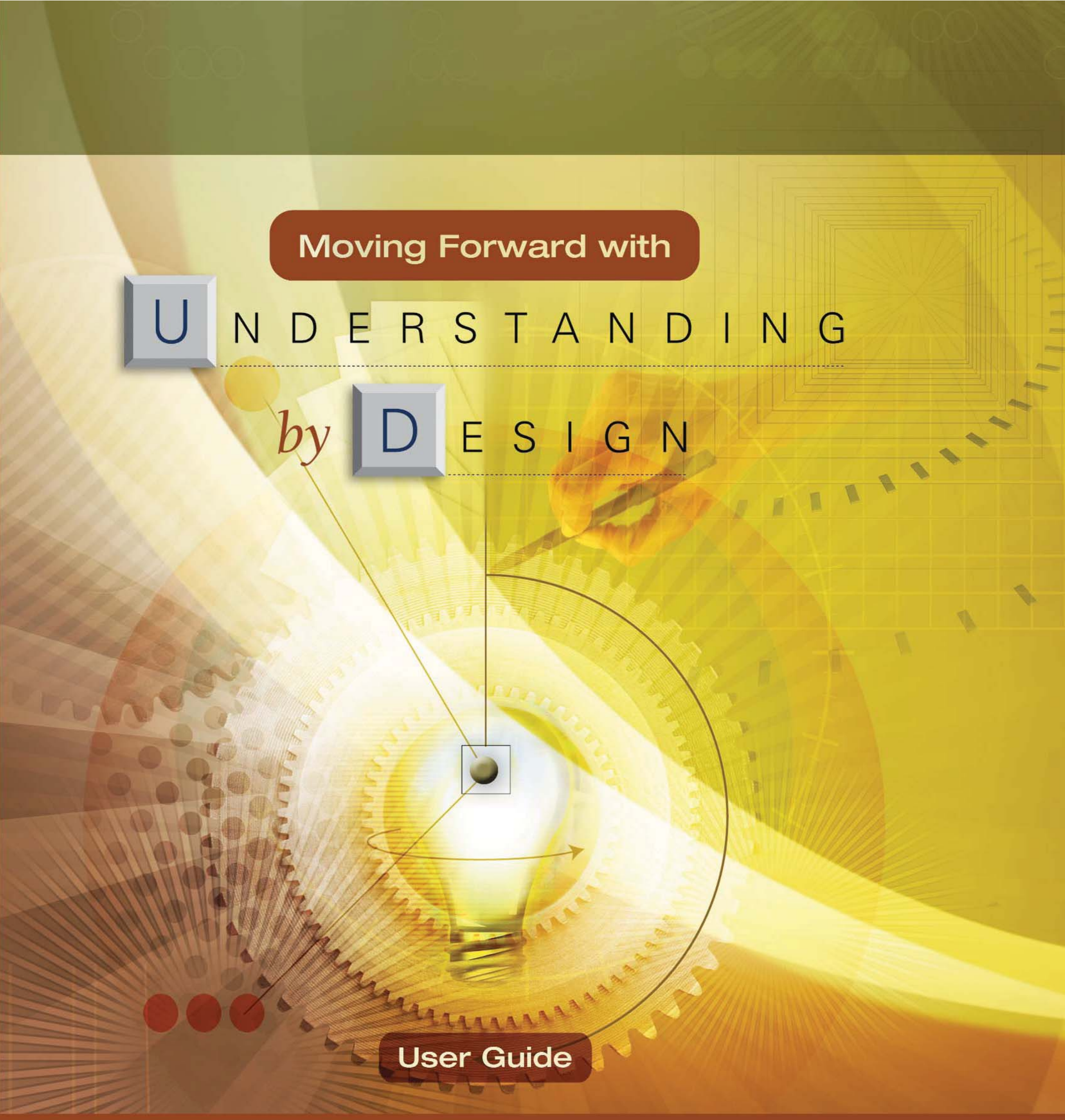
Moving Forward with

UNDERSTANDING *by* DESIGN



User Guide

Moving Forward with Understanding by Design

User Guide

Association for Supervision and Curriculum Development
Alexandria, Virginia USA

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INTRODUCTION

Background Information for *Moving Forward with Understanding by Design*

This program and user guide are designed for educators interested in exploring what has been learned about the successful implementation of Understanding by Design in classrooms and schools. By using this program and the accompanying professional development activities and resources, users can explore the inevitable issues and challenges educators confront when collaborating to provide an education emphasizing student understanding, not just mechanical knowledge-recall learning. This program also provides examples of what Understanding by Design and its three interrelated stages might look like when implemented in elementary, middle, and high school classes.

Moving Forward with Understanding by Design emphasizes the continuum of experiences that are an important—and inevitable—part of successful Understanding by Design implementation. In the video, participating educators and administrators vary from those in their first year of using the Understanding by Design framework to those with multiple years of experience. This important element is reinforced through the extensive self-reflection activities included in this guide. Additionally, users of this program will be able to expand their investigation of Understanding by Design to include four significant strands:

1. Understanding by Design: An Overview—The learning principles underlying this framework, including an overview of its evolution.
2. Understanding by Design in the Classroom—Examples that can be used to discuss and analyze the ways the three stages of the backward design process manifest in elementary, middle, and high school classroom settings.
3. Understanding by Design and The School Improvement Process—The implications of Understanding by Design for school improvement planning, including insights into professional development.
4. Understanding by Design: The Experts and Practitioners Speak—Reflections from experts and practitioners on various Understanding by Design topics.

What Is Understanding by Design?

As described by authors Grant Wiggins and Jay McTighe, Understanding by Design is "not a prescriptive program, nor is it a philosophy of education. It is a way of thinking more purposefully and carefully about the nature of any design that has understanding as the goal"

(2005, p. 7). In today's world, students need to be able to do more than memorize facts and processes; they need to understand what they are learning.

For students to understand, educators must change their thought processes with respect to curriculum design. The traditional approach of organizing learning activities and then developing assessments does not support learning for understanding. Instead, educators need to focus on the big ideas of each topic. What is essential for students to learn? Once big ideas are established, the next step is to design assessments that will provide evidence of student learning of those big ideas. After that, and only then, will educators be in a position to design and sequence learning activities that will lead students to an understanding of the big ideas.

This three-stage approach to planning curriculum is referred to as "backward design."

- **Stage 1: Identify Desired Results**
What should students know, understand, and be able to do? In Stage 1, consider the goals, examine content standards, and review curriculum expectations.

- **Stage 2: Determine Acceptable Evidence**
What assessment evidence will we accept as evidence of student understanding? In Stage 2, consider a variety of evidence, including both formative and summative assessments. Teaching for understanding means assessing for understanding.

- **Stage 3: Plan Learning Activities**
What sequence of learning activities will lead students to an understanding of the big ideas? In Stage 3, consider the knowledge and skills that students will need to know to perform effectively. Identify the materials and resources that will best meet the goals set out in Stage 1.

Purpose of the Program

The activities in this guide are designed to stimulate exploration, discussion, and sharing in a large or small study group setting. An individual may also use the program and activities for personal reflection and growth. The large group, small group, and individual settings are designed to enable participants to

- Use the Understanding by Design tools to work smarter in curriculum and assessment design.
- Incorporate the Understanding by Design theory as a way of thinking, planning, and reviewing curriculum designs.
- Understand that the Understanding by Design framework is appropriate for any content area and learning level in which understanding is desired.

About the Program

This program examines what Understanding by Design is, what classrooms look like when they reflect key principles of Understanding by Design, what schools look like when they successfully embody principles of Understanding by Design, and what the experts and practitioners say about the evolution of Understanding by Design.

Understanding by Design: An Overview

This strand addresses the learning theory underlying the Understanding by Design framework, particularly how Understanding by Design offers a framework and consensus-driven language for curriculum design, instruction, and assessment that promote understanding and transfer.

Understanding by Design in the Classroom

This strand provides a detailed exploration of what each of the stages of Understanding by Design looks like in classrooms at the elementary, middle, and high school levels.

- Stage 1: Identify desired results that focus on enduring understandings, essential questions, and the six facets of understanding.
- Stage 2: Determine acceptable evidence that includes a balanced, "photo-album" approach to assessment.
- Stage 3: Design and sequence learning activities by applying the principles of W.H.E.R.E.T.O.

It also addresses the following questions:

1. What can I observe in classrooms that are successfully implementing Understanding by Design principles and strategies?
2. How do successful educators promote student understanding?

3. To what extent can I expect to observe different levels of use and complexity as educators deepen their understanding of the *Understanding by Design* framework?

Understanding by Design and the School Improvement Process

This strand explores the emerging implications of Understanding by Design for the school improvement planning process.

- How can educators promote the principles of equity and excellence using the Understanding by Design framework?
- How can educators use Understanding by Design to improve their professional development?
- What are the inevitable issues, implementation gaps, and problems that must be confronted to implement Understanding by Design successfully in school settings?

Understanding by Design: The Experts and Practitioners Speak

This strand provides participants with an opportunity to reflect on how the experts of Understanding by Design, Grant Wiggins and Jay McTighe, and practitioners view the framework with respect to the following:

- Where do we start?
- How long does it take to become proficient with the backward design process?
- What are the challenges?
- What does Understanding by Design look like in the classroom?
- How does Understanding by Design work at a school or district level?

Classroom Examples

The elementary, middle, and high school examples provide participants with an opportunity to view key elements of units that were presented over an extended period of time.

Program Objectives

By the end of this program, participants will be able to

- Identify strategies for implementing the three stages of the backward design process in classroom unit design, systemic curriculum development, and classroom observations.
- Integrate the principles of Understanding by Design into unit study and professional development.

Customize the Program for Your Professional Development Needs

Whether using this guide for large groups, for small study groups, or as independent study, keep in mind that when people view a video-based program, each may see, hear, and learn something different. Consequently, if participants discuss their different insights, they will often learn more than if they viewed the program without the follow-up activities. These activities can promote further reflection and support the participants' efforts to plan for the effective application of the ideas presented in the program.

This guide is designed to help you get the best possible benefits from *Moving Forward with Understanding by Design*. The activities included serve as a starting point. Participants should be encouraged to raise their own questions based on the particular needs or concerns of the school, district, or community. The guide's structure is intended to allow participants maximum flexibility in selecting activities that best fit the nature of their professional development goals.

As such, this guide contains three sections:

• **Introduction**
This section presents an overview of the philosophy and principles pertaining to the use of backward design in classrooms and schools to promote understanding. It focuses on the practices used in four schools—an elementary school, a middle school, and two high schools—and includes a description of the program.

• **Activities**
This section provides specific activities that address each key idea within the program. The activities are designed to offer maximum flexibility and customization of use. For that reason, handouts are included

within the activities to reproduce in the manner that best suits your needs. Feel free to duplicate and distribute handouts to participants. They can be adapted to serve the needs of large groups, small study groups, or individuals engaged in independent study.

• **Resources**
This section includes a glossary of terms pertaining to Understanding by Design as well as references that were cited in the text. A bibliography of related resources also is provided in this section.

Designing Effective Professional Development

Professional development is a collaborative endeavor that is planned and implemented by educators and administrators working together. Educators and administrators identify specific needs for professional development and how they might best be met. The collaboration of administrators and teachers in designing professional development enhances all parties' sense of ownership and professionalism.

A substantial part of professional development is school-based and job-embedded. It takes place during teacher planning and in grade-level or department meetings where educators reflect on their work and solve problems together; in classrooms, where educators observe colleagues' lessons to see a strategy in action and support and coach each other; and in small study or reading groups or action research activities that teachers choose to participate in.

Professional development planning is most effective when the following organizational ideas are considered:

- Arrange teacher schedules to create common planning times so that small teams such as grade-level teams, subject teams, or small study groups can meet on a regular basis.
- Use opportunities such as faculty meetings for professional development. Remember that many announcements can be communicated outside the meeting, in e-mail messages and paper memos, allowing time in faculty meetings for professional development discussions.
- Hold breakfast meetings—in some schools, these are held monthly and voluntarily attended—to discuss a research study or professional article educators have read before the meeting.
- Use district staff development days more flexibly. In addition to full-day, whole-staff workshops, these days can also be used

for small-team activities such as reading groups or small study groups—or for independent work or whole-staff sharing.

Professional development is a sustained endeavor and needs to be differentiated. The best professional development is based on an analysis of an organization's needs and the choices individuals make to strengthen their skills and expertise in support of the organizational goals. Effective programs acknowledge that educators, like their students, are at different levels of readiness and have varied interests and preferred ways of learning. To meet these varied needs, professional development should be flexible and approached in several ways, such as large groups, small study groups, and independent study.

The graphic representation in Figure 1 is one way to organize groups and content as you plan a professional development program.

As Figure 1 shows, once the entire faculty has an introduction, several small groups and individuals may decide to continue exploring the content in different ways. Just as they would using any map, different people will find different routes to get where they're going in their learning, and groups and individuals will be moving simultaneously through the map in their exploration of Understanding by Design.

This user guide includes ideas and resources for each of these options. To keep professional development as informative and interactive as possible, we recommend setting up structures for participants to share learning with others. For example, you may want to set up public sharing sessions at regular intervals.

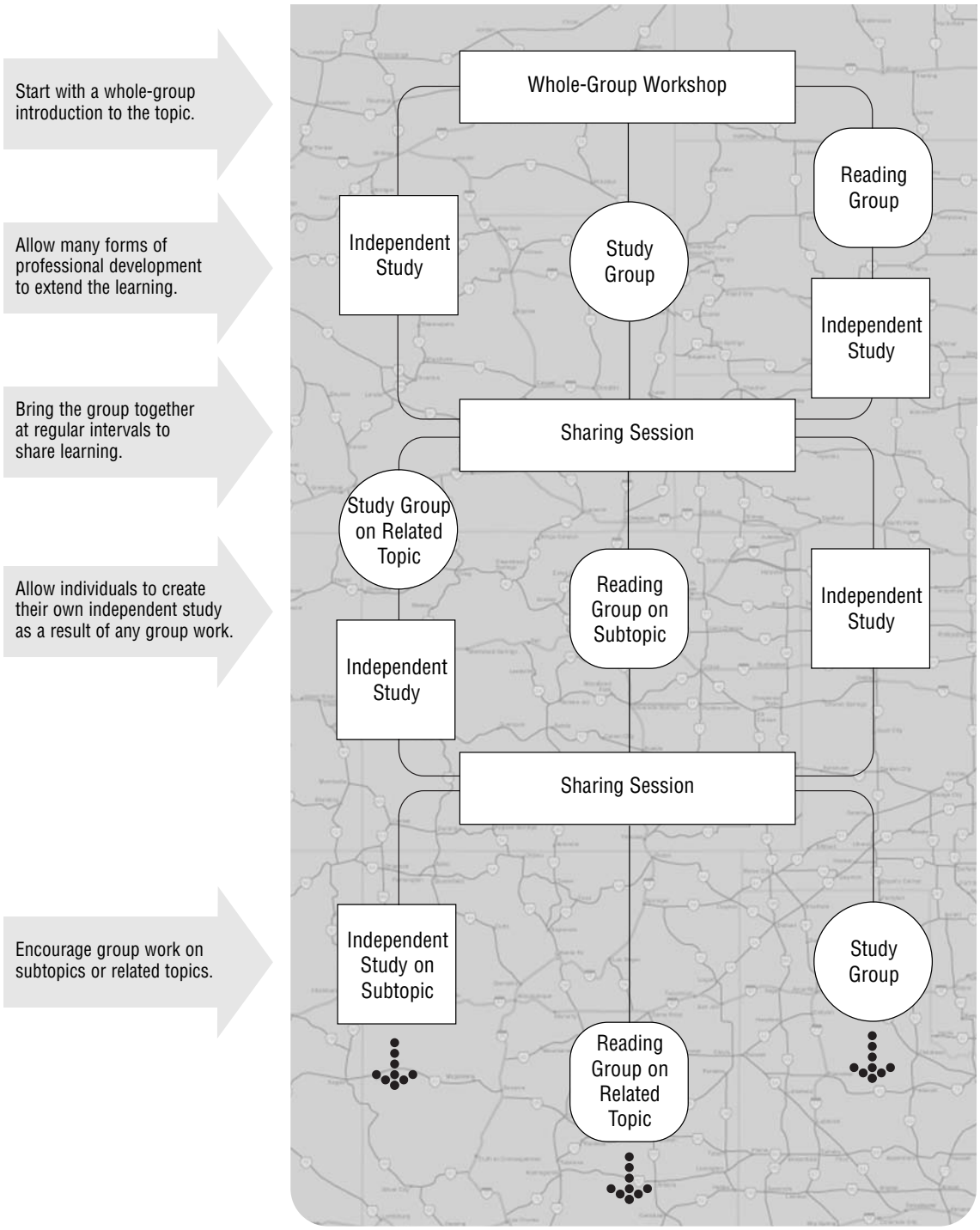
Large Group

Large group activities can be an effective way to establish a common base of knowledge and a shared vocabulary among staff members. As a starting point for professional development on Understanding by Design, consider the following two options:

• **Option 1. A Linear Investigation of the Four Strands**
Large group professional development can be designed and implemented using the four strands in a linear order, beginning with the first strand. For this approach, four or more professional development sessions can be offered using a combination of viewing sessions, follow-up discussions, and participant activities (implemented in the order they are presented in the user guide and using the resources presented for

FIGURE 1

Road Map Organizer



Source: Adapted from *Differentiated Instruction:* An ASCD Professional Development Planner (p. 5), by S. Chapman, M. D'Arcangelo, L. Kiernan, and J. O'Neil, 2000, Alexandria, VA: Association for Supervision and Curriculum Development. Copyright 2000 by the Association for Supervision and Curriculum Development.

each activity). This linear approach is advisable for large group sessions involving participants who have some introductory background knowledge of Understanding by Design and wish to engage in a step-by-step follow-up process to deepen their work with it.

Specifically, this approach is ideal for participants interested in moving forward with the Understanding by Design framework beyond the level of initial unit development. In Option 1, large group participants will begin with an overview of the Understanding by Design framework. They will then observe and analyze classroom-based learning activities reflecting backward design principles. Next, large group participants will investigate the implications of Understanding by Design for school improvement planning, including professional development practices. Participants will then have the opportunity to respond to experts' and practitioners' observations about implementing Understanding by Design within schools and districts. Finally, participants can use the examples as a basis for continued discussion.

• Option 2. Job-Embedded Large Group Professional Development

Option 2 involves the process of job-embedded decision making related to professional development design. Participants can select one or more of the strands or classroom examples and related professional development activities specifically aligned with their classroom, school, or district needs and priorities. For example, large group trainings can be designed using the first strand if participants have completed an initial investigation of Understanding by Design and wish to synthesize their experiences and insights.

In contrast, the second strand presents a range of opportunities for participants wishing to observe, discuss, and debate what Understanding by Design may look like in classrooms at all age levels. It is ideal for participants preparing walk-throughs in their own schools to examine the level Understanding by Design is being implemented in classrooms.

The third strand can be used as a focus for large group trainings involving the application of Understanding by Design to the school improvement planning process, including professional development.

The fourth strand can serve as a catalyst for large group professional development focused on universal implications of the Understanding by Design framework.

The elementary, middle, and high school classroom examples can be used as a focus for large group trainings involving the application of Understanding by Design by new and experienced educators.

Small Study Group

Small study groups are a popular form of school-based professional development. Although people use them in various ways, small study groups share the following characteristics:

- Participants construct knowledge through research, interaction with selected materials, and conversations with colleagues.
- Each person brings expertise to the group and makes contributions.
- Participants commit to creating new knowledge and using this knowledge to positively affect perspectives, policies, and practice.

Small study groups are a great tool for discussing and examining new teaching techniques or approaches before implementing them in the classroom. They also provide a forum for educators and others to report on ideas they're trying, to troubleshoot implementation efforts, and to enhance their efforts as they go.

Study groups can take either a linear or a job-embedded approach to using this program. Groups may study each of the four strands and the classroom examples in a sequential order, using the suggested questions and activities presented within the user guide. Or, the job-embedded approach involves study group leaders working with other members of the group to identify specific aspects of each of the four strands and classroom examples they wish to investigate in depth. These aspects should have direct relevance to the focus and direction of the study group and complement its overall purpose and responsibilities.

For example, a study group may elect to discuss the video and readings in the first strand in one session as a springboard for studying the teaching implications emphasized in the second strand. They can then progress to viewing selected video excerpts from the third strand related to professional development and school improvement planning priorities to study viable ways to implement the teaching strategies they studied in the second strand.

Independent Study

Independent study can consist of whatever viewing and user guide activities you think would be most productive and enjoyable for your specific needs and goals. Because independent study is self-directed, you have more flexibility in structuring it in a way that makes sense to you as an individual practitioner. To prime your thinking, here are a few examples of activities that you might undertake as part of an independent study involving *Moving Forward with Understanding by Design:*

- Complete the first strand's independent study activities to reflect on the authors' and practitioners' ideas about the learning principles and evolution of the Understanding by Design framework.
- Use the second strand to enhance your understanding of what Understanding by Design teaching and learning strategies and principles might look like in elementary, middle, and high school classrooms. This strand is ideal for reflecting on your own instructional practices if you are currently in the classroom or for enhancing your expertise as an administrator responsible for classroom observations related to teaching for understanding.
- Use the third strand to increase your understanding of the links and connections between the backward design process and broader issues related to professional development.
- Use the fourth strand to familiarize yourself with experts' and practitioners' ideas and reflections on Understanding by Design.
- Finally, use the elementary, middle, and high school classroom examples to see what Understanding by Design looks like in a classroom over a period of time.

