>

Figure B.6

**Social Studies Unit** *(continued)*

Stage 3—Learning Plan
Summary of Key Learning Events and Instruction
<p>The key to the transfer and meaning goals is that students need to be helped to process Prairie Day, the readings, and other events in terms of the essential questions. The aim is for students to say, in their own words, what prairie life was like and how pioneers then compare to pioneers now.</p> <ul style="list-style-type: none"><li>• Pre-assess: Use K-W-L to assess students' prior knowledge and identify further student-identified learning goals for the unit.</li><li>• Revise Prairie Day activities (e.g., substitute Oregon Trail 2 computer simulation for “dress the pioneer” and ask for prompted journal entries related to the EQs while the simulation is played). Students are helped to process the prairie day simulation, with the essential questions as the source of inquiry and talk. Students should see and be familiar with the questions and be encouraged to consider them on their own.</li><li>• Include other fictional readings linked to the identified content standards and understandings (e.g., <i>Little House on the Prairie</i>, <i>Butter in the Well</i>). Add nonfiction sources to accommodate various reading levels, such as <i>Life on the Oregon Trail</i>, <i>Diaries of Pioneer Women</i>, and <i>Dakota Dugout</i>. Guide students in researching the period, using a variety of resources. Link all readings back to the EQs.</li><li>• For acquisition as well as understanding, ask students to develop a timeline map of a pioneer family's journey west.</li><li>• To prepare students for transfer, have them develop ideas about how we are all pioneers in some ways, and research current pioneers.</li><li>• Stage a simulated meeting of a council of elders of a Native American tribe living on the plains to have students consider a different perspective and develop empathy for the displaced Native Americans. Discuss: “What should we do when threatened with relocation: fight, flee, or agree to move (to a reservation)? What impact would each course of action have on our lives?”</li><li>• Teacher supplies graphic organizers and prompts to help students reflect upon the readings and learning events concerning the nature of a pioneer and the effects of cultural interactions between pioneers and native peoples.</li><li>• Review the scoring rubrics for memory box, museum display, letters, and journals before students begin the performance tasks. Include opportunities for students to study examples of these products.</li></ul>

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Figure B.7

**Algebra Unit Before UbD**

Topic
Associative, Commutative, and Distributive Properties; Order of Operations
Activities
<ol style="list-style-type: none"> <li>1. Direct instruction on the order of operations (PEMDAS): parentheses, exponents, multiplication, division, addition, subtraction.</li> <li>2. In-class exercises on the order of operations.</li> <li>3. Direct instruction on the associative and commutative properties: <math>(a + b) + c = a + (b + c)</math>; <math>ab = b \times a</math></li> <li>4. In-class and online exercises on the associative and commutative properties: simplify <math>-12x - 5x + 3a + x</math>. Justify each step.</li> <li>5. Direct instruction, in class and online exercises, on the distributive property: <math>a(b + c) = ab + ac</math>; simplify <math>2(4x + y) - 2x</math></li> <li>6. Review chapter in preparation for test.</li> </ol>
Assessments
<ol style="list-style-type: none"> <li>1. Quiz on associative property, commutative property, and distributive property. For example, name the property <math>a + b + 2 = a + 2 + b</math>; write the product using the distributive property: <math>6(\\$5.95) =</math></li> <li>2. Quiz on order of operations: <math>(3 + 4) 6 - 12^2 + 4</math></li> <li>3. Chapter test on properties and rules.</li> <li>4. Homework problems on the properties and rules.</li> </ol>

Figure B.8

**Algebra Unit**

Stage 1—Desired Results		
<p><b>Established Goals</b></p> <p>Common Core Math Standards</p> <p>Interpret the structure of expressions</p> <p>1. Interpret expressions that represent a quantity in terms of its context.</p> <p>Write expressions in equivalent forms to solve problems</p> <p>3. Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.</p> <p>Rewrite rational expressions</p> <p>6. Rewrite simple rational expressions in different forms.</p> <p>Mathematical practices</p> <p>1. Make sense of problems and persevere in solving them.</p> <p>2. Reason abstractly and quantitatively.</p> <p>3. Construct viable arguments and critique the reasoning of others.</p>	<b>Transfer</b>	
	<p><i>Students will be able to independently use their learning to...</i></p> <ul style="list-style-type: none"> <li>• Solve problems by simplifying them, using equivalent statements based on the properties of real numbers and the order of operations.</li> <li>• Analyze when any rule in any system (language, law, math) is an essential principle or merely conventional.</li> </ul>	
	<b>Meaning</b>	
	<p><b>UNDERSTANDINGS</b></p> <p><i>Students will understand that...</i></p> <ol style="list-style-type: none"> <li>1. Mathematics is a language, and over the centuries mathematicians have come to agree on certain conventions, or ways of doing things, so that we can communicate our intentions clearly and efficiently.</li> <li>2. In mathematics, we accept certain truths as necessary to permit us to solve problems with logical certainty (e.g., the properties of real numbers), while other rules are conventions that we assume just for effective communication.</li> <li>3. We can use the commutative, associative, and distributive properties to turn complex and unfamiliar expressions into simpler and familiar ones to solve problems.</li> </ol>	<p><b>ESSENTIAL QUESTIONS</b></p> <p><i>Students will keep considering...</i></p> <ol style="list-style-type: none"> <li>1. Why and when is it important to come to agreement on procedural rules (in mathematics, sports/games, language)?</li> <li>2. What important rules and conventions are required to make algebra “work”? How can we distinguish between essential properties and agreed-upon, but arbitrary, conventions?</li> <li>3. Why and how do we simplify algebraic expressions?</li> </ol>
	<b>Acquisition of Knowledge and Skill</b>	
<p><i>Students will know...</i></p> <ol style="list-style-type: none"> <li>1. The commutative property and to which operation it applies (and when it does not apply).</li> <li>2. The associative property and to which operation it applies (and when it does not apply).</li> </ol>	<p><i>Students will be skilled at...</i></p> <ol style="list-style-type: none"> <li>1. Recognizing and applying the commutative, associative, and distributive properties to simplify algebraic expressions.</li> <li>2. Using the convention of "order of operations" to perform calculations and simplify algebraic expressions.</li> </ol>	

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Figure B.8

**Algebra Unit** *(continued)*

		<b>Acquisition of Knowledge and Skill <i>(continued)</i></b>	
		<i>Students will know . . .</i>	<i>Students will be skilled at . . .</i>
		3. The distributive property and to which operation it applies (and when it does not apply). 4. The "order of operations" mathematicians use and why it is needed. 5. What PEMDAS means. 6. What it means to simplify an expression.	3. Recognizing situations where properties do not apply or are optional. 4. Identifying equivalence that results from properties and equivalence that is the result of computation. 5. Justifying steps in a simplification or computation by citing applicable laws, properties, and conventions.
<b>Stage 2—Evidence</b>			
<b>Code*</b>	<b>Evaluative Criteria</b>		
All ST 1	Well argued, accurate, creative, effective	<b>PERFORMANCE TASK(S):</b>  Students will show that they really understand by evidence of . . . <ol style="list-style-type: none"> <li>1. Their ability to realize and apply the difference between (a) necessary logical implications and (b) arbitrary but needed conventions.</li> <li>2. Showing that they see why PEMDAS is a convention while the associative, commutative, and distributive properties are logical foundations.</li> <li>3. Using their understanding of PEMDAS and each property to solve problems and explain why the answers and steps are correct. Tasks might include:                             <ul style="list-style-type: none"> <li>• PR Campaign for the Rules. Mathematical rules have gotten a bad rap—they confuse people, are used to torture math students, and are too complicated (say critics). You believe that the rules are logical, necessary, and not so mysterious when you really understand them. (The real blame lies not on the rules but on people who force students to memorize rules they don't really understand.) To help remedy this unfortunate situation, you have been hired by the National Mathematics Education Association to design advertisements that explain to peers and younger students why math rules and properties work—and what would happen if we did not have them. Use practical and interesting real-world examples to illustrate your points. Use print, graphics (e.g., poster, website), music (song or rap), or video (e.g., iMovie) to sell your ideas.</li> <li>• Algebra Study Guide. Create a portion of a study guide to help future algebra students understand the associative, commutative, and distributive properties. Make up an original, real-world problem that involves one or more of the properties. Include a detailed explanation of the mathematical procedures and reasoning to explain how each property is used to simplify and solve the problem.</li> </ul> </li> </ol>	
U, EQ	Clear, thoughtful, supported		

Figure B.8

**Algebra Unit** *(continued)*

Stage 2—Evidence <i>(continued)</i>		
Code*	Evaluative Criteria	
U, EQ	Thorough, thoughtful, organized	<p>OTHER EVIDENCE:</p> <p><i>Students will show they have achieved Stage 1 goals by...</i></p> <ul style="list-style-type: none"> <li>• Providing written or oral response to one of the first three essential questions.</li> <li>• Developing a journal of Rules for Success. The students will keep an ongoing journal all year of accumulating insight about which rules and properties will lead to success in the study of algebra. Include examples that show the rule or property correctly applied, as well as common mistakes. Answer the question “Why can’t you divide by zero? Is that a convention or property?”</li> <li>• Passing all quizzes from the textbook on basic properties and order of operations (as in the original unit). Students should also troubleshoot examples and explain misapplications of the convention or property, and—at the end—explain the difference between a property and a convention.</li> </ul>
All K, S	Sufficient independent understanding of PEM-DAS and key properties	
Stage 3—Learning Plan		
<b>Code*</b>	<i>Pre-assessment</i>	
	<p>Pre-assess: Give an ungraded quiz using simple numbers but with tricky order-of-operations decisions. Although the problems appear easy, students disagree about the answers. Discuss the different answers without stating the rule. As students describe how they got their answers, pose questions such as “Why is that approach OK? Why is that not OK? Couldn’t we all agree to add before we multiply—or work from right to left? Should we?” Work through one simple example together to get the discussion started; e.g., <math>5 - 3 \times 2</math>.</p>	
	<p>Learning Events</p> <p><i>Student success at transfer, meaning, and acquisition depends upon...</i></p> <p>Often, students are given properties and conventions, told to memorize them, and then drilled on their use. The following inquiry activities will engage students in coming to understand the difference between properties and conventions—in algebra and beyond.</p>	<p><i>Progress Monitoring</i></p> <p>Predictable rough spots in their learning that need constant monitoring:</p> <ul style="list-style-type: none"> <li>• Forgetting the mnemonic and its meaning</li> <li>• Not grasping why PEMDAS is needed yet conventional</li> </ul>

Figure B.8

**Algebra Unit** *(continued)*

Stage 3—Learning Plan <i>(continued)</i>		
	<i>Learning Events (continued)</i>	<i>Progress Monitoring—(continued)</i>
M, T Hook	Find value and interest in the study of rules, laws, and conventions. For example, begin the unit with an exploration of rules of games. Share with students a few little-known but interesting rule changes (e.g., foul third strike equals out in baseball; zone defense legal then outlawed in NBA. See <a href="http://www.baseball-almanac.com/rulechng.shtml">http://www.baseball-almanac.com/rulechng.shtml</a> and <a href="http://www.nba.com/analysis/rules_history.html">http://www.nba.com/analysis/rules_history.html</a> ). Assign homework on research into their favorites. Pose questions such as “Given the rules of your favorite game, which rules are essential? Which rules are just conventions that could be changed without fundamentally messing up the game?” The goal is to help students come to the understanding that “some rules are essential to the game, while others are enacted but could be changed” (e.g., the three-point line in basketball).	<ul style="list-style-type: none"> <li>• Not understanding that conventions differ from core and logically derived principles</li> </ul>
M, A	Tell students that you have declared the next 10 minutes as “Do Your Own Thing” time. You’re going to suspend ALL the rules of math as we know them; every answer is a potential good answer. Distribute problems involving order of operations and properties, and encourage the students to work in teams to come up with as many plausible answers as possible. Then, discuss the various “answers.” (The goal is to help students come to the understanding that rules and conventions are necessary for accuracy in mathematics.)	Some groups may have difficulty generating plausible alternatives to the “same” problem. Some groups may have difficulty drawing generalizations from the answers. Be ready with prompting questions to help them make meaning with minimal assistance.
M, A	Give students a new set of problems that will lead to discussion of the main properties (commutative, associative, and distributive) without using those names. It’s valuable to use more complex examples with many possible answers, but also include some simple examples, like $5 \times 3 + 4$ and $5 - 3 \times 4$ , to illustrate properties and when they are true. Lead a discussion of possible answers for each exercise. Be sure that students have had time to explore the problems fully and discuss them in pairs or small groups.	At some point use an ungraded writing prompt—“Why can we multiply by zero but not divide by zero? Do you think that is a convention or the result of a fundamental property?”—to check for their understanding of the properties.
A, M	Know what a law is, versus a convention, via direct instruction. Introduce the idea that some of the things students learn in mathematics are not natural truths but agreed-upon human conventions. For example, order of operations does not matter for addition. However, some properties are essential because we don’t want $1 + 1$ to equal more than one answer.  Introduce PEMDAS and give students practice in using this mnemonic for order of operations. Then, try to get students to infer the importance of the three core properties—and any others they think of as important to make math “work.” After exploring their ideas, introduce the three properties from the textbook.	

\*Codes: A = Acquisition, EQ = Essential Question, K = Knowledge, M = Meaning Making, S = Skill, ST = Standard, T = Transfer, U = Understanding



Figure B.9

**Music Unit**

Stage 1—Desired Results			
<p><b>Established Goals</b></p> <p>Virginia Standards of Learning Music, Grade 1</p> <p>1.1 The student will sing songs and play instruments. 1. Sing songs that contain sol, mi, and la pitches.</p> <p>1.2 The student will perform rhythmic patterns. 2. Demonstrate melodic rhythm.</p> <p>1.3 The student will respond to music with movement. 3. Demonstrate locomotor and nonlocomotor movements.</p> <p>1.4 The student will employ creativity in a variety of music experiences. 1. Use classroom instruments, body percussion, and movement. 2. Use the voice in speech and song.</p>	<b>Transfer</b>		
	<p><i>Students will be able to independently use their learning to ...</i></p> <ul style="list-style-type: none"> <li>• Recognize beat in music, and follow a steady beat.</li> <li>• Evaluate musical performances.</li> </ul>		
	<b>Meaning</b>		
	<table border="1" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> <p><b>UNDERSTANDINGS</b></p> <p><i>Students will understand that ...</i></p> <ul style="list-style-type: none"> <li>• Sounds that have no steady beat have no predictable pattern.</li> <li>• The foundation of rhythm is pulse (steady beat), which continues through sound and silence.</li> <li>• The voice has different qualities for different functions: whispering, shouting, speaking, and singing.</li> <li>• The quality of a performance influences the enjoyment level of both the listener and the performer.</li> </ul> </td> <td style="width: 50%; vertical-align: top;"> <p><b>ESSENTIAL QUESTIONS</b></p> <p><i>Students will keep considering ...</i></p> <ul style="list-style-type: none"> <li>• What sounds in our environment have a steady beat?</li> <li>• How does steady beat look and feel?</li> <li>• How does a person learn to sing?</li> <li>• What is the difference between speaking and singing?</li> <li>• What makes a performance good?</li> </ul> </td> </tr> </table>	<p><b>UNDERSTANDINGS</b></p> <p><i>Students will understand that ...</i></p> <ul style="list-style-type: none"> <li>• Sounds that have no steady beat have no predictable pattern.</li> <li>• The foundation of rhythm is pulse (steady beat), which continues through sound and silence.</li> <li>• The voice has different qualities for different functions: whispering, shouting, speaking, and singing.</li> <li>• The quality of a performance influences the enjoyment level of both the listener and the performer.</li> </ul>	<p><b>ESSENTIAL QUESTIONS</b></p> <p><i>Students will keep considering ...</i></p> <ul style="list-style-type: none"> <li>• What sounds in our environment have a steady beat?</li> <li>• How does steady beat look and feel?</li> <li>• How does a person learn to sing?</li> <li>• What is the difference between speaking and singing?</li> <li>• What makes a performance good?</li> </ul>
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<b>Acquisition of Knowledge and Skill</b>			
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Figure B.9

**Music Unit** *(continued)*

Stage 2—Evidence	
<b>Evaluative Criteria</b>	<i>Students will show their learning by . . .</i>
<ul style="list-style-type: none"> <li>• Accuracy</li> </ul>	<p>PERFORMANCE TASK(S):</p> <p>Performance assessment is ongoing. Teachers will assess students as they engage in the learning activities Beat/No Beat, Steady Beat Silent Walking Game, Melody Up/Down, and Timbre: Speaking/Singing Game, using the following rubric:</p> <p>4 = Mastery—accurate throughout the entire performance</p> <p>3 = Competent—accurate for almost all of the performance (expected level for majority of students)</p> <p>2 = Developing—accurate for part of the performance</p> <p>1 = Emerging—very little accuracy</p>
<ul style="list-style-type: none"> <li>• Well argued</li> <li>• Well spoken</li> </ul>	<p>OTHER EVIDENCE:</p> <ul style="list-style-type: none"> <li>• Students will self-assess their individual performance.</li> <li>• Students will tell what they liked about a group performance. They will give their opinions regarding how well the group stayed together and followed the beat and how correctly they used their instruments or voices.</li> </ul>
Stage 3—Learning Plan	
<p>Summary of Key Learning Events and Instruction</p>	
<p>Rhythm: Beat/No Beat—Students recall things in their environment that have a steady beat (clocks, heartbeat, car direction blinker), and create a movement depicting it. Practice the movement for eight beats.</p> <p>Rhythm: Steady Beat Silent Walking Game—Students walk the beat to music played by the teacher. Feet must stop when music stops. Students can be “caught” by the teacher for walking when music stops, talking, or touching another person. Students earn their way back into the game by sitting quietly in their seats.</p> <p>Melody Up/Down—Students make sounds that match the squiggles, then make up their own squiggles and perform for each other. Students draw squiggles as teacher plays short melodic phrases.</p> <p>Timbre: Speaking/Singing Game (“Do What I Sing/Do Not Do What I Speak”)—Students should only respond to commands given with a singing voice. Once procedure is established, students become leaders and must demonstrate their singing or speaking voices.</p> <p>Aesthetics: Discussion—Students will tell what they liked about a group performance. They will give their opinions regarding how well the group stayed together and how correctly they used their instruments or voices.</p>	

Figure B.10

**Literature Unit**

Stage 1—Desired Results		
<p><b>Established Goals</b></p> <p>Common Core English Language Arts</p> <p>Reading — All 10 reading standards are addressed, with emphasis on 1, 2, 3, 6, 10.</p> <p>1. Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.</p> <p>2. Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.</p> <p>3. Analyze how and why individuals, events, and ideas develop and interact over the course of a text.</p> <p>6. Assess how point of view or purpose shapes the content and style of a text.</p> <p>10. Read and comprehend complex literary and informational texts independently and proficiently.</p>	<b>Transfer</b>	
	<p><i>Students will be able to independently use their learning to...</i></p> <ul style="list-style-type: none"> <li>• Derive insight into human psychology as well as enjoyment from reading fiction.</li> <li>• Apply ideas about form and content gained from one text to other texts and experiences.</li> <li>• Effectively communicate in writing and speaking, mindful of audience, situation, purpose.</li> </ul>	
	<b>Meaning</b>	
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Figure B.10

**Literature Unit** *(continued)*

Established Goals	Acquisition	
<p>Writing</p> <p>1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.</p> <p>4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.</p> <p>5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.</p> <p>9. Draw evidence from literary or informational texts to support analysis, reflection.</p> <p>Speaking and Listening</p> <p>1. Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.</p> <p>4. Present information, findings, and supporting evidence such that listeners can follow the line of reasoning and the organization, development, and style are appropriate to task, purpose, and audience.</p> <p>6. Adapt speech to a variety of contexts and communicative tasks, demonstrating command of formal English when indicated or appropriate.</p>	<p><i>Students will know . . .</i></p> <ul style="list-style-type: none"> <li>• The plot, setting, and the main characters of the novel.</li> <li>• Stylistic devices used by J. D. Salinger in <i>The Catcher in the Rye</i> (e.g., unreliable narrator, first person, slang).</li> <li>• Needed background information about the culture of the 1950s.</li> </ul>	<p><i>Students will be skilled at . . .</i></p> <ul style="list-style-type: none"> <li>• Using interpretive/inferential reading strategies to better analyze literature on their own.</li> <li>• Recognizing and using writing techniques and tactics for working in various genres and styles, for different audiences and purposes.</li> <li>• Developing a well-reasoned and refined hypothesis through a close reading of a text.</li> <li>• Collaborating better with others, in small and large groups, to make sense of texts and address performance challenges.</li> </ul>

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Figure B.10

**Literature Unit** *(continued)*

Stage 2—Evidence		
Code	Evaluative Criteria	
<p>All T and M goals</p>	<ul style="list-style-type: none"> <li>• Audience appropriate</li> <li>• Insightful</li> <li>• Well developed and organized</li> <li>• Well supported</li> <li>• Polished</li>   <li>• Insightful interpretation of the question</li> <li>• Well-supported argument</li> <li>• Thoughtful account of the development of their thinking</li>   <li>• Quality of contributions</li> <li>• Ability to listen</li> </ul>	<p>PERFORMANCE TASK(S):</p> <p><i>Students will show that they really understand by evidence of...</i></p> <ul style="list-style-type: none"> <li>• Their ability to read between the lines of Holden’s first-person unreliable narrator account and to make sense of his behavior. Students should generalize, using the EQs, and transfer their consideration of the book’s themes to a modern-day situation in which understanding the adolescent psyche is also the aim. Ideas:               <ul style="list-style-type: none"> <li>◦ A field guide to adolescents/Adolescents for Dummies. Using all the essential questions, students develop a handbook on observing and working with adolescents for their guidance counselors, teachers, and administrators. How can we find out who someone really is? When is behavior kids just being kids and when is it a sign of something seriously wrong? The guide should help adults better observe and recognize varied student behavior, as well as provide advice on how to handle puzzling/rebellious/alienated behavior effectively.</li> <li>◦ Part 2: (optional) Helping Holden. Using your own handbook or that of another group, give advice to Holden about how to improve his life that is accurate and cast in such a way that he is most likely to hear it.</li> <li>◦ Part 3: (optional) Write Holden’s likely response to your attempted counsel.</li> </ul> </li> </ul> <hr style="border-top: 1px dashed black;"/> <p>OTHER EVIDENCE:</p> <p><i>Students will show they have achieved Stage 1 goals by...</i></p> <p>Writing and speaking insightfully on the essential questions, while also showing that they have read the text carefully.</p> <p>Essay: Students write on an essential question, using evidence from at least one other text. They must also explain to what extent they changed their mind over the course of the unit about the question, and why (including a comment from their first day’s prewriting).</p> <ul style="list-style-type: none"> <li>• Is it possible—or desirable—to remain innocent? When is that a healthy and an unhealthy instinct?</li> <li>• Why do people sometimes push others away? When is “cool” uncool?</li> <li>• What makes someone a phony or genuine?</li> <li>• How—and how well—does Salinger reveal Holden’s character?</li> </ul> <p>Speaking and Listening: Rubrics for the various seminars, group work, and discussions will be used to provide students with feedback on their strengths and weaknesses as discussants, colleagues.</p> <p>Quizzes: Three quizzes on the plot, settings, and main characters (not a major factor in the unit grade—just to ensure the reading is being done, and for making needed adjustments to learning).</p>

