"Yes, but…" – Misconceptions About Standards-Based Reforms

by Grant Wiggins and Jay McTighe

In the book *Understanding by Design* (ASCD, 1998) we set forth a vision of, and pathway toward, meaningful educational reform. Five key ideas permeate the book:
1) A primary goal of education is the development and deepening of student understanding of important ideas**.** 2) Evidence of student understanding is revealed through assessments of student products and performances via six "facets" of understanding. 3) Effective curriculum development reflects a 3-stage "backward design" process in which lesson and activity design is shaped by the demands of the goals and assessments. 4) The use of "design standards" leads to improved quality in curriculum and assessment designs. 5) Available technologies enable educators to "work smarter" (i.e., more efficiently and more effectively) in curriculum design.

These ideas derive from three recurring questions that we believe should be at the heart of any serious local reform effort. What are the big ideas and core processes at the heart of content standards? What will we look for as evidence that students truly understand big ideas, and can apply basic facts and skills in meaningful and effective ways? How will we "uncover" the curriculum in engaging and effective ways, while avoiding the problems of aimless "coverage" or "activity-oriented" teaching? These three questions reflect the logic of our 3-stage "backward design" process and the UBD Design Template.

Our reform vision is neither original nor radical. It parallels that of many educators, leading researchers and reformers of the past 25 years. Nonetheless, when these ideas are proffered, it is not uncommon to hear a chorus of "Yes, buts…." from well-intentioned teachers and administrators. The proposed reforms are damned with faint praise, undercut by the rejoinder that these fine ideas cannot work in the "real world" of state standards and high-stakes testing. Some reformers, too, are adamant that good pedagogy and state standards and testing are inherently incompatible.[1]

These laments, and the concerns they are based on, are understandable, especially in light of the accountability pressures facing educators today. Yet, the "yes, but…" arguments are often based on misunderstandings about learning, assessment, teaching for understanding of big ideas, and the relation between local pedagogy and state

[1] See, for example, Kohn, Alfie. *The Case Against Standardized Testing: Raising the Scores, Ruining Our schools.* Portsmouth, NH: Heinemann Press. 2000

standards.

In this article, we examine two key misconceptions that interfere with meaningful school reform. We explain why each *is* a misconception by "unpacking" the implicit and questionable assumptions underlying the most frequently heard "yes, but…" concerns, and offer a friendly but firm rebuttal. The two misconceptions we address are:

- "Yes, but… we have to teach to the state/national test."
- "Yes, but… we have too much content to cover."

Misconception #1 – "Yes, but…we have to teach to the test."

State and provincial content standards and concomitant testing programs have emerged during the past decade with the intention of focusing local curriculum and instruction and boosting student achievement by holding schools accountable for results. Ironically, the key lever in this standards-based reform strategy – the use of high-stakes external tests – has unwittingly provided teachers with a constant rationalization for avoiding or minimizing the need to teach well, i.e. to teach for in-depth understanding.

For many educators, instruction and assessing for understanding are viewed as incompatible with state mandates and standardized tests. Though research is rarely offered in support this oft-heard claim, the speaker clearly implies that faculties are stuck "teaching to the test" against their will. They would teach for understanding, if they could. The implicit assumption is key: the only way to safeguard or raise test scores is to "cover" those things that are tested and "practice" the test format (typically selected- or brief constructed-response.) By implication, there is no time for in-depth and engaging instruction that focuses on developing and deepening students' understanding of big ideas.

This opinion is so widely held that many readers may be thinking that *we* are the ones harboring the misunderstanding (or myopia or naivete) about the "real world" of education today. Isn't it a fact that we "have to" teach to the test? Many certainly think, say, and act so. Yet, while it is certainly true that we are obligated to teach to content standards, it does not follow that the best way to meet those standards is to mimic the format of the state test and cover all prescribed content via superficial teaching.