Understanding by Design: An Overview

Moving Forward with Understanding by Design

ACTIVITIES

Understanding by Design: An Overview

This strand addresses the learning theory underlying the Understanding by Design framework. Using a combination of video excerpts, professional development activities, and suggested readings, this strand will aid in exploring the following question: How does Understanding by Design offer a framework and consensus-driven language for curriculum design, instruction, and assessment that promote understanding and transfer?

Activity 1.1

Previewing and Postviewing

Large Group Directions

This strand presents experts Grant Wiggins and Jay McTighe and practitioners as they reflect on the evolution of Understanding by Design. A focus of their discussion involves the expansion of Understanding by Design from its initial emphasis on unit design toward its growing use as a catalyst for school improvement. As participants review this video excerpt, they may wish to complete the K-W-L Chart included in this activity that asks these questions:

- Prior to viewing this video excerpt, what do you think you know about Understanding by Design and its evolution?
- As you observe this video excerpt, what do you want to learn about the goals of this framework?
- As you complete the viewing and discussion of this video excerpt, what have you learned about Understanding by Design? Are there any misconceptions or misunderstandings you have modified? Where might you go from here to answer questions posed by the experts and practitioners?

Small Study Group Directions

Small study groups may wish to use this strand as a springboard for studying and investigating the origins of Understanding by Design. How are the goals, design principles, and resources available through Understanding by Design potentially useful as participants study and investigate its implications for their school or district? As participants review this video excerpt, they may wish to complete the K-W-L Chart included in this activity.

Independent Study Directions

Individuals using this strand for independent study may wish to complete the K-W-L Chart in this activity and consider the questions listed under the Large Group Directions.

K-W-L Chart

K = What do you think you KNOW about Understanding by Design?	W = What do you WANT to learn about Understanding by Design?	L = What have you LEARNED about Understanding by Design?

Activity 1.2

Dealing with Misconceptions

Large Group Directions

When exploring this strand in a large group, participants may benefit from reading and discussing Jay McTighe, Elliott Seif, and Grant Wiggins' article from *Educational Leadership* entitled "You *Can* Teach for Meaning." A major focus of large-group discussion can be participants' debate regarding the misconceptions presented in the article (i.e., we have to teach to the test, and we have too much content to cover). Participants can use Large Group Guiding Questions to jot down notes and focus discussion.

Small Study Group Directions

"You *Can* Teach for Meaning" makes an ideal springboard for small study group discussion and investigation. After reading and debating the assertions made in the article, participants may wish to respond to the Small Study Group Guiding Questions.

Participants may wish to collect additional research articles and share them with the small study group to further the discussion. Additionally, participants should discuss the extent to which they perceive the five principles identified at the beginning of the article being operational in classrooms in their school or district.

Independent Study Directions

After reviewing the article "You *Can* Teach for Meaning," participants reflect on their own classroom, school, or district using the Independent Study Guiding Questions.

You *Can* Teach for Meaning

Jay McTighe, Elliott Seif, and Grant Wiggins

Teaching for meaning is an engaging idea, but many teachers find it problematic in this age of mandates and standardized tests.

Teaching is more than covering content, learning is more than merely taking in, and assessment is more than accurate recall. Meaning must be made, and understanding must be earned. Students are more likely to make meaning and gain understanding when they link new information to prior knowledge, relate facts to "big ideas," explore essential questions, and apply their learning in new contexts.

Consider the following classroom scenarios (Tharp, Estrada, & Yamauchi, 2000). A 6th grade teacher asks students to collect data from home on the height and weight of various family members. Students discuss the following questions in groups: How could we represent these data? What is the most effective way? Students decide on specific approaches and share them with the class. A spirited discussion takes place on the best approach.

A 4th grade teacher asks students to explore the Eskimo culture through research and discussion. Using the textbook and multiple resources, the class tackles the following question: What makes Eskimo life similar to and different from your life? Students define and describe ideas about Eskimo life, using a graphic organizer to make connections between concepts and facts. In small groups, they develop a project on an aspect of Eskimo life, conduct research, organize data, and draw conclusions that compare Eskimo life with their own lives. The teacher has shared a rubric identifying the key features of successful project work. She regularly collects samples of student work to provide feedback and offer suggestions for improvement.

These two examples illustrate a curricular and instructional approach that we call *teaching for meaning and understanding*. This approach embodies five key principles:

- Understanding big ideas in content is central to the work of students.
- Students can only find and make meaning when they are asked to inquire, think at high levels, and solve problems.
- Students should be expected to apply knowledge and skills in meaningful tasks within authentic contexts.
- Teachers should regularly use thought-provoking, engaging, and interactive instructional strategies.
- Students need opportunities to revise their assignments using clear examples of successful work, known criteria, and timely feedback.

Teachers who regularly use this approach center their planning on three recurring questions that should be at the heart of any serious education reform: What are the big ideas and core processes that students should come to understand? What will teachers look for as evidence that students truly understand the big ideas and can apply their knowledge and skills in meaningful and effective ways? What teaching strategies will help students make meaning of curriculum content while avoiding the problems of aimless coverage and activity-oriented instruction?

Such an approach to teaching and learning is more apt to engage the learner and yield meaningful, lasting learning than traditional

Source: From "You *Can* Teach for Meaning," by J. McTighe, E. Seif, and G. Wiggins, 2004, *Educational Leadership, 62*(1), 26–30. Copyright 2004 by the Association for Supervision and Curriculum Development.

fact-based and procedure-based lecture, recitation, or textbook instruction. Yet when well-intentioned teachers and administrators are asked to put these ideas into practice, it is not uncommon to hear a chorus of *Yes, but*'s. The message? Teaching for meaning is fine in the abstract, but such ideas are impractical in the real world of content standards and high-stakes testing. The current focus on state and local content standards, related testing programs, No Child Left Behind, and accountability have strengthened the view that we must use more traditional teaching approaches to produce high levels of achievement.

Ironically, a key lever in the standards-based reform strategy—the use of high-stakes external tests—has unwittingly provided teachers with a rationalization for avoiding or minimizing the need to teach for meaning and in-depth understanding. Teachers are more likely to spend time practicing for the test, covering many facts and procedures and using traditional lecture and recitation methods in the hope that more students will become proficient.

Two key *Yes, but*'s interfere with the promise of teaching for meaning: Yes, but . . . we have to teach to the state or national test. Yes, but . . . we have too much content to cover. Both are misconceptions.

Misconception Number 1: We have to teach to the test.

Many educators believe that instructing and assessing for understanding are incompatible with state mandates and standardized tests. Although they rarely offer research to support this claim, these educators imply that teachers are stuck teaching to the test against their will. They would teach for meaning, if they could. The implicit assumption is that teachers can only safeguard or raise test scores by covering tested items and practicing the test format. By implication, there is no time for the kind of in-depth and engaging instruction that helps students make meaning and deepens their understanding of big ideas.

We contend that teachers can best raise test scores over the long haul by teaching the key ideas and processes contained in content standards in rich and engaging ways; by collecting evidence of student understanding of that content through robust local assessments rather than one-shot standardized testing; and by using engaging and effective instructional strategies that help students explore core concepts through inquiry and problem solving.

What evidence supports these contentions? A summary of the last 30 years of research on learning and cognition shows that learning for meaning leads to greater retention and use of information and ideas (Bransford, Brown, & Cocking, 2000). One avenue of this research explored the differences between novices and experts in various fields. Psychologists learned that experts have more than just a lot of facts in their heads: They actually *think* differently than novices do. According to the researchers, "expertise requires something else: a well-organized knowledge of concepts, principles, and procedures of inquiry" (p. 239). This finding suggests that students, to become knowledgeable and competent in a field of study, should develop not only a solid foundation of factual knowledge but also a conceptual framework that facilitates meaningful learning.

Data from the Trends in International Mathematics and Science Study (TIMSS) also challenge the premise that teaching to the test is the best way to achieve higher scores. TIMSS tested the mathematics and science achievement of students in 42 countries at three grade levels (4, 8, and 12). Although the outcomes of TIMSS are well known—U.S. students do not perform as well as students in most other industrialized countries (Martin, Mullis, Gregory, Hoyle, & Shen, 2000)—the results of its less publicized teaching studies offer additional insights. In an exhaustive analysis of mathematics instruction in Japan, Germany, and the United States, Stigler and Hiebert (1999) present striking evidence of the benefits of teaching for meaning and understanding. In Japan, a high-achieving country, mathematics teachers state that their primary

aim is to develop conceptual understanding in their students. Compared with teachers in the United States, they cover less ground in terms of discrete topics, skills, or pages in a textbook, but they emphasize problem-based learning in which students derive and explain rules and theorems, thus leading to deeper understanding. A recent TIMSS analysis of data from seven countries indicates that all high-achieving countries use a percentage of their mathematics problems to help students explore concepts and make connections, whereas U.S. teachers tend to emphasize algorithmic plug-in of procedures instead of genuine reasoning and problem solving (Hiebert et al., 2003; Stigler & Hiebert, 2004).

Compatible findings emerged in an ambitious study of 24 restructured schools—eight elementary, eight middle, and eight high schools—in 16 states (Newmann & Associates, 1996). The research showed that students improved their performance in mathematics and social studies and that inequalities among high- and low-performing students diminished when the curriculum included sustained examination of a few important topics rather than superficial coverage of many topics; when teachers framed instruction around challenging and relevant questions; and when students were required to provide oral and written explanations for their responses.

Two additional studies of factors influencing student achievement were conducted in Chicago Public Schools. Smith, Lee, and Newmann (2001) examined 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. The study compared teachers who used interactive teaching methods with those who used noninteractive teaching methods. The researchers then looked at subsequent achievement in reading and mathematics.

The researchers described interactive instruction methods as follows:

> Teachers . . . 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. 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 study found clear and consistent correlations between interactive teaching methods and higher levels of learning and achievement.

In a related study (Newmann, Bryk, & Nagaoka, 2001), researchers in Chicago systematically collected and analyzed classroom writing and mathematics assignments given in grades 3, 6, and 8 by randomly selected schools and control schools for a three-year period. Researchers rated assignments according to the degree to which the work required authentic intellectual activity, which the researchers defined as "construction of knowledge, through the use of disciplined inquiry, to produce discourse, products, or performances that have value beyond school" (pp. 14–15). The 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.

Misconception Number 2: We have too much content to cover.

Teachers from kindergarten to graduate school wrestle with the realities of the information age and the knowledge explosion: There is simply too much information to cover. 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 set of priorities for curriculum, instruction, and assessment. In practice, however, content standards committees at the national, state, and district levels often worked in isolation to produce overly ambitious lists of "essentials" for their disciplines. Rather than streamlining the curriculum, the plethora of standards added to the coverage problem, especially at the elementary level, where teachers must teach standards and benchmarks in multiple subjects (Marzano & Kendall, 1998). The matter is further complicated by teachers' propensity to focus on overloaded textbooks as the primary resource for addressing their obligations to the content standards. U.S. textbook publishers try to cover the waterfront to appease state textbook adoption committees, national subject-area organizations, and various special-interest groups. Project 2061's study of mathematics and science textbooks (Kesidou & Roseman, 2002; Kulm, 1999) found few commercial texts that were not "a mile wide and an inch deep."

Teachers confronted with thick textbooks and long lists of content standards may understandably come to the erroneous conclusion that they must cover huge amounts of content. They feel that "if it is in my book, it has to be taught." The perceived need to "cover" is typically based on two implicit assumptions that we think are unfounded. The first assumption is that if a teacher covers specific material—that is, talks about it and assigns some work—students will adequately learn it for tests. The second is that teachers should typically address standards one at a time in lesson planning.

We know of no research that supports the idea that a coverage mode of instruction increases achievement on external tests. In fact, current research suggests that "uncoverage"—focusing on fewer topics and core understandings—is more likely to increase student achievement. The TIMSS research that demonstrated lower achievement scores for U.S. students found that U.S. mathematics and science curriculums were unfocused and included too many topics (Schmidt, McKnight, & Raizen, 1997). In contrast, high-achieving countries offered fewer topics at each level, coupled with more coherent and focused content. This concentrated focus enabled teachers and students to gradually build more complex understandings in mathematics, to delve deeply into subject matter, and to attain higher levels of achievement (Schmidt, 2004; Schmidt, Houang, & Cogan, 2002).

Recent studies on mathematics reform curriculums described by Senk and Thompson (2003) also support using an "uncoverage" approach to improve student achievement. All the mathematics reform curriculums that Senk and Thompson studied were designed to help students understand fundamental mathematical concepts and ideas. Longitudinal data from middle schools show that students using understanding-based mathematics curriculums demonstrated superior performance in both nonroutine problem solving and mathematical skills. Other studies on high school mathematics reform programs showed that students in these programs developed additional skills and understandings while not falling behind on traditional content.

The second misconception—that content standards and benchmarks should be addressed one at a time through targeted lessons—is often reinforced by state and national standardized tests that typically sample the standards and benchmarks one at a time through decontextualized

items. Thus, the presentation of both tests and standards documents often misleadingly suggests that teachers should teach to standards one bit at a time. From this point of view, teachers certainly do not have enough time to address all standards.

We suggest clustering discrete standards under an umbrella of big ideas. This approach renders teaching more efficient while applying a principle of effective learning derived from research. Bransford and colleagues suggest that

> Experts' 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. (2000, p. 24)

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 for recall or recognition.

Implications

Teaching for meaning and understanding leads to more lasting and significant student learning. Although we have made a strong case against two widely held objections to this approach, we realize that educators must test, debate, and explore these claims in their respective settings.

We therefore encourage you to conduct ongoing action research at the school and district levels that compares the kind of curriculum, assessment, and instruction described here with teaching that focuses on covering content or practicing for standardized accountability tests. Are students more engaged when you frame content in provocative essential questions? Do students show increased understanding when they have some choice in the manner in which they demonstrate their knowledge? Is performance on traditional assessments compromised when learners have the opportunity to apply their knowledge in authentic situations? Do inquiry-based and problem-based instruction energize teachers?

Let the results speak for themselves. We hope that by "uncovering" some of these unfounded claims, we will encourage educators and district leaders to take a more proactive stance and focus on what they *can* do to improve learning in today's standards-based world.

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Large Group Guiding Questions

After reading "You *Can* Teach for Meaning" by Jay McTighe, Elliott Seif, and Grant Wiggins, discuss the following questions.

1. To what extent do you agree with the assertions the authors make in the article?

2. To what extent do you disagree with its ideas?

3. Discuss with other participants how the five principles mentioned in the article are being used in your respective schools or districts.

Small Study Group Guiding Questions

After reading and debating the assertions made in "You *Can* Teach for Meaning" by Jay McTighe, Elliott Seif, and Grant Wiggins, use the following questions to guide further discussion.

1. To what extent does your school or district reflect the major misconceptions mentioned in the article?

2. How can you begin to investigate and explore the strategies and ideas presented in this article?

Independent Study Guiding Questions

After reading and debating the assertions made in "You *Can* Teach for Meaning" by Jay McTighe, Elliott Seif, and Grant Wiggins, use the following questions to reflect on your own classroom, school, or district.

1. To what extent does your classroom, school, or district reflect one or more of the misconceptions presented in the article?

2. To what extent does your classroom, or the classrooms in your school or district, reflect the five key principles identified at the beginning of the article?

Activity 1.3

Key Principles of Understanding by Design

Large Group Directions

Professional development groups viewing this strand may benefit from referring to the key principles underlying the Understanding by Design framework. Questions to Explore Key Principles will help focus discussion.

Small Study Group Directions

Small study groups can use each of the key principles as a catalyst for further study, investigation, and discussion. Individuals or pairs of participants might take one or two of the principles and investigate the research underlying those principles. In turn, they can share their conclusions and ideas with the rest of the small study group.

Independent Study Directions

Individuals participating in independent study may wish to use the Key Principles Self-Reflection Questionnaire to analyze how their school addresses the key principles of Understanding by Design.

Key Principles of Understanding by Design

1. Teaching and learning for understanding is qualitatively different than teaching and learning that emphasizes knowledge-recall learning only.

2. Understanding can be manifested in a variety of ways or "facets," including students' ability to explain, interpret, and apply what they are learning as well as demonstrate such behaviors as empathy, perspective, and self-knowledge.

3. The best instructional designs employ a backward design process, with Stage 1 emphasizing desired results; Stage 2, the design of assessment evidence; and Stage 3, learning activities.

4. Standards need to be "unpacked" via a consensus-building process that determines which standards (or aspects of standards) are just worth being familiar with, which standards describe what all learners should know or be able to do, and which standards articulate enduring understandings.

5. Desired results should cue students into the "big ideas" of what they are studying. Teachers can employ such cueing tools as enduring understandings (statements of understanding) and essential questions (open-ended, interpretive questions that frame students' exploration of key ideas and principles).

6. Assessment, teaching, and learning are inextricably linked. Instructors need to use a combination of diagnostic, formative, and summative assessments to monitor student achievement and differentiate instruction to promote the learning of all students.

7. Effective assessment should be balanced, creating a photo album rather than a photograph of student achievement results. Such balanced assessments should include tests and quizzes that contain constructed-response test items, reflective assessments (e.g., logs, journals, peer reviews), academic prompts, and culminating performance tasks and projects.

Key Principles of Understanding by Design (*continued*)

8. Effective assessment should be anchored around authentic culminating performance tasks and projects, what Understanding by Design calls G.R.A.S.P.S. (authentic, real-world goals, roles, audience, situation, products and performances, and standards).

9. Students should play an ongoing and active role in self-monitoring and self-evaluation. They need to use rubrics and scoring guides to self-regulate, revisit, and refine their own learning.

10. Key instructional design principles should focus around elements of W.H.E.R.E.T.O.

    - Students should know where they are going and why they are going there [W].
    - At the beginning of key instructional episodes, students' imagination and interests should be hooked and engaged [H].
    - Instruction should be exploratory and equip all learners for success [E].
    - Students should rethink and revise their learning process [R].
    - Students should evaluate their level of understanding [E].
    - Teachers should differentiate or tailor teaching and learning based on students' readiness levels, interests, and learning style preferences [T].
    - Learning activities should begin with experiential learning opportunities that help students build toward transfer and independent application [O].

Questions to Explore Key Principles

Use the key principles to consider the following questions.

1. To what extent are these principles operational in your school or district?

2. Which principles should you consider for further professional development to support your school improvement planning efforts?

Key Principles Self-Reflection Questionnaire

Place a check mark in the left-hand column if the principle in the middle column is already operational in your school or district. For the principles that you did not check, list in the right column some starting-point ideas for employing this principle in your school or district.

√	Key Principle	Ideas
	1. Teaching and learning for understanding is qualitatively different than teaching and learning that emphasizes knowledge-recall learning only.	
	2. Understanding can be manifested in a variety of ways or "facets," including students' ability to explain, interpret, and apply what they are learning as well as demonstrate such behaviors as empathy, perspective, and self-knowledge.	
	3. The best instructional designs employ a backward design process, with Stage 1 emphasizing desired results; Stage 2, acceptable assessment evidence; and Stage 3, learning activities.	
	4. Standards need to be "unpacked" via a consensus-building process that determines which standards are just worth being familiar with, which describe what all learners should know or be able to do, and which articulate enduring understandings.	
	5. Desired results should cue students into the "big ideas" of what they are studying. Teachers can employ such cueing tools as enduring understandings and essential questions.	
	6. Assessment, teaching, and learning are inextricably linked. Instructors need to use a combination of diagnostic, formative, and summative assessments to monitor student achievement.	

Key Principles Self-Reflection Questionnaire (*continued*)

√	Key Principle	Ideas
	7. Effective assessment should be balanced, creating a photo album rather than a photograph of student achievement results. Such balanced assessments should include tests and quizzes, reflective assessments, academic prompts, and culminating performance tasks and projects.	
	8. Effective assessment should be anchored around authentic culminating performance tasks and projects, what Understanding by Design calls G.R.A.S.P.S.	
	9. Students should play an ongoing and active role in self-monitoring and self-evaluation. They need to use rubrics and scoring guides to self-regulate, revisit, and refine their own learning.	
	10. Key instructional design principles should focus around key elements of W.H.E.R.E.T.O. • Students should know where they are going and why they are going there [W]. • At the beginning of key instructional episodes, students' imagination and interests should be hooked and engaged [H]. • Instruction should be exploratory and equip all learners for success [E]. • Students should rethink and revise their learning process [R]. • Students should evaluate their level of understanding [E]. • Teachers should tailor teaching and learning based on students' readiness levels, interests, and learning style preferences [T]. • Learning activities begin with experiential learning opportunities that help students build toward transfer [O].	

Independent Study

Activity 1.4

What Have We Learned?

Large Group Directions

The set of ideas and suggestions presented in the Lessons Learned Outline come from a national survey and interview process (Brown, 2004) involving individuals who have used Understanding by Design successfully in their classrooms, schools, and districts. As participants view the program, they may wish to review these ideas from the perspective of how Understanding by Design has evolved since its inception. In particular, they should consider the questions posed in Large Group Lessons Learned.

Small Study Group Directions

Each of the sections of the outline make ideal trigger points for small study groups investigating successful implementation strategies for Understanding by Design. As a whole group or via individual cohorts, small study group members can discuss and debate the issues provided in the Lessons Learned Discussion Topics handout.

