Wiggins and McTighe, *Understanding by Design*

"This book is about good design—of curriculum, assessment, and instruction—focused on developing and deepening understanding of important ideas. Posed as a question, considered throughout the book and from many perspectives, the essence of this book is this: *How do we make it more likely—by our design—that more students really understand what they are asked to learn?* So often, by contrast, those who "get it" are learners who come to us already able to articulate—understanding by good fortune. What must our planning entail to have an intellectual impact on everyone: the less experienced; the highly able, but unmotivated; the less able; those with varied interests and styles?" (pp 3-4)

"…many teachers begin with and remain focused on textbooks, favored lessons, and time-honored activities—the inputs—rather than deriving those means from what is implied by the desired result—the output. To put it in an odd way, too many teachers focus on the *teaching* and not the *learning*. They spend most of their time thinking, first, about what they will do, what materials they will use, and what they will ask students to do rather than first considering what the learner will need in order to accomplish the learning goals." (p 15)

"Students will be unable to give satisfactory responses when the design does not provide them with clear purposes and explicit performance goals highlighted throughout their work." (p 17)

Three stages of "backward design" are:
1. Identify desired results.
2. Determine acceptable evidence.
3. Plan learning experiences for instruction.

"When we speak of evidence of desired results, we are referring to evidence gathered through a variety of formal and informal assessments during a unit of study or a course. We are not alluding only to end-of-teaching tests or cumulative tasks. Rather, the collected evidence we seek may well include traditional quizzes and tests, performance tasks and projects, observations and dialogues, as well as students' self-assessment gathered over time." (p 19)

"As Bloom (1956) put it, understanding is the ability to marshal skills and facts wisely and appropriately, through effective application, analysis, synthesis, and evaluation. Doing something correctly, therefore, is not, by itself, evidence of understanding. It might have been an accident or done by rote. To understand is to have done it in the right way, often reflected in being able to explain *why* a particular skill, approach, or body of knowledge is or is not appropriate in a particular situation." (p 39)

"As a general rule, we find that many teachers overlook the enabling skills at the heart of long-term successful performance. In workshops with college professors, for example, participants complain most often about student inability to transfer the lessons in lectures and readings to new issues or cases. When we ask, 'To what extent does your syllabus give them practice, coaching, and feedback in how to apply the ideas?' many professors recognize their omission—namely, that merely specifying performance requirements does not prepare students for success." (p 59)

"In short, 'content mastery' is not the *aim* of instruction, but a *means*. Content knowledge is most appropriately viewed as the tools and material of intellectual competence…" (p 59)

"Given that every topic typically encompasses more content than we can reasonably address, we are obliged to make deliberate choices *and set explicit priorities*. Having chosen what to teach (and what not to), we have to help the learners see the priorities within what we ask them to learn. Our design should clearly signal these priorities so that all learners will be able to answer these questions: What is most important here? How do these pieces connect? What should I pay most attention to? What are the (few) bottom-line priorities?" (p 67)

"Understanding is multidimensional and complicated. There are different types of understanding, different methods of understanding, and conceptual overlap with other intellectual targets. Because of the complexity of the issue, it makes sense to identify different (though overlapping and ideally integrated) aspects of understanding. We have developed a multifaceted view of what makes up a mature understanding, a six-sided view of the concept. When we truly understand, we

1. *Can explain*—via generalizations or principles, providing justified and systematic accounts of phenomena, facts, and data; make insightful connections and provide illuminating examples or illustrations.
2. *Can interpret*—tell meaningful stories; offer apt translations; provide a revealing historical or personal dimension to ideas and events; make the object of understanding personal or accessible through images, anecdotes, analogies and models.
3. *Can apply*—effectively use and adapt what we know in diverse and real contexts—we can 'do' the subject.
4. *Have perspective*—see and hear points of view through critical eyes and ears; see the big picture.
5. *Can empathize*—find value in what others might find odd, alien, or implausible; perceive sensitively on the basis of prior direct experience.
6. *Have self-knowledge*—show metacognitive awareness; perceive the personal style, prejudices, projections, and habits of mind that both shape and impede our own understanding; are aware of what we do not understand; reflect on the meaning of learning and experience." (p 84)

"From a design point of view, Facet 1 calls for building units around questions, issues, and problems that demand student theories and explanations, such as those found in problem-based learning and effective hands-on and minds-on science programs. The implications for assessment are straightforward: Use assessments (e.g., performance tasks, projects, prompts, and tests) that ask students to provide an explanation on their own, not simply recall; to link specific facts with larger ideas and justify the connections; to show their work, not just give the answer; and to support their conclusions." (p 88)

Regarding Facet 2, "students must have activities and assessments that ask them to interpret *inherently ambiguous* matters—far different than typical 'right answer' testing." (p 92)

"…the instructional and assessment implications of Facet 3 call for an emphasis on performance-based learning: work that focuses on and culminates in more authentic tasks, supplemented by more conventional tasks." (p 94)

