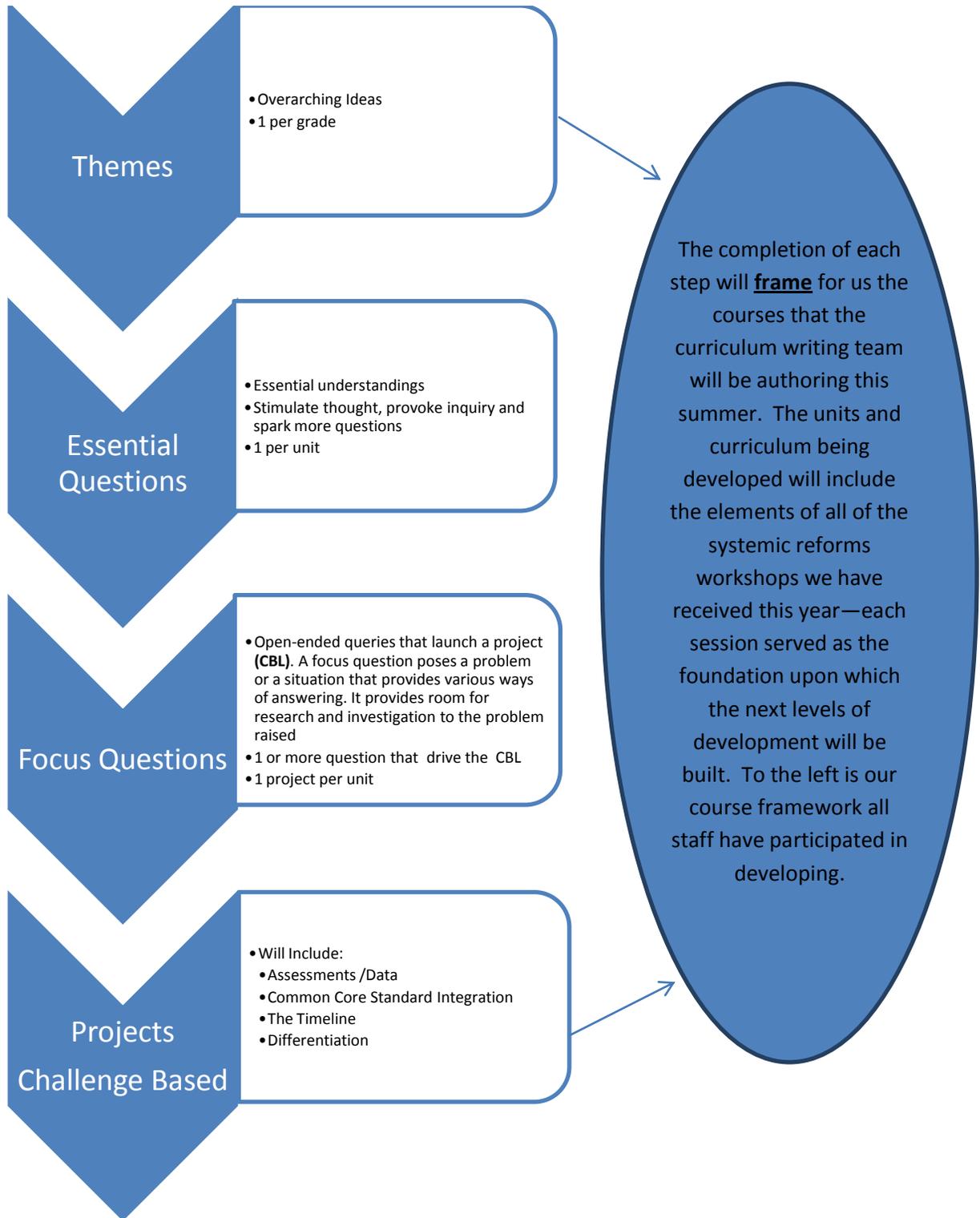


Preparation for Course Writing



Summer Curriculum Writing Deliverables:

One Course -Per Content Area- Per Grade- Per School

Begin with Grade 11

- Course description –attached template
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- Unit Objectives
- Identification of texts, primary resource documents., online resources and materials
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- Formative and Summative Assessments
- Differentiated Strategies and Techniques
- Challenge Based Projects
- Rubric/ Criteria for Challenge based Project
- Identification of grade specific, content specific domain and academic specific vocabulary
- Identification of Standards (CSS, NGSS)

Essential Questions

by Jay McTighe and Grant Wiggins

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Chapter 1. What Makes a Question Essential?

Teachers regularly pose questions to their students, but the purpose and form of these questions can vary widely. This book is about a particular kind of question—one we call "essential." So, what makes a question "essential"? Let us begin by engaging you in a bit of inquiry using the following concept-attainment exercise to examine the characteristics of an essential question. The exercise has three parts, as explained in the next several paragraphs. First, examine the questions in the two columns and try to determine the distinguishing characteristics of the ones labeled "Essential" compared to those labeled "Not Essential." What traits do the essential questions have in common? How do they differ from the others?