Independent Study Directions

Individuals may wish to use the same suggestions presented for small study group activities and use the outline and Lessons Learned Discussion Topics handout as catalysts for self-reflection and self-evaluation.

Lessons Learned Outline

1. Experienced Understanding by Design users tend to
   - Use the Understanding by Design unit design as a regular part of their professional duties.
   - Participate in some form of collaborative follow-up to their initial training, including small study groups, action research cohorts, and peer reviews.
   - Be responsible for helping to synthesize the relationship between Understanding by Design and other district or school accountability initiatives.
   - Articulate Understanding by Design as a framework or language to describe best practices, rather than as a discrete or stand-alone program.
   - Express a clear perception of the connection between design principles of Understanding by Design and universal "best practices" within their field.

2. Successful and sustained Understanding by Design professional development tends to
   - Avoid one-shot sessions with little, if any, follow-up.
   - Emphasize the alignment between Understanding by Design and other district and school-level accountability initiatives, especially standards and accountability testing.
   - Involve all appropriate system stakeholders, not single groups or cohorts.
   - Ultimately involve some form of professional collaboration, including initial small study groups, peer review sessions, and action research projects.
   - Lead practitioners to express the need for "value-added" evaluation studies.

Lessons Learned Outline (*continued*)

3. School and district staff emphasize the alignment of Understanding by Design with other district initiatives by
   - Avoiding the presentation of Understanding by Design as another "required program."
   - Articulating the relationship between Understanding by Design and district standards.
   - Using a content analysis of high-stakes accountability testing designs to articulate areas in which Understanding by Design supports student achievement on those tests.
   - Integrating enduring understandings and essential questions into district curriculum frameworks and standards documents.
   - Describing the underlying design principles of Understanding by Design and their connection to such districtwide initiatives as literacy development, mathematical problem-solving, and differentiated instruction to ensure the success of all student populations.

4. Understanding by Design impacts the curriculum and assessment processes of schools and districts by
   - Providing controlling principles for unifying the articulation of standards and standards implementation.
   - Establishing a technology (via the three-circle process, which addresses content in three ways: the big ideas, what's important to know and do, and what's worth being familiar with) for establishing a viable core curriculum.
   - Suggesting tools and methodologies for unifying curriculum design and avoiding fragmentation.
   - Emphasizing the need for a photo album of assessment results, including constructed-response test items, reflective assessments, academic prompts, culminating performances and projects, and holistic and analytic rubrics.
   - Establishing a coherent set of instructional design principles via W.H.E.R.E.T.O.

Large Group Lessons Learned

From the perspective of how Understanding by Design has changed and evolved since its inception, consider the following questions.

1. To what extent do you agree or disagree with these individuals' ideas and suggestions about successful Understanding by Design implementation?

2. Which of the ideas and suggestions presented here should you emphasize in your school or district as you implement Understanding by Design?

Lessons Learned Discussion Topics

1. As an individual user of Understanding by Design, to what extent do you practice the ideas identified in the Lessons Learned Outline?

2. How successfully does your professional development reflect the principles presented here?

3. How well has your school or district adopted the ideas and suggestions presented?

Activity 1.5

Traditional Versus Teaching for Understanding Approaches

Large Group Directions

Ask participants to use the Comparison Matrix to address the Large Group Comparison Matrix Questions.

Small Study Group Directions

Participants in a small study group can have each group member self-assess using the Comparison Matrix. How would they rate themselves for each? Once all group members have completed the matrix, the Teaching for Understanding elements are assigned to one or more members of the small study group. Members will locate at least one research article dealing with the strategy or principle they are assigned. At the next small study group meeting, members synthesize the key conclusions from their articles and build consensus about the implications of this activity for individual classrooms and the school as a whole.

Independent Study Directions

Individuals using the independent study first assess themselves for each of the elements presented in the Comparison Matrix, then answer the Independent Study Follow-Up Questions.

Comparison Matrix

A Traditional Classroom		A Teaching for Understanding Classroom	
1. The instructor and the content being taught are the primary focus.	☐ Frequently ☐ Occasionally ☐ Never	1. The student is the primary focus.	☐ Frequently ☐ Occasionally ☐ Never
2. Curriculum is organized in a discrete fashion, with topics and segments presented in a linear manner.	☐ Frequently ☐ Occasionally ☐ Never	2. Curriculum is conceptually organized around big ideas, enduring understandings, and essential questions.	☐ Frequently ☐ Occasionally ☐ Never
3. Emphasis is given to "covering" the content, ensuring that all standards are treated equally.	☐ Frequently ☐ Occasionally ☐ Never	3. The instructor emphasizes "power standards" requiring students to demonstrate depth of understanding for key elements of the curriculum.	☐ Frequently ☐ Occasionally ☐ Never
4. Students are told lesson objectives but do not discuss the purpose or overall direction of lessons and units.	☐ Frequently ☐ Occasionally ☐ Never	4. The instructor continually assesses if students understand where they are going and why they are going there.	☐ Frequently ☐ Occasionally ☐ Never
5. Diagnostic assessment occurs at the beginning of grading periods.	☐ Frequently ☐ Occasionally ☐ Never	5. Diagnostic assessment is ongoing, with the instructor constantly monitoring students' readiness levels.	☐ Frequently ☐ Occasionally ☐ Never
6. The instructor assumes that all students are interested and engaged.	☐ Frequently ☐ Occasionally ☐ Never	6. The instructor monitors and continually "hooks" and engages students by appealing to their interests and learning style preferences.	☐ Frequently ☐ Occasionally ☐ Never

Comparison Matrix (*continued*)

A Traditional Classroom		A Teaching for Understanding Classroom	
7. Coaching is provided as individuals and students appear to need it.	☐ Frequently ☐ Occasionally ☐ Never	7. Coaching is a consistent part of learning activities, with students constantly monitored for their growing levels of understanding, transfer, and independent application of content.	☐ Frequently ☐ Occasionally ☐ Never
8. Students are asked to be self-reflective.	☐ Frequently ☐ Occasionally ☐ Never	8. Students are frequently asked to revise and rethink their learning.	☐ Frequently ☐ Occasionally ☐ Never
9. The instructor asks students to evaluate their level of understanding at the conclusion of instructional units and grading periods.	☐ Frequently ☐ Occasionally ☐ Never	9. Students are given frequent opportunities to evaluate their level of understanding through presentations and peer response group activities.	☐ Frequently ☐ Occasionally ☐ Never
10. The instructor tends to treat all students alike, with little differentiation of the learning process.	☐ Frequently ☐ Occasionally ☐ Never	10. The instructor consistently differentiates instruction to address all learners' readiness levels, interests, and learning style preferences.	☐ Frequently ☐ Occasionally ☐ Never
11. Lessons and units are organized so that students demonstrate achievement of basic knowledge and skills, with little opportunity to demonstrate independent application and transfer of knowledge.	☐ Frequently ☐ Occasionally ☐ Never	11. Lessons and units are organized so that students move from initial inquiry and experience toward growing levels of conceptual understanding and independent application and transfer.	☐ Frequently ☐ Occasionally ☐ Never

Large Group Comparison Matrix Questions

Using the Comparison Matrix, consider the following prompts.

1. After you rate yourself for each element, determine whether your classroom style is more of a traditional approach or more aligned with Understanding by Design principles.

2. As a group, consider the commonalities and differences in your responses.

3. As a group, build consensus about which of the elements seem to be operational in a majority of your classrooms and which are in need of further discussion and attention.

Independent Study Follow-Up Questions

1. On which of the elements are you traditional?

2. On which of the elements do you consider yourself "teaching for understanding"?

3. How would you explain your ratings?

4. Are there key strategies and principles you might use more extensively? Why?

Activity 1.6

Characteristics of Understanding by Design Students

Large Group Directions

As part of this strand's discussion of student understanding and its relationship to Understanding by Design, participants can use their responses to A List of Student Characteristics associated with the process of understanding to consider the Student Characteristics Questions handout.

Small Study Group Directions

Small study groups can use their responses to A List of Student Characteristics as catalysts for discussion and investigation. Each characteristic can become the basis for reading, debating, and investigating, including a focus on how students as a whole can be supported in displaying these characteristics and how disaggregated student populations (e.g., special education, gifted and talented, English as a second language, socioeconomically disadvantaged) can receive coaching and support to demonstrate these behaviors.

Independent Study Directions

For independent study, individuals can use their responses to A List of Student Characteristics to reflect on students they've worked with and use the following questions to guide them through the activity:

- To what extent do your students demonstrate these characteristics?
- To what extent are there areas in which you would like to see improvement?

This self-reflection process can become the basis for investigating the Understanding by Design in the Classroom strand in this program that deals with the three stages of backward design within representative elementary, middle, and high school classrooms.

A List of Student Characteristics

Student Characteristic	Highly Evident	Evident	Somewhat Evident	Not Evident
1. All students demonstrate a clear understanding of where they are headed and why they are going there.				
2. All students can explain the purpose of a particular lesson and its key structural elements.				
3. All students can describe the connection between their learning activities and the standards for which they are responsible.				
4. All students can identify and explain the big ideas and essential questions that are at the heart of the content they are studying.				
5. All students demonstrate the ability to explain and interpret the significance of the key facts, concepts, generalizations, rules, and principles they are learning.				
6. All students demonstrate a capacity for independent application of the skills, procedures, and processes they are acquiring.				
7. All students can describe, analyze, and evaluate contrasting perspectives associated with the controversial ideas, issues, and events they are studying.				
8. Where appropriate, all students demonstrate empathy for individuals and groups they are studying.				
9. All students demonstrate a clear understanding of the criteria being used to evaluate their achievement.				
10. All students play an active role in evaluating their own performance and its growth relative to identified standards.				
11. All students demonstrate proficiency in expressing their achievement in multiple modes of assessment (e.g., tests, quizzes, academic prompts, reflections, culminating performance-based projects).				
12. All students are active learners who rethink and revise their growing knowledge, skills, and understandings.				

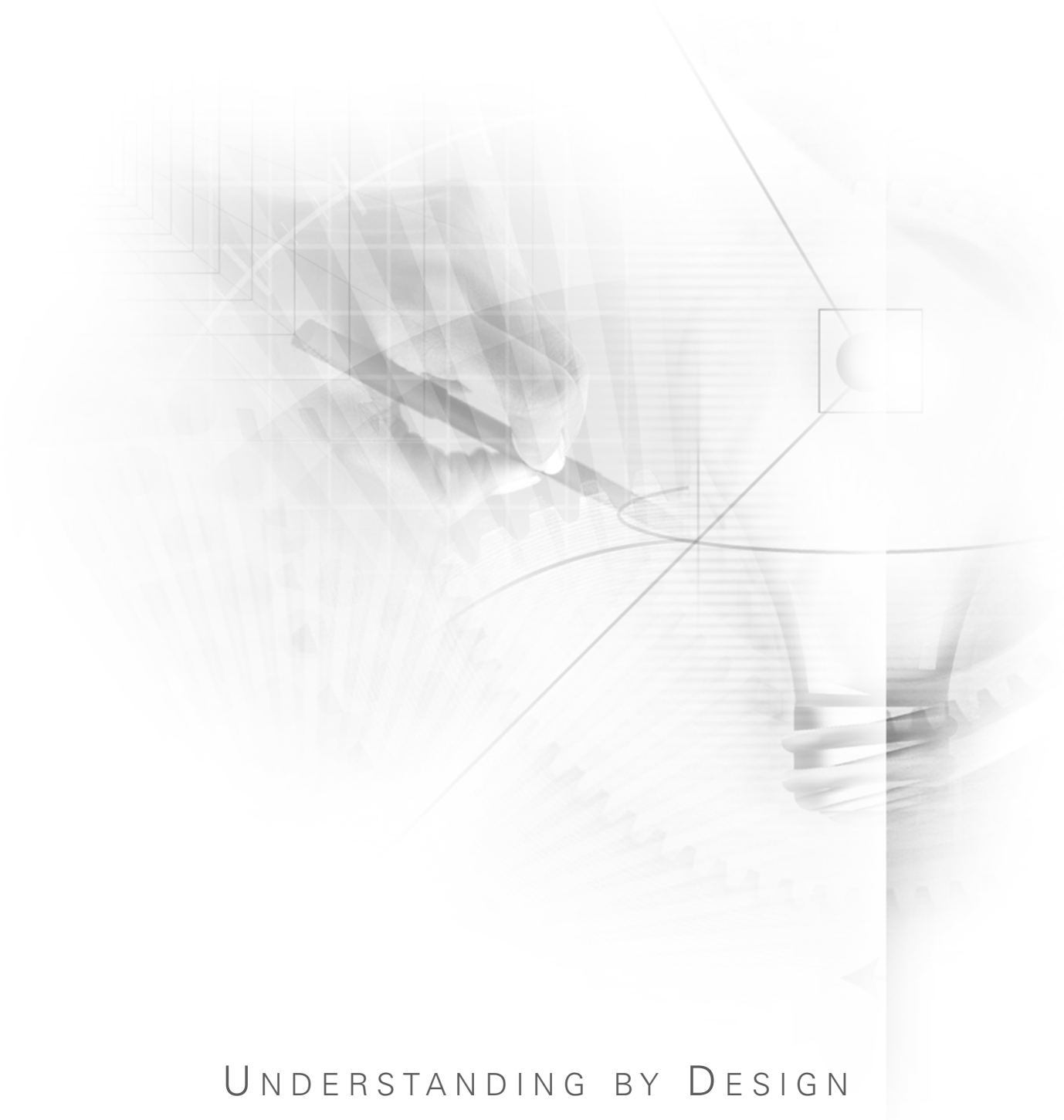
Student Characteristics Questions

Use A List of Student Characteristics to consider the following questions.

1. How well do a majority of your students reflect the characteristics presented in the handout?

2. Which of these characteristics need additional emphasis and work?

3. How can you collaborate to improve students' demonstration of these behaviors and attitudes?



Understanding by Design in the Classroom

Moving Forward with Understanding by Design

Understanding by Design in the Classroom

This strand provides an exploration of what Understanding by Design looks like in elementary, middle, and high school classrooms. Specifically, participants will be able to view examples of

• **Stage 1: Identify Desired Results**
What should students know, understand, and be able to do? In Stage 1, consider the goals, examine content standards, and review curriculum expectations.

• **Stage 2: Determine Acceptable Evidence**
What assessment evidence will we accept as evidence of student understanding? In Stage 2, consider a variety of evidence, including both formative and summative assessments. Teaching for understanding means assessing for understanding.

• **Stage 3: Plan Learning Activities**
What sequence of learning activities will lead students to an understanding of the big ideas? In Stage 3, consider the knowledge and skills that students will need to know to perform effectively. Identify the materials and resources that will best meet the goals set out in Stage 1.

With a combination of video excerpts, professional development activities, and suggested readings, this strand explores the following questions:

- What can you observe in classrooms successfully implementing design principles and strategies of Understanding by Design?
- How do successful educators promote student understanding and transfer?
- To what extent can you expect to observe different levels of use and complexity as educators deepen their understanding of the Understanding by Design framework?

Activity 2.1

Previewing and Postviewing

Large Group Directions

In this strand, participants will have the opportunity to view examples of the three stages of backward design in various content areas and grade levels.

1. As part of their viewing process, have participants complete the "K" and "W" sections of the K-W-L Chart provided. At the conclusion of their viewing process, have them complete the "L" section, summarizing what they have learned—or had reinforced—about the three stages of backward design, including any potential differences they may have observed at the elementary, middle, and high school levels.
2. If this part of the program is used over time in multiple professional development sessions, participants may wish to use the Backward Design Observation Checklist included. This observation tool can be used to guide and inform participants' viewing for each of the three stages of backward design.

Small Study Group Directions

Small study groups can use this strand as a basis for multiple discussion sessions, each organized around one of the three stages of backward design. They can use the Backward Design Observation Checklist as a catalyst for guiding their discussion of Stage 1, Stage 2, and Stage 3. A major focus of small study group discussion might center on the following question: To what extent do the classrooms you observe here vary in their levels of use and implementation of key Understanding by Design components and strategies?

At the conclusion of each small study group session, members can evaluate the extent to which the behaviors observed are present in their own classrooms, schools, or districts.

Independent Study Directions

Individuals engaged in independent study of this strand can use the Backward Design Observation Checklist to guide and inform their viewing and self-reflection.

K-W-L Chart

K = What do you think you KNOW about the backward design process?	W = What do you WANT to learn about the backward design process?	L = What have you LEARNED about the backward design process? What misconceptions and misunderstandings did you overcome?

Backward Design Observation Checklist

Use the checklist to evaluate the quality and levels of use of the three stages of backward design in the various elementary, middle, and high school classrooms presented in this strand. You may wish to apply the following rating scale to each element:

3 = Highly evident with effective use in all episodes.
2 = Some evidence of effective use, but some episodes need further development.
1 = Minimal evidence of effective use in the episodes.
0 = No evidence of effective use in any of the episodes.

Stage 1: Desired Results			
Backward Design Element	**Elementary School**	**Middle School**	**High School**
1. The teaching episodes clearly reflect emphasis on key "power standards" and established goals.			
2. All learners are clear about the "big ideas" of the lesson or unit.			
3. The instructors communicate and organize learning activities around conceptual cues, including essential questions.			
4. Lesson and unit objectives clearly articulate what all learners are expected to know and do, with emphasis on *one or more* of the six facets of understanding (i.e., explanation, interpretation, application, perspective, empathy, self-knowledge).			

Backward Design Observation Checklist (*continued*)

Stage 2: Assessment Evidence			
Backward Design Element	**Elementary School**	**Middle School**	**High School**
1. The collection and analysis of assessment evidence are ongoing.			
2. Students are actively engaged in the assessment process and show a clear understanding of the desired results they are responsible for.			
3. Assessments appear to be "balanced," with the instructors collecting a range of evidence to monitor student achievement of desired results.			
4. Assessment activities appear to help students move toward growing levels of independent use and transfer of key content.			
5. The activities presented reinforce students' ability to engage in culminating performance tasks and projects.			
6. Overall, the instructors appear to use assessment for a variety of purposes, including diagnostic, formative, and summative assessments.			

Backward Design Observation Checklist (*continued*)

Stage 3: Learning Activities			
Backward Design Element	**Elementary School**	**Middle School**	**High School**
1. The instructors appear to use activities to monitor and diagnose how individual students are progressing relative to desired results.			
2. At the beginning of instructional episodes, the instructors "hook" students' interest by engaging their imaginations and promoting their sense of authenticity and purpose for what they are doing.			
3. Students are equipped for success via exploration and inquiry and teacher and peer coaching.			
4. Students are asked to revise and rethink their learning.			
5. At key points in the episodes, students have opportunities to evaluate their level of understanding using a variety of modes of presentation.			
6. Where appropriate, the instructors appear to tailor learning activities to accommodate individual students' readiness levels, interests, and learning styles.			
7. Overall, the episodes reflect students' growth toward conceptual understanding, transfer, and independent use of content in authentic, real-world settings.			

Independent Study Guiding Questions

1. As part of your viewing process, complete the "K" and "W" sections of the K-W-L Chart provided in this activity. At the conclusion of your viewing process, complete the "L" section, summarizing what you have learned—or had reinforced—about the three stages of backward design, including any potential differences you may have observed at the elementary, middle, and high school levels.

2. As you observe the various classroom scenes using the Backward Design Observation Checklist, what can you conclude about the process of backward design as it is implemented in classrooms at the elementary, middle, and high school levels?

3. What recommendations could you make for your own school or district, based on what you observed from the classroom scenes and your related analysis?

Activity 2.2

Aspects of Backward Design

Large Group Directions

This activity contains a series of articles, with accompanying guiding questions that address various aspects of the three stages of backward design. For large groups, two approaches to using these articles may be appropriate:

1. At the conclusion of viewing the video content, participants can jigsaw the articles, forming expert groups for each article with a follow-up summary to the large group: What does the article suggest about key elements of the backward design process?
2. The articles can also be used as a follow-up activity to enhance whole-group professional development. Individuals or teams, for example, might review each article and be prepared to offer summarizing conclusions for the large group at their next training session.

Small Study Group Directions

The rich variety of articles with accompanying guiding questions included in this strand offer an ideal set of resources for small study groups. For example, each article could be used as a catalyst for a small study group seminar.

Small study group participants can all read the same article or rely on individuals to serve as group facilitators for discussion of individual articles. Use the Article Summaries to decide who will read which article, then use the Overall Guiding Questions to focus the discussion.

Independent Study Directions

The articles with accompanying guiding questions in this section offer a varied range of resources for independent study and self-reflection on the three stages of backward design. In addition to the guiding questions included for each reading, individuals reading these articles might use the Overall Guiding Questions for further reflection.

Article Summaries

"The Most Important Data" by Leslye S. Abrutyn
By targeting an area for improvement and gathering information directly from students, this district sets a clear direction for teaching and learning.

"Linking Formative Assessment to Scaffolding" by Lorrie A. Shepard
Learning theory supports four effective strategies common to both formative assessment and scaffolding.

"Looking at Student Work" by Georgea M. Langer and Amy B. Colton
Collaborative analysis of student learning can be the lifeblood of school improvement.

"Helping Students Understand Assessment" by Jan Chappuis
Formative assessments promote learning when they help students answer three questions: Where am I going? Where am I now? and How can I close the gap?

"My Year as a High School Student" by Deborah Waldron
A stint in students' shoes helped a science teacher examine her own practice.

"Seven Practices for Effective Learning" by Jay McTighe and Ken O'Connor
Teachers in all content areas can use these seven assessment and grading practices to enhance learning and teaching.

