WHITE PAPER

Understanding by Design

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Understanding by Design® (UbD™) offers a planning framework to guide curriculum, assessment and instruction. Its two key ideas are contained in the title: 1) focus on teaching and assessing for understanding and transfer, and 2) design curriculum "backward" from those ends.

UbD is based on seven key tenets:

1. UbD is a way of thinking purposefully about curricular planning, not a rigid program or prescriptive recipe.
2. A primary goal of UbD is developing and deepening student understanding: the ability to make meaning of learning via "big ideas" and transfer learning.
3. Understanding is revealed when students autonomously make sense of and transfer their learning through authentic performance. Six facets of understanding – the capacity to explain, interpret, apply, shift perspective, empathize, and self assess – serve as indicators of understanding.
4. Effective curriculum is planned "backward" from long-term desired results though a three-stage design process (Desired Results, Evidence, Learning Plan). This process helps to avoid the twin problems of "textbook coverage" and "activity-oriented" teaching in which no clear priorities and purposes are apparent.
5. Teachers are coaches of understanding, not mere purveyors of content or activity. They focus on ensuring learning, not just teaching (and assuming that what was taught was learned); they always aim – and check - for successful meaning making and transfer by the learner.
6. Regular reviews of units and curriculum against design standards enhance curricular quality and effectiveness.

7. UbD reflects a continuous improvement approach to achievement. The results of our designs - student performance - inform needed adjustments in curriculum as well as instruction.

Three Stages of Backward Design

In UbD, we propose a 3-stage "backward design" process for curriculum planning. The concept of planning "backward" from desired results is not new. In 1949 Ralph Tyler described this approach as an effective process for focusing instruction.[1] More recently, Stephen Covey, in the best selling book, Seven Habits of Highly Effective People, reports that effective people in various fields are goal-oriented and plan with the end in mind.[2] Although not a new idea, we have found that the deliberate use of backward design for planning curriculum units and courses results in more clearly defined goals, more appropriate assessments, more tightly aligned lessons, and more purposeful teaching.

Backward planning asks educators to consider the following three stages:

Stage 1 – Identify Desired Results

What should students know, understand, and be able to do? What content is worthy of understanding? What "enduring" understandings are desired? What essential questions will be explored?

In the first stage of backward design we consider our goals, examine established Content Standards (national, state, province, district), and review curriculum expectations. Since there is typically more "content" than can reasonably be addressed within the available time, teachers are obliged to make choices. This first stage in the design process calls for clarity about priorities.

More specifically, Stage 1 of UbD asks teachers to identify the "big ideas" that we want students to come to understand, and then to identify or craft companion essential questions. Big ideas reflect transferable concepts, principles and processes that are key to understanding the topic or subject. Essential questions present open-ended, thought-provoking inquiries that are explored over time. Here are examples in mathematics:

Understandings	Essential Questions
Numbers are inventions that represent quantities, rates, sequence, and characteristics of things and experiences.	*What is a number? Can everything be quantified?*

[1] Tyler, Ralph W. (1949). *Basic Principles of Curriculum and Instruction*.
[2] Covey, Stephen. (1989). *The Seven Habits of Highly Effective People*.

Mathematics can model and represent real-world phenomena in various ways. The type of representation used depends upon the nature of the data and the question(s) to be answered.	*How can mathematics represent real-world phenomena? What is the best representation for this data?*
Statistical analysis and data representation enable us to recognize patterns in data. Pattern recognition enables prediction.	*What's the pattern? What is likely to come next?*
Effective problem solvers take time to carefully define the problem before rushing to solution. They try various strategies and persist (keep at it) when struggling with challenging problems.	*What do effective problem solvers do? What do they do when they get stuck?*

More specific knowledge and skill objectives, linked to the targeted Content Standards and Understandings, are also identified in Stage 1. An important point in UbD is to recognize that factual knowledge and skills are not taught for their own sake, but as a means to larger ends. Ultimately, teaching should equip learners to be able to use or transfer their learning; i.e., meaningful performance with content. This is the "end" we always want to keep in mind.

Stage 2 – Determine Acceptable Evidence

How will we know if students have achieved the desired results? What will we accept as evidence of student understanding and proficiency? How will we evaluate student performance?

