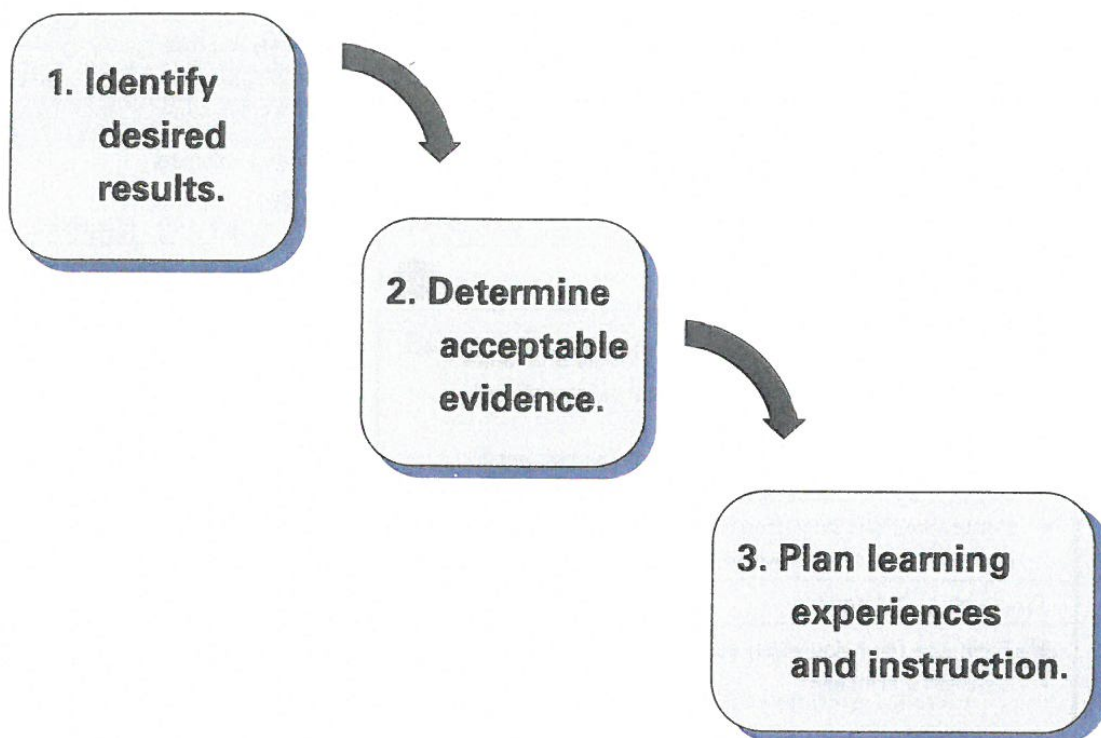


UbD: Stages of Backward Design



The backward design approach consists of three general stages:

Stage 1. Identify Desired Results. In Stage 1 we consider the goals. What should students know, understand, and be able to do? What big ideas are worthy of understanding and implied in the established goals (e.g., content standards, curriculum objectives)? What “enduring” understandings are desired? What provocative questions are worth pursuing to guide student inquiry into these big ideas? What specific knowledge and skills are targeted in the goals and needed for effective performance?

Stage 2. Determine Acceptable Evidence. In the second stage we consider evidence of learning. How will we know if students have achieved the desired results and met the content standards? How will we know that students *really* understand the identified big ideas? What will we accept as evidence of proficiency? The backward design orientation suggests that we think about our design in terms of the collected assessment evidence needed to document and validate that the desired results of Stage 1 have been achieved.

Stage 3. Plan Learning Experiences and Instruction. With identified results and appropriate evidence of understanding in mind, it is now time to finalize a plan for the learning activities. What will need to be taught and coached, and how should it best be taught, in light of the performance goals? What sequence of activity best suits the desired results? In planning the learning activities, we consider the *WHERE TO* elements (described later) as guidelines. Those guidelines can be summed up in a question: How will we make learning both engaging *and* effective, given the goals and needed evidence?

1-Page Template with Design Questions

Stage 1—Desired Results

Established Goals:

G

- What relevant goals (e.g., content standards, course or program objectives, learning outcomes) will this design address?

Understandings:

U

Students will understand that . . .