"A Time and a Place for Authentic Learning" by Joseph S. Renzulli, Marcia Gentry, and Sally M. Reis
Challenge students to solve everyday problems in meaningful contexts, and the learning will take care of itself.

"The Engaged Classroom" by Sam M. Intrator
Nothing deflates a teacher more than bored students. Here's how teachers can get teens energized about learning.

Overall Guiding Questions

Use the following questions to reflect on the article you've read.

1. What does the article suggest about the connections and relationships between and among Stages 1, 2, and 3 of the backward design process?

2. To what extent do you agree or disagree with the ideas and recommendations in the article?

3. How might you make use of the suggestions and ideas presented in the article to enhance your professional activities and work with staff and students?

The Most Important Data

Leslye S. Abrutyn

By targeting an area for improvement and gathering information directly from students, this district sets a clear direction for teaching and learning.

The good news for educators is that more data than ever are available to help us improve student achievement. The bad news is that we are often overwhelmed with so much data that we hardly know where to begin. We're unclear about which data to use, who should use it, and how to use it effectively.

In Penn-Delco School District, we have very good news about data. We use a one-day process to gather authentic, rich data that has not only propelled student achievement to new levels but also transformed our schools into collaborative communities focused on results.

Located in a suburban area outside Philadelphia, Penn-Delco serves approximately 3,400 students in its four elementary schools, one middle school, and one high school. In the late 1990s, while attending a regional meeting, a small group of our administrators viewed a video demonstrating a walk-through process developed by Lauren Resnick from the Institute for Learning at the University of Pittsburgh. A *walk-through* is an organized school or classroom tour focused on teaching and learning. The walk-through process developed by Resnick focuses on looking at student work and talking with students to determine what they can express about their learning. We realized that this strategy could hold the key to school improvement.

How We Gather Data

In our district, the walk-through process begins each August when a committee of teachers at each school reviews the data from a variety of assessments—the Pennsylvania System of School Assessment (PSSA), the TerraNova standardized achievement test, and district assessments—to identify areas that need improvement. Each school chooses one such area to tackle and develops specific questions to ask students.

In the fall, each school conducts the first walk-through of the year. Administrators, teachers, and invited community members walk through the school, interviewing every student about his or her learning. The process varies from school to school. In most cases, the school sets up desks in the hallway and pulls students out of their classrooms individually to be interviewed. A typical interview lasts about five minutes. All students can be interviewed within a few hours if the school can sign up and train enough interviewers.

The teacher committee collects the data sheets and meets to analyze student responses and to target priority areas for improvement. Usually the committee meets the same day and tallies the data in an hour or two, either manually or by computer. At the next faculty meeting, the committee provides the teaching staff with the results and its recommendations. The school now has a focus for the year, and teachers begin in earnest to work on the committee's recommendations. The following spring, each school conducts a second walk-through to determine how much growth the school has made in the focus area.

Identifying Questions, Getting Answers

Over the years, our schools have targeted many topics for investigation. Math problem solving, for example, is vital and lends itself well

Source: From "The Most Important Data," by L. Abrutyn, 2006, *Educational Leadership, 63*(6), 54–57. Copyright 2006 by the Association for Supervision and Curriculum Development.

to this process. The walk-through team might ask students to name and describe as many math problem-solving strategies as possible; to identify the problem-solving strategies they would use for several sample math problems; or to actually solve a problem and explain the strategy they used.

If a teacher committee has analyzed test results and found that students are weak in reading comprehension, the committee might develop a list of walk-through questions centering on the components of this skill. The first question on the interview sheet might simply ask students to list various reading strategies they use. The responses to this question alone can yield powerful data for our teachers: Can students list six or seven strategies and explain them, or do they struggle to list even a few? Another item might ask students to explain when and how they should use particular strategies. If students cannot explain how to predict, for example, then teachers have a clear indication that they need to devote more classroom time to this strategy.

Some schools have targeted the writing process. The interviewer may have each student share a piece of writing from his or her portfolio, asking the student to explain why this is his or her best piece and to discuss how the piece is organized. Because our students learn that different kinds of writing are organized in different ways, this question is particularly revealing. At one school that focused on writing, the results of the spring walk-through revealed the following:

- *Strength*: All grades have improved in their understanding of the writing process. Younger grades are especially strong in prewriting and initial drafts.
- *Need*: Some students still lack an understanding of the writing process. The committee recommends having the steps of the writing process posted in all classrooms and continuing to model and discuss these steps.
- *Strength*: Students are able to verbalize the importance of details when writing and are able to look at a piece they have written and add more details.
- *Need*: Some students still associate content with length and are vague about how to use details. The committee recommends using anchor papers to serve as models of proficient performance in this area.
- *Strength*: Younger students understand the concept of beginning, middle, and end.
- *Strength*: Students mention graphic organizers as a strategy to help with organization.
- *Strength*: Older students understand the importance of topic sentences and paragraph formation.
- *Need*: Younger students understand organization but need more practice. The committee recommends that teachers work on paragraph development and point out organization when students are reading passages.

This list of results suggests the level of ownership teachers have in understanding the strengths and needs of their students. The recommendations are teacher-generated, and therefore teachers have a strong investment in following them.

At Coebourn Elementary School, Principal Don Pullano explains that the walk-through process helped faculty members identify areas of needed improvement in math and gave them the tools and the ownership to address their findings. At a fall math walk-through, for example, it became evident that students did not thoroughly understand various math problem-solving strategies (such as *work backwards, guess and check*, and *draw a table or chart*). To address this need, the staff decided to give all students a packet of problem-solving strategies. Each page in the packet listed a different strategy with an illustration. Students received instruction on strategies and used the packet at school and at home throughout the school year.

The staff also addressed this finding by creating word problem sheets with a blank line at the top of the page where students were required to write the math problem-solving strategy

they planned to use. This practice became so ingrained in the culture of the school that if a worksheet or problem came from a textbook, students got into the habit of drawing their own line at the top of the page and filling in the strategy they were going to use.

A third way in which the staff worked to improve student problem solving was to begin each math class with a "Problem of the Day," using an overhead projector to model the various strategies.

Another finding of the Coebourn walk-through was that students lacked necessary knowledge of basic math facts. In response to this finding, teachers provided flash cards for students to take home, as well as training sessions teaching parents the proper way to drill students on math facts using flash cards.

Coebourn's math walk-through also found that students rushed when answering multiple-choice questions and did not use elimination strategies to narrow their choices. The staff's solution: All teachers would provide extra points for students who physically crossed out incorrect answer choices or labeled incorrect answer choices as "far off" or "off."

A Focus on Student Learning

Walk-throughs have, first and foremost, transformed our district's schools by bringing into sharper focus not only what teachers are teaching but also what students are learning. This, in effect, is a shift toward a more results-oriented school district. A school's first walk-through forever changes the lens through which it views learning. All eyes are on students—Do they understand the goals for the classroom? Can they verbalize them? The interviews powerfully increase students' investment in the learning process. When a number of adults spend an entire day talking with them about their learning, students realize that school improvement revolves around them. In the days following a walk-through, the excitement among students is palpable.

Second, teachers and administrators have gained a new insight: It doesn't matter how well a lesson plan is written or how well the lesson is taught if students cannot clearly articulate the lesson's content and purpose. This epiphany has transformed administrators' informal classroom visits. Rather than watch the teacher, the administrator will usually now look first at students to see whether they are engaged and actively participating in the learning. Next, the administrator will walk up to a student and ask, "What are you working on?" followed by, "Why are you doing that?"

Third, walk-throughs provide the most important data of all—the data closest to the students. The process produces authentic, fresh, clear information that gives teachers immediate guidance about where they must direct their efforts. This information does not require advanced technology, data warehousing, or advanced statistical skills. Yet it empowers students, teachers, and administrators, and as a result, the entire school. Schools use walk-through data to direct their plans for improving instruction. Professional staff development for the year is integrally tied to the walk-through process.

Lessons from Experience

School leaders who hear about the walk-through process often comment, "I'm concerned that my teachers will see walk-throughs as a threat. How can I overcome possible resistance and get started in my district?" Our experience has taught us the value of first sending a team of teachers and administrators to visit a district that is using the process successfully. In our case, the Palisades School District in Kintnersville, Pennsylvania, graciously included us in an actual walk-through. We now do the same for teams of educators from other districts. Every educator, without exception, finds the experience exhilarating and inspiring.

After you take a team to visit another district and experience the process, we recommend that you invite schools in your district to implement walk-throughs on a voluntary basis, perhaps as a pilot program. This strategy will ensure that only the most positive and receptive teachers

participate at the beginning. They will then be able to tell colleagues about their experience. You should also explain to teachers that walk-throughs are not used to evaluate them. In fact, the process will help teachers reach the goal they all aspire to—better student achievement. Involving the teacher association leadership is important as well.

We've also learned that no matter how the schedule goes on walk-through day, we should never leave out any students. Our students are so excited to participate and eager to speak with an adult that they are devastated if time runs short. We have now refined our scheduling to make sure that all students participate. We have learned to field-test our questions by trying them out on a few students first. No matter how clear we think the questions are, we sometimes find that they are not clear to the students or do not get at the heart of what we want to find out. We have also developed better processes for analyzing the data. Penn-Delco's principals now meet annually as a group to share information from the walk-throughs in each school so that they can learn from one another.

Transforming Professional Practice

We have discovered that the walk-through process leads to many positive outcomes that effective schools strive to achieve. These include authentic use of data, a culture of collegiality among staff, reflective discussions about teacher practice, a focus on student achievement, significant and ongoing staff development, a focus on standards, increased student engagement in the learning process, and a strong desire among staff to find out what works in the classroom.

One gauge of the success of walk-throughs in Penn-Delco School District is our standardized test scores. The trend line in every grade has been up. At certain grade levels, the increase in national percentiles during the last seven years has been as much as 20 percentile points, moving us from around the 50th percentile nationally to the 70th and 80th percentiles. Although many initiatives have undoubtedly contributed to that success, we feel confident that walk-throughs have been key.

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Guiding Questions for "The Most Important Data"

1. Why does the author emphasize the need for gathering information directly from students as part of improvement efforts in a school or district? How does she attempt to prove that by doing this, a district "sets a clear direction for teaching and learning"?

2. The walk-through process has become a significant part of many school districts' approach to data gathering and analysis. What are the key elements of this process in the Penn-Delco School District? To what extent does your school or district model the elements of the process the author describes?

3. How does the Penn-Delco School District use its data-gathering process to identify strengths and needs as part of its continuous improvement process? How does this process contribute to teacher ownership of key areas of strength and need?

4. What are the contributions to student learning the author identifies? To what extent do you agree or disagree with her assertions?

5. Abrutyn cites a series of lessons the district has learned from gathering and analyzing student achievement data. How does your school or district practice these "lessons learned"? To what extent would your school or district benefit from addressing one or more of these lessons more extensively?

Linking Formative Assessment to Scaffolding

Lorrie A. Shepard

Learning theory supports four effective strategies common to both formative assessment and scaffolding.

Some people roll their eyes when ivory tower academics talk theory. But a good theory can be immensely practical. Learning theory provides coherence and big-picture understandings, especially when we're trying to change our teaching practices. Learning theory also helps us decide what to do when we can't rely on past experience. Moreover, it provides a basis for fitting together separate research-based strategies into a pedagogical approach that really works.

Take *formative assessment* and *instructional scaffolding*, for example. When you consider the terms in light of sociocultural learning theory and Vygotsky's (1978) zone of proximal development, they're essentially the same thing. Occurring in the midst of instruction, formative assessment is a dynamic process in which supportive adults or classmates help learners move from what they already know to what they are able to do next, using their zone of proximal development.

Moving Learning Forward

Present-day learning theories and research findings have profound implications for teaching practice because they tell us how intelligence develops. Contemporary learning theories—including constructivism, cognitive theory, and sociocultural theory—share several core principles. Most important are two ideas: that we construct knowledge, and that learning and development are culturally embedded, socially supported processes.

Children develop their abilities to think and reason in the same way that they learn language, gestures, interpersonal behaviors, manners, and tastes—through their social interactions with family and community. According to Vygotsky's (1978) cultural theory of development, any aspect of a child's cognitive development occurs twice: first on the social plane in interaction with others, and then on the psychological or internal plane. Whatever language and logical structures children use in their thinking, they first learned through social interactions.

Vygotsky's zone of proximal development model explains how this development occurs. The zone of proximal development is the space between

> the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers. (1978, p. 86)

Learning in the zone of proximal development is a joint activity in which the adult simultaneously keeps an eye on the goal of fully proficient performance and on what the learner, with assistance, is currently able to do. In the case of language development, the process is natural and almost invisible as parents encourage and support their children's increasingly competent efforts. Reciprocal teaching (Palincsar & Brown, 1984), which targets reading comprehension, is an example of a formal strategy used to help students develop their language skills.

Source: From "Linking Formative Assessment to Scaffolding," by L. A. Shepard, 2005, *Educational Leadership, 63*(3), 66–70.
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Terms in Sync

Scaffolding and formative assessment are strategies that teachers use to move learning forward in the zone of proximal development. Scaffolding refers to supports that teachers provide to the learner during problem solving—in the form of reminders, hints, and encouragement—to ensure successful completion of a task. An important feature of scaffolding, especially in authentic, apprenticeship contexts, is keeping the task whole—"controlling those elements that are beyond the learner's capacity" (Wood, Bruner, & Ross, 1976, p. 90).

For example, when a child is first learning to sew or set the table, adults may step in and help with the trickiest or most difficult part—threading the needle or taking the breakable glasses down from the top shelf—but nevertheless, the child completes the real task. In classrooms, teachers help students with their research before sending them to the library on their own. When a student is stuck because he or she can't find information on a given topic, the teacher may suggest a new search term or help the student narrow the topic, but in the end, the student completes the research process on his or her own. Gradually, as competence increases, the teacher cedes more control to the learner. To be successful, the learner must also come to understand and take ownership of the goal.

Formative assessment uses insights about a learner's current understanding to alter the course of instruction and thus support the development of greater competence. From a sociocultural perspective, formative assessment—like scaffolding—is a collaborative process and involves negotiation of meaning between teacher and learner about expectations and how best to improve performance.

When D. Royce Sadler wrote his seminal paper on formative assessment in 1989, he was trying to show why students so often failed to improve, even when teachers provided accurate feedback. He argued that it was insufficient simply to point out right and wrong answers to students. For assessment to be "formative," a student must

- Come to hold a concept of quality roughly similar to that of the teacher.
- Be able to compare the current level of performance with the standard.
- Be able to take action to close the gap.

According to Sadler, the teacher could help the student internalize quality criteria by translating them "from latent to manifest and back to latent again" until these criteria become "so obviously taken for granted that they need no longer be stated explicitly." Sadler wanted to develop evaluative expertise in students so they could become proficient at monitoring their own learning. Like scaffolding, this kind of classroom interaction can foster intrinsic motivation as well as cognitive and metacognitive learning.

The Link Between Assessment and Research

The following four strategies illustrate the strong connection between formative assessment and research on learning. We must keep in mind, however, that educators will not achieve the benefits of formative assessment for learning simply by implementing a string of promising techniques or by using them mechanistically. Research-inspired strategies are not likely to be effective until they are part of a larger cultural shift in which teachers and students jointly take up learning as a worthy endeavor (Shepard, 2000).

Eliciting Prior Knowledge

Students build new understandings—about anything from mathematics to video games—by making sense of new experiences in light of what they already know. In this context, Tharp and Gallimore (1988) offered the metaphor of weaving: We understand new information only when it has been "woven into our *system* of meanings and understandings" (p. 109). Using sociocultural theory, Tharp and Gallimore developed the concepts of responsive teaching and instructional conversations to describe

how teachers can assist learning by eliciting students' relevant knowledge.

Teachers should not think of prior-knowledge assessment as a discrete pre-test to use from time to time. Rather, it should be common classroom practice. We should routinely ask ourselves what we already know that will help us solve a problem or learn from a new unit of study. For example, with Ogle's (1986) K-W-L technique, teachers ask students to post on a chart what they already *know* (K) and, through discussion, establish what they *want* (W) to learn. At the end of the activity, students discuss and summarize what they have *learned* (L). Knowledge-activation routines like this help develop students' metacognitive abilities while providing relevant knowledge connections for specific units of study.

Similarly, Moll, Amanti, Neff, and Gonzalez (1992) collaborated with teachers to identify student "funds of knowledge" as another way to draw connections between student learning experiences in and out of school. For example, a teacher who made a home visit observed a child selling Mexican candy to a neighbor and developed a unit using candy as a theme. Students studied the ingredients used to make candy and discovered the differences between the artificial flavors and coloring used in U.S. candies and the vegetable dyes and real fruit used in Mexican ones.

Routinely eliciting and building on prior knowledge can become part of the larger cultural shift required to establish a learning classroom. In a recent study of new formative assessment practices, Black and Wiliam (2004) provided an example of the power of new norms:

> One class, subsequently taught by a teacher not emphasizing assessment for learning, surprised the teacher by complaining, "Look, we've told you we don't understand this. Why are you going on to the next topic?" (p. 35)

Providing Effective Feedback

We think of feedback as essential for learning. Surprisingly, in a comprehensive review of feedback, Kluger and DeNisi (1996) found that one-third of the studies showed negative effects—feedback about performance actually harmed learning outcomes. According to Kluger and DeNisi, positive learning outcomes were more likely when feedback focused on features of the task—such as how the student could improve in relation to the standards—and emphasized learning goals instead of lavishing nonspecific praise or making normative comparisons. In motivational literature, *learning goals* refer to learning for the sake of mastering a skill and becoming competent—intrinsic motivation. In contrast, *performance goals* refer to performing a task to please someone else or to get good grades—external motivation. In classrooms, the kind of task-specific feedback that helps learning might be, "Great, you told us about the most important thing that happened in the story," or "Try to give more detail about why the puppet looked scary."

Although sustained, one-on-one interactions are not feasible in the regular classroom, detailed studies of one-on-one tutoring can show us how effective feedback works. For example, Lepper, Drake, and O'Donnell-Johnson (1997) observed that expert tutors are highly selective in how they use feedback. They typically ignore errors that are inconsequential to the solution process, such as spelling errors in an early draft. They forestall errors by offering hints when they perceive that a student is likely to repeat a previous error (for example, when a student reads a word problem aloud with a misplaced emphasis, revealing his or her misunderstanding of the problem). These decisions help maintain student motivation and self-confidence during the feedback process. Consistent with the idea of working in the zone of proximal development and Sadler's point about formative assessment—that students must be able to take action to close the gap between their current and expected performance—

feedback is most effective when it helps move the student forward.

In a study that could provide a feasible model for professional development, Elawar and Corno (1985) worked with mathematics teachers to help them learn how to provide more focused feedback to students. Their feedback training emphasized these guiding questions: What is the key error? What is the probable reason the student made this error? How can I guide the student to avoid the error in the future? As a result of this more focused feedback, student achievement dramatically improved compared with several control classes. In addition, students developed more positive attitudes about mathematics.

Teaching for Transfer of Knowledge

A goal of learning is for students to be able to extend their knowledge and apply it in new situations. However, both research findings and practical experience tell us that school learning is often compartmentalized and inert. In contrast, making connections and constructing meaning are integral to teaching for both transfer and robust understanding. Developing this kind of learning requires attention to metacognition. Classroom practices should include a broader discussion of how students can use specific strategies—not just within the narrow perimeters of a given lesson or set of content—and how they can use insights from previous lessons to generate new knowledge. Students might discuss such questions as "What do we already know about fractions that can help us understand decimals?" or "How is learning about ratios and proportions the same as—and different from—learning about fractions?"

One of the many unfortunate influences of popularized behaviorism on education is its narrow conception of learning objectives and test fairness. For behaviorists, a fair test must correspond exactly to what teachers have taught. However, as the teaching-to-the-test literature has shown, repeated practice with familiar formats reduces the likelihood that students will be able to use their knowledge when they encounter problems posed in even slightly different ways (Shepard, 1997). Teachers shouldn't ask students to answer questions on a summative exam that are fundamentally different from the kinds of questions the students experienced during instruction, but they should foster a classroom culture that challenges students to make connections and apply what they have learned to a broad range of problems. For example, as soon as students show me they've "got it," a new question always follows my congratulatory smile: "Now, have you thought about it *this* way?" When this wider range of questioning is the rule in the classroom, it becomes appropriate to expect extensions, applications, reformulations, and connections on summative examinations.

Teaching Students How to Self-Assess

Student self-assessment is not about saving teachers from the work of grading papers. When used in a way that develops student thinking, it can be a deeply principled practice that serves both metacognitive and motivational purposes. In addition to acquiring specific knowledge and skills, becoming competent in a field of study means learning and internalizing the standards by which others will judge our performance. Posting rubrics so that students can see the features of a good essay helps make criteria accessible, but the real metacognitive work takes place as students begin to learn the meaning of rubric components by trying to interpret them and apply them to their own work. High school students learn what it means to support an argument in a history paper in the same way a 3rd grader learns how to write a good summary of a story—first by receiving formative feedback about essential elements and then by being able to self-critique and check for those elements in their own work.

Self-critique increases students' responsibility for their own learning and can make the relationship between teacher and student more collaborative. In case studies of self-evaluation practices in sites in England and Australia

(Klenowski, 1995), students reported that they came to a clearer understanding of the assessment criteria and became more reflective in their judgments because they knew they would have to discuss how they met the criteria. Students also became more interested in teacher comments and feedback than in grades.

