

## WHAT IS A MATTER OF UNDERSTANDING?

THIS CHAPTER FOCUSES ON THE FIRST PHASE OF curricular design: identifying our goals and determining what is worthy of understanding. Any complex unit of study will involve many targets simultaneously: knowledge, skills, attitudes, habits of mind, and understanding. We clarify how the goal of understanding differs from other achievement targets, when teaching for understanding is needed, and how to select the important understandings to focus upon. We also examine the power of essential questions for framing the curriculum and focusing instruction on matters of understanding.

### What Should Be Uncovered?

Consider simple examples of our need to understand: We may read a text where we know all the words but cannot derive a meaning. We are puzzled by an unexpected comment from a friend. We have data that we cannot explain. We need to reach a decision regarding a perplexing issue. We must solve a problem with no pat solution.

The need to understand is heightened when an idea, fact, argument, or experience goes against our expectations or is counterintuitive. For instance, 12th grade students learn that a body's acceleration can decrease but its speed can still be increasing.

How can that be? Sixth graders multiply fractions using an algorithm. Although they have the formula, they have no clear idea why two numbers, when multiplied, yield a smaller result.

A curriculum designed to develop understanding would uncover complex, abstract, and counterintuitive ideas by involving students in active questioning, practice trying out ideas, and rethinking what they thought they knew. “Uncoverage” describes the design philosophy of guided inquiry into abstract ideas, to make those ideas more accessible, connected, meaningful, and useful. Uncoverage, then, must be done by design.

## The Expert-Novice Gap

But our work as designers is complicated by the gap between expert and novice. What we as adults understand and appreciate seems of self-evident value and interest. But to the student the same idea can seem opaque, abstract—without meaning or value. A challenge we face as designers is to know the design users well enough—the students—to know what will need uncoverage from their point of view, not ours. In textbook writing, for example, important ideas are often reduced to summary sentences.

Thus, in addition to knowing our end users well, as educators, we must also know the subject well enough to get beyond inert textbook and curriculum framework language—to bring to life the important issues and people. Our designs must help the student see what is worth understanding, what needs further exploration and understanding from the activities and readings.

To begin our inquiry, let’s uncover the weaknesses in these conventional curriculum designs by revisiting two vignettes from the Introduction. In

the second vignette, the apples unit seems to focus in depth on a particular theme (harvest time), through a specific and familiar object (apples). But as the depiction reveals, there is no real depth because there is no enduring learning for the students to derive. The work is hands on without being “minds on,” because students do not need to extract sophisticated ideas. They don’t have to work at understanding; they need only experience.

Moreover, there are no clear priorities—the activities appear to be of equal value. The students’ role is merely to participate in mostly enjoyable activities, without having to demonstrate that they understand any big ideas at the core of the subject (excuse the pun). All activity-based—as opposed to standards-based—teaching shares the weakness of the apples unit: Little in the design asks students to derive intellectual fruit from the unit. One might view this activity-oriented approach as “faith in learning by osmosis.”

In the fourth vignette, the world history teacher covers vast amounts of content during the last quarter of the year. However, in his harried march to get through a textbook, the teacher apparently does not consider what the students will understand and apply from the material. Even if the course has some clear goals, how will students determine what is most important—by the number of paragraphs the textbook devotes to a topic? What kind of intellectual scaffolding is provided to guide students through the important ideas? In coverage-oriented instruction, the teacher, in effect, merely checks off topics that were covered and moves on, whether or not students understand or are confused. This approach might be termed “teaching by mentioning it.”

## Similar Results

Although the errors in design differ, in both units, the result is the same—student understanding of important ideas is not likely. Both the teacher of the apples unit and the history teacher would claim, if asked, that they want students to understand. “I want them to understand the importance of farming, harvesting, the role of the seasons,” says the elementary school teacher. “I want students to understand the causes and effects of the two World Wars,” says the high school history teacher. Yet, their curricular plans would show that understandings are more likely to occur through chance student interest and reflection than through the design of inquiry and performance. In neither case are all students guided to analyze their experience to derive understandings that the teachers claim the units are about.

Looking beyond these particular examples, let us summarize four common design flaws that work against understanding:

- The design does not prioritize important ideas worthy of understanding. To the students, various activities and textbook topics appear of equal importance.

- The design does not foster students’ understanding because it does not encourage them to explore essential questions, link key ideas, or rethink their initial ideas or theories.

- Students have no clear performance targets. They do not know the purpose of activities and lessons or the expected performance requirements, other than to participate in the activities and pay attention during lectures.

- The necessary evidence that understanding has occurred has not been established. Without

explicit performance goals or culminating assessments of understanding, teachers do not know which students understand what, and to what level of sophistication.

How, then, do we ensure that understanding is the true goal? We do so by knowing when to focus on understanding and when not to, and by knowing what subject matter needs uncoverage to be understood and learned.

## Focusing on Priorities

Not everything we ask students to learn must be thoroughly understood. The purpose of a course or unit of study, the age of the learners, and the time available all determine how much or how little teachers can expect students to understand. But if we as educators seek greater depth and breadth, how do we set priorities amid so many content standards and despite little time? When is it worth the trouble to get students to understand? When is it sufficient for students to have only familiarity? Or acquaintance? In terms of curriculum design, how does understanding, as a target, differ from knowledge and skill?