Figure B.10

**Literature Unit** *(continued)*

Stage 3—Learning Plan	
<b>Code</b>	<ul style="list-style-type: none"> <li>• Pre-assess reading skills, especially for ability to infer (main idea, the character behind the words, etc.)</li> <li>• An anticipation guide/survey, with relevant statements or questions about adolescence—for example, agree or disagree with statements: “Most people are phony.” Or, “Underneath our public image we all know who we really are.”</li> <li>• Prewriting on an EQ. (e.g., Can someone be a phony and also be a good person? Have you ever wanted to stay innocent at some point in your life?). (Comment on your prewriting at the end of the unit.)</li> </ul>
W, H, E1, R, E2	<p style="text-align: center;">Learning Events</p> <p><b>TRANSFER:</b> The learning must help students become increasingly able, on their own, to connect the lessons learned in <i>Catcher in the Rye</i> and apply them to other literature and experiences, as well as to aspects of the text not addressed by the teacher.</p> <p>The final task requires taking general conclusions about the EQs and applying them to the specific school environment. So, students will need practice in applying generalizations about adolescence and loneliness and coolness to real-world situations and other concrete situations in this and other texts. And over the unit, teachers should scaffold and prompt less and less. Events might include:</p> <ul style="list-style-type: none"> <li>• What’s Wrong with Holden? Groups of students speak and write as the doctor to the parents and friends of Holden. This activity provides students with a scaffolded opportunity to transfer their learning in a situation. The teacher can serve as a case worker for Holden Caulfield. After a close reading and discussion of Holden’s account of the events of the preceding December, students write a letter to Holden’s parents to describe Holden’s behavior and explain what (if anything) is wrong with him. Cite examples from the text to support your analysis.</li> <li>• <i>Catcher</i> today: Writing or discussion: Match the characters in the novel to students in school: insight or stereotype?</li> <li>• An assignment (oral and/or written) in which students must compare and contrast Holden to any other character read this year, in terms of EQ4: How can we tell who a character really is?</li> <li>• “Comin thro’ the Rye.” A Socratic seminar of Robert Burns’s poem with minimal teacher intervention. Why does Holden like the poem? Does he get its true meaning? Use those or two other questions to frame the discussion. The aim is for students to practice seeing for themselves the sexual undertones that are often missed—and more generally to relate the two texts.</li> <li>• Holden today: Imagine Holden in the present day. Using J. D. Salinger’s writing style and Holden’s voice, have Holden discuss a current pop star, cultural event, or athletic event at school. (Suggest looking at the original <i>New York Times</i> review of the book in 1951, written in the style of the book. It can also be critiqued as a superficial review, even if the voice is accurate.)</li> </ul>
	<p><i>Progress Monitoring</i></p> <p>Look for evidence of student ability to apply the content and processes increasingly on their own, with minimal teacher prompting. All five proposed events will provide evidence of this. If students are not making such connections, reclarify unit goals, stop to go over and apply rubrics, and model such applications.</p> <p>Use ungraded writing prompts asking for connections not discussed in class; for example, “What would Holden think about last week’s assembly?” Or, “How would Sally describe Holden?”</p>

Figure B.10

**Literature Unit** *(continued)*

<b>Stage 3—Learning Plan (continued)</b>		
W, H, E1, R, E2	<p><b>MEANING:</b> The learning must help students become more skilled at seeing on their own how the EQs relate to the text as the unit progresses, using the inferential reading strategies they know already and are taught in the unit; the learning must be framed to develop, refine, and rethink each student’s theory of who Holden is and what’s wrong with him as the novel unfolds.</p> <p>As the unit unfolds, students should take increased responsibility for linking the EQs to specific aspects of the text and making connections with other texts and experiences after modeling and guidance from the teacher:</p> <ul style="list-style-type: none"> <li>• Establish reading-detective roles. Explain that each group will be assigned an EQ to be an expert on; they will take this role and see it through the text. Students will track every reference to “innocence” (EQ1), every reference to characters pushing other characters away (EQ2), every reference to “phonies” or “phoniness” (EQ3), every reference to how you know who someone really is or how that gets hidden (EQ4).</li> <li>• Each day: Journal writing in a constant review of the essential questions. Students would be expected to develop a “theory” about</li> </ul>	<p>Look for evidence of student ability to infer from the events of the text and generalize across text and experience. For example:</p> <ul style="list-style-type: none"> <li>• A 10-minute quick-write at the start of class on their “reading detective” EQ</li> <li>• A reading challenge bookmark about their reading and group discussion each day, in which each student responds briefly to               <ul style="list-style-type: none"> <li>– I understand . . .</li> <li>– I don’t understand . . .</li> </ul> </li> </ul>
W, R	<p>Holden and refine/rethink/revise it as the story and discussion unfolds. Prompts:</p> <ul style="list-style-type: none"> <li>– What is the most important thing you learn about Holden in this section of the novel?</li> <li>– What is the most important unanswered question about Holden at this point in the novel?</li> </ul> <ul style="list-style-type: none"> <li>• In class, on a regular basis: Think/pair with small group/whole group. Students spend two minutes reviewing their journal entries individually, then sharing in pairs. Then, they form their EQ detective groups and report to other groups what they learned about Holden and their EQ.</li> </ul>	<p>Monitor the degree to which students are developing a theory about who Holden is and using new information from the text to rethink their theory, as needed. The journal and quick-writes on the two recurring questions provide evidence.</p>
H, E2	<ul style="list-style-type: none"> <li>• Holden’s favorite poem—Students research a variety of poems on their own (see online poetry databases) to find one Holden would love. They write a “missing” section of the book in which Holden, in accurate voice, explains why he likes that particular poem: “Write (300–400 words) as if you were Holden, using his language and speech patterns, to describe why he likes it.” Students vote on the most Holden-like choice and voice.</li> </ul>	<p>If students are having difficulty moving from facts to inference, pause to teach and reinforce key reading strategies via worksheets, graphic organizers, and other techniques.</p>
H, R	<ul style="list-style-type: none"> <li>• Ongoing discussion about who Holden is and what, if anything, is “wrong” with him. Students must be asked to continually reflect develop, compare, and self-assess their emerging theory about who he is. They should realize they need to rethink their theories as the book unfolds; the teacher should be assertive about calling attention to information in the text that undercuts some of the more common but glib answers on the table. (Note that a final prompt in Stage 2 requires students to write on their EQ and describe their emerging thinking, with an emphasis on any changes of mind over time, and the reasons why.)</li> </ul>	

Figure B.10

**Literature Unit** *(continued)*

<b>Stage 3—Learning Plan (continued)</b>		
W, E1	<p><b>ACQUISITION:</b> Success at the final task on a handbook of adolescents requires that students have access to readable resources about working with adolescents (especially some brochures or diagnostic material to serve as models for the task). Students will find it useful and thought provoking to hear from guidance counselors, assistant principals, or psychiatrists about their work. Other ideas include brainstorming a list of advisors to adolescents and interviewing two different types; handouts from different student-made dummy’s manuals.</p> <p>Success in the unit depends upon enabling the students to do a close read of the text so as to make increasingly subtle inferences about Holden, beneath the veneer of coolness and unreliable narrator. In addition to direct instruction and review of key inferential reading strategies (and guided practice that leads to independent use), there will likely be a need for minilessons on character, setting, point of view, voice; modeling and practice on key inferential reading strategies.</p>	<p>Use ungraded quizzes to find out if students are acquiring the key details of plot, character, and techniques used by Salinger to develop and enrich the novel.</p>
E1, E2	<p>Other helpful teaching and directed exercises might include</p> <ul style="list-style-type: none"> <li>• A guided mapping exercise on Holden’s route in NYC. Using copies of a map of Manhattan, students trace his route and draw conclusions.</li> <li>• Background teaching or assignment on J. D. Salinger biography.</li> </ul>	<p>Have either whole-group or small-group minilessons for students who are not seeing these things.</p>
E1	<ul style="list-style-type: none"> <li>• Minilessons, by either teacher or interested students, on Kübler-Ross and Freud, and the culture of the 1950s (use clips from <i>Mad Men</i> and <i>Leave it to Beaver</i>).</li> <li>• Ongoing reports from each EQ group listing key passages in the text that relate to their question.</li> <li>• Making Venn diagrams about troubled girls versus boys. (Does Holden resonate with girls? How should the guide reflect gender?)</li> </ul> <p>The novel can be divided into six reading assignments. Sample discussion questions are provided.</p> <ol style="list-style-type: none"> <li>1. Chapters 1–4: What observations do you have about Holden’s use of language?</li> <li>2. Chapters 5–9: What observations do you have about Holden’s fight with Stradlater?</li> <li>3. Chapters 10–14: On p. 87, Holden says, “The Navy guy and I we were glad to’ve met each other. Which always kills me. I’m always saying, ‘Glad to’ve met you’ to somebody, I’m not at all glad I met. If you want to stay alive, you have to say that stuff, though.” Based on your own life and experiences, do you think this last observation is true? Be specific.</li> </ol>	



Figure B.10

**Literature Unit** *(continued)*

<b>Stage 3—Learning Plan <i>(continued)</i></b>	
<p>4. Chapters 15–18: Look at the conversation between Holden and Sally (about pp. 130–134). How does this conversation help explain Holden?</p> <p>5. Chapters 19–23: What do you think is the most revealing moment in the long scene between Holden and Phoebe, in D.B.’s bedroom, and why?</p> <p>6. Chapters 24–26: How do you interpret Mr. Antolini’s behavior and Holden’s reaction to it, at the time it happened and later?</p> <p>Discuss the ending of the book. In preparation for the role-play, have students work in groups to discuss Holden from the perspective of different characters—one from a member of Holden’s family, one from one of his teachers, and two from his friends or peers. Lead full-class discussion. Then, ask students to identify the characteristics of an effective response to their forthcoming activity, What’s Wrong with Holden? Guide them in generating the key rubric traits.</p>	<p>Students might have difficulty following the narrative. Use story maps, timelines, or other graphic organizers to monitor basic comprehension; refer to journals and reading detective journal entries to monitor higher-level comprehension. Work with struggling students to help them build an accurate narrative, as needed.</p>

Figure B.11

**Climate Unit**

Stage 1—Desired Results		
<p><b>Established Goals</b></p> <p>1.3 Explain how the transfer of energy through radiation, conduction, and convection contributes to global atmospheric processes, such as storms, winds, and currents.</p> <p>1.4 Provide examples of how the unequal heating of Earth and the Coriolis effect influence global circulation patterns, and show how they impact Massachusetts weather and climate (e.g., global winds, convection cells, land/sea breezes, mountain/valley breezes).</p> <p>1.6 Describe the various conditions associated with frontal boundaries and cyclonic storms (e.g., thunderstorms, winter storms [nor'easters], hurricanes, tornadoes) and their impact on human affairs, including storm preparations.</p> <p>3.1 Explain how physical and chemical weathering leads to erosion and the formation of soils and sediments, and creates various types of landscapes. Give examples that show the effects of physical and chemical weathering on the environment.</p>	<b>Transfer</b>	
	<p><i>Students will be able to independently use their learning to...</i></p> <p>Accurately predict and compare the climates of varied locations in terms of key climate-determining factors.</p>	
	<b>Meaning</b>	
	<p><b>UNDERSTANDINGS</b></p> <p><i>Students will understand that...</i></p> <ul style="list-style-type: none"> <li>• The unequal heating between the equator and poles, Earth's rotation, and the distribution of land and ocean generate the global wind patterns that determine climate.</li> <li>• Most of what goes on in the universe involves some form of energy being transformed into another. Transformations of energy usually produce some energy in the form of heat, which spreads around by radiation and conduction into cooler places.</li> </ul>	<p><b>ESSENTIAL QUESTIONS</b></p> <p><i>Students will keep considering...</i></p> <ul style="list-style-type: none"> <li>• What causes weather and wind patterns?</li> <li>• What factors affect climate?</li> <li>• How do events in one geographic area affect another?</li> <li>• How does climate affect agriculture?</li> <li>• How can I apply these factors to locations on Earth to determine the climate?</li> </ul>
	<b>Acquisition of Knowledge and Skill</b>	
<p><i>Students will know...</i></p> <ul style="list-style-type: none"> <li>• Causes of wind and weather patterns.</li> <li>• Factors affecting climate.</li> <li>• Causes of the Coriolis effect.</li> <li>• How events in one geographical area affect another.</li> <li>• How climate affects agriculture.</li> </ul>	<p><i>Students will be skilled at...</i></p> <ul style="list-style-type: none"> <li>• Interpreting data illustrating the relationship between air pressure and temperature.</li> <li>• Interpreting isobar maps of gradient pressure.</li> <li>• Applying the concepts of Newton's First Law, the spherical geometry of the earth, and centripetal acceleration to the Coriolis effect.</li> </ul>	

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Figure B.11

**Climate Unit** *(continued)*

Stage 2—Evidence	
<b>Evaluative Criteria</b>	
<ul style="list-style-type: none"> <li>• Accuracy of predictions</li> <li>• Thoroughness of explanation</li> <li>• Quality of presentation</li> </ul>	<p>PERFORMANCE TASK(S):</p> <p><i>Students will show their learning by . . .</i></p> <ul style="list-style-type: none"> <li>• Comparing climates. Students will be asked to research the climate in our area and two other areas. One will be at our latitude, but in the interior of the continent. The other will be at our longitude, but at a tropical location. The students will compare the climates of these locations in terms of climate-determining factors in teams representing a climatological consulting firm seeking an account with a large agricultural business that has farms in each area.</li> </ul> <hr style="border-top: 1px dashed black;"/> <p>OTHER EVIDENCE:</p> <ul style="list-style-type: none"> <li>• Open-book exam</li> <li>• Quizzes on readings</li> </ul>
Stage 3—Learning Plan	
<p>Students will</p> <ol style="list-style-type: none"> <li>1. Evaluate circulation cell diagram by identifying directions of air movement under specific conditions and explain these movements in terms of differential heating.</li> <li>2. Perform the Let's Go Fly a Kite activity. This is the hook and the introductory activity. After completing the first activity, in which students will learn about the relationship between air pressure and wind, they will make predictions about which campus location will have the best kite flying. Then the class will, kites in hand, travel around the campus looking for the best place to fly a kite. We will then use our results to ask questions about what causes wind patterns, why wind patterns differ, and what causes these differences.</li> <li>3. Read articles and perform a series of labs that illustrate Newton's First Law and centripetal acceleration, and then relate these to the Coriolis effect.</li> <li>4. Analyze maps showing isobars, and label the wind directions (and explain why).</li> <li>5. Study why the angle of the sun's rays cause differential heating. This will be applied to the different areas of the Earth and seasons in our area.</li> <li>6. Analyze an energy budget diagram showing the energy (heat) flow between the sun, the Earth's surface, and the Earth's atmosphere.</li> <li>7. Analyze diagrams showing high- and low-pressure centers and describe air flow around and between these centers.</li> <li>8. Study cases (articles supplied by teacher) in which events such as El Niño and volcanoes in one part of the world are thought to affect weather in another part of the world. Students will then propose mechanisms by which this is possible.</li> <li>9. Complete the "Comparing Climates" proposal, including presentations and self-evaluation.</li> </ol>	

Figure B.12

**Visual Arts Unit**

Stage 1—Desired Results		
<p><b>Established Goals</b> Maryland Visual Arts</p> <p>Standard 1.2a: Compare how artists use narrative conventions in selected artworks.</p> <p>Standard 1.2b: Create narrative artworks from observation, memory, and imagination that show setting, characters, action, and differing points of view.</p> <p>Standard 2.3b: Plan personal artworks that interpret the unique styles and forms of different artists.</p> <p>Standard 3.2a: Communicate ideas and concepts by manipulating elements of art and principles of design to achieve specific visual effects.</p> <p>Standard 4.2c: Select, apply, and communicate criteria for making aesthetic judgments about personally created artworks and the artworks of others.</p>	<b>Transfer</b>	
	<p><i>Students will be able to independently use their learning to . . .</i></p> <ul style="list-style-type: none"> <li>• Create original narratives based on various themes and media.</li> <li>• Use the artistic process in the creation of original narrative works.</li> <li>• Select and effectively apply different media and conventions to the narrative.</li> <li>• Analyze and critique works of art (including their own) against criteria.</li> </ul>	
	<b>Meaning</b>	
	<p><b>UNDERSTANDINGS</b> <i>Students will understand that . . .</i></p> <ul style="list-style-type: none"> <li>• Ideas for artworks may come from observations, imagination, personal experiences, and other artists.</li> <li>• Artists use narrative conventions similar to oral and written storytelling to tell stories.</li> <li>• Artists select, organize, and manipulate art elements and principles of design to create specific effects and communicate meaning.</li> <li>• Decisions about art and artmaking can be based on established and personally developed criteria.</li> </ul>	<p><b>ESSENTIAL QUESTIONS</b> <i>Students will keep considering . . .</i></p> <ul style="list-style-type: none"> <li>• Where do artists get their ideas?</li> <li>• How do artists tell stories with images?</li> <li>• How can meaning be communicated in artworks?</li> <li>• What do artists consider when making decisions about their work?</li> </ul>
	<b>Acquisition</b>	
<p><i>Students will know . . .</i></p> <ul style="list-style-type: none"> <li>• Background information on Jacob Lawrence, Romare Bearden, and Faith Ringgold.</li> <li>• Key vocabulary and processes related to visual narrative, narrative conventions, art media, and techniques.</li> <li>• Stages of planning and finalizing compositions.</li> </ul>	<p><i>Students will be skilled at . . .</i></p> <ul style="list-style-type: none"> <li>• Comparing, analyzing, and discussing artworks.</li> <li>• Generating ideas through brainstorming and sketching.</li> <li>• Planning, selecting, and organizing a variety of materials and images in a composition.</li> </ul>	

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Figure B.12

**Visual Arts Unit** *(continued)*

Stage 2—Evidence		
Code	Evaluative Criteria	
M	<ul style="list-style-type: none"> <li>• Effective use of narrative conventions (characters, action, setting), art elements, and design principles to communicate a story</li> </ul>	<p>PERFORMANCE TASK(S):</p> <p><i>Students will show that they really understand by evidence of...</i></p> <ul style="list-style-type: none"> <li>• Analysis and development of personal narrative.</li> <li>• Analysis comparing artworks by Jacob Lawrence, Romare Bearden, and Faith Ringgold to identify characteristics of their style and ways they use narrative conventions to communicate visual stories.</li> </ul>
T	<ul style="list-style-type: none"> <li>• Effective use of selected media</li> <li>• Craftsmanship</li> <li>• Insightful, complete, and well-written analysis</li> </ul>	<p>Students will use information learned from the analysis to generate ideas for a personal narrative by planning a series of sketches, selecting one idea to enlarge and finalize in a medium (collage, mixed media, and/or paint) influenced by their study. Students will prepare the final work for exhibition.</p> <hr style="border-top: 1px dashed black;"/> <p>OTHER EVIDENCE:</p> <p><i>Students will show they have achieved Stage 1 goals by...</i></p> <ul style="list-style-type: none"> <li>• Student self-reflections defending decisions made in creating, selecting media, and completing narrative compositions.</li> <li>• Teacher observations of the artistic process of planning, use of materials, work habits, and safety procedures.</li> </ul>
M	Thoughtful, clear, thorough	
A	Accurate, disciplined, careful	

Figure B.12

**Visual Arts Unit** *(continued)*

Stage 3—Learning Plan	
Code	Pre-assessment
<p><i>Student success at transfer, meaning, and acquisition depends upon...</i></p> <p><b>Learning to look, think, and work like an artist</b></p> <ul style="list-style-type: none"> <li>• Students will be introduced to various artworks. They will be asked to determine which one best “tells” a story and to identify what in the work contributes to storytelling. (Meaning)</li> <li>• Teacher guides students in analyzing a selected artwork to identify the narrative conventions (i.e., subject/ characters, setting, time frame, action, text, sequence) used to communicate the story. (Acquisition)</li> <li>• Students work in pairs or trios to read about Jacob Lawrence, Romare Bearden, and Faith Ringgold and other narrative works by the artists. They will analyze and compare the artists’ works to identify similarities and differences in themes or subject matter, use of narrative conventions and storytelling techniques, and unique characteristics of their style. Based upon their group analysis and discussions, students will work from a writing prompt to draft a summary of their analysis. (Meaning and Transfer)</li> <li>• Students will share drafts, then look at a teacher-made narrative sample and discuss the subject matter, ways that the sample incorporated narrative conventions discussed in the previous class, stylistic elements, and compositional qualities. (Acquisition and Meaning)</li> <li>• Students will be given the performance task activity and criteria for creating a personal narrative. They will discuss themes and subjects that have significance to them and plan three sketches for a personal narrative that incorporates stylistic elements and/or media choices observed in their analysis of Lawrence, Bearden, and Ringgold’s works. Students will critique their sketches to determine which one most effectively tells a personal story. (Meaning)</li> <li>• Students select, refine, and enlarge one idea from their sketches that fulfills criteria established by the class, teacher, and personal interests. Students work in pairs to review enlarged sketches and give feedback regarding effective narrative techniques and visual impact through choice of art elements and design principles. The teacher demonstrates ways to add paint, texture, and other collage components and materials to the composition. Students experiment with collage and mixed media techniques by painting with collaging materials to parts of their sketches before applying them to the final composition. Students will complete a journal entry to reflect on the process and progress of their work. (Transfer and Meaning)</li> <li>• Students continue experimenting with media. Teacher provides ongoing feedback while students work and make refinements to the final composition. Students share works in progress, discuss processes and techniques, and consult with peers to determine what areas still need work, modification, or changes. Students complete a journal entry to reflect on the process and progress of their work at the end of each studio session. Students finalize their compositions and prepare their work for exhibition. (Transfer and Meaning)</li> </ul>	<p><i>Progress Monitoring</i></p>

Figure B.13

**Health and PE Unit**

Stage 1—Desired Results			
<p><b>Established Goals</b></p> <p>Maine Learning Results H/PE Motor Skills 1, 2, 8</p> <p>Performance Indicators:</p> <p>1. Demonstrate the correct use of skills in simplified versions of a variety of physical activities.</p> <p>2. Identify the critical elements of more advanced movement skills.</p> <p>8. Use feedback from others to improve a skill by focusing on critical elements of the skill.</p>	<b>Transfer</b>		
	<p><i>Students will be able to independently use their learning to...</i></p> <ul style="list-style-type: none"> <li>• Maximize force production and accuracy in all physical activities involving striking (e.g., tennis), throwing (baseball), and kicking (e.g., soccer).</li> <li>• Effectively seek and use feedback to improve their performance, in any endeavor.</li> </ul>		
	<b>Meaning</b>		
	<table border="1" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> <p><b>UNDERSTANDINGS</b></p> <p><i>Students will understand that...</i></p> <ul style="list-style-type: none"> <li>• A muscle that contracts through its full range of motion will generate greater force.</li> <li>• The entire body needs to be involved in movements requiring a great deal of force.</li> <li>• Follow-through provides greater momentum on impact on release and helps to improve accuracy.</li> <li>• Feedback is information during or after the movement.</li> <li>• Self-directed learners analyze performance and make adjustments on the basis of feedback to improve their performance.</li> </ul> </td> <td style="width: 50%; vertical-align: top;"> <p><b>ESSENTIAL QUESTIONS</b></p> <p><i>Students will keep considering...</i></p> <ul style="list-style-type: none"> <li>• How can I hit with greatest power without losing control?</li> <li>• How can I improve my performance (golf game)?</li> </ul> </td> </tr> </table>	<p><b>UNDERSTANDINGS</b></p> <p><i>Students will understand that...</i></p> <ul style="list-style-type: none"> <li>• A muscle that contracts through its full range of motion will generate greater force.</li> <li>• The entire body needs to be involved in movements requiring a great deal of force.</li> <li>• Follow-through provides greater momentum on impact on release and helps to improve accuracy.</li> <li>• Feedback is information during or after the movement.</li> <li>• Self-directed learners analyze performance and make adjustments on the basis of feedback to improve their performance.</li> </ul>	<p><b>ESSENTIAL QUESTIONS</b></p> <p><i>Students will keep considering...</i></p> <ul style="list-style-type: none"> <li>• How can I hit with greatest power without losing control?</li> <li>• How can I improve my performance (golf game)?</li> </ul>
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<b>Acquisition</b>			
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Figure B.13

**Health and PE Unit** *(continued)*

Stage 2—Evidence		
Code	Evaluative Criteria	
	<ul style="list-style-type: none"> <li>• Distance</li> <li>• Accuracy</li>   <li>• Accuracy</li> <li>• Effective adjustment</li>   <li>• Effective adjustment</li>   <li>• Continuous Improvement</li>   <li>• Skilled performance</li> <li>• Effective adjustment</li>   <li>• Continuous improvement</li> </ul>	<p>PERFORMANCE TASK(S):</p> <p><i>Students will show they really understand by evidence of...</i></p> <ul style="list-style-type: none"> <li>• Driving the ball: Assesses students' ability to use a full swing in order to strike a ball so that it takes flight and travels in a relatively straight pathway.</li>   <li>• Putting accuracy: Assesses students' putting skills in different situations (e.g., distance from hole, varied slopes) while demonstrating the ability to make adjustments to movements to improve accuracy based on feedback.</li>   <li>• Reading the ball: Assesses students' ability to make shots and putts from different distances and course conditions while demonstrating the ability to make adjustments to improve accuracy based on feedback.</li>   <li>• Playing the game: Continued skill improvement and enjoyment of the game over time will provide the most authentic assessment for this unit.</li> </ul> <hr style="border-top: 1px dashed black;"/> <p>OTHER EVIDENCE:</p> <p><i>Students will show they have achieved Stage 1 goals by...</i></p> <ul style="list-style-type: none"> <li>• Par 3 golf: Students take a standardized golf test during which their various skill performances are videotaped for review and assessment. Students watch the video of their performance and mark skill areas where they see themselves performing consistently well and those that they need to work.</li>   <li>• Ongoing skill and knowledge assessments: golf skills self-assessment at the beginning of the unit that helps them analyze their skill levels. Students complete a skill-tracking assignment throughout the unit, moving from simple to more complex tasks. Tasks are matched with standards for completion so that students know when to move to the next task. Questions also help them to assess their knowledge of rules of the game, club choices, and more.</li> </ul>