To more clearly show why such a plausible defense is based on a misunderstanding, consider a rephrasing of the reason. The speaker asks us to believe that the only way to raise test scores is to teach *worse*. That is not how the speaker usually puts it, of course, but that is what the argument amounts to. "I would love to teach well, but I just can't; it doesn't pay. I'm better off teaching discrete facts and skills, just the way they are tested" is what the "yes, but…" response really amounts to. Just putting it this way should cause a raised eyebrow or two. Is it *really* either/or? Must one sacrifice more effective and engaging forms of instruction to raise test scores? Is more passive and fragmented teaching more or less likely to maximize student interest and performance? We think this is a false dilemma, based on a misunderstanding about how testing works and how validity is established.

To begin to uncover the flaw in this reasoning, consider an analogy. Once per year, we go to the doctor for a physical exam. No one particularly relishes the thought of such an exam, but we go with the understanding that it is in our long-term interest to get an objective (yet superficial) measure of our health. The doctor performs a few tests in a short span of time (e.g. blood pressure, pulse, temperature, blood work for cholesterol, etc.). The "physical" is a small sample of tests, yielding a few useful indicators of one's health status. Its validity and value stem from the fact that the results *suggest* our state of health, not because the physical *defines* healthfulness. We take a (relatively quick and unintrusive) physical exam so that various "indicators" can be examined for signs of any deeper trouble demanding further scrutiny.

Now suppose we are terribly concerned about the final numbers (weight, blood pressure, etc.) and that the numbers ultimately link to our personal health insurance costs. What we might do, in our panicky state prior to each annual physical, would be to "practice" for the test – focus all our energy on the physical exam (as opposed to what its indicators suggest). If our doctor knew of our actions, her response would surely be: "Whoa! You're confused: you have mixed up causality and correlation here. The best way to 'pass' your physical is to live a healthful life on a regular basis – exercising, watching weight, lowering intake of fats, eating more fiber, getting sufficient sleep, avoiding tobacco, etc."

Note that *none* of the elements of true healthfulness – your diet, your fitness regimen – are *directly* tested in the physical; doctors use *indirect* indicators of blood pressure, weight, skin tone and color, etc. Thus, the effects of your healthful regimen will be

reflected in the test indicators. In fact, the more you concentrate only on what is on the physical exam, the less likely it is in the long run that you will be healthy.

Like the doctor, state education agencies give schools a "check-up" once per year via such indirect testing of student performance. A state test, like the physical exam, is composed of indicators of local "health" – a set of "items" which sample indirectly from the broader domain of the content supposedly addressed through a local educational regimen. The test yields valid inferences to the extent that test results correlate with more complex and meaningful learnings, – in the same way that the physical exam relies on tried and true indicators like blood pressure and cholesterol level. Simple items are used to test indirectly for a "healthy regimen" in the same way that the physical is a proxy for the daily "tests" of genuine fitness and wellness. That is the nature of test validity: establishing a correlational link between one set of easy-to-obtain indicators with a related set of more complex and desired results.[2]

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

Please understand that this explanation does not constitute an endorsement of current state testing practices in which we over-rely on one-shot external testing. In fact, we feel strongly that state agencies and policy makers bear a responsibility for allowing this confusion to persist by not making local assessments part of a comprehensive state accountability system. What matters most in educational reform is that we take to heart the point of the analogy: we are responsible for wellness, not the state. The state's job is to audit – just as the physical exam is not the regimen we should engage in at home, but rather a set of superficial indicators to see if our regimen is adequate. The state test does not try to duplicate all the "healthful" activity and assessment that should be taking place day in and day out at the local level in classrooms, schools, and districts. Indeed, the state could not possibly assess everything of value in an authentic way,

[2] While it may surprise many readers for us to argue this way, given our longstanding documented opposition to over-reliance on indirect tests, the issue here is more narrowly focused on test validity. There are numerous arguments to be made on behalf of more performance assessment in educational testing, but the issue here is the reverse: indirect – "inauthentic" – tests can yield valid inferences, just as "authentic" tasks can yield invalid inferences.

even if we all wanted it, because of excessive costs and the desire to limit the intrusions of external testing. This is true for doctors, too: to require all patients come in for a multi-day comprehensive work-up at a medical lab would be excessively time-consuming and costly (never mind expecting our insurers to foot the bill).