- What are the big ideas?
- What specific understandings about them are desired?
- What misunderstandings are predictable?

Essential Questions:

Q

- What provocative questions will foster inquiry, understanding, and transfer of learning?

Students will know . . .

K

- What key knowledge and skills will students acquire as a result of this unit?
- What should they eventually be able to do as a result of such knowledge and skill?

Students will be able to . . .

S

Stage 2—Assessment Evidence

Performance Tasks:

T

- Through what authentic performance tasks will students demonstrate the desired understandings?
- By what criteria will performances of understanding be judged?

Other Evidence:

OE

- Through what other evidence (e.g., quizzes, tests, academic prompts, observations, homework, journals) will students demonstrate achievement of the desired results?
- How will students reflect upon and self-assess their learning?

Stage 3—Learning Plan

Learning Activities:

L

What learning experiences and instruction will enable students to achieve the desired results? How will the design

W = Help the students know **Where** the unit is going and **What** is expected? Help the teacher know **Where** the students are coming from (prior knowledge, interests)?

H = **Hook** all students and **Hold** their interest?

E = **Equip** students, help them **Experience** the key ideas and **Explore** the issues?

R = Provide opportunities to **Rethink** and **Revise** their understandings and work?

E = Allow students to **Evaluate** their work and its implications?

T = Be **Tailored** (personalized) to the different needs, interests and abilities of learners?

O = Be **Organized** to maximize initial and sustained engagement as well as effective learning?

Sample 2-Page Template, Page 1

Life Cycles—Interdisciplinary, Grade 2

Title: Life Cycles **Subject/Course:** Interdisciplinary
Topic: Needs of Living Things **Grades:** 2 **Designers:** Marie Adams

Stage 1—Desired Results

Established Goals:

NY Math, Science, Technology 4.1, 4.3, 4.4–4.7; Technology 5.1, 5.2, 5.5; Interconnectedness 6.1–6.4; ELA 1.1, 1.2, 2.1; Social Studies 3.1

G

Understandings:

Students will understand that . . .

- All living things have needs and must depend on and interact with resources in their environments in order to survive.
- Living things grow and change, sometimes in predictable patterns—yet often, the adherence to a strict pattern weakens the organism's ability to survive.
- Living things are designed to survive as individuals and as a species, yet survival of an individual or community often requires the death of another living thing.

U

Essential Questions:

- How is a pea, a prairie dog, a praying mantis or a peacock like a person?
- What do living things need to survive?
- How do living things interact with their environments in order to survive?

Q

Students will know . . .

- Life-cycle patterns of insects, plants, and mammals.
- A specific food chain within each region.
- The connection between plants and animals and our own needs for clothing, food, and shelter.
- Characteristics of desert, forest, pond, and ocean environments, including climate and natural resources.

K

Students will be able to . . .

- Use graphic organizers to record and analyze data.
- Apply understandings to design a human habitat in a given environment that meets basic needs.

S

Stage 2—Assessment Evidence

Performance Tasks: *Summary in GRASPS form*

T

Survivor

This task is a simulation of a survival experience in the wilderness within one of five different environmental regions. Given a collection of materials in imitation of natural resources, students will design and build a model of a human habitat specific to the resources and dangers of the region. The model will show how the student will meet his needs for shelter, food, water, clothing, freedom, power, fun, and belonging.

Key Criteria

- Appropriate habitat for environment
- Meets basic needs for food, clothing, shelter, and defense
- Carefully and neatly crafted

Other Evidence

- Unit Vocabulary Test
- Review of student science journals
- Chapter test from Science/Social Studies Texts
- Project self assessment