Figure B.13

**Health and PE Unit** *(continued)*

Stage 3—Learning Plan	
Code	<i>Pre-assessment</i>
<p><i>Student success at transfer, meaning, and acquisition depends upon...</i></p> <p>Exploring the EQs:</p> <p>Questions: What types of feedback can you use to improve your skill? How can feedback be used to increase accuracy and efficiency?</p> <p>Form partnerships and introduce “golf” with hula hoops and different fun targets. Partners practice, giving one piece of positive specific feedback and one piece of instructional feedback. After a bit, introduce how we can get feedback from the result of movement and make conscious changes in movement to increase accuracy. Discuss general findings. (Meaning and Transfer)</p> <p>Swing mechanics questions: How can you hit the ball the greatest distance without losing control? What role does timing and speed of movement play in striking with a golf club, so that the ball will take flight and travel in the desired direction? Review the proper mechanics for grip and stance. Introduce full swing mechanics and skill cues. Have partner practice without hitting the ball. Have them try to brush the grass. Then, practice with whiffle balls and short-flight balls, taking turns giving and receiving feedback in partners. Introduce individual skill sheets, and have students begin self-ssessments and skill cue targeting. (Transfer)</p> <p>Questions: How can you adjust your golf swing to increase accuracy when hitting to different distances? How is club number related to how the ball travels in the air? Students rotate around the field using an assortment of irons, golf balls, various targets at different distances. They experiment with choosing different clubs and practice making adjustments to their swing when dealing with different distances and clubs. Partners give and receive feedback, and complete skill sheets. (Meaning and Acquisition)</p> <p>Questions: What are the correct mechanics for a good putt? How is putting different from swinging an iron? Give students putters and balls and assign them to a workstation where they experiment with trying to come up with the most efficient way to putt the ball into the cup from different distances. Have them write or speak their overall findings. (Meaning and Transfer)</p>	<p><i>Progress Monitoring</i></p>

Figure B.13

**Health and PE Unit** *(continued)*

Stage 3—Learning Plan <i>(continued)</i>	
Code	<i>Pre-assessment</i>
<p><i>Student success at transfer, meaning, and acquisition depends upon...</i></p> <p>Acquiring Skills:</p> <ul style="list-style-type: none"> <li>• Golf grip and stance: Instruct students on the golf grip. Partners take turns demonstrating each of the three grips, offering and receiving feedback until each has identified the grip that they are most comfortable with. Introduce the stance using mechanics and skill cues outlined in the notes and have partners practice while giving each other feedback.</li> <li>• Students continue to practice with feedback and modeling by teacher when needed. Complete the driving-the-ball task. Keep practicing and complete self-assessment using the skill sheets.</li> <li>• Model proper stance and with student input come up with all of the important skill cues to focus on when working on effective putting. In pairs, students take turns putting, starting very close to the cup. If they make it, they get to move their marker back one step. They continue taking turns. If they miss, on their next turn they must attempt that same distance again. Keep practicing, and complete the self-assessment using the skill sheets.</li> <li>• Review basic stance and swing; then, demonstrate backswing and follow-through and the concepts behind controlling and producing force. Students practice driving the ball; partners provide feedback. Complete the reading-the-ball-task, and self-assess using the skill sheets.</li> </ul>	<p><i>Progress Monitoring</i></p>

Figure B.14

## History Unit

Stage 1—Desired Results				
<p><b>Established Goals</b></p> <p>Virginia Social Studies Standards</p> <p>Virginia History</p> <p>a) identify and interpret artifacts and primary and secondary source documents to understand events in history.</p> <p>f) sequence events in Virginia history.</p> <p>g) interpret ideas and events from different historical perspectives.</p> <p>Virginia Visual Arts Standards</p> <p>4.20 The student will identify and investigate ways that works of art from popular culture reflect the past and influence the present.</p> <p>7.23 The student will analyze, interpret, and judge works of art based on biographical, historical, or contextual information.</p>	<b>Transfer</b>			
	<p><i>Students will be able to independently use their learning to . . .</i></p> <ul style="list-style-type: none"> <li>• Recognize that history involves interpretation of past events and that historical interpretations typically reflect a singular perspective, an incomplete account, or deliberate bias.</li> <li>• Critically evaluate historical accounts.</li> </ul>			
	<b>Meaning</b>			
	<table border="1"> <thead> <tr> <th style="text-align: left;">UNDERSTANDINGS</th> <th style="text-align: left;">ESSENTIAL QUESTIONS</th> </tr> </thead> <tbody> <tr> <td> <p><i>Students will understand that . . .</i></p> <ul style="list-style-type: none"> <li>• History consists of “his” story and “her” story.</li> <li>• There are often different perspectives on what happened in the past.</li> <li>• One’s experiences influence one’s view of history. Race and gender influence historical interpretation.</li> <li>• Photographs can reveal but also mislead.</li> <li>• Critical reading and viewing is necessary to recognize incomplete or biased accounts of the past.</li> </ul> </td> <td> <p><i>Students will keep considering . . .</i></p> <ul style="list-style-type: none"> <li>• Whose “story” is it?</li> <li>• How do we know what really happened in the past?</li> <li>• What roles do race and gender play in creating and interpreting history?</li> <li>• What can a photograph tell us about a society?</li> <li>• How should we “read” an historical account, artifact, or photograph? Can we trust it?</li> </ul> </td> </tr> </tbody> </table>	UNDERSTANDINGS	ESSENTIAL QUESTIONS	<p><i>Students will understand that . . .</i></p> <ul style="list-style-type: none"> <li>• History consists of “his” story and “her” story.</li> <li>• There are often different perspectives on what happened in the past.</li> <li>• One’s experiences influence one’s view of history. Race and gender influence historical interpretation.</li> <li>• Photographs can reveal but also mislead.</li> <li>• Critical reading and viewing is necessary to recognize incomplete or biased accounts of the past.</li> </ul>
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<b>Acquisition</b>				
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Source: Goals for History © 2008 Board of Education, Commonwealth of Virginia. All rights reserved. Goals for Visual Arts © 2006 Board of Education, Commonwealth of Virginia. All rights reserved.

Figure B.14

**History Unit** *(continued)*

Stage 2—Evidence		
Code	Evaluative Criteria	
Analysis	<ul style="list-style-type: none"> <li>• Historical accuracy</li> <li>• Thorough explanation of the significance of the selected events and the perspective or point of view of the photographs</li> </ul>	<p>PERFORMANCE TASK(S):</p> <p><i>Students will show that they really understand by evidence of...</i></p> <p>The Virginia Historical Society has invited you to prepare an exhibit to inform the public about significant transitions that occurred in early 20th century Virginia society and show various points of view through which this history can be seen. The exhibit will be presented using historical photographs with commentaries.</p> <p>Your task is to choose two significant events or transition periods from early 20th century Virginia. Select several photographs that represent each event from two or more perspectives. Prepare a commentary for each selected photograph in which you explain (1) the significance of the event shown (how it reveals an important transition occurring in early 20th century Virginia); and (2) the perspective or point of view of the photograph.</p>
Synthesis		
Application		
	<ul style="list-style-type: none"> <li>• Well-crafted display</li> </ul>	<ul style="list-style-type: none"> <li>• Students have access to archives of historical photos at the following websites:  <a href="http://www.lib.virginia.edu/speccol/collections/jdavis">http://www.lib.virginia.edu/speccol/collections/jdavis</a>  <a href="http://cass.etsu.edu/ARCHIVES/photoapp.htm">http://cass.etsu.edu/ARCHIVES/photoapp.htm</a>  <a href="http://www.vcdh.virginia.edu/afam/raceandplace/index.html">http://www.vcdh.virginia.edu/afam/raceandplace/index.html</a></li> </ul>
	<ul style="list-style-type: none"> <li>• Historical accuracy</li> <li>• Effective critical analysis</li> <li>• Effective analysis of perspective</li> <li>• Clear and appropriate reflections</li> </ul>	<p>-----</p> <p>OTHER EVIDENCE:</p> <p><i>Students will show they have achieved Stage 1 goals by...</i></p> <ul style="list-style-type: none"> <li>• Passing quizzes on historical facts and sequence of events.</li> <li>• “Reading” art and completing four-part criticism worksheets.</li> <li>• Filling out a historical analysis sheet (perspectives).</li> <li>• Writing a series of journal entries—reflections on events and time periods from different perspectives (race, gender, economic status).</li> </ul>
Knowledge, comprehension		
Evaluation		

Figure B.14

**History Unit** *(continued)*

Stage 3—Learning Plan	
Code	Pre-assessment
<p><i>Student success at transfer, meaning, and acquisition depends upon...</i></p> <p><b>Interpret photos:</b> (Meaning)</p> <ul style="list-style-type: none"> <li>• Distribute letter from historical society and rubric. Present photo collection. Present students with an engaging photo of people in early 20th-century Virginia, depicting a certain event or time of social transition (e.g., segregated restaurant/white patrons). Ask students to create a caption for a magazine of the time. Students share their captions.</li> <li>• Lead a Socratic seminar on a photo. In middle of seminar, present another photo showing same “event” with different perspective (segregated restaurant with African American patrons). Continue seminar, now comparing two photos.</li> <li>• Introduce a representative photo and one with another point of view. Lead students in four-part art criticism process (describe, interpret, analyze, evaluate), which will get them into the history depicted, the human subject, and what the photographer wanted us to see.</li> <li>• Complete historical analysis sheet (looking at stakeholders’ perspectives and outcomes of event).</li> <li>• Compare and contrast photo with text information (Venn diagram, primary/secondary sources). Continue these comparisons with several photos.</li> <li>• Self-evaluation. Exhibit display (“gallery walk”). Analysis of peers’ selections.</li> <li>• Daily journal entries. Prompt: Reflect on the event, considering different perspectives and personal connection. Share in small groups.</li> </ul> <p><b>Acquire knowledge about and for the unit.</b> Post and discuss essential questions and understandings. Introduce Performance Task 1: Take a Walk in Someone Else’s Shoes. Discuss rubric. Class time to complete.</p> <p>Present and discuss exemplar for Task 2. Discuss rubric. Time to begin task.</p> <p>Facilitate SQ3R of textbook section (or other resource) for information regarding topic.</p>	<p><i>Progress Monitoring</i></p>

Figure B.15

**Time Unit**

Stage 1—Desired Results		
<p><b>Established Goals</b></p> <p>Virginia Mathematics Standards 1.11</p> <p>The student will tell time to the half hour, using an analog or digital clock.</p>	<b>Transfer</b>	
	<p><i>Students will be able to independently use their learning to . . .</i></p> <ul style="list-style-type: none"> <li>• Use knowledge of time to make plans and schedule activities.</li> </ul>	
	<b>Meaning</b>	
	<table border="1" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> <p>UNDERSTANDINGS</p> <p><i>Students will understand that . . .</i></p> <ul style="list-style-type: none"> <li>• Measuring the passage of time helps us better plan and organize activities.</li> <li>• Humans measure time in a variety of ways.</li> <li>• Different situations call for different degrees of time precision.</li> </ul> </td> <td style="width: 50%; vertical-align: top;"> <p>ESSENTIAL QUESTIONS</p> <p><i>Students will keep considering . . .</i></p> <ul style="list-style-type: none"> <li>• How would life be different if we couldn't tell time?</li> <li>• How do we know what time it is?</li> <li>• How do people measure time?</li> <li>• How precise do we need to be (in a given situation)?</li> </ul> </td> </tr> </table>	<p>UNDERSTANDINGS</p> <p><i>Students will understand that . . .</i></p> <ul style="list-style-type: none"> <li>• Measuring the passage of time helps us better plan and organize activities.</li> <li>• Humans measure time in a variety of ways.</li> <li>• Different situations call for different degrees of time precision.</li> </ul>
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<b>Acquisition</b>		
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Figure B.15

**Time Unit** *(continued)*

Stage 2—Evidence		
Code	Evaluative Criteria	
	<ul style="list-style-type: none"> <li>• Accurate time placement shown on each clock</li> <li>• Explanation clearly showing understanding of time frames</li> <li>• Appropriate use of time-related vocabulary</li> </ul>	<p><b>PERFORMANCE TASK(S):</b>  <i>Students will show that they really understand by evidence of...</i></p> <p>Imagine that you are in charge of the cafeteria and must help the cafeteria staff know when to begin preparing lunch for the primary lunch shift. You know that it takes 2 hours and 15 minutes to prepare lunch. To help the staff be ready to serve lunch on time, create two analog clocks to hang on the wall in the kitchen. One clock will show what time to start preparing lunch. The other clock will show when the kids will arrive to eat. When you have completed the clocks, write a note to explain to the school principal what time the kitchen staff will begin preparing lunch in order to have it ready for the primary lunch shift.</p> <ul style="list-style-type: none"> <li>• Students who are not proficient at independent writing can do this orally.</li> </ul> <hr style="border-top: 1px dashed black;"/> <p><b>OTHER EVIDENCE:</b>  <i>Students will show they have achieved Stage 1 goals by...</i></p> <ul style="list-style-type: none"> <li>• Completing worksheets on the clock.</li> <li>• Passing a quiz on time-measuring devices.</li> <li>• Teacher observations of students at work throughout the unit.</li> <li>• Verbal questioning on telling time (ongoing).</li> </ul>
Stage 3—Learning Plan		
Code	<i>Pre-assessment</i>	
	<p style="text-align: center;">Learning Events</p> <p><i>Student success at transfer, meaning, and acquisition depends upon...</i></p> <ul style="list-style-type: none"> <li>• Begin with a K-W-L on the question: “How do we measure time?”</li> <li>• Build on student answers by showing various time-measuring devices (e.g., sundial, watch, grandfather clock, egg timer).</li> <li>• Present and discuss the essential question “What might happen if we didn’t have a way of telling time?”</li> <li>• Clock repair—Have students pretend that they need to fix a broken clock by cutting and pasting the numbers onto a paper cutout.</li> <li>• TV guide—Have students list the times of their favorite TV shows (for one day or one week) in sequential order. Chart how much time would be needed to watch the selected shows.</li> <li>• Have students work in cooperative groups to plan the amount of time it would take for various activities (e.g., walk to the cafeteria, watch a movie, eat breakfast).</li> <li>• Present a time-planning task similar to the culminating performance task. Guide students in completing the task.</li> </ul>	<i>Progress Monitoring</i>

## Frequently Asked Questions

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### 1. Why did you change the UbD Template?

Just as computer software programs are regularly updated to incorporate new ideas and adjustments based on user feedback, the new template reflects the most current thinking on UbD, based on our own observations and the constant feedback we get from users throughout the world. In particular, we have seen the need to highlight transfer goals and the coding of Stages 2 and 3 because too often well-intentioned designers were not focusing their units on long-term transfer goals. Unit assessments did not always align with the stated goals of Stage 1.

### 2. Do you have to follow the UbD Template order (top to bottom) when you design?

No. Backward design does *not* demand a rigid sequence. The process of thinking through a design is inherently nonlinear, with various entry points, leading eventually to a logically organized product. Regardless of approach, designers should routinely check the emerging design against the UbD design standards to ensure that the process yields a desired high-quality unit.

### 3. Should you use the three-stage UbD Template for planning lessons as well as units?

We do not recommend isolated lesson planning separate from unit planning. We have chosen the unit as a focus for design because the key elements of UbD—understandings, essential questions, and transfer performances—are too complex and multifaceted to be satisfactorily addressed within a single lesson. For instance, essential questions should be revisited over time, not answered by the end of a single class period.

Nonetheless, the larger unit goals provide the context in which individual lessons are planned. Teachers often report that careful attention to Stages 1 and 2 sharpens their lesson planning, resulting in more purposeful teaching and improved learning.

### 4. Does everything we teach need to be taught for deep “understanding” and “transfer”? Aren’t there some facts you just need to memorize and some basic skills you can learn only by drill and practice?

Although certainly there are basics that must be mastered, it does not follow that rote learning is the only or best means of achieving these ends. Think of the way many students (maybe even you) learned math “facts” (e.g., cross-multiplying



fractions or using the quadratic formula) without understanding why the method works, why it matters, and when you would ever use it in the so-called real world. In other words, even though you “knew” the fact, you didn’t necessarily understand its meaning or its applicability.

Yes, some things need to be taught for automaticity: letter recognition, times tables, instant translation of phrases from English to French. But those elements are means to a larger end—transfer—and have to be taught as such. Decoding of letters and words is a skill, but it is not the goal of reading. The goal—comprehension of any text, on one’s own—must be stressed from the outset so that students don’t fixate on a technique and lose sight of the purpose of the technique, which ultimately is only one tool among many for achieving the goal.

This point is reflected further in Bloom’s Taxonomy, where “synthesis” equals creative and flexible performance, not just the ability to recite someone else’s idea when prompted. That is why we need to distinguish rote or prompted skill from intellectual performance when framing our goals in Stage 1. Far too many teacher-designers lose sight of the desired performance goals by reducing them to lists of discrete facts and skills, and then teaching and testing each in isolation. The result is predictable: many of our students cannot perform with or adapt knowledge and skill to unfamiliar situations. They can only recall and plug in bits of learning into highly prompted, familiar-looking exercises. Student motivation, engagement, and, ultimately, achievement, are the casualties of rote learning without understanding. So are achievement results on standardized tests because the items that students most frequently miss are more likely to require transfer (e.g., questions about texts never before read and problems never before seen). As we contend and research confirms, teaching for understanding and transfer is the best test-prep method.

Figure C.1

**Starting Points in Unit Design**

Where to Start	Where <i>Not</i> to Start
A “big” state/provincial standard that encompasses content knowledge, skill, and higher-order thinking and application (e.g., “creative writing” or “regrouping and factoring to solve problems”)	A “narrow” standard, benchmark, or indicator that focuses on a discrete skill or content objective (e.g., “sonnets” or “the associative property”)
Important, enduring ideas that are worth understanding (e.g., “Models enable us to test possible outcomes or effects”)	A favorite learning activity (e.g., making a model volcano with baking soda and vinegar)
Topics with essential questions that must be continually revisited (e.g., Whose “history” is this? How precise do I have to be? How does culture shape art and vice versa?)	Questions with factual answers (e.g., What is the chemical symbol for iron? What is alliteration? How do you add fractions?)
Performance weaknesses revealed by assessments (e.g., students have difficulty making inferences about the main idea or solving multistep/nonroutine math problems)	Basic knowledge or skill deficits revealed by assessments (e.g., vocabulary, subtraction of two-digit numbers that involves borrowing)
Enduring ideas that are worth understanding—a universal theme, theory, or interpretive schema (e.g., “power corrupts”)	Key facts, definitions, or a short reading
A powerful process/strategy for using many important skills (e.g., conducting a scientific inquiry)	A single important process (e.g., using a microscope)
An inquiry into complex issues or problems (e.g., WebQuest on sustainable energy options)	A basic skill that requires only drill and practice (e.g., keyboarding)

Figure C.2

## Common Problem Statements

Identify a statement, below, with which you agree. Based on your decision, frame your unit goals accordingly. Alternatively, add your own statement, or modify any sentence to suit you.

### What You Often Observe in Student Performance and Behavior

1. Student performance on assessments is frustratingly weak, especially on questions/tasks that require in-depth understanding and transfer ability.
2. My students seem to have no sense of what really matters in my class; they seem to be unclear about year-long priorities and their primary responsibilities.
3. My students are very passive and reactive in their work. They have great difficulty solving their own problems, asking questions, thinking critically.
4. My students don't understand that understanding is my goal. They think all they need to do is give the "right" answer (or find it somewhere), they think learning is just recall, and they think that my job is to spoon-feed them—and they resist when I try to get them to justify answers or dig deeper.

Other:

### What You Acknowledge Might Be True About Design Weaknesses

5. We tend to "cover" the content more superficially than we should (even though the classes might involve interesting discussions and experiences).
6. Our lessons have many "activities," but they often lack an overarching learning goal that is clear to learners. Lessons are sometimes just a lot of different and isolated experiences.
7. We ask students to do too many "drills" and not enough "playing the game" in our assessments. We have too few higher-order performance tasks in our assessments; our tests focus mainly on the first two levels of Bloom's taxonomy: recall, recognition, and plugging in of previous learning.

Other:

Figure C.3

Various Template Entry Points

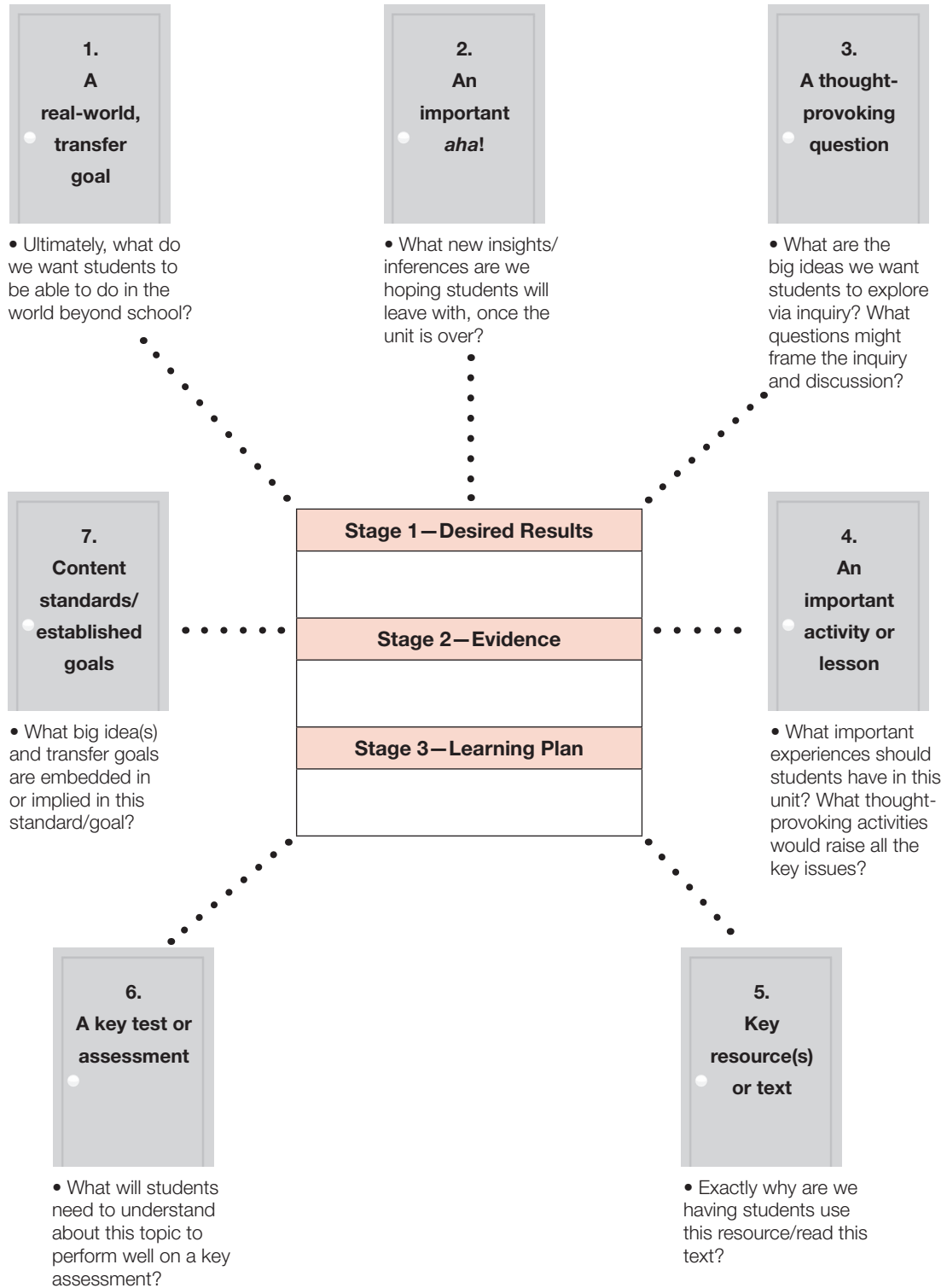


Figure C.4

**Entry Point—Content Standards**

**Standard(s):** \_\_\_\_\_

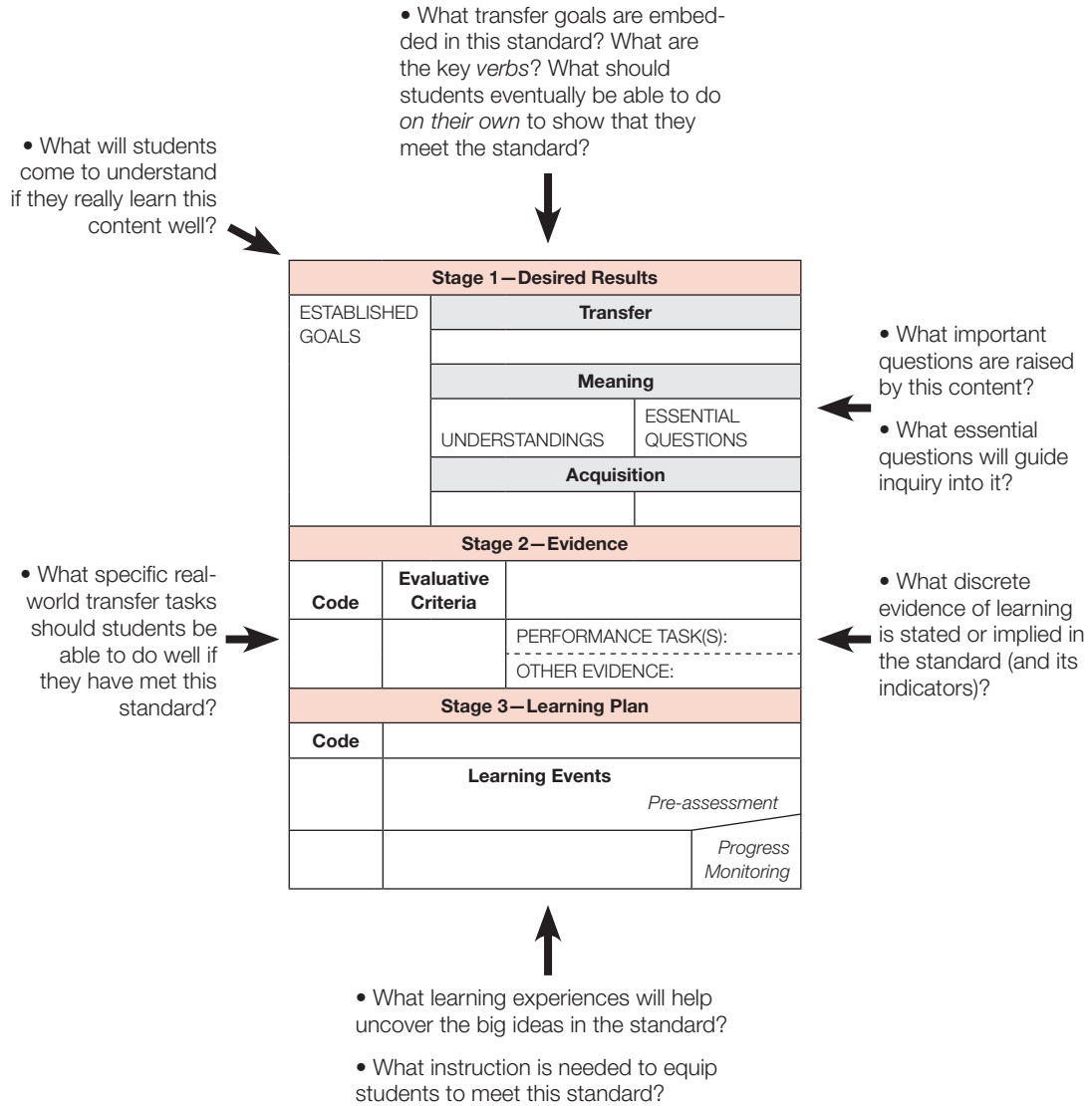


Figure C.5

**Entry Point—Important Topic**

**Topic:** \_\_\_\_\_

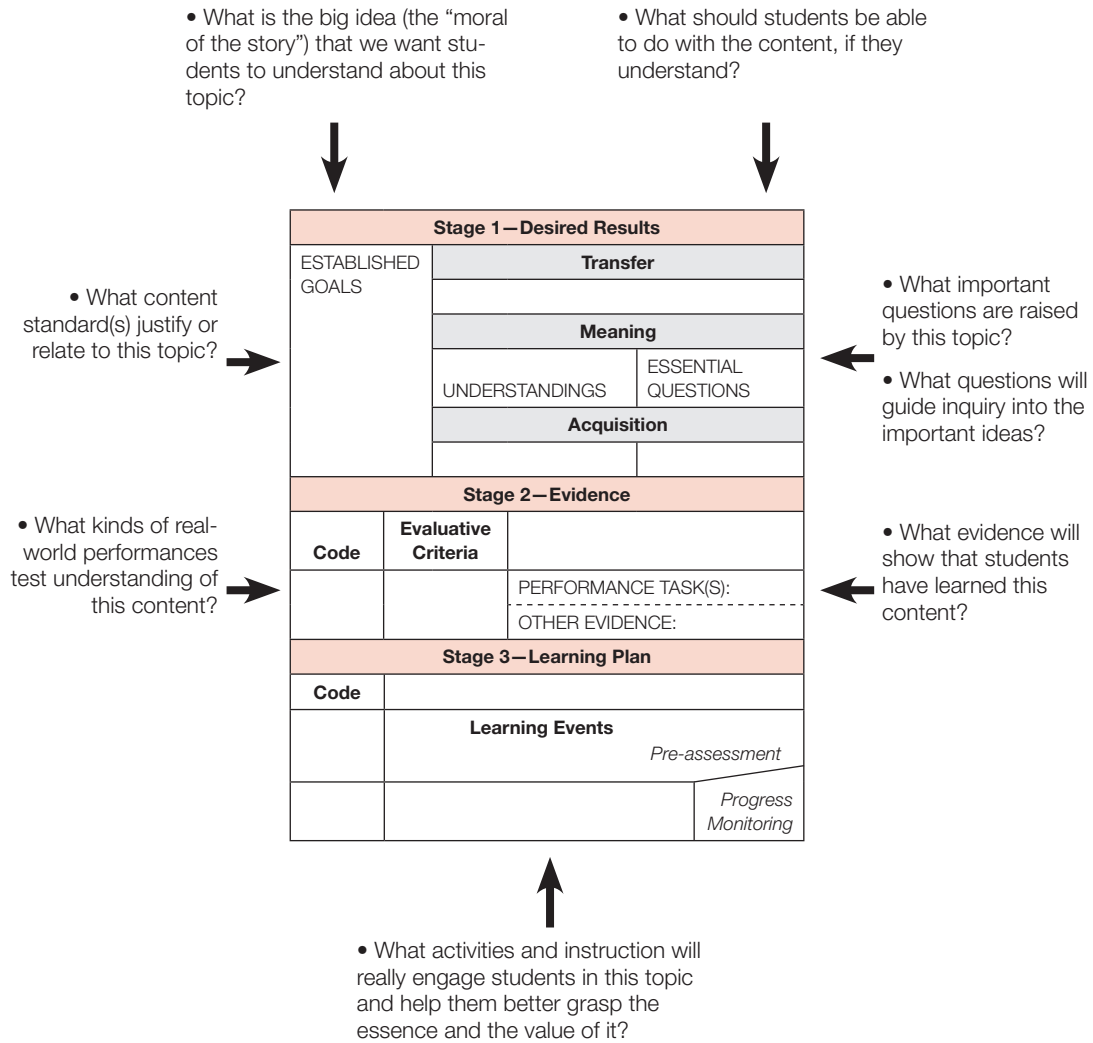


Figure C.6

**Entry Point—Important Skill**

**Skill/Process:** \_\_\_\_\_

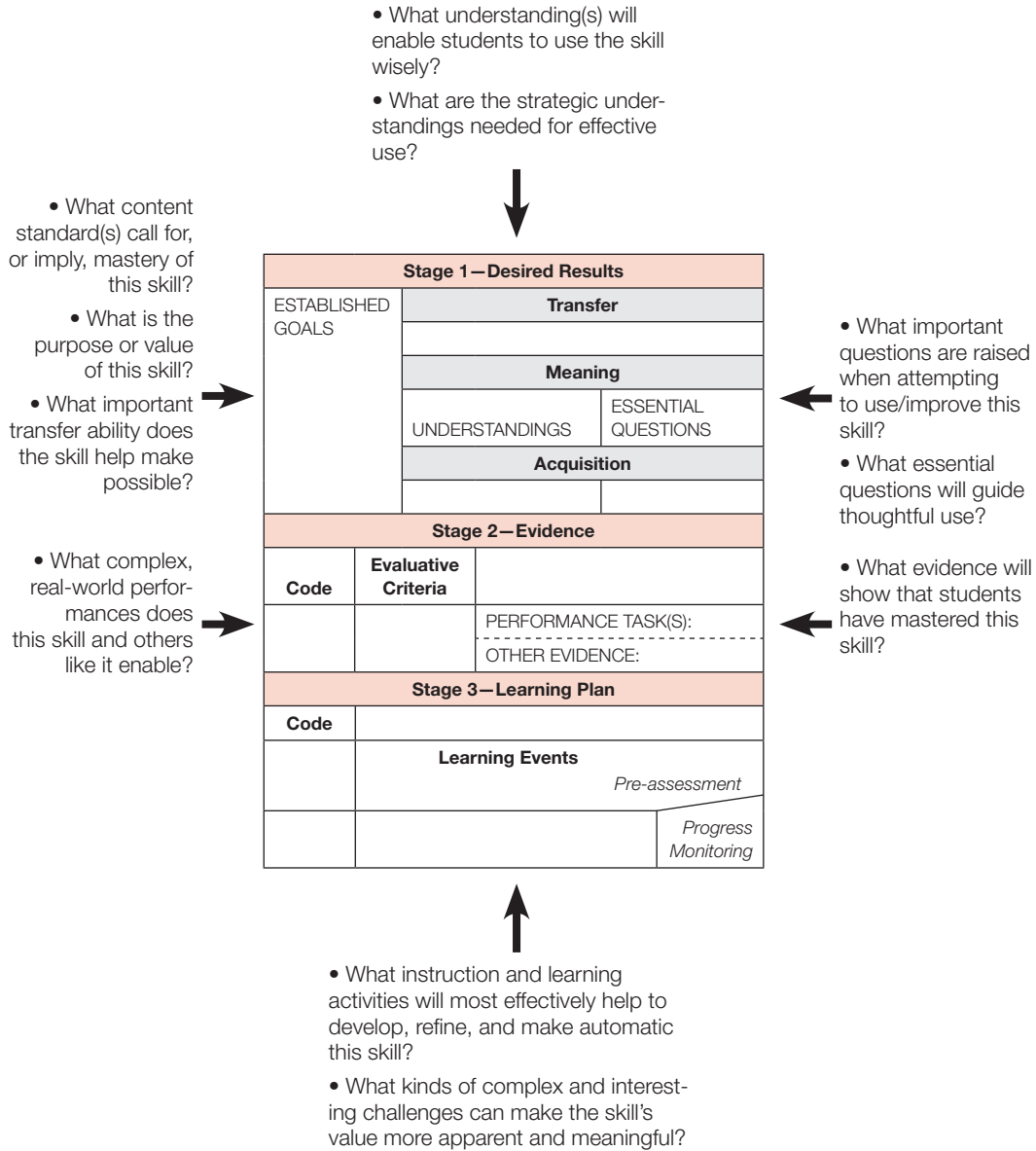


Figure C.7

**Entry Point—A Key Text**

**Text/Resource:** \_\_\_\_\_

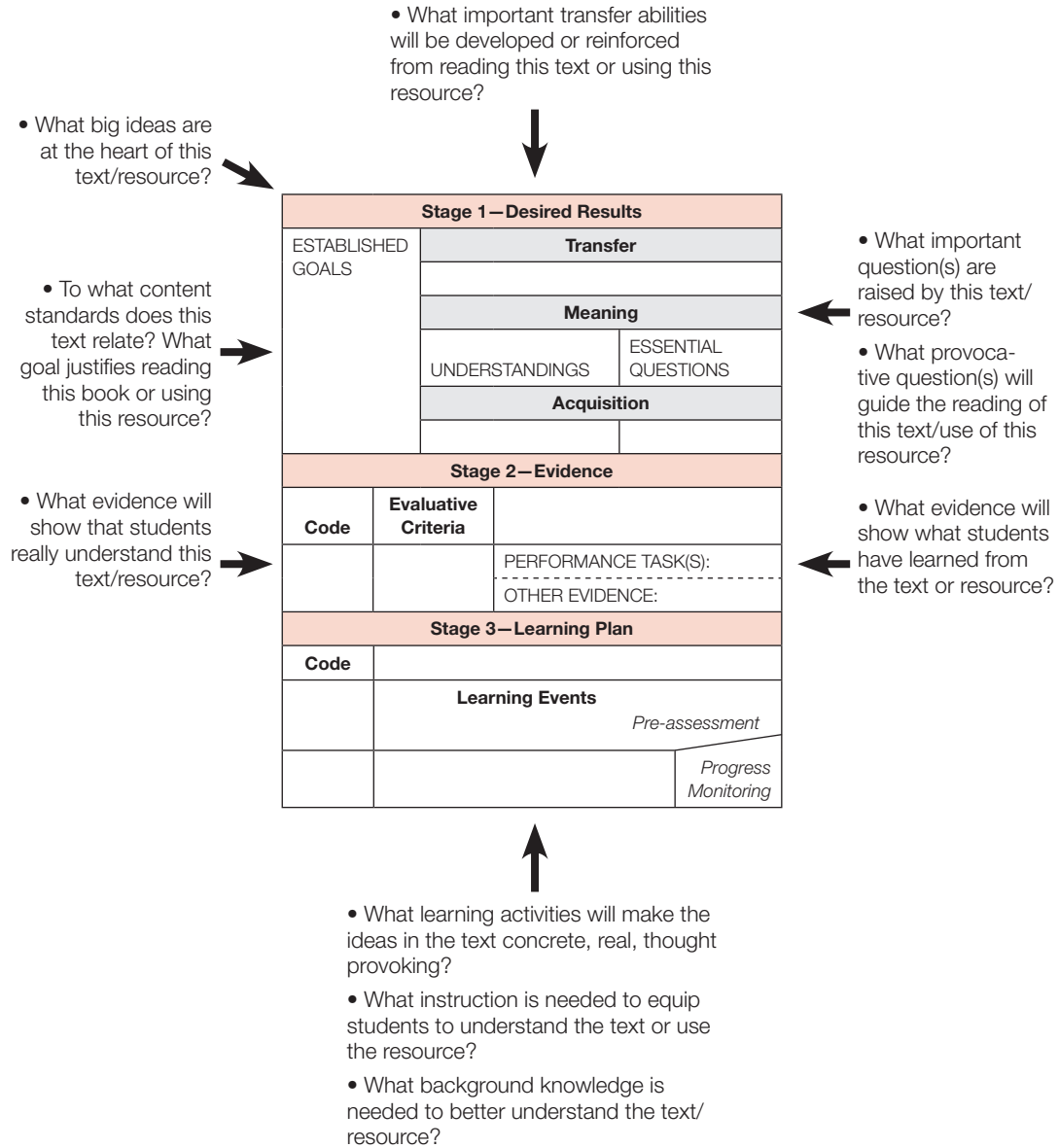




Figure C.8

**Entry Point—A Favorite Activity**

**Activity/Unit:** \_\_\_\_\_

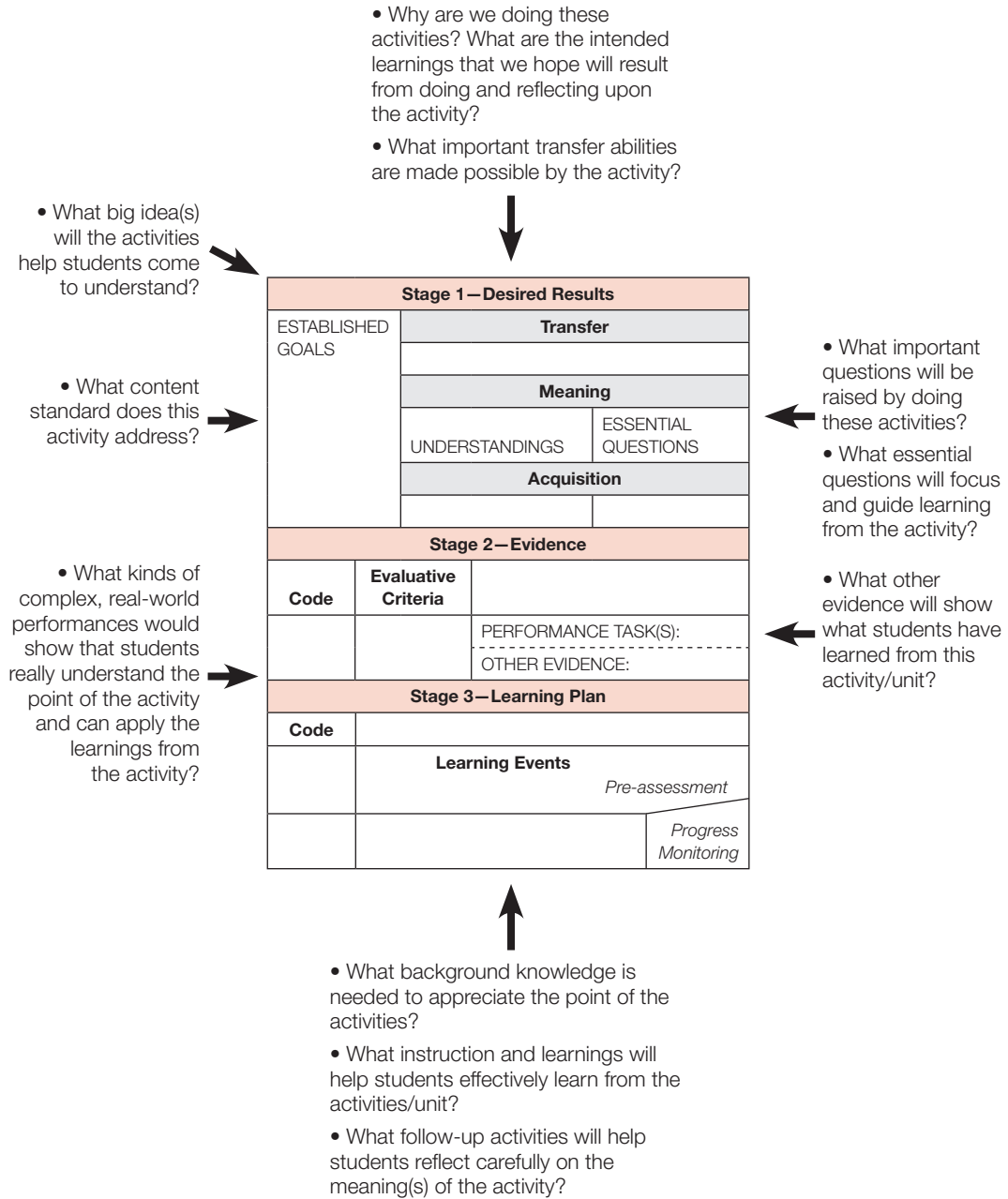
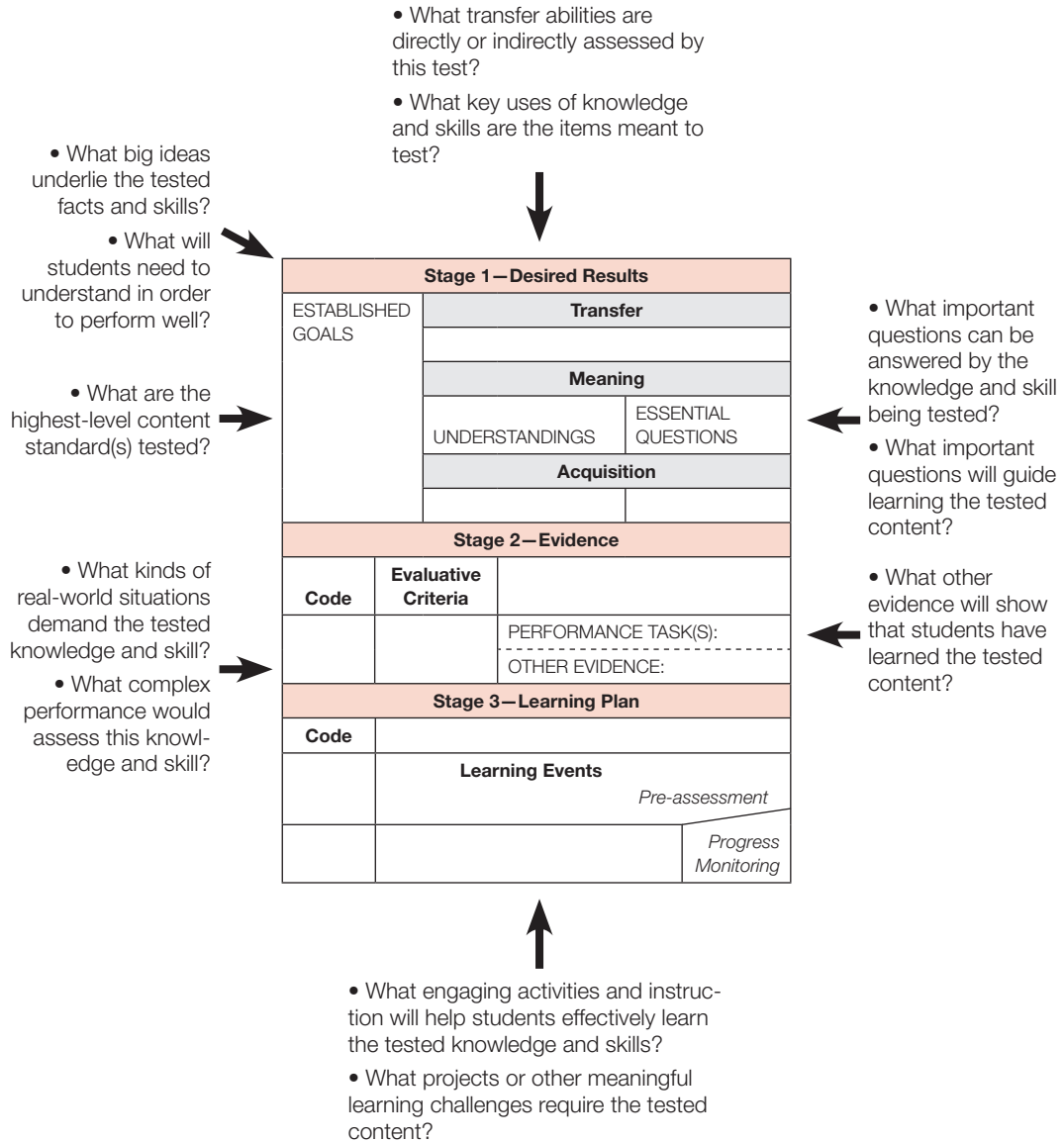


Figure C.9

**Entry Point—A Key Test**

**Test:** \_\_\_\_\_





## Frequently Asked Questions

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### 1. Do you have to follow this or the other UbD Template in order (top to bottom) when you design?

No. Backward design does *not* demand a rigid sequence of thinking. The process is inherently nonlinear, with various entry points, leading to an organized product—a point we discussed in Module B when we introduced the template. The final design is presented in a logical format, via a template. Although the final product reflects the three-stage logic, the designing process typically unfolds in an iterative and unpredictable way, with the end result in mind.

Think of the difference between cooks experimenting in the kitchen and their final product after lots of experimenting—a new recipe. They may be inspired to start in various ways: with a fresh seasonal ingredient, a specific audience for whom to cook, or the desire to test out new preparation techniques. Much trial and error is likely, as they try various combinations of ingredients, spices, pairings, temperatures, and timings. But they present the final product to others in an efficient step-by-step form. Similarly, although the UbD Template provides a format for sharing the final design “recipe,” it does not specify the sequence of the design process. (And, of course, designs as well as recipes will often be further revised following feedback from peer review and use with students.)

We have observed that certain variables, such as subject area, topic, and a teacher’s style, seem to influence the design sequence. Regardless of approach, designers should complete the template and routinely check the emerging design against the UbD design standards to ensure that the process yields the desired high-quality result.

### 2. What if we have rigid pacing guides based exclusively on a textbook? How can UbD be done well or help me?

Although the situation you describe would seem to make UbD impossible in your context, it is not only possible but desirable to fit your textbook and pacing guide into a framework of UbD lessons. Almost all such pacing guides merely highlight the key knowledge and skill to be covered, and a “pace” for covering it. This ignores the vital question: how will students be helped to learn and use this knowledge and skill? Even with such guides, there still remains the vital task of framing all that discrete content via big ideas and transfer goals if students are going to be able to make sense of that content and use it effectively—and thus do well on tests related to the content. Consider the pacing guide for what it is—a reminder of the knowledge and skill that need to be learned. However, ensuring that students learn with understanding requires more than just marching through textbook pages.

That's what the UbD planning process does: it asks you to state your long-term goals and the priority understandings and transfer goals, and thereby package the learning of content to make it most understandable, engaging, and useful.