Backward design encourages teachers and curriculum planners to first "think like an assessor" before designing specific units and lessons. The assessment evidence we need reflects the desired results identified in Stage 1. Thus, we consider in advance the assessment evidence needed to document and validate that the targeted learning has been achieved. Doing so invariably sharpens and focuses teaching.

In Stage Two, we distinguish between two broad types of assessment – Performance Tasks and Other Evidence. The performance tasks ask students to apply their learning to a new and authentic situation as means of assessing their understanding. In UbD, we have identified six facets of understanding for assessment purposes[3]. When someone truly understands, they:

[3] Wiggins, G. and McTighe, J. and (1998, 2005). *Understanding by Design*. Alexandria, VA: The Association for Supervision and Curriculum Development.

1) Can **explain** concepts, principles and processes; i.e., put it their own words; teach it to others; justify their answers; show their reasoning.

2) Can **interpret**; i.e. make sense of data, text and experience through images, analogies, stories and models.

3) Can apply; i.e., effectively use and **adapt** what they know in new and complex contexts.

4) Demonstrate **perspective**; i.e., can see the big picture and recognize different points of view.

5) Display **empathy**; i.e., perceive sensitively and "walk in someone else's shoes."

6) Have **self-knowledge**; i.e., show meta-cognitive awareness, use productive habits of mind, and reflect on the meaning of their learning and experience.

These six facets do not present a theory of how people come to understand something. Instead, the facets are intended to serve as indicators of how understanding is revealed, and thus provide guidance as to the kinds of assessments we need to determine the extent of student understanding. Here are two notes regarding assessing understanding through the facets:

- All six facets of understanding need not be used all of the time in assessment. In mathematics, Application, Interpretation and Explanation are the most natural, whereas in Social Studies, Empathy and Perspective may be added when appropriate.
- Performance Tasks based on one of more facets are not intended for use in daily lessons. Rather, these tasks should be seen as culminating performances for a unit of study. Daily lessons develop the concomitant knowledge and skills needed for the understanding performances, just as practices in athletics prepare teams for the upcoming game.

In addition to Performance Tasks, Stage 2 includes Other Evidence, such as traditional quizzes, tests, observations, and work samples to round out the assessment picture to determine what students know and can do. A key idea in backward design has to do with alignment. In other words, are we assessing everything that we are trying to achieve (in Stage 1), or only those things that are easiest to test and grade? Is anything important slipping through the cracks because it is not being assessed? Checking the alignment between Stages 1 and 2 helps insure that all important goals are appropriately assessed, resulting in a more coherent and focused unit plan.

Stage 3 – Plan Learning Experiences and Instruction

How will we support learners in coming to understanding of important ideas and processes? How will we prepare them to autonomously transfer their learning? What enabling knowledge and skills will students need in order to perform effectively and *achieve desired results? What activities, sequence, and resources are best suited to accomplish our goals?*

In Stage 3 of backward design, teachers now plan the most appropriate learning activities to help students acquire important knowledge and skills, come to understand important ideas and processes, and transfer their learning in meaningful ways. When developing a plan for learning, we propose that teachers consider a set of instructional principles, embedded in the acronym W.H.E.R.E.T.O. These design elements provide the armature or blueprint for instructional planning in Stage 3 in support of our goals of understanding and transfer. Each of the W.H.E.R.E.T.O. elements is presented in the form of questions to consider.

W = *How will I help learners know – What they will be learning? Why this is worth learning? What evidence will show their learning? How their performance will evaluated?*

Learners of all ages are more likely to put forth effort and meet with success when they understand the learning goals and see them as meaningful and personally relevant. The "W" in W.H.E.R.E.T.O. reminds teachers to clearly communicate the goals and help students see their relevance. In addition, learners need to know the concomitant performance expectations and assessments through which they will demonstrate their learning so that they have clear learning targets and the basis for monitoring their progress toward them.

H = *How will I hook and engage the learners?*

There is wisdom in the old adage: "Before you try to teach them, you've got to get their attention." The best teachers have always recognized the value of "hooking" learners through introductory activities that "itch" the mind and engage the heart in the learning process, and we encourage teachers to deliberately plan ways of hooking their learners to the topics they teach. Examples of effective hooks include provocative essential questions, counter-intuitive phenomena, controversial issues, authentic problems and challenges, emotional encounters, and humor. One must be mindful, of course, of not just coming up with interesting introductory activities that have no carry-over value. The intent is to match the hook with the content and the experiences of the learners – by design – as means of drawing them into a productive learning experience.