"Are you then saying that a more concerted effort to 'teach to the test' *lowers* scores?" No. Teaching to the test clearly has *some* effect, particularly if prior to such practice there was little attention to common standards and a focus on results. Scores do increase in the short run when a school or district focuses more carefully on a common goal. No surprise here: greater attention to an outcome will improve performance on *any* measure. But once the test particulars are figured out and students have become familiar with the test format and test-taking skills, there is rarely long-term progress, and the scores typically drop when the test is altered or re-normed.[3]

We know of precious little data to support the claim that "teaching to the test" (understood as deriving local teaching and testing methods from the test format and content) raises scores. Rather, it appears to us that educators are confused by the lack of "face validity" of the tests into assuming that teachers must mimic the test format. Worse, they wrongly infer that their own instruction should focus on a *superficial survey of content and decontextualized treatment of facts and skills,* as suggested by the test's construction.

We contend that the best way to raise test scores over the long haul is to: 1) teach the key ideas and processes contained in content standards (the content that is purportedly tested) in rich and engaging ways, 2) to collect evidence of student understanding of that content via more robust local assessments than "one-shot", standardized testing can ever provide, and 3) to raise the standards and quality control for local assignments and assessments. That is just what we offer in *Understanding by Design*, of course: a set of standards and procedures for instituting greater quality control in local curriculum and assessment designs.

Consider informal evidence for our claim. Do we see more "teaching and assessing for understanding" in the *worse* performing schools? Do we see students more involved in

[3] Furthermore, recent studies have cast doubt on the extravagant claims made by SAT-prep companies about the gains in scores that they cause.

"practicing" state and national tests in *high-achieving* schools? During the past 15 years of work with hundreds of schools and districts throughout the U.S. and Canada, we have observed more in-depth teaching and demanding assessment in the higher-performing schools. In contrast, within the lower-performing schools one is more likely to see a "drill and practice" orientation designed specifically to raise standardized test scores – often at the expense of more meaningful learning that engages students and leads ultimately to enhanced understanding and improved performance. Recent major research by William Firestone in New Jersey, under an NSF grant supports this claim.[4]

What other data support these observations? Readers are encouraged to review *The Teaching Gap* (1999), which describes the findings of the teaching study, conducted in parallel with the Third International Mathematics and Science Study (TIMSS) testing of 8th-graders. The TIMMS test results are now well known: – United States' students are badly outperformed in mathematics and science by comparable groups in other countries. But the follow-up investigation of instructional practices is far more interesting and revealing. In a careful study of classroom teaching in the US, Germany, and Japan, we see striking evidence of the *failure of a "coverage" approach to optimize student test performance*.

Despite the fact that Japanese mathematics teachers cover *fewer* topics, they achieve *better* results on tests. Rather than saying that their aim is the development of many discrete skills, Japanese mathematics teachers report that their aim is conceptual understanding, and their teaching practices reflect these aims, contrasting sharply with American teacher views of their job[5]. The Japanese teacher sets as a goal **-**

> "… for the lesson is for students to develop mathematical thinking rather than to acquire a particular mathematical procedure as in other countries:
>
> **Comparison of steps typical of eighth-grade mathematics lessons in Japan, Germany, and the United States**
>
> **The emphasis on understanding is evident in the steps typical of Japanese eighth-grade mathematics lessons:**
>
> - Teacher poses a complex, thought-provoking problem.

[4] See CEPA report xxxx.

[5] J. Stigler and J. Hiebert. *The Teaching Gap: Best Ideas from the World's Teachers for Improving Education in the Classroom.* New York, NY: The Free Press. 1999.

- Students struggle with the problem.
- Various students present ideas or solutions to the class.
- The teacher summarizes the class' conclusions.
- Students practice similar problems.

In contrast, the emphasis on skill acquisition is evident in the steps common to most U.S. and German mathematics lessons:

- Teacher instructs students in a concept or skill.
- Teacher solves example problems with the class.
- Students practice on their own while the teacher assists individual students.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Third International Mathematics and Science Study, Videotape Classroom Study, 1994-95.[6]

Japanese teachers emphasize problem-based learning in which rules and theorems are often derived, not merely stated and reinforced through drill: 42% of Japanese 8th-grade math classes involved student presentation of possible alternative solutions to problems as opposed to only 8% in American classrooms. 44% of the time in class, Japanese students are trying to induce the idea to be learned from problems; in American classrooms it is less than 1%. By contrast, 95% of the time is spent in American classrooms practicing a procedure to be learned, something that happens only 40% of the time in a Japanese classroom.