Essential Questions

How do the arts shape, as well as reflect, a culture?

What do effective problem solvers do when they get stuck?

How strong is the scientific evidence?

Is there ever a "just" war?

How can I sound more like a native speaker?

Who is a true friend?

Not Essential Questions

What common artistic symbols were used by the Incas and the Mayans?

What steps did you follow to get your answer?

What is a variable in scientific investigations?

What key event sparked World War I?

What are common Spanish colloquialisms?

Who is Maggie's best friend in the story?

Second, look at these additional examples, organized by subject area, to spark your thinking and clarify the qualities of essential questions, or EQs.

Essential Questions in History and Social Studies

- Whose "story" is this?
- How can we know what *really* happened in the past?
- How should governments balance the rights of individuals with the common good?
- Should _____ (e.g., immigration, media expression) be restricted or regulated? When? Who decides?
- Why do people move?
- Why is that there? (geography)
- What is worth fighting for?

Essential Questions in Mathematics

- When and why should we estimate?

- Is there a pattern?
- How does *what* we measure influence *how* we measure? How does *how* we measure influence *what* we measure (or don't measure)?
- What do good problem solvers do, especially when they get stuck?
- How accurate (precise) does this solution need to be?
- What are the limits of this math model and of mathematical modeling in general?

Essential Questions in Language Arts

- What do good readers do, especially when they don't comprehend a text?
- How does *what* I am reading influence *how* I should read it?
- Why am I writing? For whom?
- How do effective writers hook and hold their readers?
- What is the relationship between fiction and truth?
- How are stories from other places and times about me?

Essential Questions in Science

- What makes objects move the way they do?
- How are structure and function related in living things?
- Is aging a disease?
- Why and how do scientific theories change?
- How can we best measure what we cannot directly see?
- How do we decide what to believe about a scientific claim?

Essential Questions in the Arts

- What can artworks tell us about a culture or society?
- What influences creative expression?
- To what extent do artists have a responsibility to their audiences?
- Do audiences have any responsibility to artists?
- What's the difference between a thoughtful and a thoughtless critique?
- If practice makes perfect, what makes perfect practice?

Essential Questions in World Languages

- What should I do in my head when trying to learn a language?
- How can I express myself when I don't know all the words (of a target language)?
- What am I afraid of in hesitating to speak this language? How can I overcome my hesitancy?
- How do native speakers differ, if at all, from fluent foreigners? How can I sound more like a native speaker?
- How much cultural understanding is required to become competent in using a language?
- How can I explore and describe cultures without stereotyping them?

As a result of comparing essential and nonessential questions and studying the additional examples, you should now have an idea of what makes a question "essential." Here are seven defining characteristics. A good essential question

1. Is *open-ended*; that is, it typically will not have a single, final, and correct answer.
2. Is *thought-provoking* and *intellectually engaging*, often sparking discussion and debate.
3. Calls for *higher-order thinking*, such as analysis, inference, evaluation, prediction. It cannot be effectively answered by recall alone.
4. Points toward *important, transferable ideas* within (and sometimes across) disciplines.
5. Raises *additional questions* and sparks further inquiry.
6. Requires *support* and *justification*, not just an answer.
7. *Recur*s over time; that is, the question can and should be revisited again and again.

How does your working definition compare?

Questions that meet all or most of these criteria qualify as essential. These are questions that are not answerable with finality in a single lesson or a brief sentence—and that's the point. Their aim is to stimulate thought, to provoke inquiry, and to spark more questions, including thoughtful student questions, not just pat answers. They are provocative and generative. By tackling such questions, learners are engaged in *uncovering* the depth and richness of a topic that might otherwise be obscured by simply *covering* it.

Now we present the third part of the concept-attainment exercise. Using the characteristics we presented and those that you noted, which of the following questions do you think are essential? Why?

Question	Is it Essential?
1. In what year was the Battle of Hastings fought?	Yes/No
2. How do effective writers hook and hold their readers?	Yes/No
3. Is biology destiny?	Yes/No
4. Onomatopoeia—what's up with that?	Yes/No
5. What are examples of animals adapting to their environment?	Yes/No
6. What are the limits of arithmetic?	Yes/No

Check your answers against the key on page 15. How did you do? Are you getting a better feel for what makes a question essential? Good! Now we'll probe more deeply to uncover the nuances of EQs.

Two Sides of a Coin

Although we have characterized essential questions as being important for stimulating student thinking and inquiry, this is not their sole function. In the body of work known as *Understanding by Design* (McTighe & Wiggins, 2004; Wiggins & McTighe, 2005, 2007, 2011, 2012), we propose that education should strive to develop and deepen students' understanding of important ideas and processes so that they can transfer their learning within and outside school. Accordingly, we recommend that content (related goals) be unpacked to identify long-term transfer goals and desired understandings. Part of this unpacking involves the development of associated essential questions. In other words, EQs can be used to effectively frame our key learning goals. For example, if a content standard calls for students to learn about the three branches of government, then questions such as "When does a government overstep its authority?" or "How might we guard against governmental abuses of power?" help stimulate student thinking about why we need checks and balances, what the framers of the Constitution were trying to achieve, and other governmental approaches to balancing power. Note that the question has more than one answer, even if in the United States we have grown accustomed to our particular answer. In this sense, the question is still open, not closed.