If readers find the above questions difficult to answer, it might be because of three other complex questions:

- What knowledge is worth understanding—worth spending time to uncover?

- What kind of achievement target is understanding, and how does it differ from other targets or standards?

- What are matters of understanding in any

achievement target? How does an educator identify or select the understanding element embedded or contained in any complex achievement target, such as state or district content standards?

Let us probe each of these questions.

## What Knowledge Is Worth Understanding?

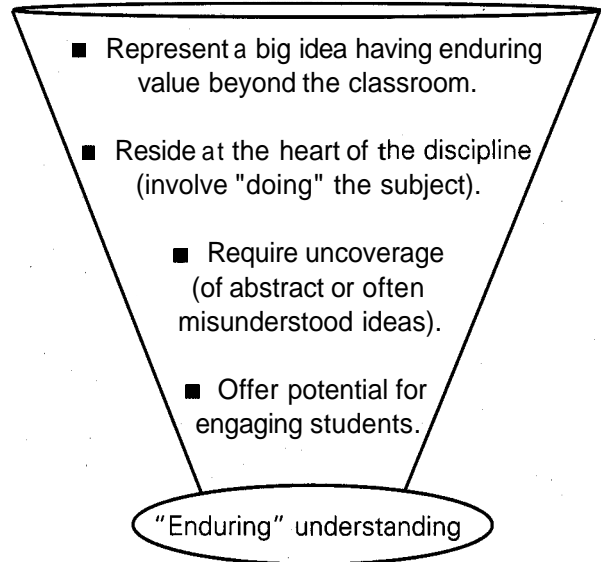
When should teachers require students to have an in-depth and broad understanding of something, and when should they be satisfied if students have only a superficial familiarity with it? How deep an understanding should teachers strive for in the available time? In other words, how can teachers identify the knowledge worth uncovering? Only by clarifying their priorities can teachers construct the most effective and efficient curriculum.

Earlier in this book, we stated four criteria for determining when material is worthy not just of covering but of understanding. The material should be

- Enduring.
- At the heart of the discipline.
- Needing uncoverage.
- Potentially engaging.

By coupling these criteria with the rings graphic introduced in Chapter 1 (Figure 1.2), we now offer a process for clarifying priorities and focusing on enduring understanding. While there are many fruitful topics worthy of understanding, the reality of teaching is that we cannot go into depth on everything. Figure 2.1 shows filters for arriving at enduring understanding. We need to make wise choices and stick with our priorities, based on the

Figure 2.1 **FILTERS FOR SELECTING UNDERSTANDINGS**



time available and any established curricular framework of content standards.

From a practical design point of view, a major challenge facing any designer is the inadequacy of most district, state, and national standards in helping clarify which are the big ideas and how best to uncover them. Many such statements are either too vague—"The student will be proficient in all genres of writing"—or they unhelpfully suggest that didactic teaching and rote learning will be sufficient for learning—"The student will know that there are three branches of government and why" Even when the standards identify a desired understanding, there is often too little guidance on what kinds of evidence are valid or adequate—"The student will understand that acceleration is a change in motion due to one or more forces acting on the body."

To more effectively craft and edit unit designs, we find that distinguishing three degrees of specificity and clarity in such standards is helpful. Topical statements are the least specific. They merely define the subject-area topic to be addressed without specifying what is to be understood and how — “Students will understand the Civil War.” General understandings are a bit more specific. They identify what needs to be understood in an overall sense, but provide little help into the specific insights to be gained or the methods and assessments best used to gain and display such understanding — “Students will understand the causes and effects of the Civil War.” *Specific* understandings not only summarize the particular understandings sought, they also suggest the kinds of work needed to achieve and show such an understanding — “Students will demonstrate through historical and social analysis and role-plays their understanding of the Civil War as a struggle of state versus federal power over economic and cultural affairs that continues to the present day.”<sup>1</sup> Teacher-designers will likely need to amplify or sharpen the framing of the content standards into useful matters of understanding if they work in states or districts that provide less specific guidance.

Another way to frame a design issue at stake is to refer to our prioritization/assessment graphic (see Figure 1.5). Teacher-designers need to ask themselves the extent to which the standard merely requires students to be “familiar with” the textbook explanation of the Civil War—in which case a quiz on the textbook account will be sufficient—or the extent to which the standard requires the student to achieve a more complex and “enduring understanding” through analysis, synthesis, and evaluation of given accounts culminating in their own performance.

## What Kind of Achievement Target Is Understanding, and How Does It Differ from Other Targets or Standards?

To understand a topic or subject is to use knowledge and skill in sophisticated, flexible ways. Knowledge and skill, then, are necessary elements of understanding, but they are not synonymous with understanding. Matters of understanding require more: Students need to make conscious sense and apt use of the knowledge they are learning and the principles underlying it.

By contrast, when we say we want students to know the key events of medieval history, to be effective touch typists, or to be competent speakers of French, the focus is on a set of facts, skills, and procedures that need only be internalized, as opposed to pondered and understood in terms of underlying principles or philosophy.