In a related finding, the researchers noted that American teachers address far more topics in mathematics and science than do their international colleagues. They also make far fewer connections to other lessons – 96% of Japanese teachers made such links vs. only 40% of American teachers:

> One way to measure coherence is to look for threats to coherence, features of lessons that make it difficult to design and sustain a smoothly developing story. Threats include things like switching topics frequently, or being interrupted by outside intrusions. We found that U. S. lessons contained significantly more

[6] U.S. Department of Education. National Center for Education Statistics, The TIMSS Videotape Classroom Study: Methods and Findings from an Exploratory Research Project on Eighth-Grade Mathematics Instruction in Germany, Japan, and the United States, NCES 99-074, by James W. Stigler, Patrick Gonzales, Takako Kawanaka, Steffen Knoll, and Ana Serrano. Washington, DC: U.S. Government Printing Office, February 1999 (nces.ed.gov/pubs99/timssvid/index.html#findings)

> topics than Japanese lessons, and significantly more switches from topic to topic than did both German and Japanese lessons.[7]

Both Japanese and German teachers go into far greater depth than American teachers:

> We defined 'developed' quite generously to include cases in which the concept was explained of illustrated, even with a few sentences or brief example. We found that one fifth of the topics in U. S. lessons contained developed concepts, while four-fifth contained only stated concepts. As shown in Figure 4.1 this distribution was nearly reversed in Germany and Japan.[8]

In short, despite the typical American educational mantra, *"coverage" simply does not work to maximize test scores.*

Compatible findings emerged in studies of 24 restructured schools (8 elementary, 8 middle and 8 high schools in 16 states) by researcher Fred Newman and his colleagues at the University of Wisconsin.[9] Their research showed that students improved their performance in mathematics and social studies when: 1) there was sustained examination of a *few* important topics rather than superficial coverage of many; 2) instruction was framed around challenging questions, problems, and tasks having relevance to the world beyond the classroom; and 3) students were required to provide oral and written explanations and reasons for their responses and solutions.

Educators torn between "practicing for the test" and offering more meaningful, in-depth, and "authentic" instruction and assessment should take heart. There is no significant empirical evidence to suggest that more teaching for understanding will undermine performance on standardized tests. But isn't this just common sense? Of course we would expect that more in-depth teaching and rigorous assessment at the local level will lead to better results on external tests– as valid measurement says it must, and data analysis says they do. (There is a pressing need, then, for research to explain why the misunderstanding is so persistent and what forms of professional

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[7] J. Stigler and J. Hiebert. *The Teaching Gap: Best Ideas from the World's Teachers for Improving Education in the Classroom.* New York, NY: The Free Press. 1999. Pp. 61-62.

[8] J. Stigler and J. Hiebert. *The Teaching Gap: Best Ideas from the World's Teachers for Improving Education in the Classroom.* New York, NY: The Free Press. 1999. P. 60.

[9] Newmann, F., Marks, H. and Gamoran, A. (1995). "Authentic Pedagogy: Standards that Boost Student Performance." Issue Report No. 8, Spring 1995. Madison, WI: Center on Organization and Restructuring of Schools. And F. Newmann, W. Secada, & G.Wehlage. *A Guide to Authentic Instruction and Assessment: Vision, Standards and Scoring* . (Madison: Wisconsin Center for Education Research, 1995).

development abet the view and which practices best expose and undermine it.)

The bottom line is that we should be teaching to standards, not the indirect measures used in testing to determine if standards are being addressed and met locally. To invoke a different analogy, state standards are like building codes; local instructional design is our "architecture." The goal of architectural design is not to meet building and zoning codes in a slavish fashion. It is, rather, the reverse: the goal is to design something that is practical, pleasing, and stylish – while also happening to meet building and zoning codes. In fact, most state standards stress the importance of in-depth understanding and mastery of key complex performances and genres in which knowledge, skill, and understanding are revealed. *Understanding by Design* (and many other programs and reform approaches) provides a way in which a focus on big ideas, robust assessment, and a focused and coherent learning plan makes it likely that state standards are addressed and met.