E = *How will I equip students to master identified standards and succeed with the transfer performances? What learning experiences will help develop and deepen understanding of important ideas?*

Understanding cannot be simply transferred like a load of freight from one mind to another. Coming to understand requires active intellectual engagement on the part of the learner. Therefore, instead of merely covering the content, effective educators "uncover" the most enduring ideas and processes in ways that engage students in constructing meaning for themselves. To this end, teachers select an appropriate balance of constructivist learning experiences, structured activities, and direct instruction for helping students acquire the desired knowledge, skill and understanding. While there is certainly a place for direct instruction and modeling, teaching for understanding asks teachers to also adopt a facilitative role; i.e., to engage learners in making meaning through active inquiry and

R = *How will I encourage the learners to rethink previous learning? How will I encourage on-going revision and refinement?*

Few learners develop a complete understanding of abstract ideas on the first encounter. Indeed, the phrase "coming to understand" is suggestive of a process. Over time, learners develop and deepen their understanding by thinking and re-thinking, by examining ideas from a different point of view, from examining underlying assumptions, by receiving feedback and revising. Just as the quality of writing benefits from the iterative process of drafting and revising, so to do understandings become more mature. The "R" in W.H.E.R.E.T.O. encourages teachers to explicitly include such opportunities.

E = *How will I promote students' self-evaluation and reflection?*

Capable and independent learners are distinguished by their capacity to set goals, self-assess their progress, and adjust as needed. Yet, one of the most frequently overlooked aspects of the instructional process involves helping students to develop the meta-cognitive skills of self-evaluation, self-regulation, and reflection. The second "E" of WHERETO reminds teachers to build in time and expectations for students to regularly self assess, reflect on the meaning of their learning and set goals for future performance.

T = *How will I tailor the learning experiences to the nature of the learners I serve? How might I differentiate instruction to respond to the varied needs of students?*

"One size fits all teaching" is rarely optimal. Learners differ significantly in terms of their prior knowledge and skill levels, their interests, talents and preferred ways of learning. Accordingly, the most effective teachers get to know their students and tailor their teaching and learning experiences so as to connect the material with the kids. A variety of strategies may be employed to differentiate content (e.g., how subject matter is presented), process (e.g., how students work), and product (e.g., how learners demonstrate their learning). The logic of backward design offers a cautionary note here: the Content Standards and Understandings should not be differentiated (except for students with Individualized

Education Plans – I.E.P.s). In other words, we differentiate means while keeping the ends in mind for all.

O = *How will I organize the learning experiences for maximum engagement and effectiveness? What sequence will be optimal given the understanding and transfer goals?*

When the primary educational goals involve helping students acquire basic knowledge and skills, teachers may be comfortable "covering" the content by telling and modeling.

However, when we include understanding and transfer as desired results, educators are encouraged to give careful attention to how the content is organized and sequenced. Just as effective story tellers and filmmakers often don't begin in the "beginning," teachers can consider alternatives to sequential content coverage. For example, methods such as the Case Method, Problem or Project-Based Learning and Socratic Seminars immerse students in challenging situations, even before they may have acquired all of the "basics." They actively engage students in trying to make meaning and apply their learning in demanding circumstances without single "correct" answers. It is through such attempts to apply learning in context that one develops expertise and strategic skill.

Research Underpinnings

The Understanding by Design framework is guided by the confluence of evidence from two streams – theoretical research in cognitive psychology and results of student achievement studies. A summary of key findings is provided below.

Research in Cognitive Psychology

The book, How People Learn: Brain, Mind, Experience, and School Experience,[4] provides a comprehensive and readable synthesis of research findings regarding learning and cognition. It offers new conceptions of the learning process and explains how skill and understanding in subject areas are most effectively acquired. Key findings relevant to UbD include the following:

1) Views on effective learning have shifted from a focus on the benefits of diligent drill and practice to a focus on students' understanding and application of knowledge.

2) Learning must be guided by generalized principles in order to be widely applicable. Knowledge learned at the level of rote memory rarely transfers; transfer most likely occurs

[4] National Research Council (2000). *How people learn: Brain, mind, experience, and school: Expanded Edition*. Washington, DC: National Academy Press.

when the learner knows and understands underlying concepts and principles that can be applied to problems in new contexts. Learning with understanding is more likely to promote transfer than simply memorizing information from a text or a lecture.