Figure D.1

### Simple Stages for Nutrition Unit

**Unit Topic:** Nutrition

**Subject(s):** Health/PE

**Grade(s):** 5

**Time Frame:** 4 weeks

<b>Stage 1—Desired Results</b>
This unit introduces basic concepts of nutrition. Students will learn about various types of foods and their nutritional values, the USDA Food Pyramid guidelines for a “balanced” diet, and various health problems that can result from poor nutrition. They will also learn how to read food labels for nutritional information.
<b>Stage 2—Evidence</b>
Students will be assessed through quizzes and a final test to assess their knowledge of nutrition, specific nutrition vocabulary, the food groups, and the Food Pyramid guidelines.
<b>Stage 3—Learning Plan</b>
Major learning activities include the following: <ul style="list-style-type: none"><li>• Learn and memorize nutrition vocabulary.</li><li>• Read “Nutrition” chapter from the health textbook.</li><li>• Learn about the USDA Food Pyramid and the food groups.</li><li>• Watch video “Nutrition and You.”</li><li>• Create a class cookbook.</li><li>• Listen to a guest speaker (nutritionist).</li><li>• Learn to read food labels for nutrition information.</li><li>• Plan healthy menu for class party.</li><li>• Take final unit test.</li></ul>

Figure D.2

### Simple Stages Template

Unit Topic: \_\_\_\_\_ Subject(s): \_\_\_\_\_ Grade(s): \_\_\_\_\_ Time Frame: \_\_\_\_\_

<b>Stage 1—Desired Results</b>
What should students learn as a result of this unit?
<b>Stage 2—Evidence</b>
What evidence will show that students have met the Stage 1 goals?
<b>Stage 3—Learning Plan</b>
What key learning events will help students reach the goals and be successful on the assessments?

Figure D.3

**“If . . . , Then” Worksheet**

Stage 1	Stage 2	Stage 3
If the desired end result is for learners to... →	then you need evidence of the learners' ability to... →	then the learning events need to...
<p>Drive in heavy traffic with aggressive and inattentive drivers without accident or anger.</p>	<p>Handle real as well as simulated driving conditions in which defensive driving is required by traffic and behavior of other drivers.</p>	<p>Help novices become skilled in handling the automobile; help them learn and practice defensive driving in a variety of situations; help them learn to defuse anger using humor and different thought patterns, etc.</p>

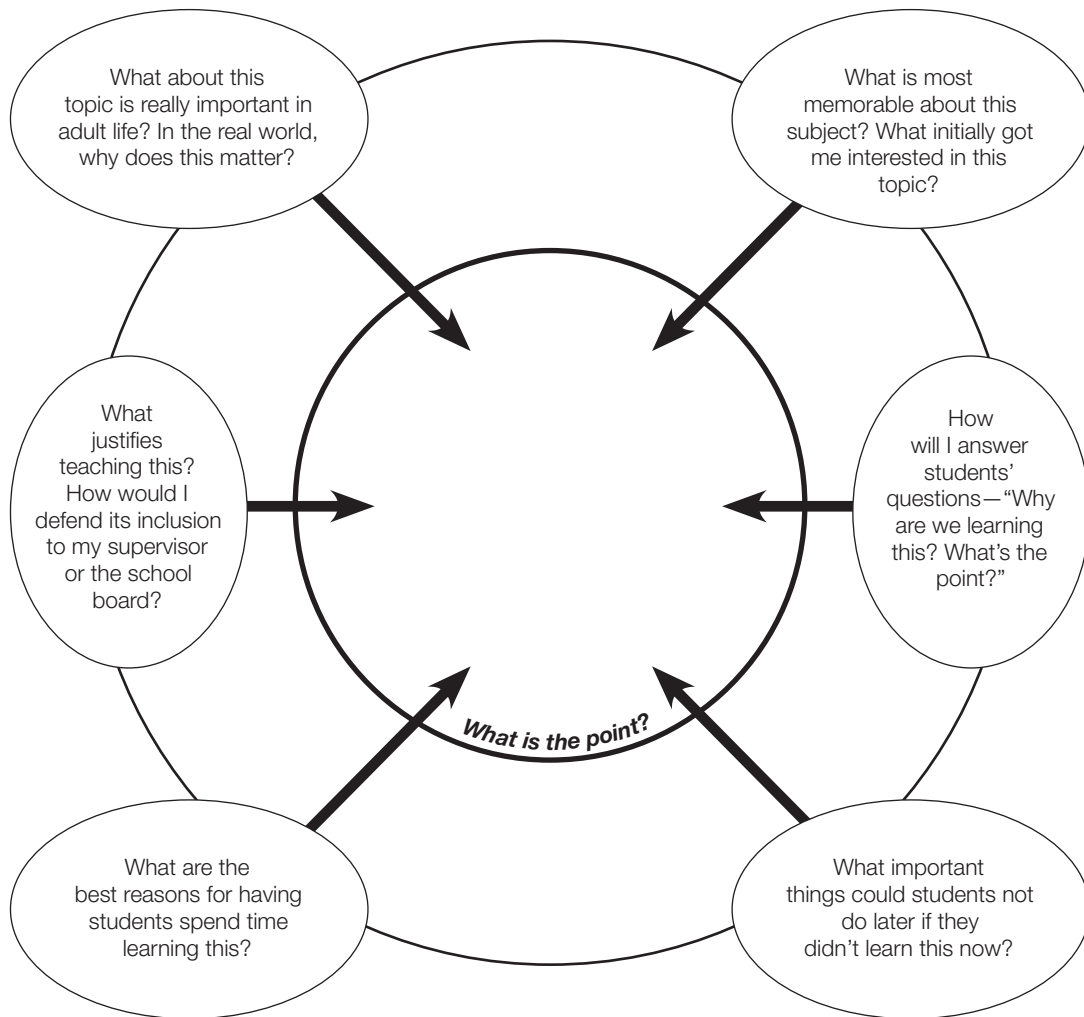


Figure D.4

### What's the Point of My Unit?

**Purpose:** To clarify the long-term purpose of your unit topic; to provide students with reasons for learning the content.

**Directions:** Consider the following questions. Your answers will help you help students understand the purpose of the unit and why they should put forth effort to learn.



## Frequently Asked Questions

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### 1. This three-stage approach makes sense. So, why do you call it “backward” design?

We use the term *backward* in two ways. First, plan with the end in mind by initially clarifying the learning you seek—that is, the desired change or ability in the student, the learning results (Stage 1). Then, think about the evidence needed to show that students have achieved those desired learnings (Stage 2). Finally, plan the means to the end—the teaching and learning activities and resources required to help them achieve the goals (Stage 3). We have found that backward design, whether applied by individual teachers or district curriculum committees, helps to avoid the twin sins of activity-oriented and coverage-oriented curriculum planning.

Second, our use of the term refers to the fact that this approach is “backward” in relation to the way many educators plan. For years we have observed that curriculum planning often translates into listing activities (Stage 3), with only a general sense of intended results and little, if any, attention to assessment evidence (Stage 2). Many teachers have commented that the UbD planning template makes sense but feels awkward, because it requires a break from comfortable planning habits.

Backward design is not a new concept. In 1948 Ralph Tyler articulated a similar approach to curriculum planning. “Task analysis” presumes the same logic. More recently, “outcome-based” and “mastery” education advocates, such as Benjamin Bloom (1956) and Robert Gagné (1977), recommended that curriculum be designed down from desired outcomes. In the best-selling book *The Seven Habits of Highly Effective People*, Stephen Covey (1989) conveys a similar finding—effective people plan “with the end in mind.”

On the other hand, it’s not just backward design from *any* goal. A key element of Understanding by Design is that the goals have to be complex and understanding-focused; we design backward from understanding-related performance as opposed to discrete knowledge and skill objectives and exercises. It’s like the difference between the drill and the game in sports. Many teachers design backward from the drill instead of the game. (We say more about this in later modules.)

This approach may be backward from familiar planning habits and may be hard at first. Nonetheless, there is a method to our madness, and the three-stage template is organized to help guide your thinking in this way. With practice, you will find that backward design becomes a natural way of thinking, and both your teaching and student learning will benefit from it.

Figure E.1

## Examples of Four Goal Types

### Topic: The American Revolution (Declaration of Independence)

- Know the names of the writers of the Declaration of Independence. **K**
- Use your research skill to learn about one of the signers of the Declaration. **S**
- Analyze the Declaration in terms of the historical context and its “audience” and “purpose” and develop a thesis about this document. **M**
- Apply your analysis to role-play a signer of the Declaration in a simulated town meeting where you explain your decision to your townspeople and are prepared to respond to criticism of your stance. **T**

### Topic: Beginning Spanish

- Know the most common phrases related to asking directions. **K**
- Use your emerging skill with the present tense (and your knowledge of common phrases) to translate simple teacher prompts that begin *¿Dónde está...?* **S**
- A student argues “One past tense is enough, and it’s too hard to learn two! Why bother?” Write a letter, make a podcast, or create a YouTube video on why different past tenses are needed for precise communication in Spanish. **M**
- Role-play: In a simulation of being in a crowded train station with little time, you must ask about various trains that have departed and will soon depart. Some speakers will speak more quickly and idiomatically than others. **T**

### Topic: Linear relationships in algebra

- Know the meaning of “slope” and that  $y = mx + b$ . **K**
- Graph various linear pairs. **S**
- Explain, in general terms, how linear relationships help you find the price point but are not likely to help you predict sales. **M**
- Use linear equations and real data from experiments to help you determine the price point for selling store-bought donuts and homemade coffee at athletic events in order to make a profit for a fund-raiser. **T**

Figure E.2

### Distinguishing Understandings from Factual Knowledge

Understandings	Factual Knowledge
<ul style="list-style-type: none"> <li>• Reflect “big ideas” in the form of powerful generalizations.</li> <li>• Are transferrable across situations, places, and times.</li> <li>• Must be “earned” (i.e., constructed in the mind of the learner) through processes of inquiry, inferencing, and rethinking.</li> <li>• Are most appropriately assessed through performance tasks requiring one or more <i>facets of understanding</i> (e.g., application and explanation).</li> </ul>	<ul style="list-style-type: none"> <li>• Consists of <i>facts</i> (e.g., <math>4 \times 4 = 16</math>) and basic <i>concepts</i> (e.g., sky).</li> <li>• Facts do not transfer. Basic concepts have limited transfer capacity (e.g., the concept of <i>dog</i> applies to different breeds).</li> <li>• Can be learned in a rote fashion (i.e., without understanding).</li> <li>• Can be assessed using objective test/quiz items having a “right” or “wrong” answer.</li> </ul>

#### Other Points to Remember

- An understanding is an inference, not a fact. It is a helpful insight derived from inquiry. Key understandings in intellectual fields (e.g., in physics: *Objects remain in motion at a constant velocity if no force acts on them*) often violate common sense and conventional wisdom. They are thus often prone to misunderstanding by students. Therefore, they cannot simply be “covered”; they must be “uncovered” (e.g., by exploring essential questions, wrestling with challenging problems, debating a complex issue).
- Such understandings endure in that they enable us to make vital and informative connections in our learning—as students and as adults. For example, the idea that “might does not make right” applies to both playground disputes and international diplomacy.
- Although facts and basic concepts can be learned in rote fashion, research shows that an understanding-based approach can yield more substantive, long-term, and flexible learning of the basics. Understandings function by helping to link and connect otherwise discrete facts and skills.

Figure E.3

**Successful Meaning-Making**

<b>Students show that they understand when they</b>	<b>Students have not yet made meaning if they</b>
<ul style="list-style-type: none"> <li>• See a pattern in the data (e.g., in the data, text, historical events) on their own.</li> <li>• Explain in their own words or own way (e.g., visual representation).</li> </ul>	<ul style="list-style-type: none"> <li>• Can only restate what they were told the pattern was.</li> <li>• Don't know how to look for a pattern or confirm for themselves that this is the pattern.</li> </ul>
<ul style="list-style-type: none"> <li>• State what the story means or provide a summary in their own words.</li> <li>• Realize that you have to read between the lines to make inferences about character, motives, feelings.</li> </ul>	<ul style="list-style-type: none"> <li>• Only read literally, and retell the plot, setting, characters, and so on.</li> <li>• Can only state facts from the story or repeat what others say the story means.</li> <li>• Are puzzled by inferences others make.</li> </ul>
<ul style="list-style-type: none"> <li>• Connect facts about people and events in a historical narrative to observations and generalizations they have made about such experiences.</li> <li>• Make generalizations about a historical period in their own words.</li> </ul>	<ul style="list-style-type: none"> <li>• Can only repeat a conclusion offered by the teacher or textbook, or only cite facts.</li> <li>• Do not make (or see the need to make) any connections to their own experiences or judgments about people and history.</li> <li>• Cannot accurately summarize or generalize about a historical period.</li> </ul>
<ul style="list-style-type: none"> <li>• Realize that the speaker of another language has made a joke or spoken sarcastically.</li> </ul>	<ul style="list-style-type: none"> <li>• Translate word-by-word and do not draw inferences about the speaker's intent.</li> </ul>

Figure E.4

### Examples of Transfer Goals

Long-Term Transfer Goals	Why (and When) These Are Transfer Goals
<p><i>Writing</i>—Effectively write in various genres for various audiences, in order to</p> <ul style="list-style-type: none"> <li>• Explain (narrative).</li> <li>• Entertain (creative).</li> <li>• Persuade (persuasive).</li> <li>• Help perform a task (technical).</li> <li>• Challenge or change things (satirical).</li> </ul>	<p>The goal is to prepare students to use their writing repertoire for real-life demands with any combination of purpose, audience, and genre. The students transfer their prior learning when they write without explicit reminders and graphic organizers.</p>
<p><i>Mathematics</i>—Recognize and solve never-before-seen mathematical problems in which it is not clear what exactly the problem is asking and what the appropriate approach for solving the problem is. These novel-looking problems involve either theoretical or real-world challenges.</p>	<p>Students have to judge what any problem is really asking, which mathematics might best apply, and the optimum solution path—all without being told how to proceed step-by-step. Transfer requires mathematical reasoning and strategy, not merely plugging in numbers in a familiar-looking exercise, via a memorized algorithm.</p>
<p><i>Health and Physical Education</i>—Make healthful choices and decisions regarding diet, exercise, stress management, alcohol, drug use.</p>	<p>The long-term aim is to equip students with the knowledge, skills, and motivation to live a healthful life without nagging from parents and teachers.</p>
<p><i>Science</i>—Evaluate scientific claims (e.g., X brand of paper towels absorbs the most liquid of all the leading brands), and analyze current issues involving science or technology (e.g., ethanol is the most cost-effective alternative fuel source).</p>	<p>Students understand scientific methods (e.g., need for validation) and habits of mind (e.g., healthy skepticism) to make informed decisions about science-related issues that they will encounter.</p>
<p><i>Reading</i>—Read and respond to various types of text (literature, nonfiction, technical) through</p> <ul style="list-style-type: none"> <li>• Global understanding (the “gist”).</li> <li>• Interpretation (between the lines).</li> <li>• Critical stance.</li> <li>• Personal connections.</li> </ul>	<p>The goal is to prepare students to read and comprehend any text on their own.</p>
<p><i>History</i>—Discuss the applicability of the history they have been learning to current and future events, and to other historical events and issues. What lessons, if any, should we learn from the past and apply to the present and other past events?</p>	<p>Students must consider the relevance of the past to the present, make judgments on their own, and apply them to specific issues.</p>
<p><i>Performing Arts</i>—Create and perform an original work in a selected medium to express ideas and evoke mood/emotion.</p>	<p>The goal is to equip students for personal expression through the arts and to make aesthetic judgments about the arts on their own.</p>
<p><i>World Languages</i>—Communicate effectively in the target language, in various situations with different challenges to understanding (speed, accent, over phone, etc.).</p>	<p>The goal is independent and successful communication in real-world situations where teacher prompts and reminders about the use of discrete knowledge and skills are not available.</p>

Figure E.5

## Nutrition Unit Outline for Stage 1

**Unit Topic:** Nutrition

**Subject(s):** Health

**Grade(s):** 5–7

**Time Frame:** 3 weeks

### Stage 1—Desired Results

**Transfer**—Students will be able to . . .

- Evaluate their own eating patterns and make healthful nutritional choices.

**Understandings**—Students will understand that . . .

- Eating a balanced diet promotes physical and mental health, and enhances one's appearance and energy level.
- The USDA Food Pyramid defines healthy eating, but healthy eating varies for each individual depending upon age, lifestyle, culture, and available foods.
- Choosing healthy foods isn't always easy.

### Essential Questions

- What should we eat?
- Are you a healthy eater, and how would you know?

**Knowledge**—Students will know . . .

- The food groups.
- The USDA Food Pyramid recommendations for a balanced diet.
- Key nutrition vocabulary (e.g., *protein*, *fat*, *calorie*, *carbohydrate*, *cholesterol*).
- Health problems caused by poor nutrition.

**Skill**—Students will be skilled at . . .

- Reading food labels for nutritional information.
- Planning a balanced meal.

Source: © 2004 ASCD. All rights reserved.

Figure E.6

### Summarize the Relationships Among Four Goal Types

Use this page to sketch your current understanding of the relationships among the four types of goals—*transfer*, *meaning*, *knowledge*, and *skill*. You might try to create a Venn diagram, a concept web, a drawing, an analogy, an equation—whatever will help you clarify the relationships.

*Example:* knowledge + skill < transfer; knowledge + big idea = meaning, like “connect the dots” puzzles.

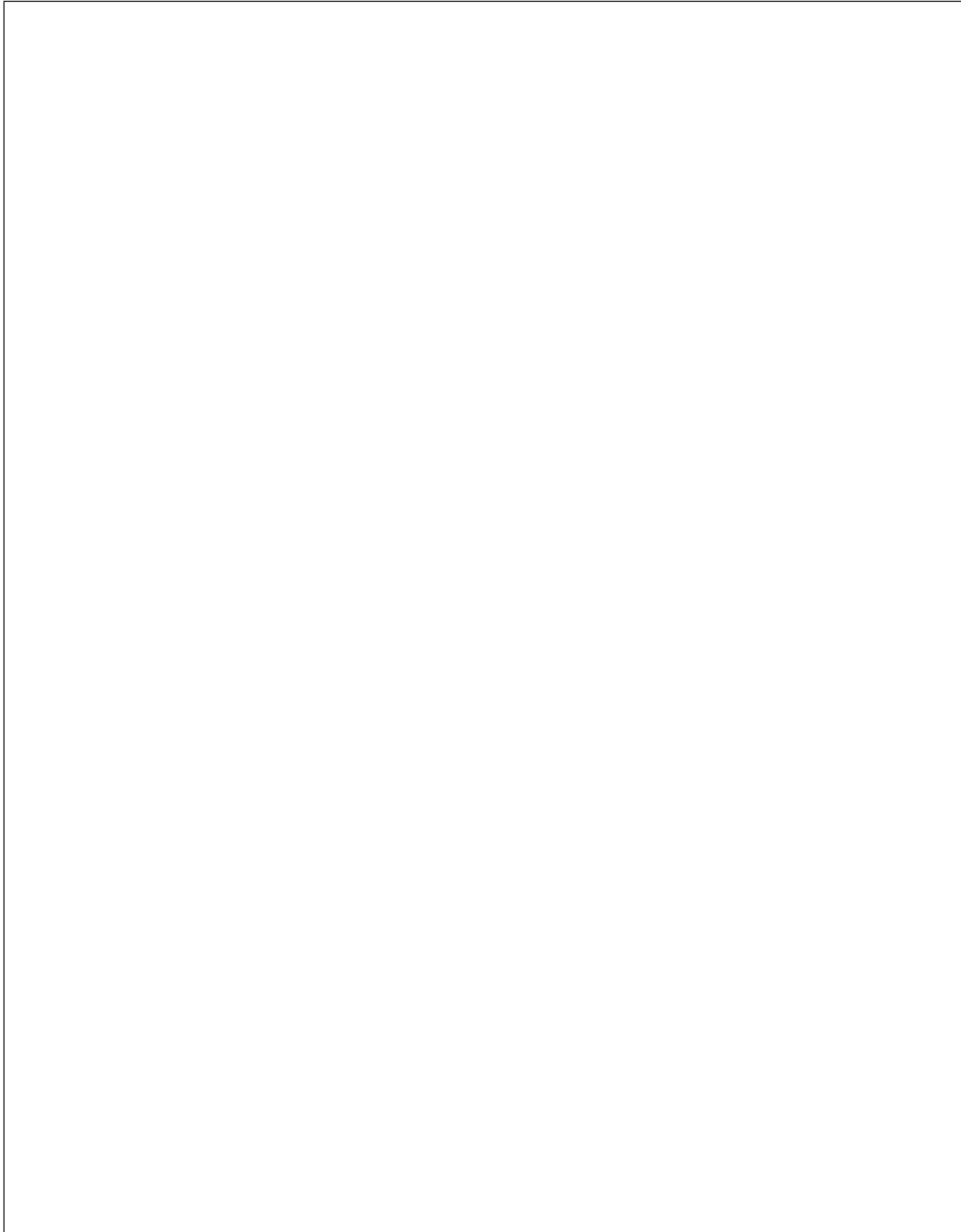
A large, empty rectangular box with a thin black border, intended for a student to sketch their understanding of the relationships between the four goal types: transfer, meaning, knowledge, and skill. The box is currently blank.



Figure E.7

### **Coding Stage 1 Goals**

List and code your Stage 1 goals according to the following key.

T = Genuine, long-term accomplishments that we want students to achieve autonomously (i.e., transfer goals)

M = Important ideas that we want students to come to understand by drawing inferences; the *meanings* that we want students to make

K = Knowledge of facts, definitions, and basic concepts that students will acquire (i.e., declarative knowledge goals)

S = Discrete skills that students will learn to do (i.e., procedural knowledge goals)

**Code**            **Stage 1 Goals**

Figure E.8

**Implications for Stages 2 and 3 of Four Goal Types**

**Directions:** Sketch out a unit idea in the three stages of backward design based on the four desired results in Stage 1—transfer, make meaning, knowledge, and skill.

Stage 1	Stage 2	Stage 3
<i>If the desired end result is for learners to...</i>	<i>then you need evidence of the learners' ability to...</i>	<i>then the learning events need to...</i>
<i>Transfer</i>		
<i>Make Meaning of</i>		
<i>Be Skilled At</i>		
<i>Know</i>		

Figure E.9

**Sample Implications for Stages 2 and 3 of Four Goal Types**

Stage 1	Stage 2	Stage 3
<b><i>If the desired end result is for learners to... →</i></b>	<b><i>then you need evidence of the learners' ability to... →</i></b>	<b><i>then the learning events need to...</i></b>
<b><i>Transfer</i></b> Effectively handle real-world traffic and road conditions (e.g., on entering highways).	Enter highways at appropriate speeds and in a safe merge, from varied streets and road conditions.	Provide students with direct instruction, practice, and feedback on highway merges—under real as well as simulated and virtual conditions.
<b><i>Make Meaning of</i></b> What “defensive driving” requires in a highway entrance-ramp merge.	Observe, analyze, and discuss real and simulated highway merges in terms of their safety and appropriateness for the situations.	Give students insights and practice in exploring the question “What is ‘defensive driving’ when entering a highway?” via discussion, analysis of video.
<b><i>Be Skilled At</i></b> Accelerating on an entry ramp to match traffic flow on the highway.	Accelerate and decelerate smoothly and safely when conditions demand it.	Provide instruction, practice, and feedback on how to accelerate while mindful of road conditions.
<b><i>Know</i></b> The speed limit on city streets, entry ramps, and highways.	Recall the laws about speed limits locally, and know what to do when speed limits are not posted.	Instruct students orally, in print, and via video about speed limit laws.

Figure E.10

### Clarifying Transfer Goals

**Purpose:** To clarify the long-term transfer goals for your unit topic.

**Directions:** Consider the following questions. Your answers represent possible transfer goals for focusing teaching and learning on long-term outcomes.

**Your Unit Topic:** \_\_\_\_\_

What **complex task**, requiring this and other skills, do I want learners to be able to accomplish?

Given all I will “teach,” what performance should learners be able to accomplish **fluently and independently**?

What are the most important **real-world challenges** requiring the skill(s)?

What is **the point** of learning these skills? What do these skills enable learners to eventually do?

What **complex challenges** do learners have trouble tackling on their own, without prompting or scaffolding?

What kinds of tasks, reflecting standards, should students be able to do **on their own**?

**1–2 key transfer goals**

Figure E.11

### Considering Long-Term Transfer Goals

**Purpose:** To consider the questions

- If learning content is the means, what is the desired end?
- What should learners eventually be able to do with the content?