Misconception #2 – "Yes, but… I have too much content to cover."

Teachers from kindergarten to graduate school wrestle with the reality described in the familiar phrases, "information age" and "knowledge explosion." They face the challenge on a daily basis – there is simply too much information, and it is expanding too rapidly, to ever hope to "cover" it all.

In theory, the standards movement promised a solution to the problem of "information overload" by identifying curricular priorities. Content standards were intended to specify what is most important for students to "know and be able to do," thus providing a much-needed focus and prioritization for curriculum, instruction and assessment. In practice, content standards committees at the national, state and district level often worked in isolation to produce overly ambitious lists of "essentials" for their disciplines. Rather than streamlining the curriculum, the plethora of standards contributed to the "overload" problem, especially at the elementary level where teachers are charged with teaching standards and benchmarks in multiple subjects. An exhaustive analysis of content standards by researchers Marzano and Kendall sheds further light on the current reality facing many educators in the United States (Marzano and Kendall, 1998). Their review of 160 national and state-level content standards documents yielded a synthesis of 255 standards and *3,968* benchmarks that students are expected to know and do in various subject areas. They went on to calculate that if 30 minutes of instructional time were allocated to each benchmark (and many benchmarks require much more time), an additional *15,465* hours would be required for students to learn them all! Clearly, despite the best of intentions, the challenge of too much content remains. Yet, a misconception often underlies the argument about needing to cover so much.

The matter is further complicated by the propensity of teachers to focus on textbooks as the primary resource for addressing their obligations to the content standards. Indeed, American textbook publishers try to "cover the waterfront" in order to appease state textbook adoption committees, national subject-area organizations, and various special-interest groups. The result is superficial treatment of the entire array of expert knowledge.

This concern was noted in a recent evaluation of major textbooks in science and

mathematics conducted by the American Association for the Advancement of Science (AAAS) covering lots - teaching *about* science rather than teaching science:

> Out of 45 texts analyzed (13 middle-grades mathematics texts, 12 algebra texts, 10 middle-grades science texts, and 10 high school biology texts) only five (four middle-grades math texts and one stand-alone physical science unit) were found to be satisfactory, that is, having a high potential for helping students learn ideas that are essential for mathematics and science literacy. Seven of the algebra texts were borderline, considered barely adequate for learning. The rest of the math and science texts were found to be unsatisfactory with little potential for helping students learn important ideas and skills.[10]

Similar findings were reached as part of the TIMSS instructional study. Researchers concluded that while American textbooks are notably bigger than texts in other industrialized nations their students typically outperform ours, and the level of challenge provided by American texts was far below the international standard.

As with the face validity confusion about tests, so, too with textbooks. The obvious fact of seeing overloaded textbooks and long lists of content standards frequently leads to two understandable, yet fundamental, misconceptions on the part of many teachers; namely, that there job is to "cover" lots of content. The perceived need to "cover" is typically based upon three implicit assumptions that we think are unfounded: 1) if I "teach" it (i.e., talk about it and assign some work on it), it will be adequately learned for tests; 2) if I don't address it in a didactic way, it won't be learned; and 3) standards are typically addressed one at a time in lesson planning.

A closer examination of the term, "cover," sheds light on the first assumption. The two most common meanings of the term – to "conceal" (as in cover up), or to "skim the surface" like a bedspread – seem at odds with teaching for meaningful learning. (Indeed, if our intent is to cover more content, we can accomplish this by talking faster in class.) But "teaching by mentioning" is unlikely to insure that students know, much less understand, the key ideas and core processes of the subject. A superficial and disconnected teaching of information simply cannot yield optimal results on <u>any</u> test.