We'll have more to say about how to come up with good essential questions in later chapters, but for now try this simple thought experiment. If the content you are expected to teach represents "answers," then what questions were

being asked by the people who came up with those answers? This conceptual move offers a useful strategy both for seeing a link between content standards and important questions and for coming up with ways of engaging students in the very kind of thinking that is required to truly understand the content. In short, expert knowledge is the result of inquiry, argument, and difference of opinion; the best questions point to hard-won big ideas that we want learners to come to understand. The questions thus serve as doorways or lenses through which learners can better see and explore the key concepts, themes, theories, issues, and problems that reside within the content.

It is also through the process of actively "interrogating" the content using provocative questions that students strengthen and deepen their understanding. For instance, a regular consideration of the question "How are stories from different places and times about me?" can lead students to the big ideas that great literature explores—the universal themes of the human condition underneath the more obvious peculiarities of personality or culture—and thus can help us gain insight into our own experiences. Similarly, the question "To what extent can people accurately predict the future?" serves as a launch pad for examining big ideas in statistics and science, such as sampling variables, predictive validity, degrees of confidence, and correlation versus causality.

At a practical level, think of targeted understandings and essential questions as the flip sides of the same coin. Our essential questions point toward important transferable ideas that are worth understanding, even as they provide a means for exploring those ideas. This associated relationship is suggested graphically in the Understanding by Design (UbD) unit-planning template, where targeted understandings are placed next to their companion essential questions. Here are some examples:

Understandings	Essential Questions
The geography, climate, and natural resources of a region influence the economy and lifestyle of the people living there.	How does <i>where</i> you live influence <i>how</i> you live?
Statistical analysis and data display often reveal patterns. Patterns enable prediction.	What will happen next? How sure are you?
People have different dietary needs based on age, activity level, weight, and various health considerations.	How can a diet that is "healthy" for one person be unhealthy for another?
Dance is a language of shape, space, timing, and energy that can communicate ideas and feelings.	How can motion express emotion?

Three Connotations of *Essential*

A finer-grained examination of such questions reveals three different but overlapping meanings for the term *essential*. One meaning of *essential* includes the terms "important" and "timeless." Essential questions in this sense arise naturally and recur throughout one's life. Such questions are broad in scope and universal by nature. *What is justice? Is art a matter of taste or principles? How much should we tamper with our own biology and chemistry? Is science compatible with religion? Is an author's view privileged in determining the meaning of a text?* Essential questions of this type are common and perpetually arguable. We may arrive at or be helped to grasp understandings for these questions, but we soon learn that answers to them are provisional or more varied than we might have imagined. In other words, we are liable to change our minds in response to reflection, different views, and rich experience concerning such questions as we go through life—and such changes of mind are not only expected but beneficial. A good education is grounded in such lifelong questions, even if we sometimes lose sight of them while focusing on

content mastery. Such questions signal that education is not just about learning "the answer" but also about learning how to think, question, and continually learn.

A second connotation for *essential* refers to "elemental" or "foundational." Essential questions in this sense reflect the key inquiries within a discipline. Such questions point to the big ideas of a subject and to the frontiers of technical knowledge. They are historically important and very much alive in the field. The question "Is any history capable of escaping the social and personal history of its writers?" has been widely and heatedly debated among scholars over the past hundred years, and it compels novices and experts alike to ponder potential bias in any historical narrative. Questions such as "How many dimensions are there in space-time?" and "To what extent are current global weather patterns typical or unusual?" are at the forefront of debate about string theory in physics and global climate change in climatology, respectively. The question "Is it more a sign of creativity or arrogance when a writer tries to tell a story from the perspective of a gender or culture different from his or her own?" has been energetically debated in the world of literature and the arts in recent years.

A third and important connotation for the term *essential* refers to what is vital or necessary for personal understanding—in the case of schooling, what students need for learning core content. In this sense, a question can be considered essential when it helps students make sense of seemingly isolated facts and skills or important but abstract ideas and strategies—findings that may be understood by experts but not yet grasped or seen as valuable by the learner. Examples include questions such as these: *In what ways does light act wavelike? How do the best writers hook and hold their readers? What models best describe a business cycle? What is the "best fit" line of these "messy" data points?* By actively exploring such questions, learners are helped to connect disparate and confusing information and arrive at important understandings as well as more effective (transfer) applications of their knowledge and skill. Consider a sports example. In soccer, basketball, football, lacrosse, and water polo, strategic players and teams come to understand the importance of asking "Where can we best create more open space on offense?" (Note that this question serves as a springboard for a strategic understanding—that spreading out the defense enhances ball advancement and scoring opportunities.) It leads to the more obvious and important question: "How might we win more games?" Note, therefore, that even in skill-focused instruction such as in PE or math, there are important essential questions for helping students understand the point of the skills and the meaning of results. (We will further discuss EQs in skill-based courses in later chapters.)