**Directions:** Respond to the following prompts for your unit topic.

**Your Unit Topic:** \_\_\_\_\_

I want students to learn [*specify the content*]

... so that, in the long run, they will be able, on their own, to use this content to [*specify the long-term desired accomplishment*].

Figure E.12

## Clarifying Meaning Goals

**Directions:** Fill in the blanks to clarify the meaning goals for your unit. We've provided space for two goals; repeat for however many meaning-making goals you have.

### Goal 1

It's not enough for students to know—

*They also have to be able to explain in their own words*

*And they have to be able to infer on their own, as much as possible*

### Goal 2

It's not enough for students to know—

*They also have to be able to explain in their own words*

*And they have to be able to infer on their own, as much as possible*

## Frequently Asked Questions

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1. Does everything we teach need to be taught for deep “understanding” and “transfer”? Aren’t there some facts and skills to master that you just need to memorize and learn by drill and practice?

Although there are certainly “basics” that students must master, it does not follow that rote learning is the only or best means of achieving these ends. It ends up being a question of how you define *master*. Recall the old quip from a frustrated math teacher: “Yours is not to reason why, just invert and multiply.” Think of how often you learned a math “fact” (e.g., cross-multiplying fractions or using the quadratic formula) without understanding why it worked, why it mattered, and what important performance it permitted. In other words, even though you “knew” the fact, you didn’t understand its meaning or its applicability to performances in your world. And that inability had practical consequences: it often led to forgetfulness, misunderstanding, and thus an inability to apply the learning in later work. Of course, some things need to become automatic: times tables, the meaning of key terms, the conjugation of *être* and *estar*. But that is no excuse for piling fact upon fact, skill upon skill, out of context. The research is clear: too much out-of-context learning inhibits transfer.

2. Why should we use “big ideas” to frame unit design? Aren’t the standards sufficient? Isn’t clear instruction in the knowledge and skills sufficient?

No clearer statement of the importance of ideas for advancing one’s learning has been presented than Bruner’s account in *The Process of Education*, more than 50 years ago:

Grasping the structure of a subject is understanding it in a way that permits many other things to be related to it meaningfully. To learn structure, in short, is to learn how things are related... [T]o take an example from mathematics, algebra is a way of arranging knowns and unknowns in equations so that the unknowns are made knowable. The three fundamentals involved... are commutation, distribution, and association. Once a student grasps the ideas embodied by these three fundamentals, he is in a position to recognize wherein “new” equations to be solved are not new at all. *Whether the student knows the formal names of these operations is less important for transfer than whether he is able to use them* [emphasis added]. (p. 7–8)

The authors of the widely cited summary of research on learning in *How People Learn* (Bransford, Brown, & Cocking, 2000) note the following:

When a subject is taught in multiple contexts, and includes examples that demonstrate wide application of what is being taught, people are more likely to abstract the relevant features of concepts and to develop a flexible representation of knowledge. (p. 50)

One way to deal with lack of flexibility is to ask learners to solve a specific case and then provide them with an additional, similar case; the goal is to help them abstract general principles that lead to more flexible transfer. [Another] way is to generalize the case so that learners are asked to create a solution that applies not simply to a single problem, but to a whole class of related problems. (p. 50)

Effective comprehension and thinking require a coherent understanding of the organizing principles in any subject matter; understanding the essential features of the problems of various school subjects will lead to better reasoning and problem solving. (p. 227)



Figure F.1

### Distinguishing Essential Questions from Knowledge Questions

Essential Questions	Knowledge Questions
<ol style="list-style-type: none"> <li>1. Are meant to be explored, argued, and continually revisited (and reflected upon).</li> <li>2. Have various plausible answers. Often the answers to these questions raise new questions.</li> <li>3. Should spark or provoke thought and stimulate students to engage in sustained inquiry and extended thinking.</li> <li>4. Reflect genuine questions that real people seriously ask, either in their work or in their lives—not a “teacherly” question asked only in schools.</li> </ol>	<ol style="list-style-type: none"> <li>1. Have a specific, straightforward, unproblematic answer.</li> <li>2. Are asked to prompt factual recall rather than to generate a sustained inquiry.</li> <li>3. Are more likely to be asked by a teacher or a textbook than by a curious student or person out in the world.</li> <li>4. Are more rhetorical than genuine.</li> </ol>

#### Other Points to Remember

- It is the *purpose* of the question that matters, not its phrasing. How the question is pursued (or not) in the activities and assessments determines if it is “essential.” In this regard, many essential questions begin with “open” stems (e.g., *Why...? In what ways...? How might...?*), but this is not a requirement. Questions may be phrased as if they could be answered with a “yes/no” or a single answer, yet still meet the criteria of “essential” (e.g., *Is biology destiny? What should we eat? Which modern president has the most disappointing legacy?*). In other words, the format or phrasing of the question is not the sole determiner of its purpose.
- Some essential questions are meant to be guiding; that is, they are initially open to many plausible interpretations and answers, but they *eventually* end in an understanding. Many essential questions in the sciences fit this description (e.g., *What are things made of? Where does the water go? Why do things move the way they do?*). Nonetheless, such questions can guide student inquiry, stimulate thinking, and encourage meaning-making by the learner.
- Note the distinction between “hook” questions (e.g., *Can what you eat help prevent zits?*) intended to engage students’ interest in a new topic, and essential questions. We recommend placing hook questions in Stage 3 as part of the learning plan.

Figure F.2

**Essential Questions for Skill-Related Goals**

Subject	Skill	Strategy	Essential Questions
<b>Reading</b>	"Sound out" unfamiliar words.	Use context clues to figure out the word's meaning.	<ul style="list-style-type: none"> <li>• What's the author trying to say?</li> <li>• How can I find out what these words might mean?</li> </ul>
<b>Writing</b>	Follow the five-paragraph essay structure.	Match your word choices with your purpose and audience.	<ul style="list-style-type: none"> <li>• If that's my purpose and audience, what follows for my writing?</li> </ul>
<b>Mathematics</b>	Dividing fractions: Invert and multiply.	Problem solving: <ul style="list-style-type: none"> <li>• Simplify equivalent expressions.</li> <li>• Work backward from end result.</li> </ul>	<ul style="list-style-type: none"> <li>• How can I turn unknowns into knowns?</li> <li>• What form must this end up in?</li> </ul>
<b>Visual Arts/ Graphic Design</b>	Use the color wheel to select complementary colors.	Use colors to reinforce the mood you want to evoke in the viewer.	<ul style="list-style-type: none"> <li>• What am I trying to make the viewer feel?</li> <li>• How can I best evoke mood using color?</li> </ul>
<b>Carpentry</b>	Apply proper techniques when using a band saw.	Measure twice, cut once.	<ul style="list-style-type: none"> <li>• How can I best save time, money, and energy?</li> </ul>

Figure F.3

**What Makes a Question “Essential”?**

**Part 1:** Examine the following essential questions (1–6) and nonexamples (7–12) to determine the common characteristics of essential questions. List the common characteristics.

Essential Questions	Not Essential Questions
1. How are “form” and “function” related in biology? 2. How do effective writers hook and hold their readers? 3. Who “wins” and who “loses” when technologies change? 4. Should it be an axiom if it is not obvious? 5. What distinguishes fluent foreigners from native speakers? 6. How would life be different if we couldn’t measure time?	7. How many legs does a spider have? How does an elephant use its trunk? 8. What is “foreshadowing”? Can you find an example of foreshadowing in the story? 9. What is the original meaning of the term <i>technology</i> (from its Greek root, <i>techne</i> )? 10. By what axioms are we able to prove the Pythagorean theorem? 11. What are some French colloquialisms? 12. How many minutes are in an hour? How many hours are in a day?
<p><b>Common characteristics of essential questions:</b></p>	

**Part 2:** Test your theory about essential questions by deciding which of the following questions (13–18) are essential, using your list of characteristics as criteria. Mark yes if it is an essential question or no if it’s not.

	YES	NO
13. What is the relationship between popularity and greatness in literature?	_____	_____
14. When was the Magna Carta signed?	_____	_____
15. Crustaceans—what’s up with that?	_____	_____
16. Which U.S. president has the most disappointing legacy?	_____	_____
17. To what extent are common sense and science related?	_____	_____
18. What’s the pattern?	_____	_____

**Part 3:** Review the answer key and explanations; revise your description of essential questions.

13. Yes—Open-ended, thought provoking; supports inquiry, discussion, and debate.  
 14. No—A fact question with a single “correct” answer.  
 15. No—Somewhat open, but does not necessarily point toward any important ideas.  
 16. Yes—Open-ended, thought provoking; supports inquiry, discussion, and debate with follow-up prompts (e.g., Why? What’s your reasoning? Support your choice).  
 17. Yes—Open-ended, thought provoking; supports inquiry and discussion.  
 18. Maybe—Not an essential question if it points to a correct answer (e.g., 1, 2, 4, 8, 14, \_\_\_\_\_), but could be if the students are given complex data with no obvious pattern; in this case, students will need to use reasoning to make and test inferences.

**Revised descriptions for common characteristics of essential questions:**

Figure F.4

### Framing Understandings

**Part 1:** Examine the following examples (1–5) and nonexamples (6–10) to determine the common characteristics of an effectively framed understanding. List these below.

Enduring Understandings	Not Enduring Understandings
<p><b>The student will understand that...</b></p> <ol style="list-style-type: none"> <li>1. In a free-market economy, price is a function of supply and demand.</li> <li>2. True friendship is revealed during difficult times, not happy times.</li> <li>3. Statistical analysis and data display often reveal patterns that may not be obvious.</li> <li>4. The most efficient and effective stroke mechanics in swimming involve pushing the maximum amount of water directly backward.</li> <li>5. Heating of the Earth's surface and atmosphere by the sun drives convection within the atmosphere and oceans, producing winds and ocean currents.</li> </ol>	<p><b>The student will understand...</b></p> <ol style="list-style-type: none"> <li>6. That the price of long-distance phone calls has declined during the past decade.</li> <li>7. True friendship.</li> <li>8. Mean, median, and mode are measures of central tendency.</li> <li>9. That they should not cup their hands when swimming the freestyle.</li> <li>10. Wind is a force of nature.</li> </ol>
<p><b>Common characteristics of enduring understandings:</b></p>	

**Part 2:** Use your list of characteristics as criteria to determine which of the following examples are effectively framed as enduring understandings. Mark yes if it is an enduring understanding or no if it's not.

	YES	NO
11. The concept of estivation.	_____	_____
12. The USDA Food Pyramid presents relative, not absolute, guidelines for a balanced diet.	_____	_____
13. Mathematical models simplify reality to enable useful solutions.	_____	_____
14. How to tell time.	_____	_____
15. The causes and effects of the Civil War.	_____	_____
16. That the Magna Carta was signed on June 15, 1215.	_____	_____

**Part 3:** Review the answer key and explanations; revise your description of enduring understandings.

- 11. No—States the concept to be learned, not the understanding about the concept that should be learned.
- 12. Yes—The word 'relative' in this statement signals that there is not a single prescribed or pat formula for healthy eating, given individual and cultural differences.
- 13. Yes—This is a transferable idea, applicable throughout school and life. And it is not obvious that insightful models greatly simplify reality at some potential cost, despite their power.
- 14. No—Skill objective does not state understandings about telling time that need to be grasped.
- 15. No—States the topic, not the unobvious understandings about the causes and effects to be achieved.
- 16. No—States a fact, not an idea.

<p><b>Refined common characteristics of enduring understandings:</b></p>
--

Figure F.5

## Nutrition Unit with Expanded Understandings and Essential Questions

**Unit Topic:** Nutrition

**Subject(s):** Health

**Grade(s):** 5–7

**Time Frame:** 3 weeks

### Stage 1—Desired Results

#### Understandings

*Students will understand that . . .*

- Eating a balanced diet promotes physical and mental health, and enhances one's appearance and energy level. Poor nutrition leads to a variety of health problems. (*Related misconception: If food is good for you, it must taste bad.*)
- Healthful eating requires an individual to act on available information about nutritious diets, even if it means breaking comfortable habits. (*Related misconception: As long as I'm thin, it doesn't matter what I eat.*)
- The USDA Food Pyramid defines healthy eating, but healthy eating varies for each individual depending upon age, lifestyle, culture, and available foods. (*Related misconception: Everyone must follow the same prescription for good eating.*)

#### Essential Questions

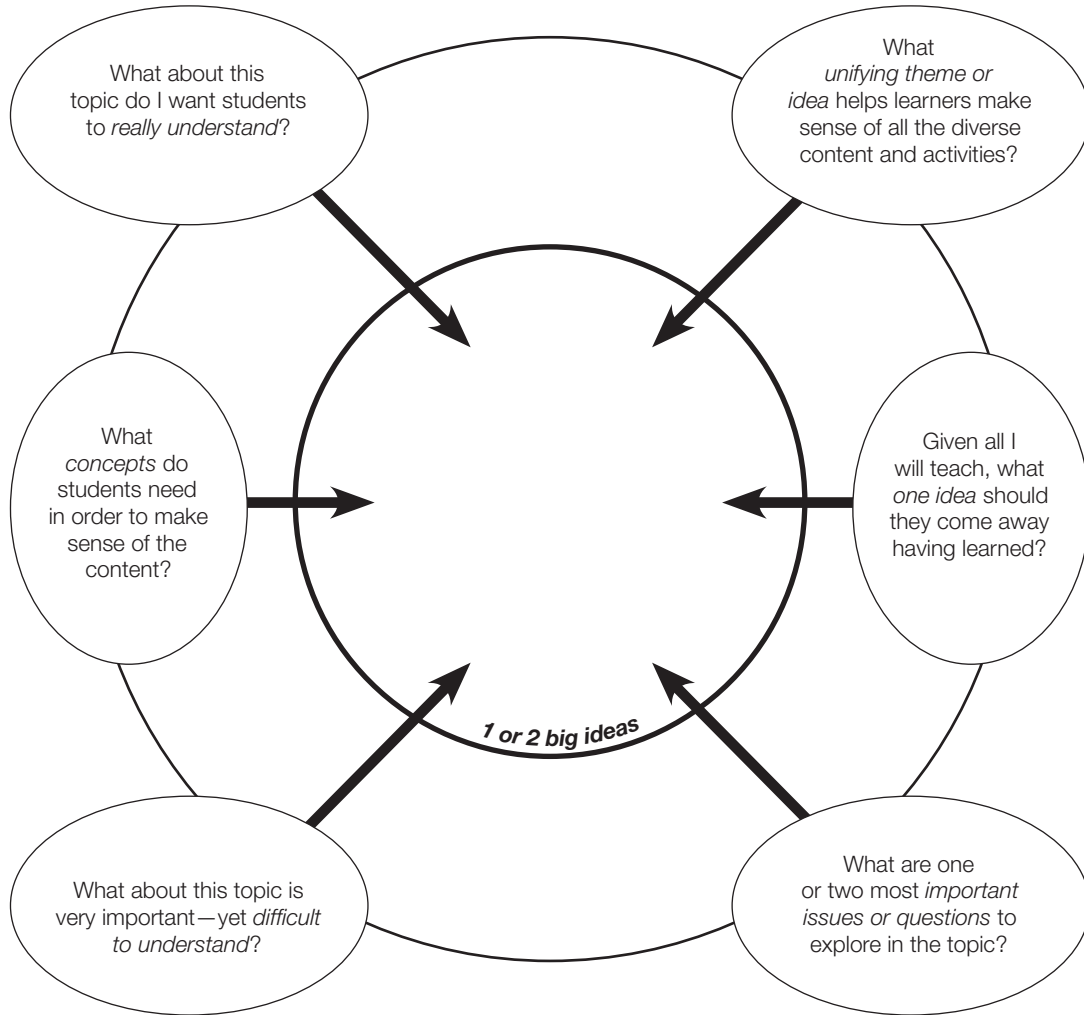
- What is healthful eating?
- Are you a healthful eater? How will you know?
- How could a healthy diet for one person be unhealthy for another?
- Why are there so many health problems caused by poor nutrition despite all of the available information about healthful eating?

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Figure F.6

### Brainstorming Big Ideas

Topic: \_\_\_\_\_



Your answers represent possible "big ideas" for the topic.

Figure F.7

## Brainstorming Essential Questions

**Directions:** Use this worksheet to brainstorm possible essential questions based on the following criteria. Your ideas can be listed or webbed.

*Tip:* For now, just brainstorm possible essential questions. Later you can fine-tune the wording and edit for kid-friendliness.

### Essential Questions

- Are meant to be explored, argued, and continually revisited.
- Have various plausible answers; often the “answers” raise new questions.
- Should provoke thought and stimulate students to engage in sustained inquiry and extended thinking.
- Reflect genuine questions that real people seriously ask, either in their work or in their lives—not a “teacherly” question asked only in schools.

**Topic:** \_\_\_\_\_

Figure F.8

### From Topics to Big Ideas

A big idea is a central and organizing notion. Given the topic of your unit, brainstorm possible big ideas using the categories shown below.

Topic: \_\_\_\_\_

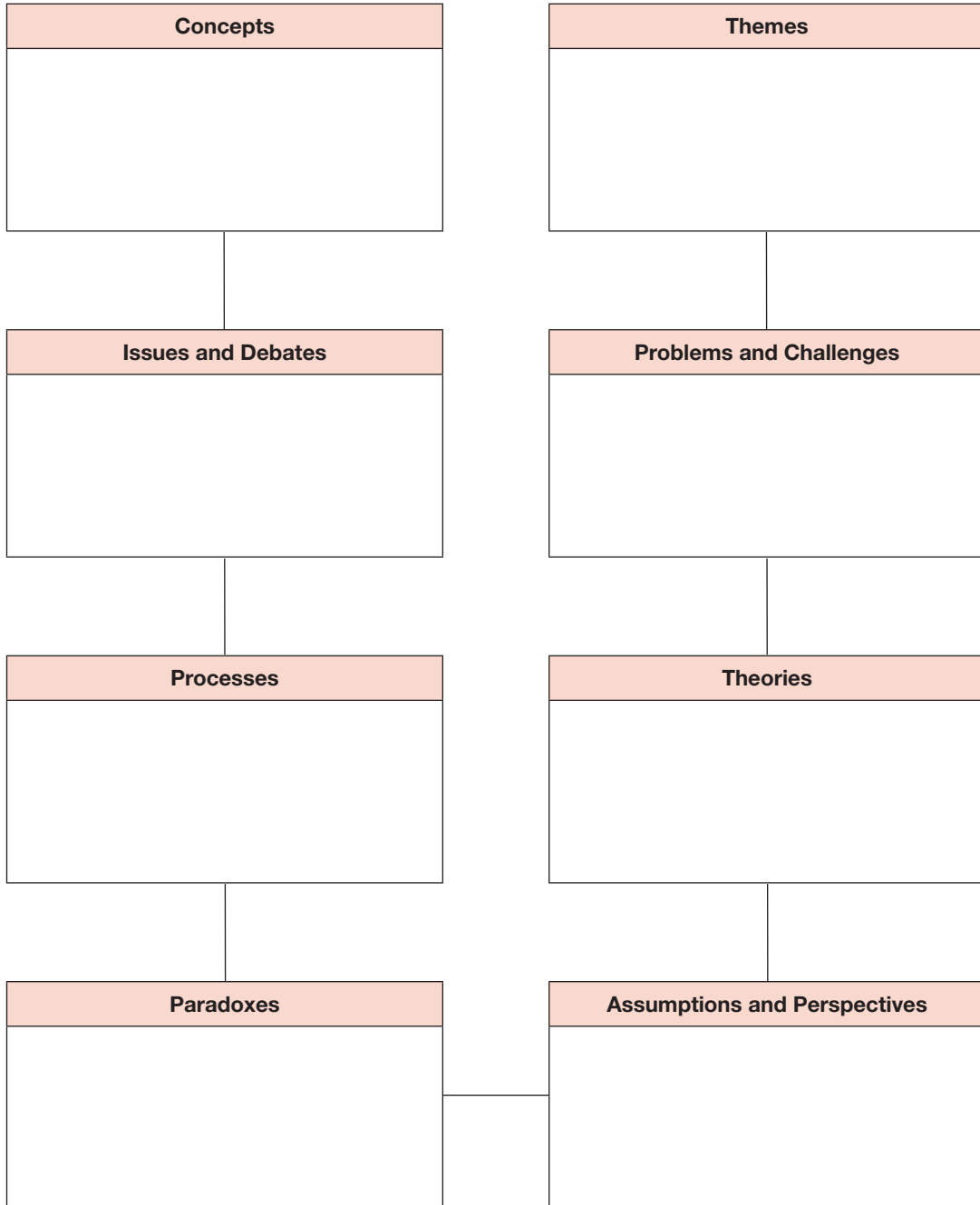




Figure F.9

### Manifestations of Big Ideas

Topic: Nutrition

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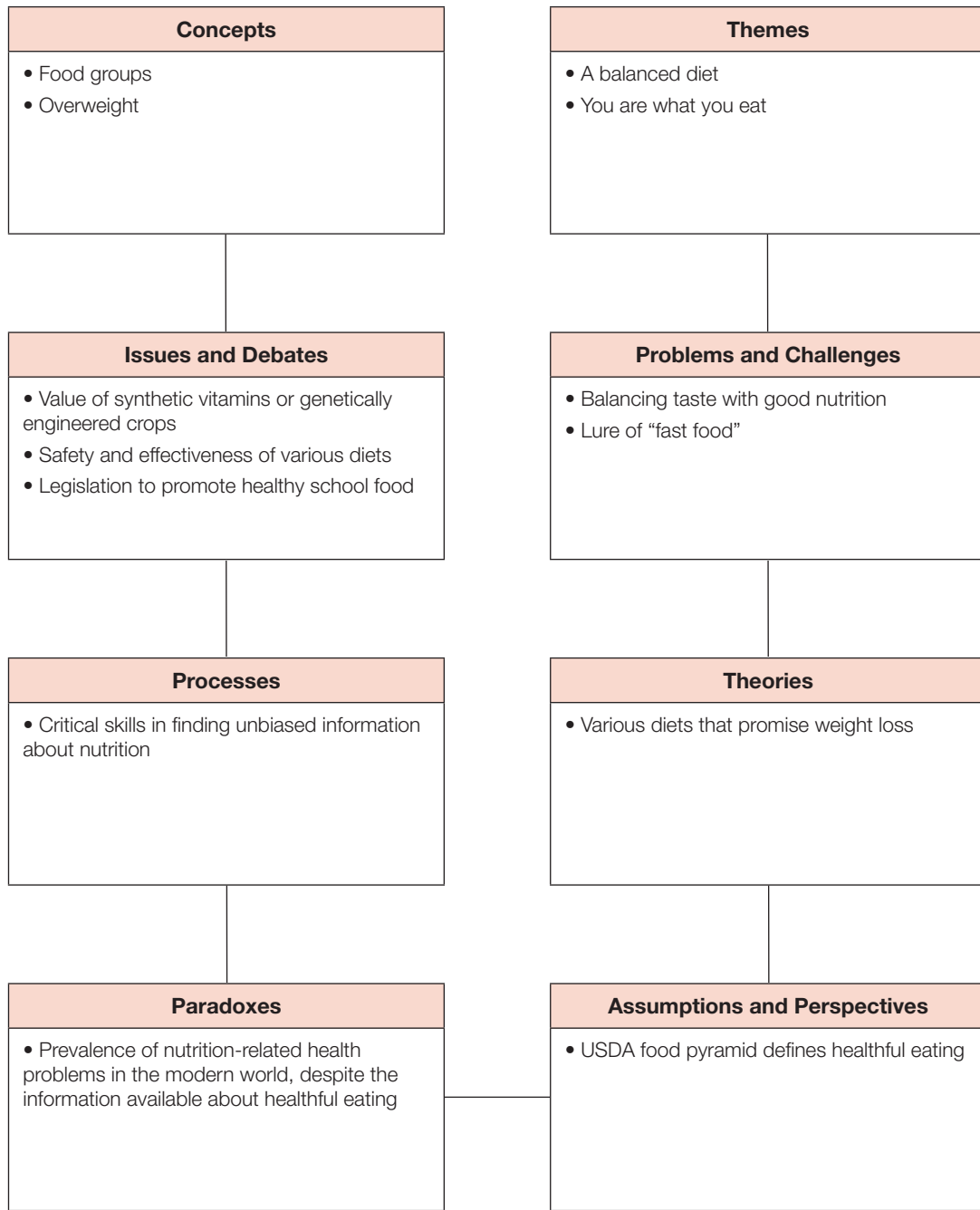


Figure F.10

### Finding the Big Ideas in Skills

Use this worksheet to brainstorm possible big ideas for your skill-focused unit. Consider concepts underlying the skill, the purpose/value of the skill, the strategy/tactics of effective skill performers, and the context where the skill is applied.