We know of no research, in short, that supports the merits of a "coverage" mode of instruction when faced with external tests. On the contrary, a synthesis of thirty years

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[10] Roseman, J.E., Kulm, G., & Shuttleworth, S. (2001). Putting Textbooks to the Test. *ENC Focus* (8)3 56-59. Cf. www.project2061.org/newsinfo/research/textbook/default.htm. Project 2061 is a project of the American Association for the Advancement of Science www.aaas.org.

of research on learning and cognition points out that,

> Research on expertise suggests that a superficial coverage of many topics in the domain may be a poor way to help students develop the competencies that will prepare them for future learning and work.[11]
>
> Curricula that emphasize breadth of knowledge may prevent effective organization of knowledge because there is not enough time to learn anything in depth. Instruction that enables students to see models of how experts organize and solve problems may be helpful.[12]

Interestingly, when teachers maintain that they are *required* to march through texts and syllabi (irrespective of the degree of student understanding or the learning results), they often cite reports of external pressures from supervisors. Yet, we have never been able to trace such reports to the administrative source nor have we found a supervisor who claimed to have issued such an edict. Our inquiries into these claims revealed that teachers were often interpreting a Principal's or Supervisor's focus on test scores as an *implied* request to stick closely to textbooks and "test prep" as the sole strategy.

The *de facto* job requirement of teaching to content standards raises an important question regarding the fit between state content standards and a nationally marketed textbook or commercial resource. Consider the following exercise which asks teachers to review their textbook against state or district content standards to determine the degree of correlation, and then to select the figure which best represents that relationship.

[11] J. Bransford, A. Brown, and R. Cocking, editors (1999), *How People Learn: Brain, Mind, experience, and School*, Washington DC: National Academy Press. P . 30.
[12] J. Bransford, A. Brown, and R. Cocking, editors (1999), *How People Learn: Brain, Mind, experience, and School*, Washington DC: National Academy Press. p. 37.