A study by White and Frederickson (2000) illustrates the power of self-assessment. In the context of an inquiry-based science curriculum, students learned to evaluate their own and one another's research by applying specific criteria, such as the degree to which the student's work revealed knowledge of the science and a grasp of the processes of inquiry; was systematic; was carefully reasoned; and used the tools of science. Their judgments had a correlation of 0.58 with teacher ratings, whereas the judgments of control students, who saw the criteria only at the end of the curriculum, had a correlation of only 0.23 with teacher ratings. Compared with students in control classrooms, students who learned to self-assess showed greater gains on an inquiry test, earned higher scores on their research projects, and earned higher scores on the conceptual model test. Impressively, the advantages of learning to use the assessment criteria were greatest for previously low-achieving students, raising their performance to the level of high-achieving students in the control classrooms. White and Frederickson's students became successful in science through scaffolding that emphasized the process of self-assessment.

A Learning Culture

Perrenoud (1991) argued that some students will work hard and thrive on formative assessment, whereas others are "imprisoned in the identity of a bad pupil and an opponent" (p. 92). To counteract this, Perrenoud emphasized that teachers who want to practice formative assessment must "reconstruct the teaching contract" (p. 92). Our aim should be to establish classroom practices that encourage peer assessment, regard errors as opportunities for learning, and promote shared thinking. This implies a profound cultural transformation: classrooms in which both students and teachers focus on learning rather than on grades.

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Guiding Questions for "Linking Formative Assessment to Scaffolding"

1. What are the major arguments the author makes in this article for the importance of formative assessment and instructional scaffolding?

2. In your opinion, how evident are these practices in your current school or district?

3. Shepard underscores the need for experience-based and collaborative problem solving to enhance students' growing understandings and abilities to transfer knowledge. To what extent do you agree or disagree with her assertions about "moving learning forward"?

Guiding Questions for "Linking Formative Assessment to Scaffolding" (*continued*)

4. In spite of its emphasis in assessment literature, the term "formative assessment" is interpreted differently by many educators. In the Terms in Sync section, Shepard identifies three specific criteria for assessment to be formative. What are these criteria? To what extent do you and your fellow educators actively implement these criteria in your work with students?

5. In the Link Between Assessment and Research section, Shepard identifies specific strategies that illustrate a strong connection between formative assessment and research on learning:
   - Eliciting prior knowledge
   - Providing effective feedback
   - Teaching for transfer of knowledge
   - Teaching students how to self-assess

   How do these strategies align with the principles of Understanding by Design and the three stages of the backward design process?

6. Like all the strands in this program, this second strand reinforces the power of Understanding by Design to promote an effective learning organization. In this article, what does Shepard mean by "a learning culture"? How does her portrait of this culture align with Understanding by Design?

Looking at Student Work

Georgea M. Langer and Amy B. Colton

Collaborative analysis of student learning can be the lifeblood of school improvement.

Why do the majority of school improvement efforts fail to develop true learning communities? Because they don't adequately engage teachers in collaborative inquiry where it matters most: in the daily learning-teaching interactions between students and teachers. Our experiences studying teachers' development over the last 17 years have culminated in what we refer to as collaborative analysis of student learning (CASL), a particular form of learning community in which teachers discover the relationship between their instruction and student performance on classroom assessments and other samples of student work (Langer, Colton, & Goff, 2003). We define student work as any data or evidence collected by teachers that reveals information about student learning. Such evidence can come from teacher observations, student performances, writing samples, classroom assessments, and standardized tests. These data provide windows into students' understanding of key ideas and skills.

The idea of analyzing student work is not new. We suggest, however, that the approach has little potential to transform teaching or improve schools unless educators conceive it more broadly as *collaborative inquiry*, which places the student at the heart of the endeavor. Collaborative inquiry is most powerful when teachers look at an individual learner's progress over time; when a theoretical framework guides the inquiry process; when teachers learn and follow collaborative norms; and when leadership and structures support the inquiry. As a result, teachers discover how specific students' understanding evolves and how they, as teachers, can promote this understanding. The approach also encourages school policies and practices that support learning at all levels (Langer et al., 2003).

What Does Collaborative Inquiry Look Like?

When they reviewed student scores on the local district reading assessments, one group of 1st grade teachers that we observed thought the solution to improving students' poor performance might be to adopt a neighboring district's guided reading program. The teachers decided to spend several months in CASL groups analyzing their students' reading to see whether the new program's approach would address their students' specific needs.

The teachers narrowed their area of study to oral reading fluency. They designed and administered a classroom assessment to determine the students' entry-level skills. Then the teachers recorded details about each student's performance to identify common strengths and challenges. One teacher, Sue, found a cluster of students in her class who were generally strong on reading rate but who did not use problem-solving strategies when faced with unknown words. They either skipped the unknown words or substituted other words that didn't make sense. Sue selected a focus student, Elena, from this cluster. Developing Elena's word recognition problem-solving strategies became Sue's initial area of study. Sue's colleagues also each selected a focus student who represented a common challenge found in the data, such as phrasing or reading rate.

The group analyzed a different focus student's work sample each week to learn why that student was (or was not) making progress in the identified area. Teachers experimented

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with various instructional practices and analyzed the resulting student work to determine next steps. A later assessment of the students' reading fluency showed dramatic improvement. The teachers concluded that there was no need for a new reading series.

The Individual Learner Over Time

Learning to teach is not easy, partly because no one practice works for every student or for every learning outcome. The challenge is to figure out which strategies work for whom and in what combination and sequence. Two ideas central to this process are that teacher learning appears to proceed from the specific to the general and that professionals construct new understandings over a period of time.

From the Specific to the General

Collaborative inquiry is most instructive when teachers narrow their study to the complexities and uncertainties of one student's learning. This capitalizes on Shulman's (1987) idea of "case knowledge," the notion that individual students are the point around which teachers develop their theories of what works, with whom, and for what purpose. For example, a teacher may not store an understanding of "wait time" in a separate cognitive file for "strategies." Rather, he or she may store it with the case of the quiet student, Joe, who, when called on, demonstrated an impressive understanding of mathematical thinking after the teacher gave all students adequate time to prepare an answer to the problem.

You might reasonably ask whether studying only one student provides an excuse to ignore the others in the classroom. Because the focus students represent a cluster of students who exhibit similar learning challenges, teachers can use what they learn from studying one student with the larger group. Moreover, periodic classroom formative assessments provide information on the entire class's progress. Thus, the teachers' theories are tentative and modifiable when applied to larger groups of students.

This focus on the particulars of individual student learning is in direct opposition to more traditional school improvement approaches that use grade-level averages, subgroup averages, and item analyses to establish goals. Unfortunately, we all too often view such data as a mere baseline rather than as a source of information about students' current understanding that can inform instruction. When teams move directly from data analysis to workshops to "fix" the problems, they make three erroneous assumptions: that all low-performing students are struggling in the same way; that the same strategies will work for all students; and that all teachers need the same professional learning experiences.

The result is that we overgeneralize and engage in uniform instructional and professional development practices (El-Haj, 2003). This tendency explains why school improvement efforts often fail. In contrast, collaborative inquiry around individual student cases can and does transform teacher and student learning. To have maximum power, this inquiry needs to take place over time.

Studying Students Over Time

Analyzing a single piece of student work provides only a snapshot of what a student can do at a given moment. In contrast, looking at the same student's work over time enables teachers to study how students develop complex understandings through an intricate tapestry of scaffolded experiences. We would all agree that it is easier to teach isolated science definitions than it is to teach the scientific thinking outlined in many benchmarks. Collaborative inquiry enables teachers to study how students gradually learn these complex processes and to understand the teacher's role in promoting that learning. Because such deep learning rarely results from a single experience, teachers need time to conduct longitudinal studies in which they test and reconstruct their current theories of what works (Putnam & Borko, 2000).

Another advantage of studying one student over time is that teachers often discover gaps in their own knowledge base when their teaching strategies fail. This leads them to identify their own professional development needs. At such moments, teachers need extra time to seek new information through professional reading, conferences, workshops, or observation of colleagues. For example, one high school science teacher we observed was studying how his students learned to write research papers. He realized that he needed to update his own teaching skills in that area and asked an English teacher in his CASL study group to share and model ideas for teaching writing.

The Inquiry Cycle

To portray and study teacher learning, we created the Framework for Teachers' Reflective Inquiry (Colton & Sparks-Langer, 1993). The framework combines research and theory about professional knowledge, learning, and dispositions within a collaborative culture. A key part of the framework is the inquiry cycle (Kolb, 1984), which consists of four stages: observing, analyzing/interpreting, planning, and acting. This cycle describes how teachers build much of their professional knowledge base.

Observing

Teachers often observe a learning challenge and immediately try to figure out what to do about it. At this stage, however, they need to refrain from jumping to conclusions and take the time to see all the relevant aspects of what is taking place (Carini, 1979; El-Haj, 2003).

When Sue met with her CASL group to study Elena's development of oral reading fluency, she brought Elena's initial running record, which measured rate, word recognition, and phrasing. Sue picked this particular student because Elena seemed eager to learn and would try new ideas, although her progress was sometimes hindered by her anxiety when she felt the work was too difficult. Further, Elena's parents didn't model much reading at home because they worked long shifts at an auto factory. Sue's colleagues noticed Elena's limited use of problem solving when encountering new words. She would substitute words regardless of whether or not they made sense. Elena even missed the picture clue. The group noted one strength, however: When Elena read the word *always* as *away*, she corrected herself by saying *all* and then *always*.

Analyzing/Interpreting

Once teachers have observed such a phenomenon, they take time to engage in flexible thinking (Costa & Garmston, 2002) by entertaining several possible explanations for the events. Sue's colleagues offered multiple interpretations of Elena's performance. One teacher wondered whether the reading level was too difficult. Another thought Elena might have trouble dividing her attention between rate and accuracy. Still another proposed that Elena might never have been explicitly taught problem-solving strategies, such as using picture clues. Her successful self-correction was possibly due to the fact that she could see that the difficult word combined two words that she already knew (*always* = *all* plus *ways*).

Planning

On the basis of their analyses, the teachers devise a plan of action. For example, Sue decided to do another running record with a lower-level reading book to determine whether the books she selected for Elena were at the appropriate reading level. When teachers have a fairly good understanding of the student's learning needs, they can consider multiple interventions and evaluate each one's potential to yield the desired results.

Sue's colleagues helped her plan how to proceed by suggesting and discussing several problem-solving strategies that Elena could use to improve her word recognition. Sue selected the strategies that she believed would best fit Elena's needs and discussed with her group how to model and teach them. After a month of having Elena practice the problem-solving strategies, Sue would reassess Elena's progress and bring the results back to the group.

Acting

Next, the teacher puts the plan into action. Sue worked with Elena on the suggested strategies and brought Elena's most recent running record to the group. It showed marked improvement on Elena's use of problem-solving strategies. Sue attributed this to the modeling and guided practice. These strategies seemed to ease Elena's anxiety when tackling new words. Sue also became more intentional about picking texts at the appropriate reading level.

What happened next illustrates the power of this process to generate powerful teacher learning. Initially, the teachers assumed that improving reading rate and accuracy would also improve phrasing and comprehension. But this was not evident in Elena's recent work sample, nor was it true for the other 1st grade students whom the group had been studying. The teachers began to question the relationship between fluency—especially phrasing—and comprehension.

They invited the district reading specialist in for help. She had the teachers read an article that addressed their questions and provided ideas for teaching phrasing. One "aha" moment for Sue was understanding that students need to know how text is put together to comprehend the author's meaning during oral reading. Sue chose strategies from the article to try with Elena, such as using texts that lent themselves to dramatic performance (plays and fairy tales, for example). When Sue brought Elena's next work sample to her CASL group, the teachers noted better phrasing and improved comprehension, with less anxiety on Elena's part. The group continued to use the inquiry cycle to improve other errors in Elena's reading.

Learning to Collaborate

Collaborative analysis of student learning invites multiple interpretations of the same event. In Elena's case, we saw teachers share multiple explanations for her reading problems. Collaborative inquiry can also prompt teachers to reconsider limiting assumptions. For example, some teachers in Sue's group assumed that Elena's progress would be hindered by her parents' limited reading at home. As they observed how Sue's modeling helped Elena improve, however, they realized that teachers can influence learning regardless of the home situation.

Collaboration also enriches and transforms the teacher's knowledge base. When Sue discovered that reading fluency was closely related to phrasing and comprehension, she shared her insight with the other teachers. Sue's group also learned new reading strategies from the article that the reading specialist brought in. One result of this professional inquiry is "collective efficacy," a sense that we can do it together—an element identified in a pertinent study as an important variable in school reform (Goddard, How, & Hoy, 2000).

Collaboration does not happen automatically. Many schools have not developed a culture in which teachers and leaders can safely take risks—by sharing less successful students' work, for example—and engage in dialogue about assumptions, beliefs, and practices. Schools need to develop effective norms for the groups, and these groups need to learn how to paraphrase, probe, and question as they engage in professional discussions (Costa & Garmston, 2002). These skills help teachers and organizations move beyond a "culture of polite conversation" to deep analysis of teaching and learning (Little, Gearhart, Curry, & Kafka, 2003).

Promoting Collaborative Inquiry

Transforming school cultures for collaborative inquiry is a slow process that requires a clear vision and a passion for this kind of change. We suggest that school administrators and teacher leaders engage in their own collaborative inquiry to develop a shared vision for their organization. Without this vision, it becomes more difficult to explain, model, and promote collaborative inquiry.

Administrators who hold this vision often ask us, "How can I introduce collaborative inquiry to my staff?" A group session should begin with establishing a preliminary set of norms, such as starting and ending on time,

building on others' ideas, and withholding judgment. Following an explanation of the inquiry cycle, teachers use the cycle to discuss written or videotaped cases of classroom dilemmas. When asked to reflect on this experience, teachers typically mention that in the hectic pace of their work, they rarely slow down enough to analyze why things happen, and they would like to do more of this.

Another way to introduce the inquiry cycle is by asking teachers to observe patterns in test data. They can then analyze why these patterns—low scores on science writing, for example—might exist. To test their hunches, teachers can design and administer an assessment similar to the one on the test and then analyze their students' patterns of performance.

For example, some 5th grade teachers assessed their students' writing on science concepts. Even though many students earned the same score—a 2—on the rubric, the teachers observed that one cluster of students could express the ideas orally but could not write them down, whereas another cluster could write down their thoughts but could not organize them orally. As the teachers analyzed various reasons for these patterns, they discovered that they might need to implement different strategies for these two clusters of students.

If a school has already established its professional learning agenda for the year, teachers might engage in the inquiry cycle with student work samples to determine whether the strategies or programs are having the desired effect on student learning.

When teachers are empowered by their experience with inquiry, they are more willing to influence school policies and work toward school improvement. For example, an entire staff met in study groups during a certain time block for a year while substitute teachers covered their classes. On the basis of the teachers' positive reports, the principal rearranged the following year's schedule to allow grade-level teams to meet during the day. This structural shift reflected the school's commitment to the vision of collaborative inquiry.

We believe that every teacher's passion is to see his or her students succeed. Yet too many teachers attribute student failure to external forces—a mind-set that is due, in part, to cultures of isolation and failed professional development. Schools that engage in collaborative inquiry develop a sense of collective efficacy that helps educators reconnect with their original point of passion: ensuring student success.

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Guiding Questions for "Looking at Student Work"

1. Langer and Colton argue for the power and value of collaborative analysis of student learning. What are the major arguments they make for this process being the "lifeblood of school improvement"?

2. What are the limitations of school improvement efforts identified by the authors of this article? To what extent does your school or district reflect any of these limitations? How could these issues be addressed using the suggestions in this article?

3. Collaborative inquiry is presented by Langer and Colton as essential to the continuous improvement process. What is this process as they present it? How effectively are educators in your school or district currently employing this process and the criteria they recommend for it?

4. Teaching and learning for transfer and understanding, according to these authors, requires
   - Monitoring and studying individual learners over time, including their ability to transfer from the specific to the general.
   - Collaboratively using the inquiry cycle (observing, analyzing and interpreting, planning, and acting).

   How successfully do the educators you know use these processes? Which elements might be useful for further study and implementation?

5. What are the major ideas the authors present for learning to collaborate and promoting collaborative inquiry? To what extent could your school or district benefit from further emphasis on these processes?

Helping Students Understand Assessment

Jan Chappuis

Formative assessments promote learning when they help students answer three questions: Where am I going? Where am I now? and How can I close the gap?

During the last decade, many schools have begun to emphasize formative assessment. As teachers work to develop short-cycle or common assessments and engage in data-driven decision making, they typically remain in the central decision-making role. This approach reflects the underlying assumption that teachers control learning. Although teachers must create the conditions for learning, however, students ultimately decide whether they feel capable of learning and whether they will do the work. Therefore, students are equally important users of formative assessment information. The research tells us why.

Necessary Components of Formative Assessment

In their 1998 synthesis of research, Black and Wiliam reported that formative assessment produced significant learning gains, with effect sizes between 0.4 and 0.7. They noted, however, that in schools achieving these gains, students were the primary users of formative assessment information. In such schools,

- Formative assessment began with offering students a clear picture of learning targets.
- Students received feedback on their work that helped them understand where they were with respect to the desired learning target.
- Students engaged in self-assessment.
- Formative assessment provided an understanding of specific steps that students could take to improve.

Sadler (1989) had previously reported similar findings. In describing the role of formative assessment in developing expertise, he identified three conditions required for students to improve:

> The student comes to hold a concept of quality roughly similar to that held by the teacher, is able to monitor continuously the quality of what is being produced during the act of production itself, and has a repertoire of alternative moves or strategies from which to draw at any given point. (p. 121)

This research on effective formative assessment suggests that students should be able to answer three basic questions: Where am I going? Where am I now? and How can I close the gap? (adapted from Atkin, Black, & Coffey, 2001). The seven strategies described in the following sections can help ensure systematic student involvement in the formative assessment process (Stiggins, Arter, Chappuis, & Chappuis, 2004).

Where Am I Going?

Students need to know what learning targets they are responsible for mastering, and at what level. Marzano (2005) asserts that students who can identify what they are learning significantly outscore those who cannot.

Strategy 1: Provide a clear and understandable vision of the learning target. Share the learning targets before you begin instruction, in language your students can understand. For example, when introducing a reading comprehension unit calling for inference, you might say, "We are learning to *infer*. This means we

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are learning to make reasonable guesses on the basis of clues." Or provide students with a written list of learning targets described in student-friendly language, such as,

> We are learning about fractions. We are learning to
>
> • Read and write fractions with halves, thirds, fourths, and tenths.
> • Read and write mixed numbers (whole numbers plus fractions).
> • Change fractions written as tenths into decimals.

When working with more complex content standards that call for performance assessment, such as "Writes clearly and effectively," introduce the language of the scoring guide that the school will use to define quality. To do this, ask students what they think constitutes good writing, and then help them identify where their concept of good writing matches the concepts in the scoring guide. If the scoring guide is above students' reading level, you might want to create a student-friendly version.

Strategy 2: Use examples of strong and weak work. To know where they are going, students must know what excellent performance looks like. Ask students to evaluate anonymous work samples for quality and then to discuss and defend their judgments, using the language of the scoring guide in the case of performance assessments. Such an exercise will help students develop skill in accurate self-assessment.

Teachers often use strong examples, or exemplars, but avoid using weak examples because they worry that students will accidentally emulate them. On the contrary, when students evaluate weak examples that mirror common problems, they become more proficient at identifying their own weaknesses and gain a better understanding of quality. To introduce work samples to students, you might

1. Distribute to students a student-friendly version of the scoring guide you will use to evaluate their final products.
2. Choose one aspect of quality (one trait) to focus on.
3. Show an overhead transparency of a strong anonymous sample, but don't let students know it's a strong example. Have students work independently to score it for the one trait using the student-friendly scoring guide. You may ask students to underline the statements in the scoring guide that they believe describe the work they're examining.
4. After students have settled on a score independently, have them share their scores in small groups, using the language of the scoring guide to explain their reasoning.
5. Ask the class to vote and tally their scores on an overhead transparency. Then ask for volunteers to share their scores and the rationale behind them. Listen for, and encourage, use of the language of the scoring guide.
6. Repeat this process with a weak anonymous sample, focusing on the same trait. Do this several times, alternating between strong and weak papers, until students are able to distinguish between strong and weak work and independently give rationales reflecting the concepts in the scoring guide (Stiggins et al., 2004).

Where Am I Now?

When my daughter was in 3rd grade, she once brought home a math paper with a smiley face, a minus 3, and an *M* at the top. When we asked her what the *M* meant she had learned, she looked at us as though we were trying to trick her and replied, "Math?" When we asked her what that meant she needed to work on, she frowned and ventured, "Math?"

Papers marked like this one do not give students the information they need. At best, such marks might tell the student, "I'm doing OK in math," but they will not enable the student to assess his or her own strengths and weaknesses. You can use the following two strategies to help students identify how they

are currently performing in relation to the learning and actions that are expected of them.

Strategy 3: Offer regular descriptive feedback. Black and Wiliam (1998) recommend that to improve formative assessment, teachers should reduce *evaluative* feedback—such as "*B*+. Good work!" or "You didn't put enough effort into this"—and increase *descriptive* feedback, such as "You maintained eye contact with your audience throughout your whole presentation" or "Your problem-solving strategy for dividing all the people into equal groups worked well right up to the end, but you need to figure out what to do with the remaining people."