Intent Trumps Form

You may have heard that so-called higher-order questions should begin with the stems *why*, *how*, or *in what ways*. Indeed, such question starters seem to signal inherently open-ended thought, inviting multiple responses. Do not assume, however, that all questions beginning with *what*, *who*, or *when* are necessarily asking for factual answers or that *why* questions are inherently higher-order. For example, consider these questions: *What is fair in economics? Who is a "winner"? When should we fight?* These are clearly not recall questions. They encourage thinking and discussion, and one's answers may evolve over time. Alternately, you could ask your class, "Why did World War II start?" but really be seeking the single answer that is provided in the textbook.

This consideration leads to a more general point: intent trumps form. *Why* you ask a question (in terms of the desired result of asking it) matters more than *how* you phrase it. No question is inherently essential or trivial. Whether it is essential depends on purpose, audience, context, and impact. What do you as a teacher intend for students to do with the question? Recall the earlier example "Is biology destiny?" It is framed in a way that to the uninitiated might sound closed or factual. But clearly we would ask it to spark interesting and pointed debate about what is and isn't predictable about human behavior and health. In other words, the essentialness of the question depends upon why we pose it, how we intend students to tackle it, and what we expect for the associated learning activities and assessments. Do we envision an open, in-depth exploration, including debate, of complex issues, or do we plan to simply lead the students to a prescribed answer? Do we hope that our questions will spark students to raise their own questions about a text, or do we expect a conventional interpretation?

In other words, if we look only at the wording of a question out of context, we cannot tell whether the question is or is not essential. Consider the question "What is a story?" Clearly, if we pose this question with the intent of having students give a textbook answer ("a story contains a plot, characters, setting, and action"), then the question (as pursued) is not essential in terms of our criteria. However, if the question is being asked to initially elicit well-known story elements but then *overturn* that conventional definition through a study of postmodern novels that lack one or more of these elements, then it functions in an "essential" manner.

Consider the same question—"What's the pattern?"—used in three classroom situations with very different intentions:

1. A 2nd grade teacher asks, "Boys and girls, look at the numbers 2, 4, 6, 8, _____. What comes next? What's the pattern?" In this case, the question is leading toward a specific answer (10).
2. An Algebra 1 teacher presents students with a set of data and asks them to plot two related variables on a graph. "What do you notice? What's the pattern?" In this case, the teacher is guiding the students to see a linear relationship in all the data.
3. A science teacher shows a data table of incidents of AIDS cases over a 15-year period, disaggregated by age, gender, region, and socioeconomic status. His question to students is "What's the pattern (or patterns)?" Instead of a pat answer, he intends to evoke careful analysis, reasoning, and spirited discussion.

Thus we cannot say a question is or is not essential based only on the language used in its phrasing. As noted, *who/what/when* questions, as well as those that seem to elicit a *yes/no* response, may spark impressive curiosity, thought, and reflection in students, depending upon how they are set up instructionally and the nature of the follow-ups. Consider these examples and imagine the lively discussion, sustained thinking, and insights they might evoke:

- Is the universe expanding?
- Is a democracy that suspends freedoms a contradiction in terms?
- Does Euclidean geometry offer the best "map" for the space we live in?
- Who should lead?
- Are imaginary numbers useful?
- Is *Catcher in the Rye* a comedy or a tragedy?
- What is the "third" world? Is there a "fourth"?
- When is mission accomplished and victory assured?

And as we noted, the notion of intent works the other way around. A teacher may pose an intriguing and *seemingly* open question yet expect a pat answer. In the worst cases, instructors display intellectual dishonesty when they ask for students' opinions on controversial issues but actually seek or highlight responses that they deem politically or morally correct.

This relevance of purpose or intent is more easily grasped if you think about your own response to thought-provoking questions. The best essential questions are really alive. People ask, discuss, and debate them outside school. They arise naturally in discussion, and they open up thinking and possibilities—for novices and experts alike. They signal that inquisitiveness and open-mindedness are fundamental habits of mind and characteristic of lifelong learners. In a more practical sense, a question is alive in a subject if we really engage with it, if it seems genuine and relevant to us, and if it helps us gain a more systematic and deep understanding of what we are learning.

Ultimately, then, we need to consider the larger intent and context of the question—including its associated follow-ups, assignments, and assessments—to determine whether it ends up being essential. (We have more to say on the culture of inquiry needed to make the most of essential questions in a later chapter.)

Size and Scope Matter: Overarching Versus Topical EQs

Questions such as "What margins of error are tolerable?" are essential in yet another sense. They offer relevance and transferability across disciplines, linking not only to units and courses in measurement, statistics, and engineering, but also to areas as diverse as pottery, music, and parachute packing. Such questions encourage and even demand transfer beyond the particular topic in which we first encounter them. They can (and thus should) recur over the years to promote conceptual connections and curriculum coherence within (and sometimes) across topics and disciplines.