"Facet 4 promotes the idea that instruction should include explicit opportunities for students to confront alternative theories and diverse points of view regarding the big ideas—not just as a function of hearing other student views different from their own, but as a result of the design of the coursework and materials, which show experts offering different perspectives on the same ideas." (p 97)

Regarding Facet 5, "to ensure greater understanding of abstract ideas, students must have far more direct or simulated experiences of them than most current textbook-driven courses allow." (p 100)

"What any curriculum designed for understanding must do, then, is help students realize that their job is not merely to take in what is 'covered' but to actively 'uncover' what lies below the surface of the facts and to ponder their meaning. This is, of course, what *constructivism* means: Meaning cannot be taught; it must be fashioned by the learner via artful design and effective coaching by the teacher. Thus, part of what a curriculum designed to develop student understanding will do is 'teach' students that their job is not merely to learn facts and skills but also to question them for their meaning." (pp 103-4)

"We propose that a question is essential if it is meant to:
1. Cause genuine and relevant inquiry into the big ideas and core content.
2. Provoke deep thought, lively discussion, sustained inquiry, and new understanding as well as more questions.
3. Require students to consider alternatives, weigh evidence, support their ideas, and justify their answers.
4. Stimulate vital, ongoing rethinking of big ideas, assumptions, prior lessons.
5. Spark meaningful connections with prior learning and personal experiences.
6. Naturally recur, creating opportunities for transfer to other situations and subjects." (p 110)

"Some teachers have argued that essential questions may work fine in certain subjects like history, English, or philosophy but not in skill-focused areas such as mathematics, chemistry, reading, physical education, and world languages. […] In fact, big ideas—hence important questions—underlie all skill mastery, and considering such questions can be fruitfully framed around four categories of big ideas relevant to effective skill learning: (1) key concepts, (2) purpose and value, (3) strategy and tactics, and (4) context of use. […] Skills are means, not ends; the aim is fluent, flexible, and effective performance." (pp 112-3)

"The learners' own questions often do not seem important to them. 'I know this sounds stupid…' is often the preface to a *wonderful* question. Why the self-deprecation? It is not merely developmental or a function of shyness. An unending dose of straightforward coverage and the sense that school is about 'right answers' can easily make it seem as if the experts do not have questions, only the foolish and ignorant do." (p 122)

"Without committing ourselves to curriculum designed around essential questions, the twin sins of aimless coverage [of material] and activity lurk in waiting, no matter how interesting the teacher or how lively the individual lessons." (p 124)

"A common problem in framing [desired] understandings is to unwittingly restate the topic. 'I want students to understand [Newton's Laws]' is indeed a sentence about the topic, but it is not a proposition regarding the desired understanding. […] A simple prompt that has proven particularly helpful is to ask designers to finish the sentence *'Students should understand **that**…'* Such phrasing ensures a full-sentence answer and prevents the designer from falling back into stating only the topic or a concept." (p 135)

"…the goal of cultivating understanding in the learner depends upon the teacher's vigorous resistance of a deep-seated instinct: teaching an understanding as a fact. Indeed, merely *stating* understandings (by either the teacher or the textbook) is the cardinal mistake of 'coverage' in the bad sense of the term: treating complex inferences as words to be simply taken in, instead of treating the understanding as a problem to be solved by good design of learning activities." (p 138)

"…we are obligated to consider the assessment evidence implied by the outcomes sought, rather than thinking about assessment primarily as a means for generating grades. Given the goals, what performance evidence signifies that they have been met? Given the essential questions, what evidence would show that the learner had deeply considered them? Given the understandings, what would show that the learner 'got it'? We urge teachers to consider a judicial analogy as they plan assessment. Think of students as juries think of the accused: innocent (of understanding, skill, and so on) until proven guilty by a preponderance of evidence that is more than circumstantial. In a world of standards-based accountability, such an approach is vital." (p 148)

We must consider three questions in assessment:
1. What kinds of evidence do we need to find hallmarks of our goals, including that of understanding?
2. What specific characteristics in student responses, products, or performances should we examine to determine the extent to which the desired results were achieved?
3. Does the proposed evidence enable us to infer a student's knowledge, skill, or understanding?

"Our goal […] is appropriate evidence, not interesting projects or tasks. […] We must ensure that the project is designed backward from the evidence we need, not designed primarily with the learner's interests in mind." (p 156)

"The six facets of understanding signal the types of performances we need as valid measures of understanding. They map out, in general terms, the kinds of performance evidence we need to successfully distinguish factual knowledge from an understanding of the facts." (p 161)

Analytical scoring systems, based on rubrics that are designed with specific criteria in mind, can be productive for evaluating individual aspects of submitted work. Six steps for designing and refining rubrics based on student work are:

1. Gather samples of student performance that illustrate the desired understanding or proficiency.
2. Sort student work into different "stacks" and write down the reasons.
3. Cluster the reasons into traits or important dimensions of performance.
4. Write a definition of each trait.
5. Select samples of student performance that illustrate each score point on each trait.
6. Continuously refine.