OE

Sample 2-Page Template, Page 2

Life Cycles—Interdisciplinary, Grade 2

Stage 3—Learning Plan

Learning Activities

L

Students will

- Plant peas and beans, measure and observe; record observations in a journal; determine stages of growth in the life cycle of plants; apply knowledge to other plants through a cut-and-paste life-cycle activity.
- Observe class monarch caterpillar culture. Read *Caterpillar Diary*.
- Raise mealworms and fruit flies; observe and record stages of growth; determine life cycle of insects.
- Manipulate systems affecting survival (food, water, light, space, and temperature); record observations in journal; look for patterns and draw conclusions.
- View and discuss videotapes about life cycles and basic needs of plants and each animal class.
- Read and discuss chapters on life cycles and basic needs in science and social studies texts; complete worksheets.
- Collect flowers and fruits to find seeds; read fact sheet about how seeds travel; sort seeds into groups according to how they travel; make a poster.
- View the video “Bread: From Farm to Table.” Choose a favorite food. Draw the steps you think are used to get your food from farm to table.
- Examine fungi and ferns to learn about spores.
- Listen to and discuss books about plants and animals read aloud by the teacher such as *Plants That Never Ever Bloom*, *The Popcorn Book*, *Chickens Aren't The Only Ones*.
- Read *The Pilgrims' First Thanksgiving*. Complete a graphic organizer to identify the ways basic needs were met. Visit the *Mayflower Web* site to view the list of supplies purchased for the voyage. Make a list of items you would take to a new world. Read *Over the River and Through the Wood*. Complete a graphic organizer to identify the ways basic needs were met. Use a Venn diagram to compare the lifestyles of the people in the two books.
- Write a book review comparing the lifestyles of the people in the two books.
- View videos about Native American peoples; hear read-aloud books about Native tribes; use books, Web sites, and posters to research food, shelters, clothing, tools, transportation, and fun of native peoples.
- Read *Legend of the Indian Paintbrush*. Read and hear about other Native American legends and identify common elements; write in the style of a legend to explain something that happens in nature.
- Write a letter to the main character in *Indian Paintbrush* telling him about your region, and how you meet your basic needs using natural resources.
- Read *A House Is a House for Me*. Examine posters and local architecture to determine structure, shape, and materials used in building homes in various regions of the world. Find out why some roofs are flat, some sloped. Find out why Adirondack homes are built with the first floor 3–4 feet off the ground.
- Read in social studies and science texts and supplemental materials about forests, ponds, oceans, deserts and grasslands in the United States. Identify the physical characteristics of each region, and its plant and animal life, and note natural resources that meet basic needs; make a poster to demonstrate what you've learned.
- Choose one region and native animal whose characteristics you admire; research the animal's habitat, food, and life cycle. Write a report about the animal.
- Read *Time to Sleep* and listen to the read-aloud book *Animals in Winter*.
- View bulletin board display to learn about adaptation, hibernation, and migration; complete worksheets about each.
- Practice vocabulary words associated with the unit through reading, writing, listening, speaking, and worksheets.

The teacher will

Post the big questions; Gather and prepare materials and visual displays; Order videos and books; Make and post vocabulary cards; Lead discussions; Teach mini-lesson on each subtopic; Prepare and share with students the exemplars, graphic organizers and rubrics for writing assignments; Prepare goals statements, vocabulary lists, and skills to be learned for weekly communication with parents; Prepare practice activities, graphic organizers and quizzes; Observe and record individual participation in activities; Assess individual progress toward unit goals; and Provide instructional intervention.

An Enduring Understanding . . .

(description)



Involves the Big Ideas that give meaning and importance to facts.

Enduring understandings are made up of the concepts, principles, and theories that weave many facts into revealing and useful patterns. They involve the (few) organizing priority ideas that enable us to make sense of past lessons, conduct current inquiry, and create new knowledge.

Can transfer to other topics, fields, and adult life.

Such understandings endure in that they enable us to make vital and informative connections in our learning—as students and as adults. For example, the idea that “might does not make right” applies to both playground disputes and international diplomacy.

Is usually not obvious, often counterintuitive, and easily misunderstood.

An understanding is an inference, not a fact. It is an insight derived from inquiry. Key understandings in intellectual fields (e.g., in physics: *Objects remain in motion at a constant velocity if no force acts on them*) often violate common sense and conventional wisdom. They are thus often prone to misunderstanding by students. These understandings therefore cannot be covered; they must be uncovered.

May provide a conceptual foundation for basic skills.

Though skill-based teaching in mathematics, foreign language, and physical education does not seem to deal with “understandings” in most units, all skills derive their value from the strategic principles that help us know when and how to use the skill. The understandings also justify the use of a skill (e.g., the student who can explain why you should use a bent-arm pull in swimming freestyle) and enable the student to extend the use of the skill to new situations (e.g., the use of bent-arm pull in backstroke).