The quality of the feedback, rather than its quantity, determines its effectiveness (Bangert-Downs, Kulik, Kulik, & Morgan, 1991; Sadler, 1989). The most effective feedback identifies success and also offers students a recipe for corrective action (Bloom, 1984; Brown, 1994). Grades and other coded marks—such as ⚐ + and 92%—do not tell students what areas they need to improve. Instead, such marks signal that the work on this piece is finished.

Here are some simple actions you can take to provide effective feedback:

- After students have practiced using a scoring guide with anonymous work and they understand the meaning of the phrases in the scoring guide, highlight phrases that describe strengths and weaknesses of their work. If you are working with a multitrait scoring guide, limit feedback to one or two traits at a time.
- Have students *traffic light* their work (Atkin et al., 2001), marking it with a green, yellow, or red dot to indicate the level of help they need. Allow students with green and yellow dots to provide descriptive feedback to one another, while you provide feedback for students with red dots.

Strategy 4: Teach students to self-assess and set goals. In giving students descriptive feedback, you have modeled the kind of thinking you want them to do as self-assessors. As a next step, turn that task over to students and guide them in practicing self-assessment and goal setting. You may find it useful to have students identify the strengths and weaknesses of their work before you offer your own feedback. Have them complete a form like the one in Figure 1 and staple it to their work when they turn it in. Respond with your feedback, either on the form or orally.

Figure 1. Student Self-Assessment Form

My Strengths and Areas to Improve
Trait(s): _____

Name: _____

Name of Paper: _____

Date: _____

My Opinion
My strengths are _____
_____

What I think I need to work on is _____
_____

My Teacher's or Classmate's Opinion
Strengths include _____
_____

Work on _____
_____

My Plan
What I will do now is _____
_____

Next time I'll ask for feedback from _____
_____

Source: From *Classroom Assessment* for *Student Learning: Doing It Right—Using It Well*, by R. J. Stiggins, J. Arter, J. Chappuis, and S. Chappuis, 2004, Portland, OR: Assessment Training Institute. Reprinted with permission.

To help students align their expectations with yours, ask them to turn in a scoring guide with their work, highlighting in yellow the phrases in the guide that they believe represent the quality of their work. On the same scoring guide, highlight in blue the phrases that you think describe their work, and return the guide

to them. Where the highlighted phrases are green (blue over yellow), your feedback matches the student's self-assessment. Any highlighted phrases that remain blue or yellow, however, indicate areas in which the student probably needs to refine his or her vision of quality (Stiggins et al., 2004).

If you are using a selected-response test, you can arrange the items according to the learning targets they assess and give students the list of learning targets correlated to the test item numbers. When they receive their corrected test, students can identify which learning targets they have mastered and which learning targets they need to work on further. They can then develop a plan for how they will improve the targeted areas. This practice is especially effective if students have the opportunity to retake the test.

How Can I Close the Gap?

The final essential step in making formative assessment work is to keep students in touch with what they can do to close the gap between where they are now and where they need to be.

Strategy 5: Design lessons to focus on one aspect of quality at a time. This strategy breaks learning into more manageable chunks for students. For example, suppose that students are learning to design and conduct scientific investigations, and one part of the scoring guide describes the qualities of a good hypothesis. If students are having trouble formulating hypotheses, they can refer to that portion of the scoring guide as they differentiate between strong and weak examples of hypotheses, practice drafting hypotheses, give one another descriptive feedback on their drafts, and assess their own drafts' strengths and weaknesses.

Strategy 6: Teach students focused revision. Let students practice revising their work before being held accountable by a final grade. You might begin with one of the anonymous, weak work samples that your students have evaluated (see Strategy 2). Focusing on just the single aspect of quality that they evaluated, ask students to work in pairs to either revise the sample or create a revision plan describing what the anonymous student needs to do to improve the work. Then ask students to apply the same process to their own work, either revising it to make it better or submitting a revision plan. For example, after assessing their draft hypotheses in science, students could use the scoring guide to write out what they need to do to improve their hypotheses.

Strategy 7: Engage students in self-reflection and let them document and share their learning. We know the power of self-reflection to deepen learning for adults. It also works for students. One of the strongest motivators is the opportunity to look back and see progress.

In a skill-based course, such as physical education, students can fill out a daily form that asks two questions: "What are two important things you learned from today's class?" and "What is one goal you have for tomorrow's class?"

Student portfolios can also promote students' self-reflection. In collecting their work and insights in portfolios, students have the opportunity to reflect on their learning, develop an internal feedback loop, and understand themselves better as learners. To use portfolios in this way, students must clearly understand their learning goals, the steps that they have taken toward reaching those goals, and how far they have come. Involving students in parent-teacher conferences can accomplish the same purpose. Students gain insight from explaining to their parents the learning that their work represents, their strengths as learners, and what they plan to work on next.

Students at the Center

The seven strategies described here are designed to help students better understand their learning goals, recognize their own skill level in relation to the goals, and take responsibility for reaching the goals. By expanding our formative assessment practices to systematically involve students as decision makers, teachers acknowledge the contributions that students

make to their own success and give them the opportunity and structure they need to become active partners in improving their learning.

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Guiding Questions for "Helping Students Understand Assessment"

1. Jan Chappuis's three questions for formative assessment reinforce Grant Wiggins and Jay McTighe's arguments for balanced assessment and active student engagement in the process of self-monitoring and self-assessment. How do Chappuis's three questions (Where am I going? Where am I now? How can I close the gap?) reflect and reinforce key elements of the backward design process?

2. Wiggins and McTighe argue for students to be clear about the evaluation criteria they are responsible for. They also contend that students should play an active and ongoing role in their own assessment and evaluation processes. How do the arguments presented in this article by Chappuis reinforce their case?

3. The author presents seven strategies in this article for helping students to understand assessment and to play an active role in it. What are these seven strategies? To what extent do educators you work with practice these strategies?

My Year as a High School Student

Deborah Waldron

A stint in students' shoes helped a science teacher examine her own practice.

Like countless other teachers, I decided to take a class last fall. Unlike most teachers, though, I chose to take a biology class at the school where I teach physics, Yorktown High School in Arlington, Virginia.

I had begun pursuing National Board Certification in Adolescence and Young Adulthood/Science, and I faced the hurdle of showing breadth of knowledge across the four major areas of biology, chemistry, earth and space science, and physics. My biology knowledge was woefully inadequate. Rather than enrolling in a class at the local community college, I decided to sit in on Allyson McKowen's 9th grade Intensified Biology class.

I attended class every day, took notes, did my homework, read the textbook, worked in a lab group, wrote up labs, and took the tests and quizzes. Except for my age and the fact that I came and went from class without a hall pass, I was a typical student. The amount of time I spent on after-school activities probably paralleled the time commitments of a typical high school student. I had family responsibilities as well as a fairly time-consuming "extracurricular activity"—I taught an evening physics class at the local community college. My stint in students' shoes gave me insight into the challenges that high school students face and led me to make changes in my own teaching. The following are my observations from the other side of the desk about practices that I believe help create the best conditions for learning.

What Looks Good from the Student Side

Give students more time for creative projects. Although I have fairly well-honed time management skills, I found myself starting a lot of creative assignments for class late at night. No matter how hard I tried, my daily responsibilities and workload kept me from getting a head start on a pending long-term assignment.

For example, one assignment involved creating an analogy for how a cell functions. I chose to compare a cell to a restaurant, reasoning that just as the various parts of a cell perform the functions necessary to maintain cell health, each staff member at a restaurant performs certain jobs to ensure the restaurant's continued success. Not only did I have to write a paper explaining the logic of my analogy, but I also had to create a physical model of the analogy. This was an incredible learning experience that truly taught me the structure of a cell and the functions of its parts—but it was one of several assignments I finished at 1:00 a.m.

I used to give my physics students a hard time when they complained about late-night study sessions. Now I realize that students' extracurricular and academic commitments often make it hard to work ahead. In teaching future classes, I plan to break long-term assignments into smaller chunks so that students have multiple deadlines along the way and to cut back on homework during weeks when longer assignments are due.

Occasionally use short, straightforward assessments. Although I believe all assessments should require students to demonstrate deep, authentic understanding, at times it is preferable

Source: From "My Year as a High School Student," by D. Waldron, 2006, *Educational Leadership, 63*(6), 63–65. Copyright 2006 by the Association for Supervision and Curriculum Development.

to accomplish this with simple, straightforward assessments. These more traditional assessments can be structured in a way that gauges student learning and probes for true understanding. I remember one lab assignment in which Allyson told us that all we needed to do was analyze the data and complete six questions at the end of the lab. My lab partner and I looked at each other and almost simultaneously declared, "Thank goodness!" We had recently completed a formal lab write-up on a separate experiment, and neither of us had the energy or time to tackle another. The questions were enough for Allyson to make sure we understood the material and had completed the lab without drowning us in work.

Reinforce ethics and clarify plagiarism. In early October, our first formal paper was due. We had been studying water properties and had recently completed a lab on surface tension. This assessment required us to write the introductory section of a formal lab write-up as well as answer several in-depth questions about our data. My schedule that week was quite busy, and I didn't get a chance to sit down and start writing until 11:00 p.m. the night before the paper was due. Around 11:15 p.m., I thought to myself, "Hey, if I don't go to class tomorrow, I won't have to turn the paper in yet." The thought was extremely tempting, and I went to bed. Somewhere around 3:00 a.m. I woke up, thought better about my choice, and finished my paper.

When I talked with Allyson about my dilemma, she mentioned that she always calls home to talk with the parents of a student who is absent the day a big assignment is due. I suspect that this kind of outside pressure helps students make wiser choices. Without such pressure, even as a teacher and a supposed role model, I made a poor choice for about four hours.

Later in the year, we had to create a brochure about a particular genetic disorder, explaining when the disorder was discovered, its symptoms, the genetic cause of the disorder, how common the condition is, and what treatments are available. I was assigned clubfoot and spent a significant amount of time researching it over the weekend. Although I had done the research and processed the information, I didn't get a chance to actually create the brochure until the following Thursday evening, after I had taught my night class.

That evening, as I drove home from the community college, I continued to plan my brochure in my head. I was tired and wanted to do it as quickly as possible while still doing a good job. At home, I started lining up Web sites from which I could cut and paste the information. After a few minutes, it dawned on me that I was about to plagiarize the entire assignment. When I thought about the situation later, I realized that as a teacher I simply expect my students to know what plagiarism is. Teachers need to be more specific with students and provide concrete examples throughout the year that will help them realize what is and is not academically acceptable.

Change student seats often. Simple as it sounds, shaking up student seating every six weeks or so makes a huge difference in the dynamics of the classroom. I initially knew none of the students in the class. At first, my lab partners were leery of me, but over time they warmed up to me and treated me as normally as possible, even teasing me about getting a low quiz grade. However, had we stayed in the same seats for the entire year, I would have only gotten to know these 3 students in a class of 22.

My experience as the "new kid" made me realize the importance of creating an environment in which students can meet many other students. Because Allyson switched the student seats eight times over the course of the year, I got to know almost the entire class. The regular rearrangement of seats and reassignment of lab groups created a supportive classroom environment in which students felt comfortable asking any other student, not just a friend, for assistance. I now periodically rearrange student seats in my physics classes; I also assign lab groups rather than let students choose them.

How I Learned to Love the "Squishy Stuff"

The most enjoyable thing that I discovered in my year studying 9th grade biology was that it's the teacher, not the content, that makes the class. As a physics teacher, I had no expectation of enjoying biology. I called it the "squishy stuff." Allyson McKowen made me fall in love with biology. Her way of presenting the material and interacting with students made class enjoyable. Allyson's classroom was student-focused, and her leadership helped every student feel comfortable and courageous. Students asked and answered questions without fear. I looked forward to class and found myself doing outside reading in a college text so I could understand the material on a deeper level. I used to think that British physicist Ernest Rutherford was right when he said, "All science is either physics or stamp collecting." After a year of biology with Allyson, I know Rutherford was wrong.

My year as a 9th grade student was enjoyable and stressful, and it provided a dose of reality that strengthened my teaching practice. Although I learned an incredible amount of biology, I was more impressed with what I learned about teaching. A year from now, when I'm teaching physics to some of my former biology classmates, I'll draw on my experiences with them that have made me a better teacher.

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Guiding Questions for "My Year as a High School Student"

1. Perspective and empathy are two of the six facets of understanding identified by Grant Wiggins and Jay McTighe. How does author Deborah Waldron demonstrate these two facets—and their similarities and differences—in this article?

2. As the author presents her portrait of a "stint in students' shoes," what are her major recommendations and conclusions about the student side of the story?

3. How do Waldron's conclusions reflect the recommendations and strategies presented in the Understanding by Design framework?

4. What does Waldron mean by "squishy stuff"? Why does she argue for the importance of this stuff? According to the author, why is it so often missing in students' learning experiences?

Seven Practices for Effective Learning

Jay McTighe and Ken O'Connor

Teachers in all content areas can use these seven assessment and grading practices to enhance learning and teaching.

Classroom assessment and grading practices have the potential not only to measure and report learning but also to promote it. Indeed, recent research has documented the benefits of regular use of diagnostic and formative assessments as feedback for learning (Black, Harrison, Lee, Marshall, & Wiliam, 2004). Like successful athletic coaches, the best teachers recognize the importance of ongoing assessments and continual adjustments on the part of both teacher and student as the means to achieve maximum performance. Unlike the external standardized tests that feature so prominently on the school landscape these days, well-designed classroom assessment and grading practices can provide the kind of specific, personalized, and timely information needed to guide both learning and teaching.

Classroom assessments fall into three categories, each serving a different purpose. *Summative* assessments summarize what students have learned at the conclusion of an instructional segment. These assessments tend to be evaluative, and teachers typically encapsulate and report assessment results as a score or a grade. Familiar examples of summative assessments include tests, performance tasks, final exams, culminating projects, and work portfolios. Evaluative assessments command the attention of students and parents because their results typically "count" and appear on report cards and transcripts. But by themselves, summative assessments are insufficient tools for maximizing learning. Waiting until the end of a teaching period to find out how well students have learned is simply too late.

Two other classroom assessment categories —diagnostic and formative—provide fuel for the teaching and learning engine by offering descriptive feedback along the way. *Diagnostic* assessments—sometimes known as *pre-assessments*—typically precede instruction. Teachers use them to check students' prior knowledge and skill levels, identify student misconceptions, profile learners' interests, and reveal learning-style preferences. Diagnostic assessments provide information to assist teacher planning and guide differentiated instruction. Examples of diagnostic assessments include prior knowledge and skill checks and interest or learning preference surveys. Because pre-assessments serve diagnostic purposes, teachers normally don't grade the results.

Formative assessments occur concurrently with instruction. These ongoing assessments provide specific feedback to teachers and students for the purpose of guiding teaching to improve learning. Formative assessments include both formal and informal methods, such as ungraded quizzes, oral questioning, teacher observations, draft work, think-alouds, student-constructed concept maps, learning logs, and portfolio reviews. Although teachers may record the results of formative assessments, we shouldn't factor these results into summative evaluation and grading.

Keeping these three categories of classroom assessment in mind, let us consider seven specific assessment and grading practices that can enhance teaching and learning.

Source: From "Seven Practices for Effective Learning," by J. McTighe and K. O'Connor, 2005, *Educational Leadership, 63*(3), 10–17. Copyright 2005 by the Association for Supervision and Curriculum Development.

Practice 1: Use summative assessments to frame meaningful performance goals.

On the first day of a three-week unit on nutrition, a middle school teacher describes to students the two summative assessments that she will use. One assessment is a multiple-choice test examining student knowledge of various nutrition facts and such basic skills as analyzing nutrition labels. The second assessment is an authentic performance task in which each student designs a menu plan for an upcoming two-day trip to an outdoor education facility. The menu plan must provide well-balanced and nutritious meals and snacks.

The current emphasis on established content standards has focused teaching on designated knowledge and skills. To avoid the danger of viewing the standards and benchmarks as inert content to "cover," educators should frame the standards and benchmarks in terms of desired performances and ensure that the performances are as authentic as possible. Teachers should then present the summative performance assessment tasks to students at the beginning of a new unit or course.

This practice has three virtues. First, the summative assessments clarify the targeted standards and benchmarks for teachers and learners. In standards-based education, the rubber meets the road with assessments because they define the evidence that will determine whether or not students have learned the content standards and benchmarks. The nutrition vignette is illustrative: By knowing what the culminating assessments will be, students are better able to focus on what the teachers expect them to learn (information about healthy eating) and on what they will be expected to do with that knowledge (develop a nutritious meal plan).

Second, the performance assessment tasks yield evidence that reveals understanding. When we call for authentic application, we do not mean recall of basic facts or mechanical plug-ins of a memorized formula. Rather, we want students to transfer knowledge—to use what they know in a new situation. Teachers should set up realistic, authentic contexts for assessment that enable students to apply their learning thoughtfully and flexibly, thereby demonstrating their understanding of the content standards.

Third, presenting the authentic performance tasks at the beginning of a new unit or course provides a meaningful learning goal for students. Consider a sports analogy. Coaches routinely conduct practice drills that both develop basic skills and purposefully point toward performance in the game. Too often, classroom instruction and assessment overemphasize decontextualized drills and provide too few opportunities for students to actually "play the game." How many soccer players would practice corner kicks or run exhausting wind sprints if they weren't preparing for the upcoming game? How many competitive swimmers would log endless laps if there were no future swim meets? Authentic performance tasks provide a worthy goal and help learners see a reason for their learning.

Practice 2: Show criteria and models in advance.

A high school language arts teacher distributes a summary of the summative performance task that students will complete during the unit on research, including the rubric for judging the performance's quality. In addition, she shows examples of student work products collected from previous years (with student names removed) to illustrate criteria and performance levels. Throughout the unit, the teacher uses the student examples and the criteria in the rubric to help students better understand the nature of high-quality work and to support her teaching of research skills and report writing.

A second assessment practice that supports learning involves presenting evaluative criteria and models of work that illustrate different levels of quality. Unlike selected-response or short-answer tests, authentic performance assessments are typically open-ended and do not yield a single, correct answer or solution process. Consequently, teachers cannot score

student responses using an answer key or a Scantron machine. They need to evaluate products and performances on the basis of explicitly defined performance criteria.

A rubric is a widely used evaluation tool consisting of criteria, a measurement scale (a 4-point scale, for example), and descriptions of the characteristics for each score point. Well-developed rubrics communicate the important dimensions, or elements of quality, in a product or performance and guide educators in evaluating student work. When a department or grade-level team—or better yet, an entire school or district—uses common rubrics, evaluation results are more consistent because the performance criteria don't vary from teacher to teacher or from school to school.

Rubrics also benefit students. When students know the criteria in advance of their performance, they have clear goals for their work. Because well-defined criteria provide a clear description of quality performance, students don't need to guess what is most important or how teachers will judge their work.

Providing a rubric to students in advance of the assessment is a necessary, but often insufficient, condition to support their learning. Although experienced teachers have a clear conception of what they mean by "quality work," students don't necessarily have the same understanding. Learners are more likely to understand feedback and evaluations when teachers show several examples that display both excellent and weak work. These models help translate the rubric's abstract language into more specific, concrete, and understandable terms.

Some teachers express concern that students will simply copy or imitate the example. A related worry is that showing an excellent model (sometimes known as an exemplar) will stultify student creativity. We have found that providing multiple models helps avoid these potential problems. When students see several exemplars showing how different students achieved high-level performance in unique ways, they are less likely to follow a cookie-cutter approach. In addition, when students study and compare examples ranging in quality—from very strong to very weak—they are better able to internalize the differences. The models enable students to more accurately self-assess and improve their work before turning it in to the teacher.

Practice 3: Assess before teaching.

Before beginning instruction on the five senses, a kindergarten teacher asks each student to draw a picture of the body parts related to the various senses and show what each part does. She models the process by drawing an eye on the chalkboard. "The eye helps us see things around us," she points out. As students draw, the teacher circulates around the room, stopping to ask clarifying questions ("I see you've drawn a nose. What does the nose help us do?"). On the basis of what she learns about her students from this diagnostic pre-test, she divides the class into two groups for differentiated instruction. At the conclusion of the unit, the teacher asks students to do another drawing, which she collects and compares with their original pre-test as evidence of their learning.

Diagnostic assessment is as important to teaching as a physical exam is to prescribing an appropriate medical regimen. At the outset of any unit of study, certain students are likely to have already mastered some of the skills that the teacher is about to introduce, and others may already understand key concepts. Some students are likely to be deficient in prerequisite skills or harbor misconceptions. Armed with this diagnostic information, a teacher gains greater insight into *what to teach*, by knowing what skill gaps to address or by skipping material previously mastered; into *how to teach*, by using grouping options and initiating activities based on preferred learning styles and interests; and into *how to connect* the content to students' interests and talents.

Teachers can use a variety of practical pre-assessment strategies, including pre-tests of content knowledge, skills checks, concept maps, drawings, and K-W-L (*K*now-*W*ant to

learn-*L*earn) charts. Powerful pre-assessment has the potential to address a worrisome phenomenon reported in a growing body of literature (Bransford, Brown, & Cocking, 1999; Gardner, 1991): A sizeable number of students come into school with misconceptions about subject matter (thinking that a heavier object will drop faster than a lighter one, for example) and about themselves as learners (assuming that they can't and never will be able to draw, for example). If teachers don't identify and confront these misconceptions, they will persist even in the face of good teaching. To uncover existing misconceptions, teachers can use a short, nongraded true-false diagnostic quiz that includes several potential misconceptions related to the targeted learning. Student responses will signal any prevailing misconceptions, which the teacher can then address through instruction. In the future, the growing availability of portable, electronic student-response systems will enable educators to obtain this information instantaneously.