"[General guidelines for assessment:]

1. The needed evidence is inherently less direct and more complicated than that obtained from objective tests to assess knowledge and skill. We need to look at more than just the percentage of correct answers. […] In assessing for understanding, we need to ferret out the reasons behind the answers and what meaning the learner makes of the results.
2. Assessment of understanding requires evidence of 'application' in performance or products, but that complicates judging results. […] How do we design performances that enable us to make precise judgments about the different parts of the performance?
3. *Which* [elements of] performance matter most, in *what* situations?
4. Try to have parallel versions of the same content across different assessment formats.
5. Try to anticipate key misunderstandings and develop quick preassessments and postassessments to find out if those misunderstandings were overcome—regardless of what other assessment tasks you are using.
6. Given that a single application or product may or may not link to larger goals, regularly ask students to 'show their work,' give reasons for answers, and show connections to larger principles or ideas in the answers.
7. Given that an articulate explanation may be more a function of verbal ability and verbal knowledge with no real understanding, ask the student to 'transfer' that explanation to a new or different problem, situation, or issue.
8. Tap into various facets to broaden the evidence: When demanding a hands-on application, also require interpretation, and self-assessment to make sure that the final product is not overvalued." (pp 189-9)

"The designer must make the goals clear to the *students*. That means completely demystifying the big ideas, the essential questions, the desired performances, and the evaluative criteria constituting the sought-for achievement. It requires instructors to provide a rationale for the desired learnings—to identify what is most important (and what is not) and *why* it is worth learning." (p 198)

"…teachers [should] help students become clear about and mindful of the expected performances (and concomitant scoring materials, like samples and rubrics) that will reveal the extent of their understanding. All too rarely do students know where a lesson or unit is headed in terms of their own ultimate performance obligations." (p 198)

"…the work must be purposeful from a *student's* point of view in order to properly focus attention and provide direction." (p 199)

"…teachers must leave room in the syllabus for adjustments based on the gathering of useful feedback and the opportunities to use it. Such built-in flexibility is a key aspect of effective instructional design." (p 201)

"Understanding requires an iterative mix of well-designed experiences, reflections on thos experiences, and targeted instruction in light of experiences and goals." (p 208)

"We often talk in education about the need for scaffolding; that's what the best organizers do. They provide tools for the kinds of mental processes that the learner needs to internalize, so that eventually, *when no scaffolding is provided*, the learner has a repertoire of 'moves' to employ." (p 211)

"A central premise of Understanding by Design is that the big ideas must constantly be reconsidered and that complex performance is always being refined. Therefore, the flow of the unit and course must be iterative, students must be made fully aware of the *need* to rethink and revise in light of current lessons, and the work must follow the trail back to the original ideas or techniques." (p 213)

"We would think it unacceptable for a geometry teacher to argue, for example, that there is no time to inquire into the details of proofs because there are so many theorems to 'cover.' In other words, this hurried tour is the Expert Blind Spot at work again: If teachers discuss it, learners get it; the more we discuss, the more they get. This is a false logic that confuses our *teaching* with any resultant *learning*—mere *planting* with the *yield*, or *marketing* with *sales*." (p 229)

"The great paradox of educating for understanding is that extensively researched texts can end up providing an impediment to more engaging and thought-provoking learning. […] How? Because their dry simplification typically hides the questions, the issues, the history of the ideas, and the inquiries that ultimately led to what we now know—the very process needed by the learner to come to an understanding!" (p 230-2)

"…all teaching must simplify, but there is a fundamental difference between appropriately simplified accounts and overly simplistic, inquiry-ending coverage." (p 239)

The eleventh chapter in the book is devoted to the implementation of the design strategy argued throughout the book. It is not presented as a recipe for applying the approach to a course, but rather as a set of questions and diagrams to scaffold the process.

The twelfth chapter describes the implementation of Understanding by Design to build up a curriculum framework.

Regarding the notion that we should be "teaching to the test": "The bottom line is that we should be teaching to the standards and developing the kinds of complex assessments reflected in the language of the standards, not the audit." (p 309)

Regarding the notion that we "have too much to cover": "Despite the typical U.S. educational mantra and fears about having to teach to the test, coverage—with equal attention to each little fact or subskill (as opposed to a focus on ideas and performance challenges that give meaning to the facts and subskills)—simply does not work to maximize test scores." (p 316)

Regarding the notion that "this work is too hard and we don't have time": "To work smarter we have to realize that a few other misunderstandings lurk as somewhat unconscious assumptions: (1) that *each* teacher, *each* school or *each* district must climb this mountain alone; (2) that the time required must come directly from teaching time, which (we agree) is already in short supply; (3) each standard and benchmark must be addressed separately, in dozens of units designed from scratch; and (4) that 'hard and time-consuming' is a *bad* thing." (p 316)

"It is our hope that by uncovering some of these often-heard pessimistic claims, we may encourage a more proactive stance by school faculties and district leaders toward what you *can* do to improve learning, regardless of the setting in which you find yourself and the hard work required. The research findings are heartening. Regardless of all the things about students, schools, and society that we cannot control, the things that are in our control—design, instruction, giving feedback—can still significantly affect achievement." (p 321)