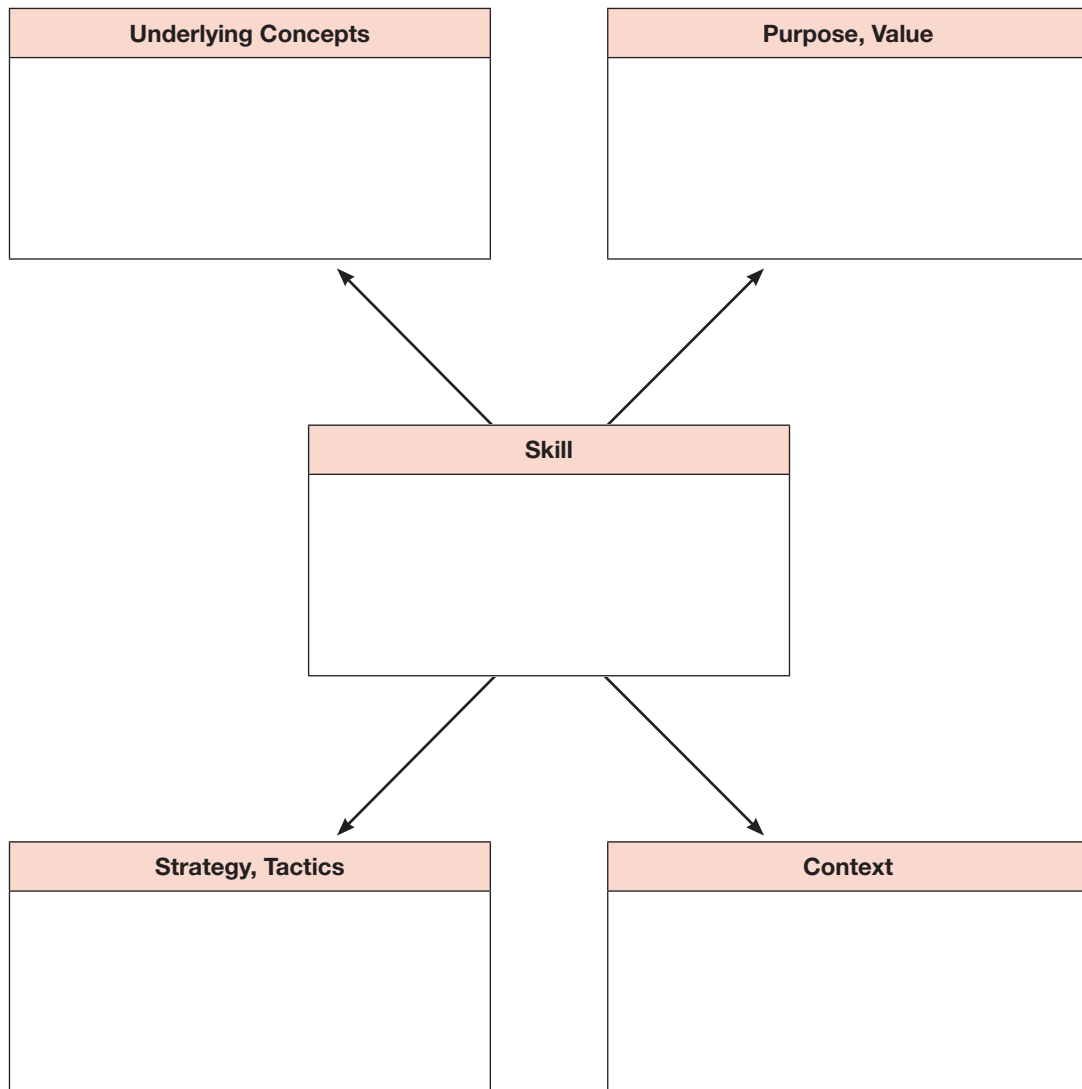


Figure F.11

### Example of Essential Questions in Skill Areas

A common misunderstanding among many educators is that teaching for understanding of big ideas is not really central to the teaching of skill-focused areas, such as beginning literacy, physical education, and mathematics. On the contrary, everything we know about learning tells us that teaching for conceptual understanding is essential to more accurate and efficient skill performance. Essential questions in skill areas may be considered in terms of the following categories:

- **Key concepts**—*What are the big ideas underlying effective skill performance?*
- **Purpose, value**—*Why is the skill important?*
- **Strategy, tactics**—*What strategies do skilled performers employ? How can skill performance become more efficient and effective?*
- **Context**—*When should you use the skill or strategy?*

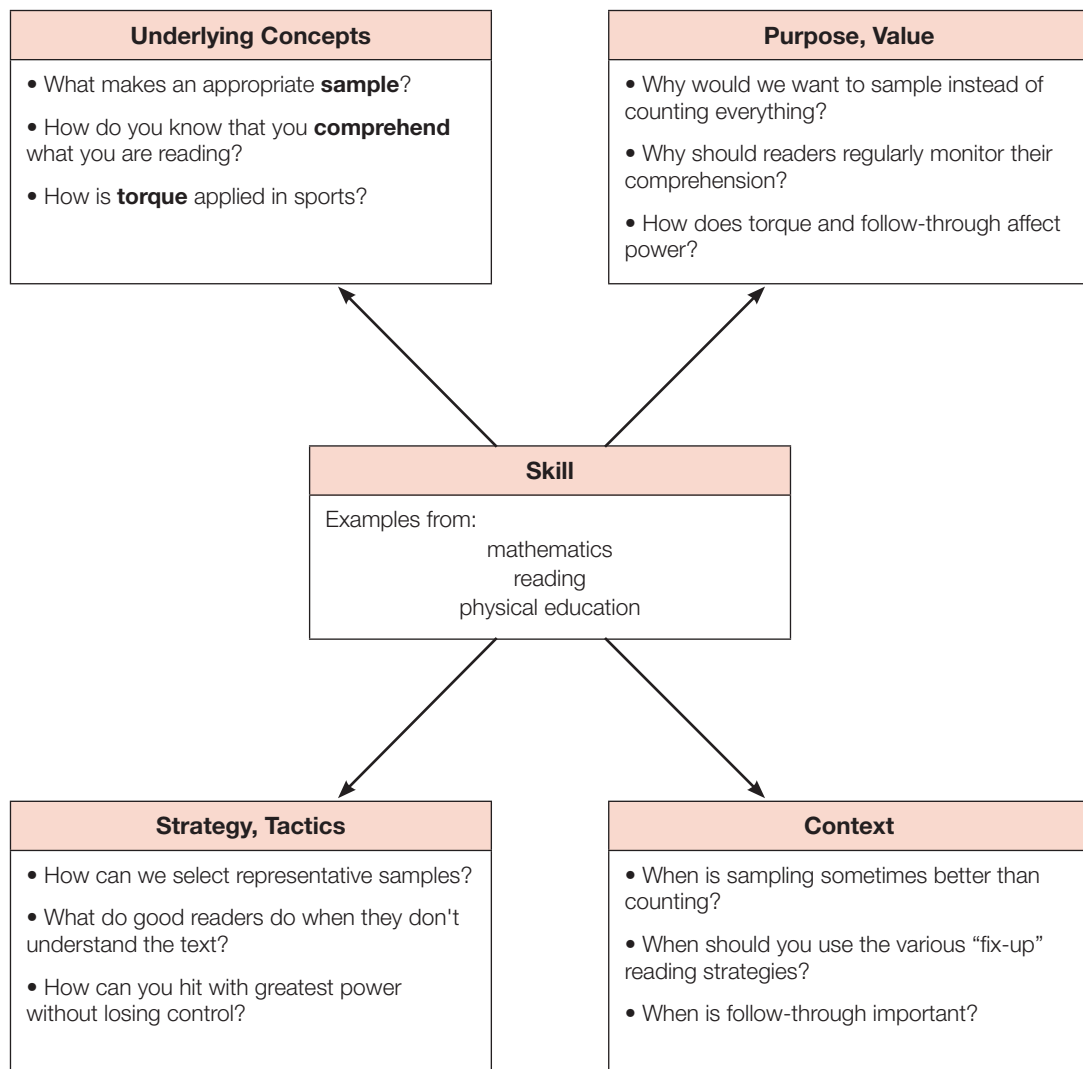


Figure F.12

## Identifying Understandings

**Topic:** \_\_\_\_\_

### What about the topic, specifically, do you want students to come to understand?

Why study \_\_\_\_\_? So what?

What makes the study of \_\_\_\_\_ “universal”?

If the unit on \_\_\_\_\_ is a story, what’s the “moral of the story”?

What’s the big idea implied in the skill or process of \_\_\_\_\_?

What larger concept, issue, or problem underlies \_\_\_\_\_?

What couldn’t we do if we didn’t understand \_\_\_\_\_?

How is \_\_\_\_\_ used or applied in the larger world?

What is a real-world insight about \_\_\_\_\_?

What is the value of studying \_\_\_\_\_?

### Having responded to the prompts, identify understandings relevant to your unit or topic.

Students will understand that . . .

- \_\_\_\_\_

## Sample for Identifying Understandings

**Topic:** *Music theory* \_\_\_\_\_

### What about the topic, specifically, do you want students to come to understand?

Why study *music theory* \_\_\_\_\_? So what?

What makes the study of *music theory* \_\_\_\_\_ “universal”?

If the unit on *music theory* \_\_\_\_\_ is a story, what’s the “moral of the story”?

What’s the big idea implied in the skill or process of *music theory* \_\_\_\_\_?

What larger concept, issue, or problem underlies *music theory* \_\_\_\_\_?

What couldn’t we do if we didn’t understand *music theory* \_\_\_\_\_?

How is *music theory* \_\_\_\_\_ used or applied in the larger world?

What is a real-world insight about *music theory* \_\_\_\_\_?

What is the value of studying *music theory* \_\_\_\_\_?

### Having responded to the prompts, identify understandings relevant to your unit or topic.

Students will understand that

- Carefully placed intervals of silence make music more dramatic.
- Surprises within familiar melodies, harmonies, rhythms, and progressions are at the heart of creativity in music.

Figure F.13

**From Skills to Ideas to Understandings**

**Directions:** Review the following examples of big ideas and understandings related to skills. Then, brainstorm possible understandings related to skills for your unit.

<b><i>Stated as a Skill</i></b>	<b><i>Underlying Big Ideas</i></b>	<b><i>Specific Generalizations to Be Understood</i></b>
Swimming: mechanics of arm strokes (freestyle, backstroke, breaststroke, butterfly, sidestroke)	<ul style="list-style-type: none"> <li>• Efficient</li> <li>• Maximum power</li> <li>• “Backward” push</li> <li>• Surface area</li> </ul>	<ul style="list-style-type: none"> <li>• The most efficient and effective stroke mechanics push the maximum amount of water directly backward.</li> <li>• A flat (versus cupped) palm offers the maximum surface area.</li> <li>• A bent arm pull enables a swimmer to push water directly backward with greatest power.</li> </ul>
Adding fractions	<ul style="list-style-type: none"> <li>• Part to whole</li> <li>• Relating “likes” to “likes”</li> </ul>	<ul style="list-style-type: none"> <li>• When “parts” are combined, they have to be framed in terms of the same “whole.”</li> </ul>
<b>Ideas for Your Unit</b>		

## Frequently Asked Questions

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### 1. How many essential questions and understandings should a unit have?

The answer depends in large part on the scope and time frame of the unit. A two-week unit on a specific topic within one subject area would likely have fewer essential questions and understandings than a 12-week interdisciplinary unit. That said, we typically see between two and four essential questions in an “average” unit.

It does not follow that a unit with more targeted essential questions and understandings is better than a unit with fewer. In this regard, it is useful to invoke a variation of the Marine Corps recruiting motto: we are seeking only a few good inquiries and insights.

Keep in mind that a truly essential question is one that you will continually revisit throughout the unit, so you don’t want too many. Similarly with understandings—these should reflect transferable big ideas, and you do not need lots of them; too many ideas will confuse the learner and undercut the moral of the story of your unit.

### 2. Why do you make me use the phrase “understand that...”? Why can’t I just finish the sentence “I want students to understand how...” or “I want students to understand the causes of...” It feels much more natural.

As we have noted and as the worksheets stress, it is not sufficient to say that the unit goal is “Students will understand the water cycle.” That actually fails to state the specific understanding we seek; it really is just a way of restating the topic, not the desired learning. The designer must go one step further: identify the particular understandings students will take away from their studies of the water cycle. That is why we ask for targets to be framed as specific generalizations or propositions.

Yet framing understandings as propositions is necessary but insufficient. Simply because we state a proposition does not ensure that the stated understanding is specific or enduring. To say that we want students to understand the proposition that “life is unfair” is too vague to adequately serve the design of a unit linked to specific standards. Conversely, focusing a unit of study on the idea that “the semicolon lies between a period and a comma” is not a big enough idea.

Similarly, it is a misconception to equate “generalization” or “proposition” with “sentence.” It is certainly a complete sentence to say that “Students will understand the causes and effects of the Civil War,” but such a sentence is not a proposition. It doesn’t propose a *specific* claim or insight about the Civil War that is worth understanding. It merely takes the topic and puts it in sentence form.

### 3. When working with skills, shouldn't we frame our understandings as "Students will understand how to...?"

The common phrase used in standard setting, "Students will understand how to . . .," presents a potential source of confusion in framing understandings in UbD unit design.

Often the phrase is loosely used as a synonym for "learn how to . . ." when what is really being described is a straightforward, discrete skill (e.g., write in cursive, dribble a basketball). Learning a single technique or recipe is *not* the same as "understanding how to" do something. It is a common mistake, for example, to simplistically operationalize the standard "understand how to write persuasively" by teaching students how to write formulaic five-paragraph essays. In such cases, the desired achievement is a skill, not an understanding, and should be listed in the Skill box on the UbD Template.

However, when "understand how to" refers to a skill or process that requires thoughtful attention to underlying concepts and principles and important strategic decisions, then we *are* dealing with understandings (as well as skills). For instance, "understand how to write persuasively" requires not only a set of skills but good judgment about their use across different contexts and audiences. Moreover, it calls for understanding about the concept of persuasion. In learning to write persuasively, in other words, the student should come to understand the big ideas that underlie all successful persuasion (e.g., in advertising and in politics). Thus, in addition to identifying both the particular skill elements, curriculum designers should state the desired understanding as a generalization—for example, "Students will understand that successful persuasion often involves nonrational appeal to audience emotions and values." In such cases, we recommend placing skills in the Skill box and their companion understandings in the Understandings box.

### 4. Where do my nonessential but "important" questions go?

Having sharpened your understanding of essential questions and perhaps identified some of your questions as not really "essential," you might well now ask, "What do I do with the questions that are important to my teaching of content but not truly 'essential' in the UbD sense?" Such questions are important to the learning plan and can be placed in Stage 3. Some designers also place nonessential but important questions in the Knowledge box in Stage 1, in question form. This latter move is useful for reminding you that you wish to assess this knowledge in Stage 2 (not just ask the questions rhetorically or as a teaching technique in Stage 3).

Figure G.1

### Applying the Two-Question Validity Test

**Purpose:** To apply the two-question validity test to your assessments.

**Directions:** Test your unit assessments using the following question prompts.

<b>Stage 1 Desired Results:</b>			
<b>Stage 2 Evidence:</b>			
	<b>Very likely*</b>	<b>Somewhat likely</b>	<b>Very unlikely</b>
<b>1. How likely is it that a student could do well on the assessment by</b>			
• Making clever guesses, parroting back, or “plugging in” what was learned, perhaps with accurate recall but limited or no understanding?			
• Making a good-faith effort, with lots of hard work and enthusiasm, but with limited understanding?			
• Producing a lovely product or an engaging and articulate performance, but with limited understanding?			
<b>2. How likely is it that a student could do poorly on the assessment by</b>			
• Failing to meet the requirements of this particular task while nonetheless revealing a good understanding of the ideas?			
• Not being skilled at certain aspects of the task, but those skills are <i>not</i> central to the goal or involve outside learning or natural talent (e.g., require acting or computer ability unrelated to Stage 1 goals)?			

\*“Very likely” means that the assessment is not aligned with goal(s).



Figure G.2

**Performance Task Ideas Based on the Six Facets**

<b>Facets</b> <b>Subject</b>	<b>Explanation</b>	<b>Interpretation</b>	<b>Application</b>	<b>Perspective</b>	<b>Empathy</b>	<b>Self-Knowledge</b>
<b>History/ Social Studies</b>	Provide conceptual clarification (e.g., “freedom” compared to “license”; meaning of the term “third world”).	Develop an oral history on the significance of the 1960s using primary sources, and write a historical biography.	Design a museum exhibit on the causes and effects of early 20th century immigration.	Compare British and French textbook accounts of the Revolutionary War with your textbook account.	Role-play a meeting of the minds (e.g., Truman deciding to drop the atomic bomb).	Self-assess your involvement in class discussions and performances, and explain your patterns of participation.
<b>Mathematics</b>	Study a common phenomenon (e.g., weather data). Reveal subtle and easily overlooked patterns in the data.	Do a trend analysis of a finite data set.	Develop a new statistic for evaluating the value of a baseball player in key situations.	Examine the differences when using various measures (e.g., mean, median) for calculating grades.	Read <i>Flatland</i> and a set of letters between mathematicians explaining why they fear publishing their findings; write a reflective essay on the difficulty of explaining new ideas, even “abstract” ones.	Develop a mathematical résumé with a brief description of your intellectual strengths and weaknesses.
<b>English/ Language Arts</b>	Describe why a particular rhetorical technique is effective in a speech.	“What’s wrong with Holden?” Make sense of the main character in <i>Catcher in the Rye</i> .	What makes a “great book”? Make an audio-tape review of a favorite book for the school library.	Read and discuss <i>The Real Story of the Three Little Pigs</i> by A. Wolf.	Work in a soup kitchen, read a book by Charles Dickens, and write an essay on the experiences of the homeless.	Attach a self-assessment to each paper you write reflecting on <i>your</i> writing process.
<b>Arts</b>	Explain the role of silence in music.	Represent fear and hope in a visual collage or dance.	Write and perform a one-act play on a school issue.	Critique three different versions of the same Shakespeare play (focus on a key scene).	Imagine you are Juliet in <i>Romeo and Juliet</i> , and consider your terrible, final act. What are you thinking and feeling?	Keep a log of the drama class exercises that demand the most from you emotionally.
<b>Science</b>	Link everyday actions and facts to the laws of physics, concentrating on easily misunderstood aspects (e.g., mass compared to weight).	Take readings of pond water to determine whether the algae problem is serious.	Perform a chemical analysis of local stream water to monitor EPA compliance, and present findings.	Conduct thought experiments (e.g., Einstein’s “What would the world be like if I were riding on a beam of light?”).	Read and discuss premodern or discredited scientific writings to identify plausible or “logical” theories (given the information available at the time).	Propose solutions to an ineffective cooperative learning activity based on what didn’t work in your group.

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Figure G.3

**Generating Assessment Ideas Using the Facets**

Stage 1	Stage 2	
If the desired result is for learners to... →	then you need evidence of the student's ability to... →	so the assessments need to require something like...
<b>Understand that</b>	<b>Explain</b> why similar items might command very different prices based on supply/demand.	<ul style="list-style-type: none"> <li>• Provide an oral/written explanation of why prices of specific items vary (e.g., ski-lift tickets) as a function of supply and demand.</li> </ul>
<ul style="list-style-type: none"> <li>• Price is a function of supply and demand.</li> </ul>	<b>Interpret</b> data on prices (e.g., changes in prices for the same item over time).	<ul style="list-style-type: none"> <li>• Develop a PowerPoint presentation to explain fluctuations in prices over time (e.g., for gasoline or housing).</li> </ul>
	<b>Apply, by</b> setting the right prices for items to be sold.	<ul style="list-style-type: none"> <li>• Conduct consumer research to establish prices for a school store or a fund-raiser.</li> </ul>
<b>And thoughtfully consider the question(s)</b> <ul style="list-style-type: none"> <li>• What determines how much something costs?</li> <li>• What's a "good" price?</li> </ul>	<b>See from the points of view of</b> buyers and sellers of the same commodity.	<ul style="list-style-type: none"> <li>• Role-play a buyer-seller negotiation at a flea market, at a garage sale, or on eBay to illustrate different perspectives on price.</li> </ul>
	<b>Empathize with</b> the inventor of a new product, trying to set a price; a buyer who has been "taken."	<ul style="list-style-type: none"> <li>• Write a simulated journal entry as a (consumer, inventor, merchant, etc.) to reveal that person's thoughts and feelings regarding transactions.</li> </ul>
	<b>Overcome the naïve or biased idea that</b> commodities have an inherent value or fixed price. <b>Reflect on</b> the influence of "sale prices" on your buying habits.	<ul style="list-style-type: none"> <li>• Describe a specific case in which you (or someone else) came to understand that commodities do not have an inherent value or fixed price.</li> </ul>

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Figure G.4

## Six-Facet Question Starters

### Explanation

- What is the key idea in \_\_\_\_\_?
- What are examples of \_\_\_\_\_?
- What are the characteristics/parts of \_\_\_\_\_?
- How did this come about? Why is this so? \_\_\_\_\_
- What caused \_\_\_\_\_? What are the effects of \_\_\_\_\_?
- How might we prove/confirm/justify \_\_\_\_\_?
- How is \_\_\_\_\_ connected to \_\_\_\_\_?
- What might happen if \_\_\_\_\_?
- What are common misconceptions about \_\_\_\_\_?

### Interpretation

- What is the meaning of \_\_\_\_\_?
- What are the implications of \_\_\_\_\_?
- What does \_\_\_\_\_ reveal about \_\_\_\_\_?
- How is \_\_\_\_\_ like \_\_\_\_\_ (analogy/metaphor)?
- How does \_\_\_\_\_ relate to me/us?
- So what? Why does it matter? \_\_\_\_\_

### Application

- How and when can we use this \_\_\_\_\_ (knowledge/process)?
- How is \_\_\_\_\_ applied in the larger world? \_\_\_\_\_
- How might \_\_\_\_\_ help us to \_\_\_\_\_?
- How could we use \_\_\_\_\_ to overcome \_\_\_\_\_?

### Perspective

- What are different points of view about \_\_\_\_\_?
- How might this look from \_\_\_\_\_'s perspective?
- How is \_\_\_\_\_ similar to/different from \_\_\_\_\_?
- What are other possible reactions to \_\_\_\_\_?
- What are the strengths and weaknesses of \_\_\_\_\_?
- What are the limits of \_\_\_\_\_?
- What is the evidence for \_\_\_\_\_?
- Is the evidence reliable? Sufficient? \_\_\_\_\_

### Empathy

- What would it be like to walk in \_\_\_\_\_'s shoes?
- How might \_\_\_\_\_ feel about \_\_\_\_\_?
- How might we reach an understanding about \_\_\_\_\_?
- What was \_\_\_\_\_ trying to make us feel/see?

### Self-Knowledge

- How do I know \_\_\_\_\_?
- What are the limits of my knowledge about \_\_\_\_\_?
- What are my "blind spots" about \_\_\_\_\_?
- How can I best show \_\_\_\_\_?
- How are my views about \_\_\_\_\_ shaped by \_\_\_\_\_ (experiences, habits, prejudices, style)?
- What are my strengths and weaknesses in \_\_\_\_\_?

Figure G.5

### Performance Verbs Related to the Six Facets of Understanding

Use one or more of the following performance verbs to generate ideas for performance tasks and learning events.

<b>Explanation</b>	<b>Interpretation</b>	<b>Application</b>	<b>Perspective</b>	<b>Empathy</b>	<b>Self-Knowledge</b>
demonstrate	create analogies	adapt	analyze	be like	be aware of
derive	critique	build	argue	be open to	realize
describe	document	create	compare	believe	recognize
design	evaluate	debug	contrast	consider	reflect
exhibit	illustrate	decide	criticize	imagine	self-assess
express	judge	design	infer	relate	
induce	make meaning of	exhibit		role-play	
instruct	make sense of	invent			
justify	provide metaphors	perform			
model	read between the lines	produce			
predict	represent	propose			
prove	tell a story of	solve			
show	translate	test			
synthesize		use			
teach					

Figure G.6

**Brainstorming Tasks Using the Six Facets**

Goals	Six Facets of Understanding	Ideas for Possible Assessment Tasks
Understand the relationship between a balanced diet and physical and mental health.	Explain	Develop a brochure to help people understand what is meant by a “balanced” diet and health problems related to poor nutrition.
Understand the USDA Food Pyramid and how dietary requirements vary for individuals based on age, activity level, weight, and overall health.	Interpret	Discuss: What does the popularity of “fast foods” say about modern life?
Analyze various diets to determine their nutritional values.	Apply	Plan a menu for a class party consisting of healthy yet tasty snacks.
Plan meals that are balanced yet tasty.	Shift perspective	Conduct research to find out if the Food Pyramid guidelines apply in other regions (e.g., Antarctica, Asia, the Middle East) and the effect of diverse diets on health.
Evaluate their own eating patterns and develop a plan for more healthful eating.	Show empathy	Describe how it might feel to live with a dietary restriction due to a medical condition.
	Demonstrate self-knowledge	Reflect on your eating habits. To what extent are you a healthy eater? How might you become a healthier eater?