3) Experts first seek to develop an understanding of problems, and this often involves thinking in terms of core concepts or big ideas. Novices' knowledge is much less likely to be organized around big ideas; novices are more likely to approach problems by searching for correct formulas and pat answers that fit their everyday intuitions.

4) Research on expertise suggests that 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. Curricula that emphasize breadth of knowledge may prevent effective organization of knowledge because there is not enough time to learn anything in depth. Curricula that are "a mile wide and an inch deep" run the risk of developing disconnected rather than connected knowledge.

5) Feedback is fundamental to learning, but feedback opportunities are limited in many classrooms. Students may receive grades on tests and essays, but these are summative assessments that occur at the end of learning segments. Grades, by themselves, do not provide the specific and timely information needed for improvement. What is needed are formative assessments, which provide students with opportunities to revise and improve the quality of their thinking and understanding.

6) Many assessments measure only propositional (factual) knowledge and never ask whether students know when, where, and why to use that knowledge. Given the goal of learning with understanding, assessments and feedback must focus on understanding, and not simply on memory for procedures or facts.

7) Expert teachers know the structure of their disciplines and this provides them with cognitive roadmaps that guide the assignments they give students, the assessments they use to gauge student progress, and the questions they ask in the give and take of classroom life. The is that teaching consists only of a set of general methods, that a good teacher can teach any subject, and that content knowledge alone is sufficient.

These findings provide a conceptual base for the way in which content standards are framed in UbD (i.e., around big ideas and essential questions) while informing the instructional and assessment practices it advocates.

Studies of Student Achievement

Three achievement studies are summarized below. While differing somewhat in subject area and grade levels, the findings are consistent in their support for the principles and practices of Understanding by Design.

1) Newmann et al. (1996) investigated 24 restructured schools at the elementary, middle, and high school levels to study the effects of authentic pedagogy and assessment approaches in mathematics and social studies. Authentic pedagogy and assessment approaches were measured by a set of standards that included higher-order thinking, deep-knowledge approaches, and connections to the world beyond the classroom.

Similar students in classrooms with high and low levels of authentic pedagogy and performance were compared, and the results were striking: students with high levels of authentic pedagogy and assessment were helped substantially whether they were high- or low-achieving students. Another significant finding was that the inequalities between high- and low-performing students were greatly decreased when normally low- performing students were taught and assessed using these strategies. These findings support Understanding by Design, which emphasizes the use of authentic performance assessments and pedagogy that promotes a focus on deep knowledge and understanding, and active and reflective teaching and learning.

Additional support emerged from two recent studies of factors influencing student achievement were conducted in Chicago public schools through the Consortium on Chicago School Research. In the first study, Smith, Lee, and Newmann (2001) focused on the link between different forms of instruction and learning in elementary schools. Test scores from more than 100,000 students in grades 2–8 and surveys from more than 5,000 teachers in 384 Chicago elementary schools were examined. The results provide strong empirical support that the nature of the instructional approach teachers use influences how much students learn in reading and mathematics. More specifically, the study found clear and consistent evidence that interactive teaching methods were associated with more learning in both subjects. For the purposes of the study, Smith, Lee, and Newmann characterized interactive instruction as follows:

The teacher's role is primarily one of guide or coach. Teachers using this form of instruction create situations in which students . . . ask questions, develop strategies for solving problems, and communicate with one another. . . . Students are often expected to explain their answers and discuss how they arrived at their conclusions. These teachers usually assess students' mastery of knowledge through discussions, projects, or tests that demand explanation and extended writing. Besides content mastery, the process of developing the answer is also viewed as important in assessing the quality of the students' work.

In classrooms that emphasize interactive instruction, students discuss ideas and answers by talking, and sometimes arguing, with each other and with the teacher. Students work on applications or interpretations of the material to develop new or deeper understandings of a given topic. Such assignments may take several days to complete. Students in interactive classrooms are often encouraged to choose the questions or topics they wish to study within an instructional unit designed by the teacher. Different students may be working on different tasks during the same class period. (p. 12)

The type of instruction found to enhance student achievement parallels methods advocated by Understanding by Design for developing and assessing student understanding.