Essential questions (and companion understandings) differ in scope. For example, "What lessons can we learn from World War II?" and "How do the best mystery writers hook and hold their readers?" are typically asked to help students come to particular understandings around those specific topics and skills. Such questions are not usually meant to be perpetually open or unanswerable. They refer specifically to the topic of a unit, in these cases, World War II and the genre of writing called mysteries, respectively. Other essential questions are broad and overarching, taking us beyond any particular topic or skill, toward more general, transferable understandings. For example, "What lessons can we and can't we learn from the past?" extends well beyond World War II and can fruitfully be asked again and again over many years in several subject areas. Similarly, we need not inquire solely about how mysteries engage us. That topical question fits under the broader question that applies to all writers and artists: "How do the best writers and artists capture and hold our attention?"

We refer to specific essential questions as "topical" and the more general questions as "overarching." (The same idea applies to understandings.) Here are some paired examples of these two types of essential questions:

Overarching Essential Questions	Topical Essential Questions
Whose "story" (perspective) is this?	How did Native Alaskans view the "settlement" of their land?
How are structure and function related?	How does the structure of various insects help them to survive?
In what ways does art reflect, as well as shape, culture?	What do ceremonial masks reveal about the Inca culture?
How do authors use story elements to establish mood?	How does John Updike use setting to establish a mood?
What makes a system?	How do our various body systems interact?
What are common factors in the rise and fall of powerful nations?	Why did the Soviet Union collapse?

As you can see, the essential questions on the right focus on particular topics, whereas the companion questions to the left are broader in nature. (Although seemingly convergent, these topical questions still give rise to different plausible responses.) Notice that the overarching EQs make no mention of the *specific* content of the unit. They transcend particular subject matter to point toward broader, transferable understandings that cut across unit (and even course) topics.

Overarching essential questions (and understandings) are valuable for framing entire courses and programs of study (such as a K–12 health curriculum). They provide the conceptual armature for an understanding-based curriculum that spirals around the same EQs across the grades.

Metacognitive and Reflective Questions

The examples of essential questions that we have provided thus far have been primarily nested in academic disciplines. However, there is a more general set of EQs that may be described as metacognitive and reflective. Here are some examples:

- What do I know and what do I need to know?
- Where should I start? When should I change course? How will I know when I am done?
- What's working? What's not? What adjustments should I make?
- Is there a more efficient way to do this? Is there a more effective way to do this? How should I balance efficiency and effectiveness?
- How will I know when I am done?
- What should I do when I get stuck?
- How can I overcome my fear of making mistakes?
- What have I learned? What insights have I gained?
- How can I improve my performance?
- What will I do differently next time?

General questions of this type are truly essential to effective learning and performance, within and outside school. Such questions have proven particularly fruitful in subjects that focus on skill development and performance. Their use characterizes a thoughtful and reflective individual, and they can be posed and considered across the grades, as well as at home and throughout life.

Nonessential Questions

Various types of questions are used in schools, and most are not essential in our sense of the term (even if they all play useful roles in teaching). Let's look at three other types of common classroom questions: questions that lead, guide, and hook. In later chapters we will describe other types, including probing questions and questions used to check for understanding.

Questions That Lead

The legendary comedian Groucho Marx hosted a television quiz show in the 1960s called *You Bet Your Life*. Whenever a contestant missed all or most of the quiz queries, Groucho would pose the final face-saving question: "Who is buried in Grant's tomb?" (Alas, not all contestants could answer it!) This is a perfect example of a leading question because it points to and demands the single, "correct" answer. (We realize that lawyers and debaters define leading questions differently, but we think the term is apt for describing the teacher's motive: to elicit a correct answer.) Here are other examples of leading questions:

- What is seven times six?
- What did we say was true of all four-sided shapes?
- Who was the president at the start of the Great Depression?
- What is the chemical symbol for mercury?
- What's the relative minor key of A major?
- Which letters are vowels?

Leading questions allow a teacher to check that learners can recollect or locate specific information. Thus they have their place when recall and reinforcement of factual knowledge are desired. Another term for such questions is *rhetorical*, which usefully reminds us that they aren't real questions in an important sense. Their purpose is not to signal inquiry but to point to a fact. That's why lawyers and debaters routinely use rhetorical questions to direct attention to *their* point.

Questions That Guide

Another familiar type of question used by teachers (and found in textbooks) may be called "guiding." Consider the following examples:

- Is this sentence punctuated properly?
- Why must the answer be less than zero?
- How do we use the "rule of thirds" in photography?
- Can you state Newton's 2nd Law in your own words?
- When did the main character begin to suspect his former friend?
- What were the four causes of World War I? (This information is found on different pages in the text.)
- Which words tend to be feminine and which masculine in French?