Understanding involves the abstract and conceptual, not merely the concrete and discrete: concepts, generalizations, theories, and mental links between facts. And understanding also involves the ability to use knowledge and skill in context, as opposed to doing something routine and on cue in out-of-context assignments or assessment items. So when we say we want students to understand the knowledge and skill they have learned, we are not being redundant. We want them to be able to use that knowledge in authentic situations as well as to understand the background of that knowledge. That background involves the theory or principles that give it importance, along with the reasons that justify our calling it knowledge as opposed to authoritative belief.

Because such matters of understanding are abstract and subtle, they are prone to student misunderstanding. In other words, students may know

without understanding. For example, almost all students know how to multiply large numbers, but few know why the procedure works. All students know that the earth revolves around the sun, but few understand the evidence that was decisive in proving such a counterintuitive fact. Thus, a matter of understanding involves inquiring both into what makes knowledge knowledge and how to turn discrete skills into a purposeful repertoire.

### What Are Matters of Understanding in Any Achievement Target?

Even fact-based objectives and straightforward skill development may contain latent matters of understanding. What conceptual or theoretical elements might lie within any objective? How can teachers identify those elements that require a more reflective understanding?

Consider, for example, persuasive writing as a desired achievement. At first blush, it would appear that we are dealing exclusively with a set of straightforward skills to be mastered. But on further reflection, we note a conceptual element here, something to intellectually uncover and better understand apart from the writing skill: The student must come to an understanding of persuasion and how it works if her writing is to be persuasive. The student must come to understand which techniques of persuasion work and why, and also must learn the subtleties in the role that audience, topic, and medium play in effective persuasion. In short, to learn to write persuasively, the student has to understand the purpose of the genre and the criteria by which we judge

- effectiveness of persuasion.

Also, understanding may well be developed by means other than writing. For example, to better understand persuasion, one might be asked to read

famous speeches, critique TV commercials, and read and discuss such literature as Orwell's essay on language and politics. Thus, the skill goal of persuasive writing contains within it a conceptual matter of understanding.

Similarly, when working with factual knowledge or textbook summaries of big ideas, it often appears (especially to students) that there is nothing complicated about dates in history, vocabulary in language arts, or axioms in geometry. Here, too, it seems as if the only understanding that is required is attention, the need to grasp the meaning of the words in English and commit the facts to memory.

But underneath many straightforward facts is often a complicated and arguable matter of understanding, with a history worth knowing: What part of the fact might be embedded theory? For example, the "facts" of evolution are intertwined with a complex and arguable theory. Or, in vocabulary: Who determines legitimate and illegitimate meanings of words, and why do word meanings change, sometimes dramatically? For example, objective and subjective have reversed meaning from prior centuries. Or, in terms of axioms: What justifies an axiom? Why do we have the ones we have, and what makes them neither arbitrary nor true but important (e.g., the parallel postulate and its complex history)?

### Problems for Understanding

In all three examples (facts, definitions, and axioms), problems for understanding lurk beneath seemingly unproblematic knowledge. In a curriculum for understanding, rethinking the apparently simple but actually complex is central to the nature of understanding and to a necessarily iterative approach to curricular design. Students continually must be led to recognize the need for uncoverage of

knowledge and skill they learn—the need for rethinking. For their part, teachers must be wary of the students’ tendency to think of their own role as apprehension of textbook content as opposed to active inquiry into its justification, meaning, and value.

To put this in fancy philosophical language, the student brings a naive epistemology to the work, namely, that there is neat and clean knowledge out there and it is my job to learn (i.e., memorize) and use it as directed. A key challenge in teaching for understanding is to make the student’s view of knowledge and coming-to-know more sophisticated by revealing the problems, controversies, and assumptions that lie behind much given and seemingly unproblematic knowledge. The work that teachers design should demonstrate to students that there is always a need to make sense of content knowledge through inquiries and applications—to get beyond dutiful assimilation to active reflection, testing, and meaning making.

To review, four criteria serve as filters to select ideas to teach for understanding. The idea, topic, or process

- Represents a big idea with enduring value beyond the classroom.
- Resides at the heart of the discipline, the “doing” of the subject in context.
- Requires uncoverage.
- Offers potential for engaging students.:

What specific curricular elements might meet these criteria? Here are some examples:

- Principles, laws, theories, or concepts that are likely to have meaning for students if they appear to be sensible and plausible (not out of the blue or

arbitrary pronouncements). In some sense, the student can verify, induce, or justify these ideas through inquiry and construction.

- Counterintuitive, nuanced, subtle, or otherwise easily misunderstood ideas, such as gravity, evolution, imaginary numbers, irony, texts, formulas, theories, and concepts.