Source: © 2004 ASCD. All rights reserved.



Figure G.8

### What My Transfer Goals Imply for Tasks

Stage 1	Stage 2
<b><i>If the TRANSFER GOAL is for learners to eventually be able to, on their own,...</i></b>	<b><i>then the specific assessments should ask learners to...</i></b>
Drive safely and effectively under varied road and weather conditions.	<b>Short term:</b> Drive during the daytime, with teacher, on side roads in good weather conditions; parallel park in parking lot with cones. <b>Long term:</b> Drive on the highway, with teacher, in varied traffic and weather conditions; park in a city environment.

Figure G.9

### Analyzing Textbooks and Instructional Resources

<b>Stage 1—Desired Results</b>	
My Goals:	Textbook Unit(s) Goals:
<b>Stage 2—Evidence</b>	
My Assessment Ideas:	Textbook Assessments:

Does this textbook or instructional resource . . .	What supplementary resources or unit redesign is needed?
Y = Yes, S = Somewhat, N = No	
<b>Stage 1</b> <ul style="list-style-type: none"> <li>• Align closely with your identified goals? _____</li> <li>• Focus on in-depth understanding? _____</li> <li>• Focus on higher-order use of knowledge and skills? _____</li> <li>• Contain relevant essential questions? _____</li> </ul>	
<b>Stage 2</b> <ul style="list-style-type: none"> <li>• Include valid and varied assessments aligned with your desired results? _____</li> <li>• Include performance tasks requiring transfer application? _____</li> <li>• Include appropriate evaluative criteria and/or rubric(s)? _____</li> </ul>	



## Frequently Asked Questions

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### 1. What is the relationship between the six facets of understanding and Bloom's account of assessment in the taxonomy?

Although both function as frameworks for assessment, one key difference is that Bloom's Taxonomy presents a hierarchy of cognitive complexity. The taxonomy was initially developed for analyzing the demands of assessment items on university exams.

The six facets of understanding were conceived as six equal and suggestive indicators of understanding and thus are used to develop or select assessment tasks and prompts. They were never intended to be a hierarchy. Rather, one selects the appropriate facet depending on the nature of the content and the desired understandings about it.

Although different in intent, the two frameworks do have some similarities. Indeed, *application* means essentially the same thing in both frameworks, and neither in Bloom nor UbD does it mean just plugging content into familiar-looking exercises:

If the situations . . . are to involve application as we are defining it here, then they must either be situations new to the student or situations containing new elements as compared to the situation in which the abstraction was learned. . . . Ideally we are seeking a problem which will test the extent to which an individual has learned to apply the abstraction in a practical way. (Bloom, 1956, p. 125)

However, the upper levels of the Taxonomy (Analysis, Synthesis, and Evaluation) are often at play simultaneously in many performance assessment tasks (e.g., writing that requires "explanation" and "perspective").

### 2. What's the relationship between the six facets of understanding and the Depth of Knowledge levels used in many state assessments and standards?

Norman Webb developed four-point rubrics and indicators for Depth of Knowledge (DOK) as part of a project for the Council of Chief State School Officers (CCSSO). Some states use these rubrics to code state standards or test items to distinguish their type and complexity. DOK Levels 3 and 4 are consistent with our account of meaning-making and transfer in UbD.

Note that Level 4 in DOK calls for complex performance assessments completed over time. Although Level 4 items are unlikely to appear on external, standardized tests, these are exactly the kinds of assessments of understanding recommended by

UbD and throughout this *Guide*. In other words, UbD can be used to develop unit assessments reflective of DOK Levels 3 and 4.

3. Our state, national, and provincial tests use primarily multiple-choice and brief constructed-response items that do not assess for deep understanding in the way that you recommend. How can we prepare students for these high-stakes standardized tests?

For many educators, instruction and assessing for understanding are viewed as incompatible with high-stakes accountability tests. This perceived incompatibility is based on a flawed assumption: the only way to safeguard or raise test scores is to “cover” those things that are tested and to practice the test format. By implication, there is no time for or need to engage in in-depth instruction that focuses on developing and deepening students’ understanding of big ideas. Although it is certainly true that we are obligated to teach to established content standards, it does not follow that the best way to meet those standards is merely to mimic the format of the state test and use primarily low-level test items locally.

To uncover the flaw in this reasoning, consider an analogy. Once per year, we go to the doctor for a physical exam. The exam includes a few tests in a short span of time (e.g., blood pressure, pulse, temperature, blood work for cholesterol) and a brief physical exam by a doctor or nurse. The “physical” is a small sample of tests, yielding a few useful indicators of one’s health status. Its validity and value stem from the fact that the results *suggest* our state of health, not because the physical *defines* healthfulness.

Now suppose we are terribly concerned about the final numbers (weight, blood pressure, etc.) and that the numbers ultimately link to our personal health insurance costs. What we might do, in our panicky state before each annual physical, would be to “practice” for the test—focus all our energy on the physical exam (as opposed to what its indicators suggest). If our doctor knew of our actions, her response would surely be “Whoa! You’re confused: You have mistaken the goals for the measures. The best way to ‘pass’ your physical is to live a healthful life on a regular basis—exercising, watching your diet, getting sufficient sleep, avoiding tobacco, and so on.”

It would be thought silly to practice the physical exam as a way of becoming healthier, but this confusion is precisely what we see in schools all over North America. Local educators, fearful of results, focus on the measures (indicators), not the goals. The format of the test misleads us, in other words.

Furthermore, the format of the test causes many educators to erroneously believe that the state test or provincial exam assesses only low-level knowledge and skill.

This, too, is false. Just because an item is multiple-choice does *not* mean it is a low-level question. Although most standardized tests are not authentic assessments, they can nonetheless provide a valid assessment of the standards when done properly. What many educators do not fully appreciate is that standardized state, national, and provincial test items often require the student to transfer. Consider the following points:

- Test items are out of context. There is no clue about which unit or chapter the content is from, and the sequence of the test questions is random.
- The student is presented with an unfamiliar reading passage, writing prompt, or problem.
- Students must respond on their own. The test proctor cannot give hints or cues.

Indeed, the data from released state and national tests show conclusively that students have the most difficulty with those items that require understanding and transfer, not recall or recognition.<sup>1</sup> To check this assertion, review the item analysis for tests in your school or district, especially the released test items and their results, if they are available. What types of questions are most difficult? What are the general patterns of weakness? We think that you will find that students have the most difficulty with transfer-related tasks—for example, dealing with unique reading passages, word problems in mathematics, questions that are unusually framed, demanding writing prompts. Learners who have been repeatedly assessed on tasks requiring autonomous transfer will naturally be better prepared for tests than those who were merely drilled on simple items.

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<sup>1</sup>See pp. 122–125 in *Schooling by Design* (Wiggins & McTighe, 2007). Readers are also encouraged to go to websites for those state and national organizations that release their test items and score results to verify our claims, such as Massachusetts, Florida, New York (at the high school level), and NAEP. For example, in all the states mentioned here, the most difficult language arts problems require students to summarize or infer the meaning of passages in the text; the most difficult math problems involve an unfamiliar look to a problem that should otherwise be familiar (e.g., a grid is presented without  $x$  and  $y$  axes as a visual aid).

Figure H.1

### A-M-T Learning Goals and Teaching Roles

Three Interrelated Learning Goals →	ACQUISITION	MEANING	TRANSFER
	<p>This goal seeks to help learners <i>acquire</i> factual information and basic skills.</p>	<p>This goal seeks to help students <i>construct meaning</i> (i.e., <i>come to an understanding</i>) of important ideas and processes.</p>	<p>This goal seeks to support the learners' ability to <i>transfer</i> their learning autonomously and effectively in new situations.</p>
<p><b>Teacher Role and Instructional Strategies</b> →</p> <p><i>Note: Like the above learning goals, these three teaching roles (and their associated methods) work together in pursuit of identified learning results.</i></p>	<p><b>Direct Instruction</b></p> <p>In this role, the primary role of teachers is to <i>inform</i> the learners through explicit instruction in targeted knowledge and skills; differentiating as needed.</p> <p><i>Strategies include</i></p> <ul style="list-style-type: none"> <li>• Lecture</li> <li>• Advance organizers</li> <li>• Graphic organizers</li> <li>• Questioning (convergent)</li> <li>• Demonstration/modeling</li> <li>• Process guides</li> <li>• Guided practice</li> <li>• Feedback, corrections</li> <li>• Differentiation</li> </ul>	<p><b>Facilitative Teaching</b></p> <p>Teachers in this role engage the learners in actively processing information and guide their inquiry into complex problems, texts, projects, cases, or simulations, differentiating as needed.</p> <p><i>Strategies include</i></p> <ul style="list-style-type: none"> <li>• Diagnostic assessment</li> <li>• Using analogies</li> <li>• Graphic organizers</li> <li>• Questioning (divergent) and probing</li> <li>• Concept attainment</li> <li>• Inquiry-oriented approaches</li> <li>• Problem-based learning</li> <li>• Socratic seminar</li> <li>• Reciprocal teaching</li> <li>• Formative (ongoing) assessments</li> <li>• Understanding notebook</li> <li>• Feedback/corrections</li> <li>• Rethinking and reflection prompts</li> <li>• Differentiated instruction</li> </ul>	<p><b>Coaching</b></p> <p>In a coaching role, teachers establish clear performance goals, supervise ongoing opportunities to perform (independent practice) in increasingly complex situations, provide models, and give ongoing feedback (as personalized as possible). They also provide just-in-time teaching (direct instruction) when needed.</p> <p><i>Strategies include</i></p> <ul style="list-style-type: none"> <li>• Ongoing assessment, providing specific feedback in the context of authentic application</li> <li>• Conferencing</li> <li>• Prompting self-assessment and reflection</li> </ul>

Figure H.2

**Action Verbs for A-M-T**

Use these action verbs to help plan teaching and learning according to your A-M-T goals.

Goal Types	Action Verbs
<b>Acquisition</b>	<ul style="list-style-type: none"> <li>• Apprehend</li> <li>• Calculate</li> <li>• Define</li> <li>• Discern</li> <li>• Identify</li> <li>• Memorize</li> <li>• Notice</li> <li>• Paraphrase</li> <li>• Plug in</li> <li>• Recall</li> <li>• Select</li> <li>• State</li> </ul>
<b>Meaning</b>	<ul style="list-style-type: none"> <li>• Analyze</li> <li>• Compare</li> <li>• Contrast</li> <li>• Critique</li> <li>• Defend</li> <li>• Evaluate</li> <li>• Explain</li> <li>• Generalize</li> <li>• Interpret</li> <li>• Justify/support</li> <li>• Prove</li> <li>• Summarize</li> <li>• Synthesize</li> <li>• Test</li> <li>• Translate</li> <li>• Verify</li> </ul>
<b>Transfer</b>	<ul style="list-style-type: none"> <li>• Adapt (based on feedback)</li> <li>• Adjust (based on results)</li> <li>• Apply</li> <li>• Create</li> <li>• Design</li> <li>• Innovate</li> <li>• Perform effectively</li> <li>• Self-assess</li> <li>• Solve</li> <li>• Troubleshoot</li> </ul>

Figure H.3

### Coding Learning Events Using A-M-T

After reviewing the examples below, try coding your learning events in terms of their primary intent—**A**cquisition, **M**eaning, or **T**ransfer of knowledge and skill.

#### Science—Physics

- Students observe four demonstrations of physical events (pendulum, pellet shooter, car slowing down, sling) and are asked to explain them in terms of the question “Why does that move the way it does?” **M**
- Students read the section in their physics textbook on the three laws of Newton and take a quiz on the content. **A**
- Students generalize from laboratory data related to cars going down inclined planes at varied heights and angles. **M**
- Students design a Rube Goldberg–type machine to illustrate principles of force, with specific reference to relevant Newtonian laws. **T**

#### English/Language Arts—Reading

- Students memorize words from a vocabulary list of those words. **A**
- Students make a web of the words’ relationships and concepts. **M**
- Students group the words and consider, “What do these have in common?” **M**
- Students critique and edit a paper in which the new words are misused. **M**
- Students read a story containing the new words and explain their meaning in context. **T**
- Students use the recently learned words in various speaking and writing situations. **T**

#### Mathematics—Linear Equations

- Students study different graphs and data plots, and generalize about the patterns. **M**
- Students learn the formula  $y = mx + b$  for linear equations. **A**
- Students solve practice problems using the formula to calculate slope. **A**
- Students compare linear and nonlinear relationships and explain the difference. **M**
- Students examine various real-world relationships (e.g., relationship of height to age, distance to speed, CD sales over time) and determine which ones are linear. **M**
- Students develop equations and graphic displays for representing relational data (with outliers and errors contained in the data). **T**

Figure H.4

## A-M-T for a Unit on Measures of Central Tendency

**Essential Question:** What is fair—and how can mathematics help us answer the question?

**A** = Acquiring basic knowledge and skills; **M** = Meaning; **T** = Transfer

1. Introduce and discuss the first part of the essential question: What is “fair”? What is “unfair”? **M**
2. Introduce a race problem: given the place of finish of all the runners in the four different grades from the high school, which class should be declared the fair winner in a whole-school run? Present a list that shows the grade level of each runner and the order in which he or she finished. The overall list of finishers is deliberately designed to make declaring a winner difficult: the mean should seem unfair, for example, age and gender might play a role. Students work in groups of four to propose the “fairest” solution and provide reasons for their approach. With the group work and presentations over, the teacher guides the class in a discussion in a summary of the issues raised. **M, T**
3. Teacher informs students about the broader mathematical connections at issue in the first two inquiries, and how those issues will be addressed by a consideration of measures of central tendency. The teacher lays out the unit activities in sequence and the culminating transfer and meaning-making tasks: Which approach to grading should be used in giving grades? What are the students’ final reflections on the Essential Question about fairness and math? **A**
4. In small-group jigsaw, students share their answers, then return to their team to generalize from all the small-group work. Discuss other examples related to the concept of “fairness,” such as the following: **M**
  - What is a fair way to rank many teams when they do not all play each other?
  - What is a fair way to split up limited food among hungry people of different sizes?
  - When is it “fair” to use majority vote and when is it not fair? What might be more fair?
  - Is it fair to have apportioned representatives based on a state’s population, yet have two senators from each state irrespective of the state’s size? What might be more fair?
  - What are fair and unfair ways of representing how much money the “average” worker earns, for purposes of making government policy?
5. Teacher connects the discussion to the next section in the textbook—measures of central tendency (mean, median, mode, range, standard deviation). **A**
6. Students practice calculating each type of measure. **A**
7. Teacher gives quiz on mean, median, mode from textbook. **A**
8. Teacher leads a review and discussion of the quiz results. **A M**
9. Group task worked on in class: What is the fairest possible grading system for schools to use? **M T**
10. Individuals and small teams present their grading policy recommendations and reasons. **M T**
11. Culminating transfer task: Each student determines which measure (mean, median, or mode) should be used to calculate his or her grade for the marking period and writes a note to the teacher showing the calculations used and explaining the choice. **T**
12. Students write a reflection on the essential question. **M T**

Figure H.5

### Nutrition Unit, Stage 3: Coded Learning Events Using A-M-T

**A** = Acquiring basic knowledge and skills

**M** = Making meaning

**T** = Transfer

1. Begin with an entry question (*Can the foods you eat cause zits?*) to hook students into considering the effects of nutrition on their lives. **M**
  2. Introduce the essential questions and discuss the culminating unit performance tasks (Chow Down and Eating Action Plan). **M**
  3. Note: Key vocabulary terms are introduced as needed by the various learning activities and performance tasks. Students read and discuss relevant selections from the health textbook to support the learning activities and tasks. As an ongoing activity students keep a chart of their daily eating and drinking for later review and evaluation. **A**
  4. Present concept attainment lesson on the food groups. Then have students practice categorizing pictures of foods accordingly. **M**
  5. Introduce the Food Pyramid and identify foods in each group. Students work in groups to develop a poster of the Food Pyramid containing cut-out pictures of foods in each group. Display the posters in the classroom or hallway. **A**
  6. Give a quiz on the food groups and Food Pyramid (matching format). **A**
  7. Review and discuss the nutrition brochure from the USDA. Discussion question: *Must everyone follow the same diet in order to be healthy?* **A M**
  8. Working in cooperative groups, students analyze a hypothetical family's diet (deliberately unbalanced) and make recommendations for improved nutrition. Teacher observes and coaches students as they work. **M T**
  9. Have groups share their diet analyses and discuss as a class. **M**
- (Note: Teacher collects and reviews the diet analyses to look for misunderstandings needing instructional attention.)
10. Each student designs an illustrated nutrition brochure to teach younger children about the importance of good nutrition for healthy living and the problems associated with poor eating. This activity is completed outside class. **M T**
  11. Show and discuss the video *Nutrition and You*. Discuss the health problems linked to poor eating. **A**
  12. Students listen to, and question, a guest speaker (nutritionist from the local hospital) about health problems caused by poor nutrition. **A**
  13. Students respond to written prompt: *Describe two health problems that could arise as a result of poor nutrition, and explain what changes in eating could help to avoid them.* (These are collected and graded by teacher.) **A**
  14. Teacher models how to read and interpret food label information on nutritional values. Then students practice using donated boxes, cans, and bottles (empty!). **A**
  15. Students work independently to develop the three-day camp menu. **T**
  16. At the conclusion of the unit, students review their completed daily eating chart and self-assess the healthfulness of their eating. Have they noticed changes? Improvements? Do they notice changes in how they feel or their appearance? **M T**
  17. Students develop a personal "eating action plan" for healthful eating. These are saved and presented at upcoming student-involved parent conferences. **T**
  18. Conclude the unit with student self-evaluation regarding their personal eating habits. Each student develops a personal action plan for his or her "healthful eating" goal. **M T**



Figure H.6

### Learning for Understanding (A-M-T)

Use this worksheet to plan the learning events for your unit. Consider the following questions:

- What discrete knowledge and skill must learners acquire? (Acquisition)
- What understandings (big ideas, organizing principles, and strategies) should the learner internalize? (Meaning-making)
- What long-term accomplishments do we want learners to be able to achieve on their own? (Transfer)

**Unit Topic:** \_\_\_\_\_

<b>Acquisition</b> List the relevant knowledge and skills.	<b>Meaning</b> List the key understandings (principles and strategies).	<b>Transfer</b> List the desired transfer applications.

Figure H.7

**Using the Textbook Wisely**

Stage 1	Stage 2	Stage 3
If the desired result is for learners to . . .	Which textbook assessments should be used?	And which textbook pages should be . . .
<i>Understand that—</i>		<i>Emphasized?</i>
<i>Be able to—</i>		<i>Skimmed?</i>
<i>Know—</i>		<i>Skipped?</i>
<i>Be skilled at—</i>		<i>Resequenced?</i>

## Frequently Asked Questions

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1. How does UbD relate to Bloom’s Taxonomy? Some of the points you are making are reminiscent of Bloom.

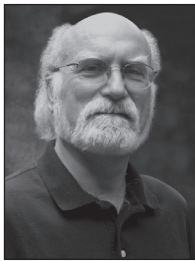
Bloom’s Taxonomy (1956) was a historically important attempt more than 50 years ago to clarify what key learning goals mean for assessment. So it still makes sense to use the taxonomy to help us think about the meaning and implications of educational goals. However, we think the taxonomy is only one source of such assistance, and any such schema is naturally open to debate. Our work is more closely aligned to the contemporary ideas and research on understanding articulated in *How People Learn* (Bransford, Brown, & Cocking, 2000). More to the point of UbD, we believe that *understanding* is fruitfully conceived as being composed of meaning-making and transfer, as common usage of the term suggests. We also think that no useful purpose is served in seeing the different meanings of *understand* in a hierarchy of cognitive complexity, as Bloom’s Taxonomy proposes, irrespective of the content and performance expectations. Sometimes “evaluation” can be easy and “analysis” very difficult, depending upon the context.

As a result, we have found that our schema of distinguishing acquisition, meaning-making, and transfer goals is simple enough to permit efficient design, analysis, and adjustment of units while avoiding some of the finer-grained distinctions and hierarchy considerations in the taxonomy that are not necessary for teacher-designers.

2. Most state tests do not seem to focus on meaning-making and transfer. It looks to us like the test cares only about acquisition of skills and facts.

Looks can be deceiving! As we argue throughout the *Guide to Creating High-Quality Units*, all the challenging questions on state and national tests require meaning-making and transfer. Consider, for example, that every set of questions about a reading passage involves both meaning and transfer: students are asked to comprehend a reading passage that they have never seen before (transfer), and they have to make meaning of it (e.g., by inferring the main idea or author’s purpose). Similarly in mathematics: all the difficult questions involve new or unfamiliar looks at key skills and ideas. For example, geometry tests always include a problem related to the Pythagorean theorem—but neither the drawing nor the instructions make this overt or obvious; hence, it is a meaning-making and transfer problem. (You can see many examples of such test items in the books *Understanding by Design* and *Schooling by Design*; you can also see for yourself by going to the websites of states that release all or most of their tests, such as Massachusetts and Florida.)

# About the Authors



**Grant Wiggins** is president of Authentic Education in Hopewell, New Jersey. He earned his EdD from Harvard University and his BA from St. John's College in Annapolis. Grant and his colleagues consult with schools, districts, and state and national education departments on a variety of reform matters. He and his colleagues also organize conferences and workshops, and develop print and web resources on key school reform issues.

Grant is perhaps best known for being coauthor, with Jay McTighe, of *Understanding by Design*, the award-winning and highly successful program and set of materials on curriculum design used all over the world, and of *Schooling by Design*. He is also a coauthor for Pearson Publishing on more than a dozen textbook programs in which UbD is infused. His work has been supported by the Pew Charitable Trusts, the Geraldine R. Dodge Foundation, and the National Science Foundation.

For 25 years, Grant has worked on influential reform initiatives around the world, including Ted Sizer's Coalition of Essential Schools; the International Baccalaureate Program; the Advanced Placement Program; state reform initiatives in New Jersey, New York, and Delaware; and national reforms in China, the Philippines, and Thailand.

Grant is widely known for his work in assessment reform. He is the author of *Educative Assessment* and *Assessing Student Performance*, both published by Jossey-Bass. He was a lead consultant on many state assessment reform initiatives, such as the portfolio project in Vermont and performance assessment consortia in New Jersey and North Carolina.

Several journals have published Grant's articles, including *Educational Leadership* and *Phi Delta Kappan*. His work is grounded in 14 years of secondary school teaching and coaching. Grant taught English and electives in philosophy, coached varsity soccer and cross country, as well as junior varsity baseball and track and field. He also plays in the Hazbins, a rock band. Grant may be contacted at [grant@authenticeducation.org](mailto:grant@authenticeducation.org).



**Jay McTighe** brings a wealth of experience developed during a rich and varied career in education. He served as director of the Maryland Assessment Consortium, a state collaboration of school districts working together to develop and share formative performance assessments. Prior to this position, Jay was involved with school improvement projects at the Maryland State Department of Education where he directed the development of the Instructional Framework, a multimedia database on teaching. Jay is well known for his work with thinking skills, having coordinated statewide efforts to develop instructional strategies, curriculum models, and assessment procedures for improving the quality of student thinking. In addition to his work at the state level, Jay has experience at the district level in Prince George's County, Maryland, as a classroom teacher, resource specialist, and program coordinator. He also directed a state residential enrichment program for gifted and talented students.

Jay is an accomplished author, having coauthored 10 books, including the best-selling *Understanding by Design* series with Grant Wiggins. He has written more than 30 articles and book chapters, and has published in leading journals, including *Educational Leadership* (ASCD) and *The Developer* (National Staff Development Council).

Jay has an extensive background in professional development and is a regular speaker at national, state, and district conferences and workshops. He has made presentations in 47 states within the United States, in 7 Canadian provinces, and 18 other countries on 5 continents.

Jay received his undergraduate degree from the College of William and Mary, earned his master's degree from the University of Maryland, and completed post-graduate studies at the Johns Hopkins University. He was selected to participate in the Educational Policy Fellowship Program through the Institute for Educational Leadership in Washington, D.C., and served as a member of the National Assessment Forum, a coalition of education and civil rights organizations advocating reforms in national, state, and local assessment policies and practices. Contact information: Jay McTighe, 6581 River Run, Columbia, MD 21044-6066 USA. E-mail: [jmctigh@aol.com](mailto:jmctigh@aol.com).