Practice 4: Offer appropriate choices.

As part of a culminating assessment for a major unit on their state's history and geography, a class of 4th graders must contribute to a classroom museum display. The displays are designed to provide answers to the unit's essential question: How do geography, climate, and natural resources influence lifestyle, economy, and culture? Parents and students from other classrooms will view the display. Students have some choice about the specific products they will develop, which enables them to work to their strengths. Regardless of students' chosen products, the teacher uses a common rubric to evaluate every project. The resulting class museum contains a wide variety of unique and informative products that demonstrate learning.

Responsiveness in assessment is as important as it is in teaching. Students differ not only in how they prefer to take in and process information but also in how they best demonstrate their learning. Some students need to "do"; others thrive on oral explanations. Some students excel at creating visual representations; others are adept at writing. To make valid inferences about learning, teachers need to allow students to work to their strengths. A standardized approach to classroom assessment may be efficient, but it is not fair because any chosen format will favor some students and penalize others.

Assessment becomes responsive when students are given appropriate options for demonstrating knowledge, skills, and understanding. Allow choices—but always with the intent of collecting needed and appropriate evidence based on goals. In the example of the 4th grade museum display project, the teacher wants students to demonstrate their understanding of the relationship between geography and economy. This could be accomplished through a newspaper article, a concept web, a PowerPoint presentation, a comparison chart, or a simulated radio interview with an expert. Learners often put forth greater effort and produce higher-quality work when given such a variety of choices. The teacher will judge these products using a three-trait rubric that focuses on accuracy of content, clarity and thoroughness of explanation, and overall product quality.

We offer three cautions. First, teachers need to collect appropriate evidence of learning on the basis of goals rather than simply offer a "cool" menu of assessment choices. If a content standard calls for proficiency in written or oral presentations, it would be inappropriate to provide performance options other than those involving writing or speaking, except in the case of students for whom such goals are clearly inappropriate (a newly arrived English language learner, for example). Second, the options must be worth the time and energy required. It would be inefficient to have students develop an elaborate three-dimensional display or an animated PowerPoint presentation for content that a multiple-choice quiz could easily assess. In the folksy words of a teacher friend, "With performance assessments, the juice must be worth the squeeze." Third, teachers have only so much time and energy, so

they must be judicious in determining when it is important to offer product and performance options. They need to strike a healthy balance between a single assessment path and a plethora of choices.

Practice 5: Provide feedback early and often.

Middle school students are learning watercolor painting techniques. The art teacher models proper technique for mixing and applying the colors, and the students begin working. As they paint, the teacher provides feedback both to individual students and to the class as a whole. She targets common mistakes, such as using too much paint and not enough water, a practice that reduces the desired transparency effect. Benefiting from continual feedback from the teacher, students experiment with the medium on small sheets of paper. The next class provides additional opportunities to apply various watercolor techniques to achieve such effects as color blending and soft edges. The class culminates in an informal peer feedback session. Skill development and refinement result from the combined effects of direct instruction, modeling, and opportunities to practice guided by ongoing feedback.

It is often said that feedback is the breakfast of champions. All kinds of learning, whether on the practice field or in the classroom, require feedback based on formative assessments. Ironically, the quality feedback necessary to enhance learning is limited or nonexistent in many classrooms.

To serve learning, feedback must meet four criteria: It must be timely, specific, understandable to the receiver, and formed to allow for self-adjustment on the student's part (Wiggins, 1998). First, feedback on strengths and weaknesses needs to be prompt for the learner to improve. Waiting three weeks to find out how you did on a test will not help your learning.

In addition, specificity is key to helping students understand both their strengths and the areas in which they can improve. Too many educators consider grades and scores as feedback when, in fact, they fail the specificity test. Pinning a letter (*B*-) or a number (82%) on a student's work is no more helpful than such comments as "Nice job" or "You can do better." Although good grades and positive remarks may feel good, they do not advance learning.

Specific feedback sounds different, as in this example:

> Your research paper is generally well organized and contains a great deal of information on your topic. You used multiple sources and documented them correctly. However, your paper lacks a clear conclusion, and you never really answered your basic research question.

Sometimes the language in a rubric is lost on a student. Exactly what does "well organized" or "sophisticated reasoning" mean? "Kid language" rubrics can make feedback clearer and more comprehensible. For instance, instead of saying, "Document your reasoning process," a teacher might say, "Show your work in a step-by-step manner so the reader can see what you were thinking."

Here's a simple, straightforward test for a feedback system: Can learners tell *specifically* from the given feedback what they have done well and what they could do next time to improve? If not, then the feedback is not specific or understandable enough for the learner.

Finally, the learner needs opportunities to act on the feedback—to refine, revise, practice, and retry. Writers rarely compose a perfect manuscript on the first try, which is why the writing process stresses cycles of drafting, feedback, and revision as the route to excellence. Not surprisingly, the best feedback often surfaces in the performance-based subjects—such as art, music, and physical education—and in extracurricular activities, such as band and athletics. Indeed, the essence of coaching involves ongoing assessment and feedback.

Practice 6: Encourage self-assessment and goal setting.

Before turning in their science lab reports, students review their work against a list of explicit criteria. On the basis of their self-assessments, a number of students make revisions to improve their reports before handing them in. Their teacher observes that the overall quality of the lab reports has improved.

The most effective learners set personal learning goals, employ proven strategies, and self-assess their work. Teachers help cultivate such habits of mind by modeling self-assessment and goal setting and by expecting students to apply these habits regularly.

Rubrics can help students become more effective at honest self-appraisal and productive self-improvement. In the rubric in Figure 1, students verify that they have met a specific criterion—for a title, for example—by placing a check in the lower left-hand square of the applicable box. The teacher then uses the square on the right side for his or her evaluation. Ideally, the two judgments should match. If not, the discrepancy raises an opportunity to discuss the criteria, expectations, and performance standards. Over time, teacher and student judgments tend to align. In fact, it is not unusual for students to be harder on themselves than the teacher is.

The rubric also includes space for feedback comments and student goals and action steps. Consequently, the rubric moves from being simply an evaluation tool for "pinning a number" on students to a practical and robust vehicle for feedback, self-assessment, and goal setting.

Initially, the teacher models how to self-assess, set goals, and plan improvements by asking such prompting questions as,

- What aspect of your work was most effective?
- What aspect of your work was least effective?
- What specific action or actions will improve your performance?
- What will you do differently next time?

Questions like these help focus student reflection and planning. Over time, students assume greater responsibility for enacting these processes independently.

Educators who provide regular opportunities for learners to self-assess and set goals often

Figure 1. Analytic Rubric for Graphic Display of Data

Analytic Rubric for Graphic Display of Data

	Title	Labels	Accuracy	Neatness
3	The graph contains a title that clearly tells what the data show.	All parts of the graph (units of measurement, rows, etc.) are correctly labeled. ✓	All data are accurately represented on the graph. ✓✓	The graph is very neat and easy to read.
2	The graph contains a title that suggests what the data show.	Some parts of the graph are inaccurately labeled. ✓✓	Data representation contains minor errors.	The graph is generally neat and readable. ✓
1	The title does not reflect what the data show OR the title is missing. ✓ ✓	The graph is incorrectly labeled OR labels are missing.	The data are inaccurately represented, contain major errors, OR are missing.	The graph is sloppy and difficult to read.

Comments: _____

Goals/Actions: _____

Source: From *The Understanding by Design Professional Development Workbook* (p. 183), by J. McTighe and G. Wiggins, 2004, Alexandria, VA: ASCD.

report a change in the classroom culture. As one teacher put it,

> My students have shifted from asking, "What did I get?" or "What are you going to give me?" to becoming increasingly capable of knowing how they are doing and what they need to do to improve.

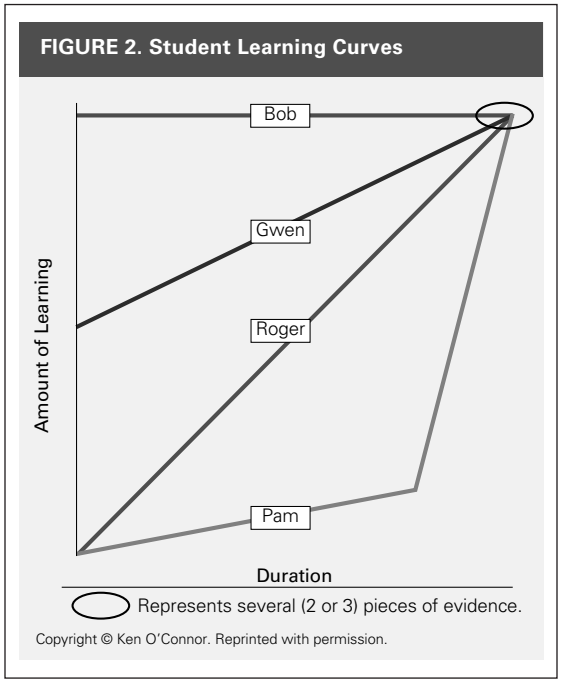
Practice 7: Allow new evidence of achievement to replace old evidence.

A driver education student fails his driving test the first time, but he immediately books an appointment to retake the test one week later. He passes on his second attempt because he successfully demonstrates the requisite knowledge and skills. The driving examiner does not average the first performance with the second, nor does the new license indicate that the driver "passed on the second attempt."

This vignette reveals an important principle in classroom assessment, grading, and reporting: New evidence of achievement should replace old evidence. Classroom assessments and grading should focus on *how well*—not on *when*—the student mastered the designated knowledge and skill.

Consider the learning curves of four students in terms of a specified learning goal (see fig. 2). Bob already possesses the targeted knowledge and skill and doesn't need instruction for this particular goal. Gwen arrives with substantial knowledge and skill but has room to improve. Roger and Pam are true novices who demonstrate a high level of achievement by the *end* of the instructional segment as a result of effective teaching and diligent learning. If their school's grading system truly documented learning, all these students would receive the same grade because they all achieved the desired results over time. Roger and Pam would receive lower grades than Bob and Gwen, however, if the teacher factored their earlier performances into the final evaluation. This practice, which is typical of the grading approach used in many classrooms, would misrepresent Roger and Pam's ultimate success because it does not give appropriate recognition to the real—or most current—level of achievement.

Figure 2. Student Learning Curves



Four students master a given learning goal by the end of an instructional segment but have vastly different learning curves.

Two concerns may arise when teachers provide students with multiple opportunities to demonstrate their learning. Students may not take the first attempt seriously once they realize they'll have a second chance. In addition, teachers often become overwhelmed by the logistical challenges of providing multiple opportunities. To make this approach effective, teachers need to require their students to provide some evidence of the corrective action they will take—such as engaging in peer coaching, revising their report, or practicing the needed skill in a given way—before embarking on their "second chance."

As students work to achieve clearly defined learning goals and produce evidence of their achievement, they need to know that teachers will not penalize them for either their lack of knowledge at the beginning of a course of study or their initial attempts at skill mastery.

Allowing new evidence to replace old conveys an important message to students—that teachers care about their successful learning, not merely their grades.

Motivated to Learn

The assessment strategies that we have described address three factors that influence student motivation to learn (Marzano, 1992). Students are more likely to put forth the required effort when there is

- *Task clarity*—when they clearly understand the learning goal and know how teachers will evaluate their learning (Practices 1 and 2).
- *Relevance*—when they think the learning goals and assessments are meaningful and worth learning (Practice 1).
- *Potential for success*—when they believe they can successfully learn and meet the evaluative expectations (Practices 3–7).

By using these seven assessment and grading practices, all teachers can enhance learning in their classrooms.

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Guiding Questions for "Seven Practices of Effective Learning"

1. In this article, Jay McTighe and Ken O'Connor powerfully affirm the Understanding by Design assertion that there is a fundamental connection between effective assessment and effective teaching and learning. To what extent do you agree with their argument?

2. Like many of the authors whose articles are presented in this activity, McTighe and O'Connor revisit and reinforce the three major purposes of assessment: diagnostic, formative, and summative. How successfully do the educators in your school or district address these three interrelated processes?

3. Virtually all the authors presented in this activity argue for the need to have students self-assess and set personal goals for learning. How do McTighe and O'Connor argue for these processes? In your opinion, why are these processes underused in many school settings?

For further exploration:
For large groups and small study groups, use the seven practices presented in the article for a jigsaw activity in which expert groups discuss and report to the full group their conclusions about the particular practice their group is assigned. In an independent study situation, use the seven practices as starting points for self-reflection and assessment of current assessment practices in your school or district.

A Time and a Place for Authentic Learning

Joseph S. Renzulli, Marcia Gentry, and Sally M. Reis

Challenge students to solve everyday problems in meaningful contexts, and the learning will take care of itself.

Each week, all the students at the Bret Harte Middle School in Oakland, California, leave their classrooms to participate in interest-based enrichment clusters. Under a teacher's guidance, one group of students is identifying, archiving, and preserving documents from the 1800s that were found in a suitcase belonging to the first pharmacist in Deadwood, South Dakota. Another group with strong interests in media, technology, and graphic arts is converting the archives into digital format and making the students' research available on a Web site.

These crossgrade clusters are scheduled on a rotating basis during the fall months. They usually last for eight weeks, generally meeting weekly for a double-period time block, with a new series scheduled in the spring. A medium-sized school might typically offer 15 to 20 clusters. The number of students in each cluster varies depending on student interest in the topic and teacher requirements for effective student participation. Teachers develop the clusters around their own strengths and interests, sometimes working in teams that include parents and community members.

Numerous schools across the United States have developed the enrichment cluster concept to deal with what many education leaders believe is a crisis in our schools. The focus on test preparation has squeezed more authentic kinds of learning out of the curriculum, thereby minimizing the one aspect of U.S. education that contributes to the innovativeness and creative productivity of the nation's culture, economy, and leadership role in the world. Improved test scores are important, but it's the *application* of knowledge in authentic learning situations—not perpetual memorization and testing—that characterizes a progressive education system.

What Is Authentic Learning?

All learning exists on a continuum that ranges from deductive and prescriptive learning on one end to inductive, self-selected, and investigative learning on the other. The essence of inductive or high-end learning is applying relevant knowledge and skills to solving real problems. Such learning involves finding and focusing on a problem; identifying relevant information; categorizing, critically analyzing, and synthesizing that information; and effectively communicating the results.

Real-life problems share four criteria. First, a real-life problem has a personal frame of reference. In other words, the problem must involve an emotional or internal commitment on the part of those involved in addition to a cognitive interest. Second, no agreed-on solutions or prescribed strategies for solving the problem exist. If they do, the process would more appropriately be classified as a training exercise because its main purpose would be to teach predetermined content or thinking skills.

Third, real-life problems motivate people to find solutions that change actions, attitudes, or beliefs. A group of students might gather, analyze, and report on data about the community's television-watching habits, causing people in that community to think critically about the television-viewing habits of young people. Last, real-life problems target a real audience. For example, students working on a local oral history project—a biographical study of Connecticut

Source: From "A Time and a Place for Authentic Learning," by J. S. Renzulli, M. Gentry, and S. M. Reis, 2004, *Educational Leadership, 62*(1), 73–77. Copyright 2004 by the Association for Supervision and Curriculum Development.

residents who died in Vietnam—initially presented their findings to their classmates, mainly to rehearse presentation skills. Their authentic audience consisted of members of a local historical society, members of veterans groups, family members of servicemen and servicewomen, attendees at a local commemoration of Vietnam veterans, and community members who had read about the research in the local newspaper.

Enrichment clusters are *not* minicourses. There are no predetermined content or process objectives. The nature of the problem guides students toward using just-in-time knowledge, appropriate investigative techniques or creative production skills, and professional methods for communicating results. In this type of learning, students assume roles as investigators, writers, artists, or other types of practicing professionals.

Authentic learning is the vehicle through which everything from basic skills to advanced content and processes come together in the form of student-developed products and services. The student's role changes from lesson-learner to firsthand inquirer, and the role of the teacher changes from instructor and disseminator of knowledge to coach, resource procurer, and mentor. Although products play an important role in creating authentic learning, students learn principally from the cognitive, affective, and motivational processes involved.

A Different Approach

Developing an authentic enrichment cluster draws on skills that most teachers already possess, especially if they have been involved in clubs or other extracurricular activities. As you begin the process of developing your own cluster, keep in mind the following:

- *Reverse the teaching equation.* Your role in planning and facilitating an enrichment cluster differs from the teacher's traditional role. Too much preplanning on your part may push the cluster toward deductive rather than inductive teaching and learning. Enrichment clusters develop just-in-time knowledge that has immediate relevance in resolving the problem. Students typically move to higher levels of knowledge than grade-level textbooks support.
- *Reverse the role of students.* Young people working on an original piece of historical research, creative writing, or play production become young historians, authors, scenery designers, and stage managers. Instead of teaching lessons, you will begin to think about how to help a young poet get work published, how to get the shopping mall manager to provide space for a display of models of historically significant town buildings, and how to engineer a presentation by young environmentalists to the state wildlife commission.
- *Create a unique enrichment cluster.* As long as you follow the guidelines for inductive teaching, there is no wrong way to plan and facilitate an enrichment cluster. Differences in interests, personalities, and styles among cluster facilitators contribute to the uniqueness of this type of learning. Experience in an inductive learning environment will help you hone the skills that will become a natural part of your teaching repertoire both in clusters and in your classroom.
- *When in doubt, look outward.* To mirror real-world situations, examine conditions outside the classroom for models of planning, teaching, and organizing. Athletic coaches, advisors for the drama club or the school newspaper, and 4-H Club leaders make excellent enrichment cluster facilitators. Similarly, tasks and organizational patterns should resemble the activities that take place in a small business, a social service agency, a theater production company, or a laboratory.

Guidelines for Developing an Enrichment Cluster

Select a Topic

Base enrichment clusters on topics in which you have a strong interest. Make a list of topics that fascinate you. Reflect on your choices,

discuss your list with colleagues—there may be possibilities for collaboration—and prioritize the topics to help you decide on the focus of your first enrichment cluster.

Focus on Key Questions

Develop enrichment clusters around the following six key questions:

- What do people with an interest in this topic or area of study do?
- What products do they create, and what services do they provide?
- What methods do they use to carry out their work?
- What resources and materials are needed to produce high-quality products and services?
- How and with whom do they communicate the results of their work?
- What steps do cluster participants need to take to have an impact on an intended audience?

These questions do not need to be answered immediately, sequentially, or comprehensively at this stage. As your cluster develops, have students discuss the questions and allow them to reach their own conclusions about the activities, resources, and products that professionals pursue in particular areas of study. If you have all the answers ready before the cluster begins, the excitement of pure inquiry will be lost.

Explore the Topic

The most obvious way to learn about the work of a professional is to discuss the key questions with someone working in the field. A cartoonist, landscape architect, or fashion designer will give you the lay of the land and offer some recommended resources. When talking with professionals, keep in mind that you want to learn what they routinely do in their jobs, how they do it, and what they produce. This background material will help you plan the cluster, but students should also pursue the same questions with professionals after the cluster commences. Such interaction dramatically increases motivation and engagement.

Almost all professionals belong to professional associations. A quick Internet search turns up approximately 3,500 professional organizations. To learn about the work that genealogists do, one teacher went to the Association of Professional Genealogists Web site (www.apgen.org) and found a treasure trove of resources on careers in the field, conferences, publications, places where family records can be found, and local chapters. She also located a directory of members by state. Association membership lists can suggest speakers, mentors, or enrichment cluster cofacilitators. By clicking on *Connecticut*, the teacher found the names, addresses, and phone numbers of 13 professional genealogists in the state, one of whom lived in close proximity to the school.

Another way to explore the key questions as you develop cluster content is to obtain resource books on the methodology of a particular field. A visit to the Genealogical Publishing Company Web site yielded an extensive list of potential resources: 423 titles, to be exact. Librarians and college bookstores can also help locate methodological resource books.

In the real world, almost all work is intended to have an impact on at least one targeted audience. In finding target audiences, you will be serving as a referral agent, promoter, or marketing manager of student work. In school, fellow students and parents are obvious audiences for whom students can practice and perfect performances and presentations, but young people will begin to view themselves in a much more professional role when you help them seek audiences outside the school. The students themselves should make the contacts and be prepared to answer questions.

Local newspapers, city or state magazines, and literary reviews—especially those that target young authors—are excellent places to submit written work. Public buildings and business offices are often receptive to requests to display student artwork. Local or state organizations—such as historical societies, writers

clubs, civic groups, environmental preservation organizations, and advocacy groups—also provide opportunities for young entrepreneurs to present their work. Young dramatists can take their performances on the road to senior citizen centers, day-care centers, religious groups, or professional organizations. One group of students who wrote and produced a legal thriller presented a synopsis of the plot at a county bar association meeting.

Contests and competitions are also great outlets. Most teachers are familiar with science fairs, National History Day, and Math League, but thousands of other competitions take place in such areas as photography, fashion design, inventions, drama, and Web design. Searching for outlets and audiences; writing query letters and submitting work for possible publication, presentation, or display; and receiving replies—both positive and negative—are all part of the creative process and motivate aspiring writers, scientists, and artists.