- The conceptual or strategic element of any skill (e.g., persuasion in writing or “creating space” in soccer): the clarification of means and ends, and insight into strategy, leading to greater purposefulness and less mindless use of techniques. Such mindfulness can only come about by active reflection upon and analysis of performance (i.e., what works, what doesn’t, and why)

## Questions: Doorways to Understanding

Let me suggest one answer [to the problem of going into depth and avoiding excessive coverage] that grew from what we have done. It is the use of the organizing conjecture. They serve two functions, one of them obvious: putting perspective back into the particulars. The second is less obvious and more surprising. The questions often seemed to serve as criteria for determining where [students] were getting and how well they were understanding.

—BRUNER, 1973a, pp. 449–450

After we have identified an objective as requiring uncoverage, how do we more deliberately and practically design units and courses to develop student understanding? How might we take a mass of content knowledge and shape it to engage and focus student inquiry? One key design strategy is to build curriculum around the questions that gave rise to

the content knowledge in the first place, rather than simply teaching students the “expert” answers found in textbooks.

Let’s revisit the apples vignette (see Introduction) and consider possible key questions to use in framing the unit:

- How have planting, growing, and harvest seasons affected life in the United States over the years? How have children’s roles at harvest time changed? Do we still need to close schools for nearly three months in the summer?

- How do geography and climate affect the growth of crops? Why is apple growing well suited to our region? What other regions support apple growing?

- Who was the real Johnny Appleseed, and were there others? Will an “apple a day keep the doctor away”? Compared to other foods, how good for you are apples? Can today’s apple farmers survive economically?

Notice how organizing the unit around questions such as these would provide teacher and students with a sharper focus and better direction for inquiry. The questions implicitly demand more than just a smorgasbord of activities found in the original unit. They call for students to make meaning of more carefully selected activities, and they call for teachers to devise assessment tasks related to answering them.

Regardless of which questions the teacher or class chooses, such questions render the unit design more coherent and make the student’s role more appropriately intellectual. Without asking and pursuing such overarching questions, the student is confronted with a set of disconnected activities, resulting in minimal understanding of important

ideas. Without such questions to focus instruction, teaching easily falls into superficial and purposeless coverage. The world history unit in the opening vignettes (see Introduction) could be similarly improved by key questions that prioritize the textbook content for teachers and students.

At the heart of all uncoverage, then, is the deliberate interrogation of the content to be learned, as opposed to just the teaching and learning of the material. While this focus may sound odd, it points to an important truth about coming to understand: Knowledge must be more than mentioned or referred to in indiscriminate ways. Important ideas must be questioned and verified if they are to be understood. One might say that content that hasn’t been questioned is like courtroom claims that are never examined, leading to a hodgepodge of opinions and beliefs instead of to knowledge.

Practically speaking, we must turn content standards and outcome statements into question form, and then design assignments and assessments that evoke possible answers. In contrast, most current curricular frameworks and standards documents make the mistake of framing core content as fact-like sentences rather than revealing them to be culminating summary insights, derived from questions and inquiries.\*We should not be surprised, then, if we continue to see apple and world history units of the kind described in the Introduction. Only by framing our teaching around valued questions and worthy performances can we overcome activity-based and coverage-oriented instruction, and the resulting rote learning that produces formulaic answers and surface-level knowledge.

As Bmner’s opening quote suggests, the best curriculum-guiding questions have another virtue—they serve as criteria against which to judge progress



in learning. For example, from the work to date, are we getting clearer about the apple's influence on our region's economy and culture? Do we yet have sufficient insight into the economics of farming? Student responses enable us to test our activity and assignment designs to ensure that learning is more than only engaging activity or indiscriminate coverage, Are we making headway in answering the questions? If not, students and teacher need to adjust.

## Essential and Unit Questions

What types of questions might guide our teaching and engage students in uncovering the important ideas at the heart of each subject? We might begin to identify such questions by using the format found in the quiz show *Jeopardy*. Given the content found in a textbook—the answers to be learned—what is an important question for which the textbook provides an answer? For instance, if “balance of powers” (a core idea) is the answer, then what are some questions that give rise to it? Were there other answers that once seemed plausible but turned out to be less useful or correct? For the balance of power example, such a question might be: What structure of government best suits the fact that “all men are not angels” (to quote the Federalist Papers)?

Not just any question will do. Consider the following questions and notice how they differ from those typically posed during daily lessons and in textbooks:

- Is there enough to go around (e.g., food, clothes, water?)
- Is history a history of progress?
- Does art reflect culture or shape it?
- Are mathematical ideas inventions or discoveries?
- Must a story have a beginning, middle, and end?

- When is a law unjust?
- Is gravity a fact or a theory?
- What do we fear?
- Who owns what and why?
- Is biology destiny?

These types of questions cannot be answered satisfactorily in a sentence—and that's the point. To get at matters of deep and enduring understanding, we need to use provocative and multilayered questions that reveal the richness and complexities of a subject. We refer to such questions as “essential” because they point to the key inquiries and the core ideas of a discipline. Figure 2.2 offers some tips for using essential questions.

Bruner (1996) suggests that questions of this type “are ones that pose dilemmas, subvert obvious or canonical ‘truths’ or force incongruities upon our attention” (p. 127). He provides an apt example of an essential question in biology, a recurring question that can be used to organize a unit, course, or entire program:

One of the principal organizing concepts in biology is the question, “What function does this thing serve?”—a question premised on the assumption that everything one finds in an organism serves some function or it probably would not have survived. Other general ideas are related to this question. The student who makes progress in biology learns to ask the question more and more subtly, to relate more and more things to it (Bmner, 1960, p. 28).