Questions that guide are broader than questions that lead, but are not truly open-ended or designed to cause in-depth inquiry. Each of these questions is steering the student toward previously targeted knowledge and skill—to arrive at a definite answer. Yet the answer requires some inference, not simply recall. As such they are important tools for helping teachers achieve specific content outcomes. Although such questions are familiar and useful, we do not consider them essential, as you will see if you check them against the seven criteria noted earlier. They may be fruitfully employed during one or more lessons, but they are not intended to set up a long-term inquiry and will not be revisited over an extended time period.

Questions That Hook

The best teachers have long recognized the value of hooking students' attention at the start of a new lesson, unit, or course. Indeed, clever opening questions can spark interest, capture imagination, and set up wonder. Although we most certainly encourage the use of questions that hook students' interest, they differ from essential questions. Consider two examples of "hooks" to see how they are distinguished from associated essential questions:

1. To open a unit on nutrition for 6th graders, a teacher poses the following question: "Can what you eat and drink help prevent zits?" This hook effectively captures students' interest and launches an exploration of the unit's broader EQ: "What should we eat?"
2. A science teacher in an Alaskan village uses this question to hook his students: "Are we drinking the same water as our ancestors?" Given the cultural reverence for ancestors and the significance of the ocean for survival, this is an elegant opener in the context of his school community. It is coupled with the companion essential question "Where does water come from and where does it go?" to spark ongoing inquiry into the relevant science.

Figure 1.1 provides examples that will help you to distinguish among the four types of classroom questions discussed in this chapter, and Figure 1.2 highlights the characteristics of each type.

Figure 1.1 Examples of Four Types of Classroom Questions

Content or Topic	Questions That Hook	Questions That Lead	Questions That Guide	Essential Questions
Nutrition	Can what you eat help prevent zits?	What types of foods are in the food groups?	What is a balanced diet?	What should we eat?
Novel Study on <i>Catcher in the Rye</i>	Do you know any teenagers that act crazy? Why do they act that way?	When (time period) and where (location) does the novel take place?	Is Holden normal? (Note: The main character is telling the story from a psychiatric hospital.)	What makes a story timeless? What "truths" can we learn from fiction?
Musical Scales	Do your parents like your music?	What are the notes of the C major scale?	Why would a composer use a major as opposed to a minor scale?	What distinguishes music from "noise"? What influences musical tastes (e.g., culture, age)?
Constitution/Bill of Rights	Do you agree with the "stand your ground" laws?	What is the Second Amendment?	Does the Second Amendment support "stand your ground" laws, according to the courts?	Which constitutional principles are timeless and which should be amended if outdated or outmoded (e.g., only white males were once seen as "persons")? Where is the balance between personal freedoms and the common good? Is the Fourth Amendment or any other parts of the Bill of Rights out of date?
Psychology/Human Behavior	Why do kids sometimes act stupid when they are in groups?	Who was B.F. Skinner? What is behaviorism?	What are the similarities and differences among behaviorism, Gestalt psychology, and Freudian psychology?	Why do people behave as they do?

Figure 1.2 Characteristics of Four Types of Classroom Questions

Questions That Hook
Asked to interest learners around a new topic May spark curiosity, questions, or debate Often framed in engaging "kid language" Asked once or twice, but not revisited
Questions That Lead
Asked to be answered Have a "correct" answer Support recall and information finding Asked once (or until <i>the</i> answer is given) Require no (or minimal) support
Questions That Guide
Asked to encourage and guide exploration of a topic Point toward desired knowledge and skill (but not necessarily to a single answer) May be asked over time (e.g., throughout a unit) Generally require some explanation and support
Essential Questions
Asked to stimulate ongoing thinking and inquiry Raise more questions Spark discussion and debate Asked and reasked throughout the unit (and maybe the year) Demand justification and support "Answers" may change as understanding deepens

Summing Up

Classroom questions can be classified into different types, each with different, legitimate purposes. As you consider the appropriate types of questions to include in your teaching, we caution you, however, to distinguish between two connotations of the term *essential*: (1) essential to me in my role as a teacher, where questions that "hook" and "guide" are regularly employed, versus (2) essential for students to continuously examine so as to "come to an understanding" of key ideas and processes. We are using the second meaning in this book. Indeed, in an understanding-focused curriculum, we want more of the latter kinds of questions.

Now that you have a better understanding of what makes a question essential, we will look more closely at when and why we should pose them. (Note: Although you might "get" the idea of essential questions, it doesn't follow that you will necessarily be able to automatically develop great essential questions on your own. We will explore ideas for generating and refining EQs in Chapter 3.)

FAQs

My principal says that we should have at least one essential question for every lesson we teach. I am finding this very hard. Can you help?

In Understanding by Design, we have chosen the unit as a focus for design because the key elements of UbD—transfer goals, understandings, essential questions, and performances of understanding—are too complex and multifaceted to be satisfactorily addressed within a single lesson. In particular, essential questions are meant to focus on long-term learning and thus be revisited over time, not answered by the end of a class period. Not only would it be difficult to come up with a new EQ for every lesson; the predictable result would be a set of superficial (leading) or, at best, guiding questions.