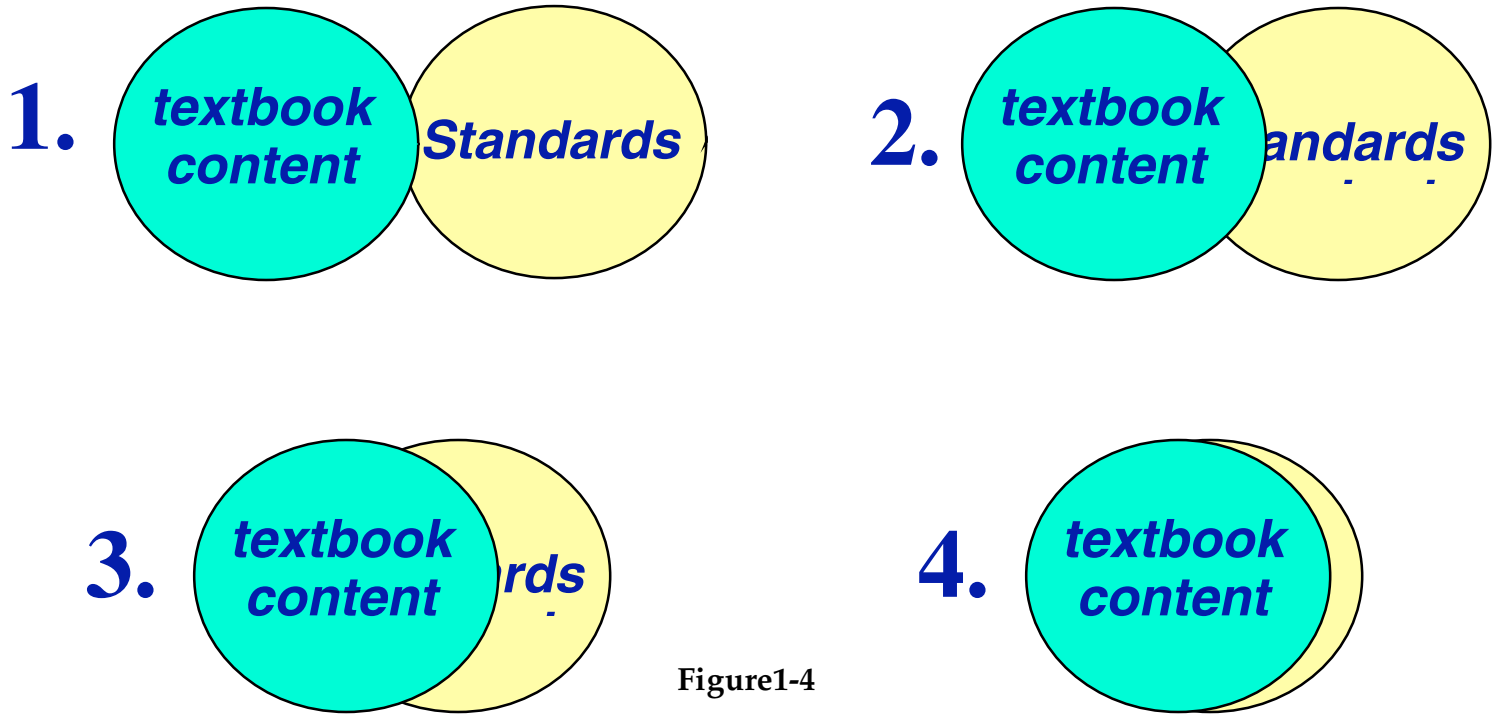

Figure1-4

The point of the exercise is straightforward – in the absence of a perfect correlation (Figure 1), the textbook, at best, should serve as a resource, *not* the syllabus. Figures 2 and 3, suggest that a portion of the textbook's content does not contribute to learning the standards (i.e., will not need to be covered), but that other resources will be needed.

We would go further to say: it is simply a misunderstanding of the job to claim that one's job is to teach the textbook. The job of curriculum design and instruction is to shape a syllabus in light of content standards as well as one's own intellectual priorities and student needs. Thus, the textbook should serve as one resource among many in the service of learning the standards. The textbook is a reference book. Its purpose is to summarize knowledge – not unlike the encyclopedia. Treating the textbook as the syllabus insures that there will be a lack of purpose and coherence to the overall design. Treating the textbook as the course of study is akin to marching through the encyclopedia from A to Z. Logical and efficient, yes; purposeful and effective, no.

Perhaps the misconception is rooted in a fundamental workplace question: "What *is* my job?" Oddly enough, this question is rarely explicitly addressed in hiring, supervision, and evaluation in schools. Few systems have performance-based job descriptions. We typically get hired on the basis of our credentials to fill an available slot (U. S. History, 3rd-grade, etc.). It is fair to say, though, that the authors have *never* seen a district contract that specifies that a teacher's job is to get through the maximum number of textbook pages. However, we do know that 49 of 50 states have established state

content standards and that teachers in these states are expected to teach to them.[13]

Then it surely is not too controversial to say that the job of teaching is to optimize student learning – not to "cover" a book, nor to "teach, test and hope for the best" irrespective of results. We think that "backward" design from content and performance standards (and the assessments they imply), not marching through a textbook, is the best way to honor that obligation.

An embedded assumption within the "need to cover" lies in the view that everything that we want learned must be "taught". This is simply not true, as a moment's reflection on assignments that are grounded in student research, discussion, and actual performance indicate. Something need not be "taught" to be learned, and learned well. Much of what we aim for gets learned by the student as they do the work of trying to understand: watch the artist, athlete, and computer scientist. Many critics of the work of E. D. Hirsch have misunderstood this point: nowhere does he advocates the direct teaching of all those facts, only that they end up being learned, if the student is to be equipped for the cultural literacy needed for high-level intellectual performance. (*Understanding by Design* has been successfully used in Core Literacy schools as well as Essential and alternative schools at the "opposite" end of the political spectrum).

We think the opposite of the typical view is often true, in fact: teaching big ideas as information to be "learned" is <u>likely</u> to fail. Big ideas – justice, irrational numbers, irony – are inherently abstract or even counter-intuitive to the naïve learner. They need *uncoverage*, as we put it in *Understanding by Design*. In fact, overly didactic teaching is a major cause, we believe, of the student misunderstanding that is much more common and persistent than typically acknowledged by teachers.[14]

The third misconception – that content standards and benchmarks need to be addressed discretely, one at a time through targeted lessons. Hence, there is not enough time to address them all – relates back to the first "Yes, but…" argument. State and national standardized tests typically sample the standards one at a time via decontexualized

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[13] The one state that has not promulgated standards from the state level, Iowa, requires school districts to develop local standards and assessments; many districts also use the ITBS as well).