Essential questions can and should be asked over and over. Practically speaking, they can recur across the curriculum (horizontally) and over the years (vertically). Central Park East Secondary School in New York, the school

Figure 2.2 **TIPS FOR USING ESSENTIAL QUESTIONS**

■ Organize programs, courses, units of study, and lessons around the questions. Make the *content* the answers to the questions.

■ Select or design assessment tasks, up front, that are explicitly linked to the questions. The tasks and performance standards should clarify what acceptable pursuit of, and answers to, the questions actually look like.

■ Use a reasonable number of questions per unit (between two and five). Make less be more. Prioritize content for students to make the work clearly focus on a *few* key questions.

■ Edit the questions to make them as engaging and provocative as possible for the particular age group. Frame the questions in “kid language” as appropriate.

■ Through a survey or informal check, ensure that every child understands the questions and sees their value.

■ Derive and design specific concrete exploratory activities and inquiries for each question.

■ Sequence the questions so they lead naturally from one to another.

■ Post the overarching questions in the classroom, and encourage students to organize notebooks around them to emphasize their importance for study and note taking.

■ Help students personalize the questions. Encourage them to share examples, personal stories, and hunches, and to bring clippings and artifacts to class to help the questions come alive.

■ Allot sufficient time for “unpacking” the questions—examining subquestions and probing implications. Be mindful of student age, experience, and other instructional obligations. Use question-concept maps to show relatedness of questions.

■ Share your questions with other faculty to make planning and teaching for cross-subject matter coherence far more likely. To promote essential questions schoolwide, ask teachers to post their essential questions in the faculty room or in department meeting and planning areas. Circulate questions in the faculty bulletin and present and discuss them at faculty meetings.

founded by Deborah Meier, builds its entire curriculum around a set of such essential questions linked to key “habits of mind”:

In every class and every subject, students will learn to ask and to answer these questions:

a. From whose viewpoint are we seeing or reading or hearing? From what angle or perspective?

b. How do we know when we know? What’s the evidence, and how reliable is it?

c. How are things, events, or people connected to each other? What is the cause and what is the effect? How do they fit together?

d. What’s new and what’s old? Have we run across this idea before?

e. So what? Why does it matter? What does it all mean? (Courtesy of Central Park East Secondary School.)

Essential questions may be characterized by what they do:

■ Go to the heart of a discipline. Essential questions can be found in the most historically important and controversial problems and topics in various fields of study: Is a “good read” a great book? Was arithmetic an invention or a discovery? Is history always biased? Do men naturally differ from women?

■ Recur naturally throughout one’s learning and in the history of a *field*. The same important questions are asked and re-asked as an outgrowth of the work. Our answers may become increasingly sophisticated, and our framing of the question may reflect a new nuance, but we return again and again to such questions.

■ Raise other important questions. They invariably open up a subject, its complexities, and its puzzles; they suggest fruitful research rather than lead to premature closure or unambiguous answers. For example, What do we mean by “naturally” differ?

Essential questions have proven to be an effective way of framing a course or an entire program of study. Indeed, some school districts have grounded their curriculum in essential questions.<sup>3</sup>

Experience has shown that an essential question may not always serve as a fruitful doorway into a specific topic, despite the question’s overarching and provocative nature. The question may simply prove to be too global, abstract, or inaccessible for students (e.g., Is biology destiny?). Thus, more specific questions are often needed to introduce and guide the work of a particular unit of study.

We find it helpful to distinguish between two types of curriculum-framing questions: essential questions and unit questions. Unit questions are more subject- and topic-specific, and therefore better suited for framing particular content and inquiry, leading to the often more subtle essential questions. The differences in specificity are illustrated by the examples in Figure 2.3. Unit questions such as those in the figure

■ Provide subject- and topic-specific doorways to essential questions. Unit questions frame a specific set

of lessons; they are designed to point to and uncover essential questions through the lens of particular topics and subjects. For example, Is science fiction great literature? is a unit question that guides inquiry in a specific literature course. Are “good reads” great books? is an essential question that the entire English/Language Arts faculty in a district or school would address.

■ Have no *one* obvious “right” answer: Answers to unit questions are not self-evidently true. Unit questions open up and suggest important multiple lines of research and discussion; they uncover rather than cover up the subject’s controversies, puzzles, and perspectives. They serve as discussion starters and problem posers, rather than lead toward “the” answer the teacher wants.