Is deliberately framed as a generalization—the “moral of the story.”

An understanding is a generalization derived from inquiry. It is the specific insight that should be inferred from study of the topic (not just the stating of the topic)—what we want the student leaving the study to realize. Note: The enduring understanding of a unit might be that there is no single agreed-upon understanding, or that people disagree about how the issues, facts, text should be understood.

Tips on Framing Understandings

U

Frame the desired understanding as a full-sentence generalization in response to the phrase, “Students will understand that . . .”

State *specifically* what about the topic students are expected to grasp. Many curricular frameworks, content standards documents, and teacher objectives make the mistake of framing understandings as a topic (e.g., *students will understand the water cycle*) or skill (e.g., *students will understand how to multiply*).

We recommend that you summarize the *particular* understandings you are after, being as specific as possible about the insights that should result from exploring the topic (e.g., *data analysis and graphic displays often reveal helpful patterns and enable prediction*).

A practical way to accomplish this is to frame the understandings in response to the stem: “students will understand that . . .” (e.g., *the Civil War was fought initially over states’ rights issues and regional economic politics, not just the morality of slavery*). This approach helps to clarify the desired generalizations that we want students to come to understand, while avoiding the problems of stating the understanding in terms of a topic or skill.

Another way to think about it: If your unit topic is a “story,” then what is the moral of your story? By stating the understanding as a “moral of the story,” designers move beyond topics to clarify the complete understanding they seek. For example, a moral in a unit on animal adaptation is *Living organisms have developed adaptive mechanisms to enable them to survive harsh or changing environments*.

Beware of stating an understanding as a truism or vague generality.

Avoid truisms. Truisms are statements that are true by definition (e.g., *triangles have three sides*) or state the obvious (e.g., *musicians work with sounds to create music*). Likewise, vague generalities (e.g., *the United States is a complex country* or *writing involves many different elements*) are too global to provide useful and transferable insights into important ideas. A practical tip: Check to see that your stated understandings do not end in an adjective (e.g., *fractions are important*).

Avoid the phrase, “Students will understand how to . . .”

Such a statement is ambiguous. One meaning is that the student will develop certain skills. This kind of objective is best placed in Box **S** (Skill) on the design template. Another meaning of “understand how” implies that there are insights essential to wise use of the skill—e.g., knowing *why* something works or is useful. Those desired insights should be made explicit and framed as understandings in Box **U** of the template.

A practical way to accomplish this is to specify “why?” “how?” “when?” and “so what?” when identifying desired understandings in skill areas.

Essential Questions

(description)



Have no simple “right” answer; they are meant to be argued.

Essential Questions yield inquiry and argument—a variety of plausible (and arguable) responses, not straightforward facts that end the matter. They serve as doorways into focused yet lively inquiry and research. They should *uncover* rather than cover the subject’s controversies, puzzles, and perspectives. They are intended to result in conclusions drawn by the learner, not recited facts. For example, Does art reflect culture or help shape it? Can we look but not see? Why do “seers” see what the rest of us don’t? Does the artist see more clearly or look elsewhere?

Are designed to provoke and sustain student inquiry, while focusing learning and final performances.

Essential Questions work best when they are designed and edited to be thought provoking to students, engaging them in sustained, focused inquiries that culminate in important performance. Such questions often involve the counterintuitive, the visceral, the whimsical, the controversial, the provocative. For example, Is the Internet dangerous for kids? Are censorship and democracy compatible? Does food that is good for you have to taste bad? Why write? Students develop and deepen their understanding of important ideas as they explore these questions.

Often address the conceptual or philosophical foundations of a discipline.

Essential Questions reflect the most historically important issues, problems, and debates in a field of study. For example, Is history inevitably biased? What is a proof? Nature or nurture? By examining such questions, students are engaged in thinking like an expert.

Raise other important questions.

Thought-provoking Essential Questions are naturally generative. They lead to other important questions within, and sometimes across, subject boundaries. For example, In nature, do only the strong survive? leads to What do we mean by “strong”? Are insects strong (since they are survivors)? What does it mean to be psychologically strong? Inquiries into human biology and the physics of physiology also follow.