Your principal is presumably well intended, but we would want her to distinguish between *using* EQs on a regular basis (we endorse that) and using a *new* one for each lesson. One or two truly essential questions can be used to frame the learning over the course of many lessons. Perhaps you should give your principal this book!

Answers and Commentary for Exercise on p. 4

Question	Is the question essential?	Commentary
1. In what year was the Battle of Hastings fought?	No	This is a factual question with a single correct answer.
2. How do effective writers hook and hold their readers?	Yes	This is a rich question for exploring the many facets of effective writing, including different genres, audience/purpose connections, writer's voice, and organizational structures.
3. Is biology destiny?	Yes	This is intended to be a thought-provoking, open question with many nuances (so don't be fooled by the phrasing).
4. Onomatopoeia—what's up with that?	No	Although the format of the question may wake up a sleepy student, it doesn't really open up worthy inquiry. At best, it can lead to a definition of a new term.
5. What are examples of animals adapting to their environment?	No	This is a useful question for helping students understand the concept of adaptation in various manifestations; however, there are specific answers that could be found in a book.
6. What are the limits of arithmetic?	Yes	This is an open question, widely applicable across mathematical topics across the grades; the question helps students come to understand an abstract yet important idea: mathematics involves tools and methods that have both strengths and limitations.

I'm confused about the difference between guiding and essential questions. Some of the questions you cited as essential—such as "What do the best writers do to hook and hold their readers' attention?"—seem to fit

the definition of "guiding" questions: "Not open-ended or designed to cause in-depth inquiry. They are designed to focus learning of content or activities."

You're correct; the difference is a bit subtle. But it all goes back to intent, as we said in this chapter. If the aim is to arrive at a single, final, and not-to-be-questioned answer, then the point of the question is to guide learning toward that answer. But if the point is to *keep questioning*, even if we arrive at a provisional answer that makes sense, then the question is essential.

How to Write Effective Driving Questions for Project-Based Learning

August 17, 2011 | [Andrew Miller](#)

Driving questions (DQ) can be a beast. When I train teachers, they say the same thing, "Writing the driving question is one of the hardest parts of an effective PBL." I agree. When I am constructing a DQ for a PBL project, I go through many drafts. It's only now, after implementing many projects and having coached countless teachers that I consider myself adept.

To get a better sense of this, I encourage you to watch some videos at the Buck Institute for Education's "How To Do PBL" playlist on their YouTube Channel before we dig in.

Our Driving Question Now Is: How to Write and Effective Driving Question?

First, we need to understand why we have them. Driving questions are there for two entities, the teacher and the student.

For the teacher: A DQ helps to *initiate and focus the inquiry*. Remember the project shouldn't be trying to solve the world's problems. Instead, it should be a focused action, and focused inquiry; the goal is to ensure the students are focused. The teacher needs to help focus the teaching and learning, and the driving question help with that.

It also *captures and communicates the purpose* of the project in a succinct question. When reading the driving question, the teacher and student should be clear on what the overall project is as well as its purpose. Also for the teacher, it helps to *guide planning and reframe standards* or big content and skills. I will say more about this later, but the driving question should not sound like a standard reimagined in the form of a question. Instead, use the driving question to reframe the standards in ways that are accessible to both you the teacher and the student.

For the student Ultimately, the driving question is for the students. It *creates interest and a feeling of challenge* so that even the most reluctant student thinks, "Hmmm, I guess that sounds kinda cool."

It *guides the project work*. All work for the project, including the culminating project and daily lessons and activities, should be trying to help students answer the driving question. Whether it's a lesson on commas, or implementation time, or drill-and-skill with math problems, the work needs to connect to the driving question. Why? The seemingly "boring" activities of the day-to-day have reason, relevancy and purpose, and then guess what? They aren't boring anymore.

This relates to my next point. *It helps student answer the question: "Why are we doing this?"* This is the Golden Question that many administrators ask students when they are visiting. If your driving question is good, it can help connect that work so that students can articulate the reason behind daily lessons and activities.

My driving question is posted all over my classroom. It's on worksheets, the project wall, and the online blog. It is continually referred to while we are working on the project so students are reminded of the purpose of the project and daily work.

The Tale of the "Snarky Kid"

I must tell the story about "Snarky Kid." Snarky Kid is the kid who pretends to hate everything in school or your class, but still shows up and does work. In my class, we were doing some comma practice sheets in class right after a direct instruction lesson. Our driving question was: "How do we get a government official to preserve both casinos and the culture of local native peoples?"

My administrator, of course, came up to Snarky Kid, and asked, "What are you working on and why?"

Snarky Kid replied, "We are working on stupid commas."

"Oh, I see," said my administrator. "Why are you working on commas?"

"Because we are writing letters to the senator to make her change her mind, and we don't want our letters to suck. We want her to read them, and not look bad."

Fantastic, right!?! Despite the crass answer, Snarky Kid was able to articulate the immediate relevance of the task. I'd like to think that maybe the driving question helped that student to answer the administrator's question.