■ Are deliberately framed to *provoke* and sustain student interest. Unit questions work best when they are designed to be thought provoking to students. Such questions often involve the counterintuitive, the thought provoking, and the controversial as a means of engaging students in sustained inquiries. They should be sufficiently open to accommodate diverse interests and learning styles and allow for unique responses and creative approaches—even ones that the teacher had not considered.<sup>4</sup>

It is important to note that the distinctions between essential and unit questions are not categorically pure, not black and white. Instead, they should be viewed as residing along a continuum of specificity as shades of gray. The point is not to quibble about whether a given question is an essential or a unit question, but rather to focus on its larger purposes—to frame the learning, engage the learner, link to more specific or more general

Figure 2.3 SAMPLE ESSENTIAL AND UNIT QUESTIONS

Essential Question	Unit Question
Must a story have a moral, heroes, and villains?	What is the moral of the story of the Holocaust? Is Huck Finn a hero?
How does an organism's structure enable it to survive in its environment?	How do the structures of amphibians and reptiles support their survival?
Who is a friend?	Are Frog and Toad true friends? Has it been true in recent U.S. history and foreign affairs that "the enemy of my enemy is my friend"?
What is light?	How do cats see in the dark? Is light a particle or a wave?
Do we always mean what we say and say what we mean?	What are sarcasm, irony, and satire? How do these genres allow us to communicate <i>without</i> saying what we mean?
Is U.S. history a history of progress?	Is the gap between rich and poor any better now than it was 100 years ago? Do new technologies always lead to progress?

questions, and guide the exploration and uncovering of important ideas.

Questions do more than serve as doorways to understanding. They can effectively establish priorities in a course of study. The following set of such questions, posed by two history scholars (Burns & Morris, 1986), is a way of coming to understand the U.S. Constitution. Think of an entire course in civics, government, or U.S. history designed around these questions:

- Is there too *much*—or too little—national power? Are the limits placed on the federal govern-

ment's powers by the U.S. Constitution realistic and enforceable?

- Does federalism work? Is the Constitution maintaining an efficient and realistic balance between national and state power?

- Is the judicial branch too powerful? Are the courts exercising their powers appropriately as interpreters of the Constitution and shapers of public policy?

- Can liberty and security be balanced? How can a republican government provide for the national security without endangering civil liberties?

■ What do we mean by “All men are created equal”? What kinds of equality are and should be protected by the Constitution and by what means?

■ Are the rights of women and minorities adequately safeguarded?

■ Does the president possess adequate—or too much—power over war making and foreign policy?

■ Does the *U.S. Government* have too many constitutional checks and balances? Does the separation of powers among the three branches of government create a deadlock in governance?

Such questions are not just posed once orally by teachers. They are posted on blackboards, as the headings of student pages in notebooks, and on unit handouts. They frame and structure the lessons and give rise to appropriate research, note taking, and final performance.

In the absence of explicit overarching questions, students are left with rhetorical questions in a march through coverage or activities. Students then come to realize that their real job is to take in sanctioned views, as purveyed in authoritative teacher and textbook pronouncements. Such official opinions, especially when combined with many leading teacher questions, will eventually stifle thoughtful inquiry, as the philosopher Gadamer (1994) suggests:

It is opinion that suppresses questions. Opinion has a curious tendency to propagate itself . . . to question means to lay open to place in the open. As against the fixity of opinions, questioning makes the object and its possibilities fluid. A person skilled in the “art” of questioning is a person who can prevent questions from being suppressed by the dominant opinion. . . . Only a person who has questions can have [understanding] (pp. 364–367).

## A Cycle of Questions-Answers-Questions

Our designs, not just our teaching style, must ensure that students see learning as anchored in questions and requiring cycles of questions-answers-questions. The key to understanding by design is to cause rethinking through appropriate inquiry and performance. That work requires a very different curricular design than the typical scope and sequence of a march through answers, with those expert answers unmoored from the questions that gave rise to them in the first place.

When merely learning answers is the goal, too often the instruction ironically precludes students from pursuing the questions that naturally arise in the unfolding work—leading to less understanding as well as less engagement. That result is because a unit is too often tacitly conceived as a set of unproblematic facts and theories to be learned without interrogation.

Simple examples from mathematics can illustrate the need. It would be silly to argue that students only need to learn the theorems in geometry in the form of statements to be memorized without their also learning about the proofs that justify the theorems—learning how to come up with and recreate such proofs. There is no other way to understand except through asking: Why is it true a triangle always has 180 degrees? How can we say that for sure? We would think it odd or unacceptable for a geometry teacher to argue that there is no time to inquire into theorem statements because there are so many proofs to cover. Yet, this approach is now unfortunately what many teachers end up doing when they march through books and lessons as if hearing and reading facts were sufficient to understand those facts.

Questions not only focus learning, they also make all subject-knowledge possible. If students are to understand what is known, they need to simulate or recreate some of the inquiry by which the knowledge was created. Such an approach is, after all, how the pioneer came to understand the unknown: asking questions and testing ideas.<sup>5</sup> Think of curriculum as not just the teaching of what we know but the designing of student inquiries into what justifies calling the content that is covered genuine knowledge; into how the knowledge came to be understood (i.e., the history of what is known and the different interpretations that have occurred and are possible); and into the value or importance of the knowledge (found through applying it). As later chapters show, such explorations and performances are central to our attempts to make sense of anything we don't understand and to demonstrate that we understand it.