Naturally and appropriately recur.

The same important questions are asked and asked again throughout one’s learning and in the history of the field. For example, What makes a great book great? Are the Harry Potter novels great books? These questions can be productively examined and reexamined by 1st graders as well as college students. Over time, student responses become more sophisticated, nuanced, well-reasoned and supported as their understandings deepen.

Stimulate vital, ongoing rethinking of big ideas, assumptions, and prior lessons.

Essential questions challenge our unexamined assumptions, the inevitable simplification of our earlier learning, and the arguments we may unthinkingly take for granted. They force us to ask deep questions about the nature, origin, and extent of our understanding. For example, In light of fractions, place value, irrationals, and negative square roots—what is a number? Is it “democratic” to have an electoral college? What IS a friend? Can the enemy of my enemy be my friend? What is a story, if a story has no clear plot or moral? Is history more of a story than a science? What are the implications for studying history, if so?

The Six Facets of Understanding

Facet 1—EXPLANATION

Sophisticated and apt explanations and theories that provide knowledgeable and justified accounts of events, actions, and ideas: Why is that so? What explains such events? What accounts for such action? How can we prove it? To what is this connected? How does this work?

Facet 2—INTERPRETATION

Narratives, translations, metaphors, images, and artistry that provide meaning: What does it mean? Why does it matter? What of it? What does it illustrate or illuminate in human experience? How does it relate to me? What makes sense?

Facet 3—APPLICATION

Ability to use knowledge effectively in new situations and diverse contexts: How and where can we use this knowledge, skill, or process? How should my thinking and action be modified to meet the demands of this particular situation?

Facet 4—PERSPECTIVE

Critical and insightful points of view: From whose point of view? From which vantage point? What is assumed or tacit that needs to be made explicit and considered? What is justified or warranted? Is there adequate evidence? Is it reasonable? What are the strengths and weaknesses of the idea? Is it plausible? What are its limits? So what? What is a novel way to look at this?

Facet 5—EMPATHY

The ability to get “inside” another person’s feelings and world view: How does it seem to you? What do they see that I don’t? What do I need to experience if I am to understand? What was the author, artist, or performer feeling, seeing, and trying to make me feel and see?