2) In a related study, Newmann, Bryk, & Nagaoka (2001) examined the relationship of the nature of classroom assignments to standardized test performance. Researchers systematically collected and analyzed classroom writing and mathematics assignments in grades 3, 6, and 8 from randomly selected and control schools over the course of three years. In addition, they evaluated student work generated by the various assignments. Finally, the researchers examined correlations among the nature of classroom assignments, the quality of student work, and scores on standardized tests. Assignments were rated according to the degree to which they required "authentic" intellectual work, which the researchers described as follows:

Authentic intellectual work involves original application of knowledge and skills, rather than just routine use of facts and procedures. It also entails disciplined inquiry into the details of a particular problem and results in a product or presentation that has meaning or value beyond success in school. We summarize these distinctive characteristics of authentic intellectual work as construction of knowledge, through the use of disciplined inquiry, to produce discourse, products, or performances that have value beyond school. (pp. 14-15).

This study concluded that,

Students who received assignments requiring more challenging intellectual work also achieved greater than average gains on the Iowa Tests of Basic Skills in reading and mathematics, and demonstrated higher performance in reading, mathematics, and writing on the Illinois Goals Assessment Program. Contrary to some expectations, we found high-quality assignments in some very disadvantaged Chicago classrooms and [found] that all students in these classes benefited from exposure to such instruction. We conclude, therefore, [that] assignments calling for more authentic intellectual work actually improve student scores on conventional tests. (p. 29)[5]

Educators familiar with Understanding by Design will immediately recognize the parallels. The instructional methods that were found to enhance student achievement are basic elements of the pedagogy in the UbD planning model. As in the researchers' conception of "authentic" intellectual work, UbD instructional approaches call for the student to construct meaning through disciplined inquiry. Assessments of understanding call for students to apply their learning in "authentic" contexts and explain or justify their work.

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[5] The complete research reports are available online at http://www.consortiumchicago.org/publications/

3) The Third International Mathematics and Science Study (TIMSS), conducted in 1995, tested mathematics and science achievement of students in 42 countries at three grade levels (4, 8, and 12) and was the largest and most comprehensive and rigorous assessment of its kind ever undertaken. While the outcomes of TIMSS are well known—American students are outperformed by students in most other industrialized countries (Martin, Mullis, Gregory, Hoyle, & Shen, 2000)—the results of the less publicized companion TIMSS teaching study offer explanatory insights. In an exhaustive analysis of classroom teaching in the U.S., Japan, and Germany using videotapes, surveys, and test data, researchers present striking evidence of the benefits of teaching for understanding in optimizing performance.[6] For example, data from the TIMSS tests and instructional studies clearly show that, although the Japanese teach fewer topics in mathematics, their students achieve better results. Rather than "covering" many discrete skills, Japanese teachers state that their primary aim is to develop conceptual understanding in their students. They emphasize depth vs. superficial coverage; that is, although they cover less ground in terms of discrete topics or pages in a textbook, they emphasize problem-based learning, in which rules and theorems are derived and explained by the students, thus leading to deeper understanding (Stigler & Hiebert, 1999). This approach reflects what UbD describes as "uncovering" the curriculum. In summary, nations with higher test scores use teaching and learning strategies that promote understanding rather than "coverage" and rote learning.

Conclusion

Many teachers who are introduced to the backward design process have observed that while the process makes sense in theory, it often feels awkward in use. This is to be expected since the principles and practices of UbD often challenge conventional planning and teaching habits. However with some practice, educators find that backward design becomes more not only more comfortable, but a way of thinking. Moreover, the resources found in this [program, text, etc.] will surely support teaching and assessing for understanding and transfer.

Frequently Asked Questions

1. *This 3-stage planning approach makes sense. So, why do you call it "backward" design?*

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[6] Additional information about this significant research may be found on the TIMSS Web site (http://nces.ed.gov/timss/).

We use the term "backward" in two ways:

- Plan with the end in mind by first clarifying the learning you seek – the learning results (Stage 1). Then, think about the assessment evidence needed to show that students have achieved those desired learnings (Stage 2). Finally, plan the means to the end; i.e., the teaching and learning activities, resources, etc. to help them 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" to the way many 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 process makes sense, but feels awkward, since 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. "Task analysis" presumes the same logic. In more recent times, "outcome-based" and "mastery" education advocates, such as Benjamin Bloom and Robert Gagne, recommended that curriculum be designed down from desired outcomes. In the best selling book, Seven Habits of Highly Effective People, Stephen Covey conveys a similar finding; i.e., effective people plan "with the end in mind."