### ■ MISCONCEPTION ALERT

To say that “coursework derives from questions” might be misunderstood, however, because all teachers ask questions. We mean here the development and unfolding of content out of *itself*, not teacher probing of student answers or the asking of leading questions. Anchoring work in questions in this sense is very different from teachers’ using questions to check for factual knowledge, move toward the right answer, or sharpen students’ responses. Too often, students leave school never realizing that knowledge is answers to someone’s prior questions, produced and refined in response to puzzles, inquiry, testing, argument, and revision. To teach from questions means rhetorically asking, If knowledge is made up of answers, then what were the questions that gave rise to textbook or teacher answers and current subject-matter knowledge answers?

### Entry-Point Questions for Understanding

Essential and unit questions, though thought provoking, are typically difficult and sometimes esoteric. The questions may not initially connect with the experiences or interest of students. Or students may have a hard time seeing the relationship of an overarching question to the facts and skills they are expected to learn. How, then, do we introduce students to big-idea questions? How do we make essential or unit questions an accessible and useful foundation upon which inquiry and performance can be built? We do so by starting units with provocative and specific entry-point questions that point to the larger questions.

Students of all ages—children and adults—need concrete and meaningful experiences, problems, applications, and shifts of perspective to enable an important question to arise. An abstract discussion of property rights is made quickly accessible and intriguing by asking students if the saying, “Finders keepers, losers weepers,” is a sound moral principle, and by building role-play around the idea. Then, when the discussion and exercise are de-briefed, the larger questions about property naturally arise. The student must come to understand each unit and its specific questions and activities as raising larger questions. If we do our preliminary entry-point question and activity design well, the student is more likely to spontaneously ask important questions and more quickly see their importance. Such insight is a key indicator of the success of our design for understanding.

In science, suppose the unit centers on the basic astronomy idea discussed earlier. Starting with the question, Why is the heliocentric view more justified than the geocentric view in explaining phenomena? is unlikely to capture the interest of most

students. On the other hand, merely stating the truth—i.e., providing an answer to a question the student has not asked or been helped to ask—bypasses inquiry and deep understanding. We might begin instead with a dare: Can you provide a plausible argument that the earth is stationary? Or, we might begin instead with the question, Why is it warmer in summer and colder in winter? and ask students to come up with provisional answers. We might then encourage them to interview a few other people—students and adults—to ask their opinion. Larger questions naturally arise out of the debate or surveys once the correct answer is known: Why is the right answer so poorly understood? Why is the truth so counterintuitive? How was it figured out? At some point in the unit, other inquiry or essential questions may arise: Is science “common sense” or not? What did Ptolemy explain clearly, but it took thousands of years before the current theory was developed? How did Copernicus, Kepler, and Newton come up with the modern answer?

We do not mean to imply that students are never ready, willing, and able to handle important questions. On the contrary, sometimes a simple introductory talk, problem, or case study can make them ready for a headlong assault on a question occupying the greatest minds. For that matter, students sometimes ask such questions entirely on their own, and the teachable moment has arrived. Our caution is that teachers and curriculum designers should map out a likely progression of simple to complex questions to provide a framework for the unfolding of student inquiry. Often the essential or unit question cannot be immediately accessible or useful without background knowledge and investigation

Though we discuss the practical structuring of such work in later chapters, the general point here is that plunking down a big-idea question at the beginning of a unit may not always succeed in stimulating interest and inquiry. The student typically does not know enough or care enough about the issues involved to see the need or value in addressing such a question. Rather, simple introductory questions are needed that frame the design of lessons or a unit as lead-ins to the overarching unit and essential questions.

One straightforward first approach for making essential or unit guiding questions more accessible is through selective editing. This method was used by a teacher in New York State for a Russian history unit within a global studies course. He modified the original essential question, Was Gorbachev a hero or a traitor to his country? with a simple edit to create an entry-point question linked to provocative role-play. The students were involved in a meeting-of-the-minds format involving Gorbachev, Yeltsin, Lenin, Stalin, Marx, Trotsky, and Catherine the Great. The debate question was, Who Blew It? The work culminated in a mock newspaper article and editorial, and an essay on the key unit question.

Thus, guidelines for entry-point questions involve four criteria. The questions should be framed for maximal simplicity; be worded in student-friendly language; provoke discussion and questions; and point toward the larger essential and unit questions. Heidi Hayes Jacobs cites an example of an entry-point question to use with young children: What is snow?<sup>6</sup> The question quickly challenges the boundaries of the concept that press the matter deeper: Is snow ice? Is ice water? Is man-made snow the same as natural snow? Here are some other examples of possible entry-point questions:

■ Start with the expression, “You know who your real friends are,” then ask, Do you? (Can be used to study works such as *A Separate Peace*, *To Kill a Mockingbird*, and *Pigman*, with the same question asked in different ways.)

■ Does food that is good for you have to taste bad? (Used as a stimulus to some lessons in the nutrition unit discussed throughout this book.)

■ In what ways is a fairy-tale “true”? In what ways is any documentary “false”? (Can be used to compare myths, novels, biographies, histories, and docudramas.)

■ Was George Washington any different from Palestinian terrorists trying to protect their country?

■ Is a straight line always the shortest possible distance? (Can be used to study spherical and other non-Euclidean geometries.)