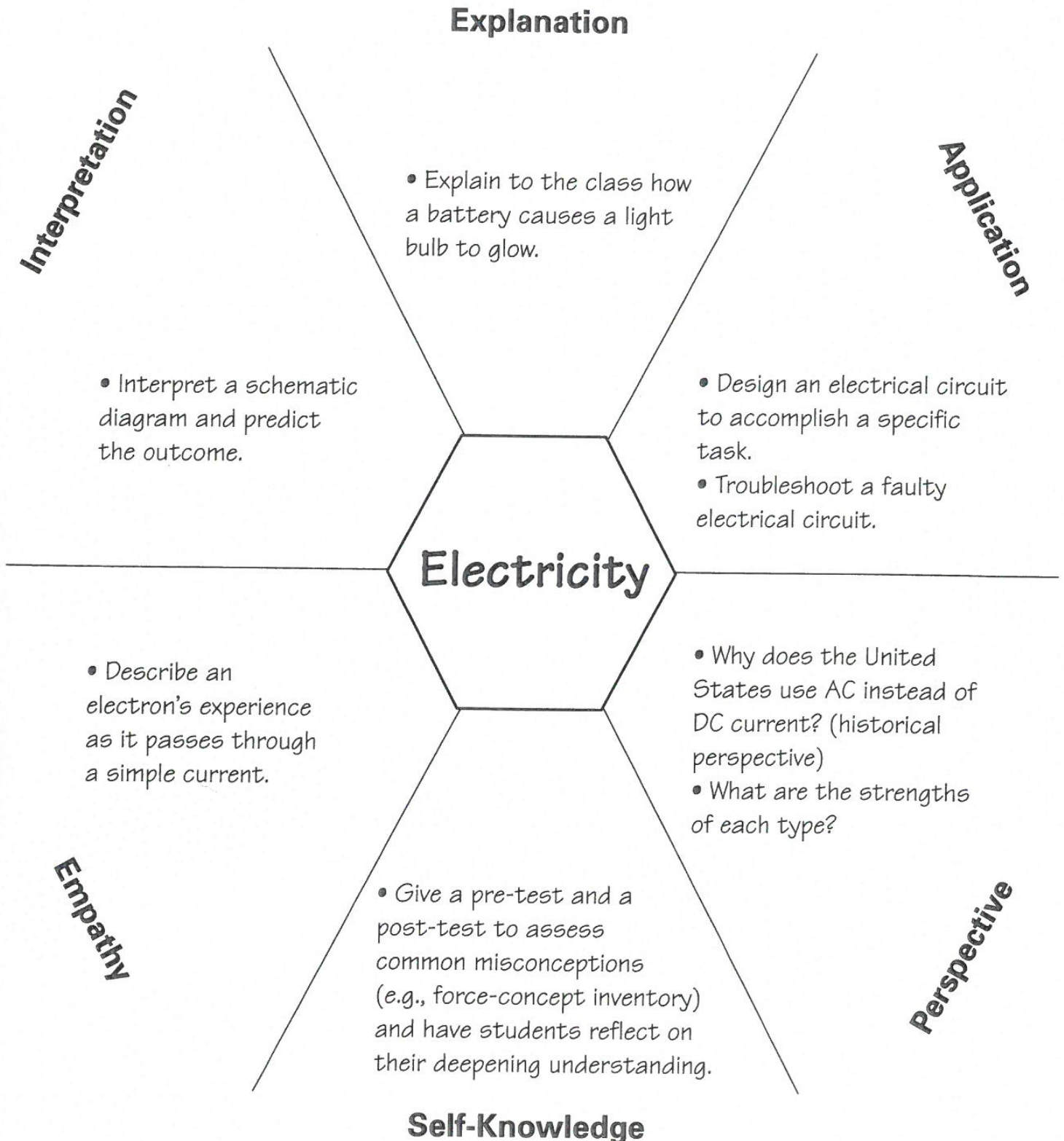
Facet 6—SELF-KNOWLEDGE

The wisdom to know one’s ignorance and how one’s patterns of thought and action inform as well as prejudice understanding: How does who I am shape my views? What are the limits of my understanding? What are my blind spots? What am I prone to misunderstand because of prejudice, habit, or style? How do I learn best? What strategies work for me?

Brainstorming Assessment Ideas Using the Six Facets of Understanding

Electricity

Use the six facets of understanding to generate possible ways in which students might reveal understanding.



Constructing a Performance Task Scenario Using GRASPS

Consider the following set of stem statements as you construct a scenario for a performance task. Refer to the previous idea sheets to help you brainstorm possible scenarios. (Note: These are idea starters. Resist the urge to fill in all of the blanks.)

Goal:

- Your task is _____
- The goal is to _____
- The problem or challenge is _____
- The obstacles to overcome are _____

Role:

- You are _____
- You have been asked to _____
- Your job is _____

Audience:

- Your clients are _____
- The target audience is _____
- You need to convince _____

Situation:

- The context you find yourself in is _____
- The challenge involves dealing with _____

Product, Performance, and Purpose:

- You will create a _____
in order to _____
- You need to develop _____
so that _____

Standards and Criteria for Success:

- Your performance needs to _____
- Your work will be judged by _____
- Your product must meet the following standards: _____
- A successful result will _____

Constructing a Performance Task Scenario Using GRASPS

Social Studies

Goal:

- **Your goal is to** help a group of foreign visitors understand the key historic, geographic, and economic features of our region.

Role:

- **You are** an intern at the Regional Office of Tourism.

Audience:

- **The audience** is a group of nine foreign visitors (who speak English).

Situation:

- **You have been asked to** develop a plan, including a budget, for a four-day tour of the region. Plan your tour so that the visitors are shown sites that best illustrate the key historic, geographic, and economic features of our region.

Product Performance and Purpose:

- **You need to** prepare a written tour itinerary and a budget for the trip. You should include an explanation of why each site was selected and how it will help the visitors understand the key historic, geographic, and economic features of our region. Include a map tracing the route for the tour.

Standards and Criteria for Success:

- **Your proposed tour plan** (including itinerary, budget and route map) **needs to include**
 - The key historic, geographic, and economic features of the region.
 - A clear rationale for the selected sites.
 - Accurate and complete budget figures.