In UbD, it's not just backward design from any goal. A key element of Understanding by Design is that the goals have to focus on understanding and transfer; i.e., we plan backward from understanding-related performance as opposed to discrete knowledge and skill objectives and exercises.

2. *Should you use the 3-stage backward design process and the UbD Template for planning lessons as well as units?*

We do not recommend isolated lesson planning separate from unit planning. We have chosen the unit as a focus for design because the key elements of UbD — understandings, essential questions, and transfer performance tasks – are too complex and multi-faceted to be satisfactorily addressed within a single lesson. For instance, essential questions are meant to be explored and revisited over time, not answered by the end of a single class period.

Nonetheless, 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.

3. *Does everything we teach need to be taught for deep "understanding" and "transfer"? Aren't there just some facts and skills to master that you just need to memorize and learn by drill and practice?*

While there are certainly "basics" that must be mastered, it does not follow that rote learning is the only or best means of achieving these ends. Recall the old quip from a frustrated math teacher, "Yours is not to reason why, just invert and multiply." Think of how often you learned a math "fact" (e.g. cross multiplying fractions or using the quadratic formula) without understanding why it worked, why it mattered, and what important performance it permitted. In other words, even though you "knew" the fact, you didn't necessarily understand its meaning or its applicability to performances in your world. That inability had practical consequences, often led to forgetfulness, misunderstanding, and thus an inability to apply the learning in later work. Of course, some things need to become automatic: times tables, the meaning of key terms, the conjugation of etre and estar. But that is no excuse for piling fact upon fact, skill upon skill out of context. The research is clear: too much out-of-context learning inhibits transfer.

4. *What is relationship between the six Facets of Understanding and Bloom's Taxonomy?*

While both function as frameworks for assessment, one key difference is that Bloom's Taxonomy presents a hierarchy of cognitive complexity. The Taxonomy was initially developed for analyzing the demands of assessment items on university exams.

The Six Facets of Understanding were conceived as six equal and hopefully suggestive indicators of understanding, and thus are used to develop or select assessment tasks and prompts. They were never intended to be a hierarchy. Rather, one selects the appropriate facet(s) depending on the nature of the content and the desired understandings about it.

While different in intent, there are some similarities between the two frameworks. Indeed, "application" means essentially the same thing in both frameworks, and neither in Bloom or UbD does it mean just "plugging" content into familiar looking exercises. In order to reveal understanding, application must occur in a new or different situation from where it was learned. In other words, the learner must transfer (apply) their learning appropriately in a new context.

5. *Our state/provincial tests use primarily multiple-choice and brief constructed response items that do not assess for deep understanding in the way that you recommend. How can we prepare students for these "high-stakes" standardized tests?*

For many educators, instruction and assessing for understanding are viewed as incompatible with high-stakes accountability tests. This perceived incompatibility is based on a flawed assumption; i.e., the only way to raise test scores is to "cover" those things that are tested and practice the test format. By implication, there is no time for or need to engage in in-depth instruction that focuses on developing and deepening students' understanding of big ideas. While it is certainly true that we are obligated to teach to established content standards, it does not follow that the best way to meet those standards is merely to mimic the format of the state test, and use primarily low-level test items locally. Such an approach mistakes the measures for the goals – the equivalent of practicing for your annual physical exam in order to improve your health!

It would be thought silly to practice the physical exam as a way of becoming healthier, but this confusion is precisely what we see in schools all over North America. Driven by the accountability pressures, educators too often focus on the measures (test items) instead of the goals (the standards). The format of the test misleads us, in other words.

Furthermore, the format of the test causes many educators to erroneously believe that the state test or provincial exam only assesses low-level knowledge and skill. This, too, is false. Indeed, the data from released state and national tests show conclusively that the students have the most difficulty with those items that require understanding and transfer, not recall or recognition. To check this assertion, review the item analysis for tests in your school or district, especially the released test items and their results if they are available. What types of questions are most difficult? What are the general patterns of weakness? We think that you will find that students have the most difficulty with transfer-related tasks; e.g., dealing with novel reading passages, never-before-seen word problems in mathematics, unusually-framed questions, demanding writing prompts, etc. Learners who have been repeatedly assessed on tasks requiring autonomous transfer will naturally be better prepared for tests than those who were merely drilled on simple items.