■ Was Jefferson a hypocrite? Did he really think of a slave as a sub-human while writing the Declaration of Independence?

■ What makes people act phony? (Can be used to introduce *Catcher in the Rye*.)

■ Is slang untranslatable? (Can be used to introduce colloquialisms and the problems of translating into a foreign language.)

■ Is honesty the best policy or just the right thing to do? (Can be used to study noble characters in literature and history.)

The kinds of entry-point questions we are discussing often emerge from student responses to lessons or inquiries, followed by guided reflection on their work. Here are examples of student questions:

■ Wait, yesterday you said it’s colder in winter because of the sun’s angle, but how does that explain cold days in summer? And why aren’t the

coldest days of the year in December?

■ How can that be? How could we have called ourselves a democracy but not have allowed people to directly elect their own senators for over a century?

■ But if Oedipus was really so clever, why would he be so blind to. . . ?

Indeed, if you are not getting at least occasional student questions such as these, it is likely that not enough opportunity for digging into ideas is being provided; that is, instruction is too didactic or textbook driven.

## A Return to the Nutrition Unit

Setting: Bob James, our teacher from Chapter 1 who was designing a unit on nutrition, reflects on the role of essential and unit questions.

This idea of essential and unit questions has really gotten me thinking. I’m especially intrigued by this notion: If the textbook contains the answers, then what are the questions? As I reflect on my own education, I can’t recall ever being in a course in which the content was framed around important, thought-provoking questions. Some of my teachers and professors asked thought-provoking questions during class, but I see these essential questions as different. I see how they provide a focus for all the work and knowledge mastery, if done right. I now feel a bit cheated since I’m beginning to realize the power of these overarching questions for pointing to the bigger ideas within a subject or topic.

Ever since I began teaching, I have tried to get my students to stretch their thinking by asking questions such as: Can you give another example of \_\_\_\_? How does \_\_\_\_ relate to \_\_\_\_? What



might happen if \_\_\_\_? Do you agree with \_\_\_\_, and why or why not? While I'm pretty good at posing these day-to-day questions, I realize that for the nutrition unit, I'll have to give more thought to up-front questions.

Well, I suppose a basic question for the unit should be, What is healthy eating? That gets at the essence of what I want my students to take away—the enduring understanding. It also links naturally to larger essential questions that could be used to frame the entire health curriculum: What is healthy living? What is wellness? But will that grab my kids? A more provocative entry question might be, Can food that is good for you also taste good? That might work because kids at this age are fond of junk food, and many seem to believe that if food is nutritional, it has to taste “yucky.”

To see if I was on the right track, I brought up my ideas over lunch with a few of the teachers in the faculty room, and they really got into it! We had a very interesting discussion about my question that led to other questions: If left on their own, will children eat what they need nutritionally? Do tastes change as we grow up—in the direction of healthier eating? If so, why? What about others in the animal kingdom, then? Do young animals naturally eat what is good for them? What is the role of junk food advertising on the eating patterns of children and adults? We were really “cooking” when the lunch period ended and I had to leave for recess duty. I think I'll stew on this awhile.

(Later) I've decided to keep my initial question, What is healthy eating? for the overall unit, but I'll use an entry question, Can food that is good for you also taste good? to get the students involved from the start. Because I try to give my kids some say in what they'll be learning, I'll also ask them for

any questions that interest them about eating and health. A 3rd grade teacher suggested posting these overarching questions on a bulletin board. I really like this idea because the posted questions will provide a visible reminder of the focus of our work during the unit.

Now that I'm adding essential and unit questions to my teaching repertoire, I can be even more effective in framing my units of study around important ideas. In addition, these questions will provide a clearer focus for my kids and a sharper target for my own teaching.

## Endnotes

1. Some of the clearer state and district documents take a slightly different formatting approach. They first state the standard, then use bulleted indicators to show the kinds of lessons, activities, and performances that are appropriate for learning and assessing such standards.
2. See Chapter 1 of Erickson (1998) for a thorough discussion of the limits of various national standards documents and the need to be clearer about the questions and understandings sought.
3. For example, Lake Washington School District in Redmond, Washington, and Pomperaug Regional School District 15 in Middlebury, Connecticut, use discipline-based essential questions to guide their development of courses, units, and accompanying performance assessment tasks. For further information, see Erickson (1998) and Educators in Connecticut's Pomperaug Regional School District 15 (1996).
4. A variant of these questions and criteria was first proposed in Wiggins (1987a). In the Harvard Teaching for Understanding project (Wiske, 1997) and Blythe & Associates (1998), when used as overarching course and program standards, such questions are presented under the heading of “throughlines.” See pp. 69 ff. in Wiske, 1997.

5. This is not a blanket call for a discovery-based or recapitulationist approach to instruction. Rather, we note here that understanding a big idea typically requires the kind of active inquiry, discussion, and applications we describe. See Chapter 8 for a more comprehensive discussion of the problem.
6. For other ideas on how to make effective use of such questions, readers should consult Jacobs's new book on curriculum mapping (1997, pp. 26–33). It has a short but insightful chapter on essential questions as a way of curricular mapping, with other fine examples and ideas for their use.