T

Frequently Asked Questions About Backward Design

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

We use the term “backward” in two ways.

First, plan with the “end in mind” by first clarifying the learning you seek; that is, the desired learning results (Stage 1). Then, think about the evidence needed to certify that students have achieved those desired learnings (Stage 2). Finally, plan the means to the end; that is, the teaching and learning activities and resources to help students achieve the goals (Stage 3). We have found that backward design, whether applied by individual teachers or district curriculum committees, helps to avoid the twin sins of activity-oriented and coverage-oriented curriculum planning.

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

Backward design is not a new concept. In 1948 Ralph Tyler articulated a similar approach to curriculum planning. In more recent times, outcome-based education advocates, such as William Spady, recommended that curriculum be “designed down” from desired outcomes. In the best-selling book *7 Habits of Highly Effective People*, Stephen Covey conveys a similar finding: Effective people plan with the end in mind (Covey, 1989).

Do you have to follow the template order (top to bottom) when you design?

No. Backward design does not demand a rigid sequence. The process is inherently non-linear with various entry points that lead to an organized product. The final design is presented in a logical format, via the UbD template. While the final *product* reflects the

three-stage logic, the designing *process* typically unfolds in an iterative and unpredictable way, with the end result in mind. Think of the difference between cooks experimenting in the kitchen and their final product: a new recipe. They may be inspired to start in various ways: with a fresh seasonal ingredient, a specific audience for whom to cook or the desire to test out new preparations. Much trial and error is likely as various combinations of ingredients, spices, temperatures, and timings are tried. But the final product is presented to others in an efficient step-by-step form. Similarly, while the UbD template provides a format for sharing the final design “recipe,” it does not specify the sequence of the design process. (And, of course, designs as well as recipes will often be revised following feedback from peer review and use with students.)

Fill the template with your ideas as they come to you. We have observed that certain variables, such as subject area, topic, and a teacher’s style, seem to influence the design sequence. (See page 276 for specific entry points that may be helpful as you work within the three stages.) Regardless of approach, designers should complete the template and routinely check the emerging design against the UbD Design Standards to ensure that the process yields the desired high-quality design.

Is Understanding by Design appropriate for all grades and subjects?

Yes—as long as the goals involve some big ideas worth understanding as opposed to those requiring only drill and recall (e.g., touch typing).

Can you use the three stages of backward design (and the UbD template) for lesson planning?

We have chosen the unit as a focus for design because the key elements of UbD—big ideas, enduring understandings, essential questions, and performances of understanding—are too complex and multifaceted to be satisfactorily addressed within a single lesson. For instance, essential questions are meant to be revisited over time, not answered by the end of a class period.

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

How does a unit fit into an entire course or K–12 program?

While backward design certainly applies to the design of individual units, the process is also an effective way of mapping a coherent curriculum. When applying backward design to curriculum mapping, we consider our desired results—including content standards and other exit outcomes—and then map backward (e.g., 12 to K) to ensure that all the important results are explicitly addressed through the courses and units. Backward mapping helps to identify any gaps and redundancies in the curriculum, and to target needed curriculum revisions and additions.

Understanding by Design suggests a particular spin on the mapping process: Instead of simply listing the topics taught, a UbD map specifies the big ideas and essential questions that are addressed at various points in the curriculum. This approach

helps to identify the overarching ideas and essential questions that provide important throughlines in the curriculum. Throughlines are big ideas, not necessarily interdisciplinary, that run vertically throughout the curriculum. For example, in social studies an overarching EQ might be, *Why do people move?* This same question would then be examined in 3rd grade for the westward movement, 5th grade when we study the explorers, and 10th grade with immigration.

Additionally, we propose that a UbD map should include core assessment tasks that all students would perform to demonstrate their understanding of key ideas and processes. (Of course, these tasks would be accompanied by agreed-upon scoring rubrics.) We believe that such curriculum mapping brings conceptual clarity and coherence to the curriculum.

The UbD Web site (ubdexchange.org) enables electronic curriculum mapping and the linking of individual UbD units to the map. The maps can be generated online, easily amended, and printed on Excel spreadsheets.