In my next blog, we will explore different types of driving questions, look at some transformations from bad to good driving questions, and look are some further criteria. In the meantime, I'm leaving you with a task to practice refining driving questions.

Practice Refining Driving Questions

Watch the video on the Tubric, a useful tool to help create effective driving questions, and then follow this link to create one of your own. (courtesy of my colleagues at the Buck Institute for Education)

Even nerdy activities have their place in the classroom. (Can I get an amen?)

Next, use the Tubric to refine the poorly written driving questions below. It's true, you have not yet received all the tips and tricks I have to share, nor do you know exactly what the PBL projects are that connect to the driving questions presented. However, you can still practice, and maybe come up with questions of your own around creating effective driving questions. (Hint: I'm modeling part of the PBL process in this exercise.)

Here are some driving questions for you to refine. Feel free to pick one and focus your work. I'll be covering some of the tips and tricks to refine driving questions in my next post.

- What is epic poetry?
- How have native peoples been impacted by changes in the world?
- How does probability relate to games?
- Why is science important and how can it help save people?

UBD Unit Template

STAGE 1 – DESIRED RESULTS	
Unit Title: _____	
Established Goals:	
Understandings: <i>Students will understand that...</i> •	Essential Questions: Focus Questions:
Students will know: •	Students will be able to: •
STAGE 2 – ASSESSMENT EVIDENCE	
Challenge Based Project:	Other Evidence:
Key Criteria:	Other Performance Tasks:

Lesson Plan Template

Unit:	Lesson Title:	
Lesson Objective(s):		
Time line (# of days):		
Materials, Resources, Technology Needed:		
Prior Learning Connections:		
Instructional Strategies/Grouping:		
Description of Learning Tasks/Activities:		
Interdisciplinary connections:		
Differentiation:	X:	Y:
<i>Common Core State Standards Alignment:</i>		
Formative Assessments:		

Fairchild Wheeler Inter-district Magnet High School

COURSE SYLLABUS: (Course Name)

Semester Offered:	Instructor:
Course Number:	Office:
Credit Hours:	E-mail:
Office Hours:	Phone:
or by appointment	

Course Description

Biotechnology

Course Objectives

Upon successful completion of this course students will achieve the following in the field of _____.

1. Content Students will learn...
2. Skills Students will apply...
3. Literacy Students will learn...
4. Applications Students will demonstrate...

Course Prerequisites:

Example:

- (specified courses) Knowledge of General Biology (9th grade), DNA Structure & Function (10th grade), Chemistry (10th grade), Conceptual Physics (9th grade), Algebra I & II, and Pre-Calculus.
- (identified skills) Reading/Writing: Informational text analysis, MLA research, publishing with technology, and rudimentary research skills.

Course Topics:

- List relevant topics to be covered; may reflect the focus questions and components of units

Units:

- Name units to be covered

Schedule and Classroom:

TBD (as much as possible; perhaps provide teacher schedule and contact information)

Examinations and Grading Criteria:

- Assignments: 30% - Announced throughout the semester
- Midterm Exam: 35% -
- Final Exam: 35% - To be explained in detail during the course
- Attendance and class conduct will be considered as part of the final exam grade.

Course Resources:

- List supplemental texts, online resources, etc.
- Additional handouts

Recommended (Supplementary) Textbook(s):

- Brown, J. K. (2011). *Biotechnology: A Laboratory Skills Course*, Student Edition, BioRad. (ISBN 978-0-9832396-0-4).
- Daugherty, E. (2007). *Biotechnology. Science for the New Millennium*. Saint Paul, MN: Paradigm Publishing.
- Grace, E. S. (2009). *Biotechnology Unzipped. Promises and Realities*. Second Ed., Washington, DC: Joseph Henry Press.

Instructional Approaches:

Section may best be addressed by school or department. Should mention project-based/challenge-based learning, problem-solving, inquiry-based rooted in the Understanding by Design instructional method.

Policies:

Example:

- Late homework / project assignment submission will not be accepted.
- Three or more unexcused absences will result in an automatic failure.
- Homework assignments and programs are due within a week from the assignment date, unless the instructor notes otherwise.
- All homework assignments are to be typed.
- Extra credit quizzes or assignments (if any), will be announced by the instructor.
- **It is the student's responsibility to become familiar with and adhere to the standards set forth in the policies on cheating and plagiarism as defined in the appropriate high school program handbook.**
- **ATTENTION PARENTS!** It is important to understand that excusing your student from a day of school does not excuse them from the work they should have completed or from assignments that were due on the day of their absence. Student academic progress can be hindered as a result of frequent absences. Please request class assignments within two weeks of a long-term absence and refer to course website or contact instructor via email for one day excused absences.

EXAMPLE COURSE OUTLINE

This course is designed for a 20-week semester with each class meeting 5 days per week for 80 minutes a day. Course outline should reflect all 20 weeks.

Week	Unit	Topic	Activities
1	1. Unit Name	Subsection of unit	Lesson activities and accompanying resources as needed (text, pg#)
2			
3			
4			
5			
6			
7			