[14] Cf. Gardner, Howard. *The Unschooled Mind: How Children Think and How Schools Should Teach.* New York, NY: Basic Books. 1991. Chapter 8; and National Research Council (Bransford, J, Brown, A. and Cocking, R. editors). *How People Learn: Brain, Mind, Experience, and School.* Washington DC: National Academy Press. P 10ff.

(aptly named) "items". Thus, the look and feel of both tests and standards documents often misleadingly suggests that we should teach to standards one bit at a time. The alternative we suggest involves clustering discrete standards under an umbrella of 'big ideas'. This approach renders teaching more efficient while reflecting a principle of effective learning derived from research:

> [E]xperts' knowledge is not simply a list of facts and formulas that are relevant to the domain; instead, their knowledge is organized around core concepts or 'big ideas' that guide their thinking about the domain.[15]

Similarly, the use of complex performance assessments enables students to apply facts, concepts and skills contained in multiple standards in a more meaningful way, while enabling educators to assess for true understanding, not just recall or recognition.

The misconceptions noted above can be exposed and overcome through local action research, we believe. Because at the heart of these misconceptions is a variant of the eternal egocentrism that is the Achilles Heel of all teaching: "I taught it, so they must have learned it; if I teach many things, they will get what they for the test…" No. When we insulate ourselves from feedback, our habits and assumptions remain perpetually unchallenged. Rather, the question that needs to be researched by individual teachers, teams, departments, and entire faculties each year – as part of the job, not as an add-on – is: what approaches to curriculum design, teaching, and assessing yield the greatest student learning? (See below for more on making action research part of the job).

Interestingly enough, when educators are asked the simple question*: What is common to the best instructional designs?,* their answers confirm our point. Based on hundreds of responses from across North America over the past few years, we have noted a remarkable similarity when educators are asked to pick out the salient characteristics of the most engaging and effective designed learning experiences. According to teachers and administrators K-12, the best designs contain: *clear performance goals, a "hook" question/problem, meaningful challenges, real-world application of ideas, opportunities to practice and revise, a timely feedback system based on model, and opportunities to revise and adjust based on results.*

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[15] National Research Council (Bransford, J, Brown, A. and Cocking, R. editors). *How People Learn: Brain, Mind, Experience, and School.* Washington DC: National Academy Press. p 24.

Conclusion

In this article we have confronted two widely held views about the obstacles to good curriculum and instruction in a world of external accountability, and we have attempted to reveal their underlying misconceptions. We have suggested that the key ideas from *Understanding by Design* – 1) teach and assess for understanding of big ideas; 2) apply design standards to review and refine local curriculum and assessment; and 3) focus on results based on multiple sources of evidence.

We do not ask or expect you to take us at our word. We know from experience that habits and misunderstandings are rarely overcome by argument. The claims we offer must be tested, argued, explored – *uncovered* – by educators in their own settings if they are to be accepted (or rejected) on rational grounds. That was, in fact, a key conclusion about American school reform drawn by the authors of *The Teaching Gap*:

> Because teaching is complex, improvements in teaching will be most successful if they are developed in the classrooms where teachers teach and students learn… ideas for improvement that come from afar – including, for example, what we have learned from Japanese classrooms – will need to be tested and adapted.[16]

We thus challenge our readers to form study groups to investigate what understanding looks like, how to best teach for it, and how to best assess for it – all this, in a world of state standards and tests.[17] We encourage you to conduct on-going action research at the school and district level on the correlation between the kind of curriculum, assessment and instruction reflected in the UBD design standards versus teaching via "coverage" of textbooks with testing that only mimics the state or national test format.

It is our hope that by "uncovering" some of these often-heard pessimistic claims, we may encourage a more realistic and pro-active stance by school faculties and district leaders toward what they *can* do to improve learning in today's standards-based world.

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[16] Stigler and Hiebert. *The Teaching Gap: Best Ideas from the World's Teachers for Improving Education in the Classroom.* New York, NY: The Free Press. 1999. P. 134-5.

[17] See the *Understanding by Design Study Guide*, available from ASCD, for suggestions on study group questions and activities.