Write Your Enrichment Cluster Description

The enrichment cluster description should convey, in no more than 100 words, the essence of the experience. Use verbs that emphasize the explorative nature of the cluster by conveying action and illustrating tasks. For example, in a cluster that involves building and marketing compost bins, you might use such verbs as *design, field-test, construct, advertise, market, contact, display*, and *sell*.

You might also pose questions about potential student interests and possible types of involvement: Do you like to express your feelings by writing poetry or short stories? Are you concerned about finding better ways to protect wildlife? Would you like to try your hand at designing fashions for teens? Each of these questions relates to a topic around which a cluster might be developed, yet they are all open-ended enough to encompass a broad range of activities in specific interest areas.

Launch Your Enrichment Cluster

Although students who have signed up for your cluster have expressed an interest in the topic, it may take them some time to understand the cluster's approach to learning. Displaying products or tools that professionals in your topic area typically use is always a good way to begin. In a cluster on archaeology, entitled *The Trash Heaps of Mankind*, the facilitator showed slides of famous and local archaeological discoveries. She opened a Mystery Box in the front of the room to reveal a trowel, a sieve, a pair of gloves, a dust brush, pegs and string, a marking pen, and a camera. She pointed out that these were the main tools of the archaeologist and that an examination of material found in garbage dumps was one of the ways in which archaeologists analyzed past and present cultures. A short videotape of a dig in the students' own state heightened student interest in the work of practicing archaeologists.

Escalate Content and Process

One of the problems we encountered in our research on enrichment clusters was a failure on the part of some facilitators to escalate the level of content and methodology pursued within a cluster. Indeed, critics may point out that clusters are nothing more than fun and games or that students carry out their work using existing skills rather than acquiring more advanced ones. You can guard against these criticisms by examining each cluster with an eye toward providing authentic and rigorous content within the topic area.

In a cluster on research about political opinion, for example, students evaluated archived news articles and editorials from the World War II and Vietnam War eras to analyze and compare public support for these wars. Students in an ecology and evolutionary biology cluster studied the survival prospects of tropical plants grown in the school's greenhouse and conducted experiments to explore optimal conditions for propagation. Content and process objectives evolve as a result of the investigations that students conduct, and this is one factor that highly differentiates the clusters from regular instruction.

Gathering Original Data

During many years of working with students in authentic learning situations, we have discovered that there is a certain magic associated with gathering original data and using that information to create new knowledge. This knowledge may not be new for all humankind, but it may be original to students and their local audiences. A group of elementary students spent an entire school year gathering and analyzing samples of rainwater for sulfur and nitrogen oxide emissions, the main pollutants responsible for acid rain. The students then prepared a report concerning the extent of acid rainfall in their region of the country. Their teacher helped them obtain a standard rain gauge and a kit for testing acidity.

Additional resources enabled these students to prepare statistical and graphic summaries of their data; compare their findings with data from national and regional reports that were easily accessed on the Internet; and design maps showing acid rain trends over time and across geographic regions. The data provided participants with the excitement and motivation to study environmental and health problems associated with various types of pollution. The students found receptive audiences for their work among state environmental protection groups, the U.S. Environmental Protection Agency, and the National Weather Bureau.

Putting It All Together

Most teachers have had a vision, at one time or another, about what they thought teaching would entail. They pictured themselves in classrooms with interested and excited students dramatizing dangerous midnight journeys on the Underground Railroad, conducting science experiments to find out how things work, or experiencing the exhilaration that occurs when a student-developed board game unlocks the relationships between a set of numbers and everyday experiences.

Many teachers, however, experience a disconnect between their vision of a challenging and rewarding career and the day-to-day grind of test preparation. What is most ironic about the separation between the ideal and the reality of today's classrooms is that most teachers actually have the skills and motivation to do the kinds of teaching they dream of. Unfortunately, lists, regulations, and other people's requirements have resulted in both a prescriptive approach to teaching and a barrier to creating a challenging and exciting classroom. Overprescribing the work of teachers has, in some cases, lobotomized good teachers and denied them the creative teaching opportunities that attracted them to the profession in the first place.

Freedom to teach still exists, as does the possibility of making learning enjoyable, engaging, and enriching. You can find both in enrichment clusters, where authentic learning is in the driver's seat.

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Guiding Questions for "A Time and a Place for Authentic Learning"

1. The term "authentic" is a frequently used adjective in the area of performance assessment and teaching and learning for understanding. What do the authors of this article mean by the term?

2. In your opinion, to what extent is the learning in your school or district authentic, as described by Joseph Renzulli, Marcia Gentry, and Sally Reis? In what areas and contexts is it most powerfully authentic? In what areas is improvement needed? Why?

3. The strategies presented in this article for making learning authentic are highly aligned with the principles of Understanding by Design. How does the "different approach" described by the authors parallel the three stages of backward design?

4. The authors of this article strongly affirm the value and power of problem solving as the basis for authentic learning. How often do you or fellow educators in your school or district apply the following steps described by the authors?
   - Find and focus on a specific problem.
   - Identify relevant information.
   - Categorize, critically analyze, and synthesize the information.
   - Effectively communicate with others.

Guiding Questions for "A Time and a Place for Authentic Learning"
(*continued*)

5. What do Renzulli, Gentry, and Reis mean by "enrichment clusters"? How is their recommendation to focus on key questions similar to Understanding by Design's emphasis on essential questions?

6. The work of enrichment clusters, as presented by the article's authors, richly parallels the design elements of G.R.A.S.P.S. as described by Grant Wiggins and Jay McTighe. How do these two models compare and contrast?

7. The authors conclude: "Freedom to teach still exists, as does the possibility of making learning enjoyable, engaging, and enriching. You can find both in enrichment clusters, where authentic learning is in the driver's seat." How does the philosophy presented here align with that of Wiggins and McTighe?

The Engaged Classroom

Sam M. Intrator

Nothing deflates a teacher more than bored students. Here's how teachers can get teens energized about learning.

I do my research by shadowing teenagers in school. Even though I'm a veteran high school and college teacher and the father of three, I figure the truest and most accurate way I can learn about the way teaching and learning happen in high schools is to experience what adolescents experience throughout a school day. I recently spent 130 days shadowing students in a diverse California high school. As I sat side by side with young people in classrooms and later debriefed them about their experiences, I focused on two central questions:

- What is happening in students' heads and hearts as they experience school?
- What characterizes classroom episodes during which students become wholly engaged and energized, finding genuine meaning in academic experiences?

My questions have their genesis in my teacher's heart. One of my best memories of the dozen years I spent teaching high school is the day my classroom sprang to life in a fierce, dazzling discussion of how themes in Billie Holiday's recording of "Strange Fruit" connected to *The Adventures of Huckleberry Finn*. Even after the bell rang, the students wouldn't stop debating.

It's been almost 20 years since that day, and I now teach at Smith College. Moments when I see the collective attention of my students and feel their energy for the subject at hand still represent the grail I pursue in teaching. When I stand before my class, I scan the rows of faces and wonder whether the students are with me—and if they're not, where are they? In my research, I seek to understand the experiential terrain of students' class time and detect links between what teachers do and what young people take in. Here is what I am learning.

Dream Factories or Deserts?

Classrooms are powerful places. They can be dynamic settings that launch dreams and delight minds, or arid places that diminish hope and deplete energy. The students I shadowed experienced them as both, but they generally described their academic experience as listless and tedious. My observations and conversations with students affirm prior research, such as that conducted by John Goodlad in his massive study of U.S. secondary schools. Goodlad (1984) concluded that the typical classroom possessed a "flat neutral emotional ambiance [where] . . . boredom is a disease of epidemic proportion" (p. 9). Mihaly Csikszentmihalyi and Reed Larson's study (1984), in which teenagers carried electronic pagers and self-report forms to monitor moods, reflected the same trend. The beepers were randomly activated, signaling students to fill out self-report forms on what they were doing and their immediate state of mind or emotion. Csikszentmihalyi and Larson found that

> Compared to other contexts in their lives, time in class is associated with lower-than-average states on nearly every self-report dimension. Most notably, students report feeling sad, irritable, and bored; concentration is difficult; they feel self-conscious and strongly wish they were doing something else. (p. 9)

Source: From "The Engaging Classroom," by S. M. Intrator, 2004, *Educational Leadership, 62*(1), 20–25. Copyright 2004 by the Association for Supervision and Curriculum Development.

To characterize class experience as merely boring overlooks important facets of student experience. Boredom by definition is a feeling of "weariness brought on by tedious iteration or dullness" (Stein, 1975). Through my research I observed students experiencing class time several different ways, often drifting from one state of experience to another.

Flavors of Disengagement

Slow time. Students often described class time as monotonous and classroom activities as predictable, mechanically routine, and dull. As one student put it, "Sitting in class is like being in the car with your parents on a long road trip without your CD player." When students experience slow time you can watch them trying to invent ways to occupy themselves. They read magazines, listen surreptitiously to headphones, or drift off into daydreams.

Lost time. A more intense form of disengagement I observed possessed strange, almost eerie properties. During lost time, time unfolds without students being able to describe or articulate any form of experience. They do not describe themselves as daydreaming but as passively waiting for class to end. As one student said, "I enter a zone where time bends, but does not move."

Fake time. Aware that teachers monitor their engagement and attention, teenagers tactically position themselves to appear attentive. They devote energy to what Denise Pope (2001) calls "doing school," by which she means going through the right motions to appear as though they are learning and focused. One student told me that

> I set up my books, position my calculator, and sit forward in my seat not because I'm interested, but because I know my teachers like to see me looking like I'm paying attention.

This charade of attention often masks students' crafty and surreptitious efforts to undertake projects unrelated to the class unfolding before them. Students do homework, pass notes, generate to-do lists, and study for quizzes—all the while monitoring the teacher and classroom activities.

Worry time. High schoolers spend vast stretches of time worrying and strategizing about nonacademic matters. Students describe a host of distractions to their attention that drain their capacity to emotionally and intellectually connect with what happens in class—from romantic spats to impending athletic events or drama performances.

Play time. I've observed students as they watched movies, listened to wonderful musical recordings, and sat through interesting lectures. Students in this state of experience are generally attentive but passive. They watch with the vigor of a popcorn-scarfing sitcom viewer. I've also sat with students who were purportedly engaged in collaborative group work, but who were actually deep in off-topic social conversation that would tactically shift upon arrival of the teacher.

Engaged Time: The Grail of Teaching

The final category of student experience I identified, *engaged time*, represents students deeply immersed in learning. From my vantage point as the shadow, I witnessed students becoming roused to life, animated with feelings and ideas. Episodes of intense concentration occurred. High schoolers experienced these moments as provocative, enchanting, memorable, and enjoyable. They described feeling immersed and involved and said things like "I can't believe how fast class went!" or "That was intense!"

After sitting with students through hundreds of class sessions and engaging in postmortem analyses of how they experienced class time, I've come to believe that these episodes of engagement represent formidable triumphs of teaching. I believe they happened because a teacher made crucial pedagogic decisions in the short term and cultivated a powerful classroom ethos over the long term. Watching different teachers during these episodes

of potent teaching, I noted one commonality—these teachers fought fiercely to hold their students' attention. They appeared to recognize that teenagers are unabashed and savvy consumers of many things. Our youth carry credit cards, cell phones, pagers, and car keys. Teens intuitively grasp that the inalienable right of a consumer is the power to choose. They are full-fledged shoppers with a ubiquitous taste for things fast, jazzy, and loud. Global marketing executive Elissa Moses (2000) notes that

> Global teens have been brought up to experience and expect sensory stimulation. This generation is constantly looking for new thrills that entertain. The preferred music is loud. The movies enjoyed feature fast action. The dances are rhythmic and frenetic. . . . Global teens have a very low threshold for boredom. . . . Do not bore this generation or it will abandon you. (p. 45)

The teachers who successfully held the attention of students used a variety of approaches and techniques. Generally, they practiced anti-boredom pedagogy and were relentlessly attuned to the attention-scape of their classroom. When attention waned, they intervened. Here is a sampling of approaches.

Manipulate Classroom Pace

One teacher veered between a frenetically paced question-and-answer discussion and long spans of quiet journaling time. She told me that her model for pace was MTV:

> I try and jar students into paying attention with lots of transitions, quick back-and-forth followed by some slow times. I see myself as a deejay at a party.

Teachers also broke routines to get students' attention. Taking students outside for class, introducing a subject with dramatic footage from a video, bringing visitors into the classroom, or dressing up in costume were all strategies teachers used to be novel and garner attention.

Feed the Need to Create

Students were most vibrant when creating or thinking about something new. I can't emphasize enough how invigorating it was for them to be part of a discussion or project that allowed them to express their originality. Students tuned in when they felt ownership over ideas expressed in class and felt they were in a safe place to share their own ideas. They yearned to be listened to and have their insights taken seriously.

Share Your Personal Presence

Energy and passion matter. We all know that if you are in the presence of someone who yawns, in a short time you'll be yawning yourself. When I observe students, the same phenomenon holds sway. Energized, expressive teaching fosters energized learning; sedentary, monotonous teaching sabotages attention. Personal presence does not need to be boisterous, but it must be authentic. Teachers who connected with students told poignant personal stories, conveyed their passions, and expressed emotion and vulnerability. Time and again, I heard students say about teachers who were capable of snaring attention, "Mr. X is a real person."

Students also responded when teachers shared their own love affair with learning and scholarship. When teachers showed wonder and passion for what they taught—sharing what they were learning from their own reading or in courses they were taking—students sometimes rolled their eyes. But I rarely thought they meant it.

Know Students as People

The young people I spent time with wanted their teachers to know them as people. They wanted teachers to understand their experiences, interests, aspirations, needs, fears, and idiosyncrasies. Feeling known, understood, and appreciated matters.

The teachers I observed in turn genuinely enjoyed young people. They were kid-savvy and created opportunities to get to know their students beyond the classroom—attending after-school events, devising assignments that gave appropriate access to the personal realm, and working to stay connected. Effective teachers used this knowledge of the personal to create bridges between their students and course content. For example, one teacher I observed would frequently frame questions using snippets of personal information: "John, you've told me about your passion for weightlifting. Linda, you've described your fascination with theater. In *The Catcher in the Rye*, what are Holden's passions?"

Connect Content to Teen Questionings

The teenagers I shadowed were on a journey, striving to figure out who they are, to whom they belong, what talents and potential they have, and where they might end up. Teachers who engaged young people used virtually any subject matter as an opening to meaningful conversation about big ideas like these. Questions that focused attention were often connected to psychosocial dilemmas that many students were already working out for themselves.

For example, to emphasize that statistics is a potent tool for highlighting inconsistencies in our culture, one math teacher capitalized on the adolescent sensitivity to paradox. This teacher had students develop a survey and poll the school about its civic values: Results showed a student body that cared deeply about community issues. The students then analyzed survey results from the New Millennium Young Voters Project, which showed that only one in five young people between the ages of 18 and 20 votes. They learned not only the process of polling and tabulating survey results but also a means to interpret their world and understand their generation through statistics.

One English teacher designed an assignment asking students to construct an "experience wheel" that compared Huckleberry Finn's developmental journey with their own journey to adulthood. One student reflected that

> I like the story about Huck, but what I found more interesting was how the assignment made me think about my own journey. I'm not heading down the Mississippi, but connecting each stage of life that Huck experienced with my own helped me think about my own journey as well.

Hearts and Minds

During the past year, people in the United States have heard a lot about "winning the hearts and minds" of others. This term suggests gaining the positive attention of a group of people for a virtuous purpose. Although the term has been co-opted by the media and politicians, it has a deeper meaning for teachers. We must win students' hearts and minds by engaging them in whatever subject we teach, so they can discover genuine meaning and value in their academic experience.

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Guiding Questions for "The Engaged Classroom"

1. A key element of student achievement—especially as it reflects student understanding and capacity for authentic, real-world transfer—is the issue of engagement and student efficacy. How does Sam Intrator make his case for the importance of this element in the classroom?

2. In the section entitled Dream Factories or Deserts?, Intrator cites a research conclusion of Csikszentmihalyi and Larson (1984): "Most notably, students report feeling sad, irritable, and bored; concentration is difficult; they feel self-conscious and strongly wish they were doing something else." How often do you observe these behaviors in your school or classroom? What accounts for their presence among some—or all—students?

3. Intrator recommends several key approaches to addressing waning student attention and engagement:
   - Manipulate the classroom pace (e.g., lots of transitions, quick back and forth activities).
   - Feed the need to create (i.e., use discussions and projects that allow students to express their originality).
   - Share your personal presence (i.e., reinforce a sense of academic trust by expressing energy and passion when teaching).
   - Know your students as people (i.e., whenever possible, address students' personal interests, experiences, background knowledge, and learning style preferences).
   - Connect content to teen questionings (i.e., align students' learning experiences with their need to figure out who they are, whom they belong to, what talents and potential they have, and where they might end up).

   How do Intrator's recommendations parallel the recommendations made by Grant Wiggins and Jay McTighe for assessing teaching and learning for understanding?

Activity 2.3

Connections Among the Three Stages

Large Group Directions

A critical issue for educators exploring ways to implement Understanding by Design successfully involves aligning and connecting the three stages of the backward design process. In Understanding by Design: The Experts and Practitioners Speak, for example, this issue is reinforced as a central priority in working with this framework. Participants in professional development groups may wish to use Connecting Principles for the Three Stages to discuss the relationship between and among Stages 1, 2, and 3.

Small Study Group Directions

Small study groups can adopt the recommendations presented for large group exploration of aligning the three stages. In addition to the directions above, participants can use their small study group setting to discuss and debate potential ways to address areas of misalignment. The set of principles and key guiding questions presented in Connecting Principles for the Three Stages can focus and inform one or more sessions for small study groups exploring ways to implement Understanding by Design successfully.

Independent Study Directions

Individuals engaged in independent study can use Connecting Principles for the Three Stages to assess their understanding of ways to align the three stages of backward design. Those elements that appear confusing or vague can become the basis for further reading, research, and independent study.

Connecting Principles for the Three Stages

As you read the following connecting principles, consider these two questions:

- To what extent do we currently do this in our classrooms and schools?
- What areas of alignment are weak or missing in our classrooms and schools?

1. All desired results identified in Stage 1 (i.e., established goals, enduring understandings, essential questions, and enabling knowledge objectives) must be aligned with one or more of the assessment tasks identified in Stage 2.

2. The established goals (i.e., power standards) identified in Stage 1 are the basis for determining the "big ideas" that should be assessed and taught for purposes of deep and enduring understanding.

3. Students need to understand where they are going and why they are going there (Stage 3, the "W" in W.H.E.R.E.T.O.). This principle for designing learning activities aligns powerfully with Stage 2's emphasis on students' self-reflection, self-assessment, and active use of rubrics and other scoring tools to monitor their own progress.

Connecting Principles for the Three Stages (*continued*)

4. Stage 3's emphasis on authentic learning, conceptual understanding, and transfer aligns powerfully with Stage 1's emphasis on "big idea" cueing tools (i.e., enduring understandings and essential questions) and Stage 2's commitment to authentic, performance-based assessment, including culminating performance tasks and projects such as G.R.A.S.P.S.

5. The first "E" of W.H.E.R.E.T.O. (exploration and equipping all learners for success) aligns powerfully with Stage 1's emphasis on all learners' acquiring the same enduring understandings, essential questions, and objectives aligned with the six facets of understanding and Stage 2's commitment to authentic, performance-based assessment (particularly real-world culminating projects via G.R.A.S.P.S.).

6. The "R" in W.H.E.R.E.T.O. (rethink and revise) underscores the power of student self-reflection and self-regulation and aligns with the emphasis on self-assessment in Stage 2 and the six facets of understanding (especially self-knowledge).

Connecting Principles for the Three Stages (*continued*)

7. The second "E" in W.H.E.R.E.T.O. underscores the need for evaluating understanding of evaluation criteria (Stage 2) and the need for all learners to acquire deep understandings of the content they are studying (Stage 1), including a capacity for conceptual application and transfer of learning to new and unanticipated settings and contexts.

8. The "T" in W.H.E.R.E.T.O. (tailoring student learning to address readiness levels, interests, and learning styles) aligns with the equity principle of Stage 1 (i.e., all learners should acquire deepening understandings of what they are studying) and the self-reflection and authentic assessment principles of Stage 2.

9. The "O" in W.H.E.R.E.T.O. (organizing learning activities to promote growing levels of student transfer and independent use of curriculum content) aligns powerfully with Stage 2's concept of authentic, performance-based assessment (especially G.R.A.S.P.S.) and Stage 1's commitment to big ideas, enduring understandings, and essential questions as the heart and soul of desired results.

Activity 2.4

Exploring Stage 1: Identify Desired Results

Large Group Directions

Professional development groups can use Stage 1: A Self-Reflection Questionnaire to discuss the extent to which Stage 1 design principles and elements are operational in their respective classrooms and schools.

Small Study Group

Small study groups can use Stage 1: A Self-Reflection Questionnaire as a catalyst for designing and implementing reading-based activities and investigations related to key Stage 1 design elements, including

1. Unpacking standards using the three-circle audit process.
2. Determining power standards and related big ideas.
3. Developing enduring understandings and essential questions based on power standards.
4. Designing enabling knowledge objectives aligned with one or more of the six facets of understanding.

Independent Study Directions

Individuals engaged in independent study can use Stage 1: A Self-Reflection Questionnaire to examine the level of implementation of Stage 1-related elements and strategies in their respective classrooms, schools, or districts.

Stage 1: A Self-Reflection Questionnaire

To what extent is each of the following Understanding by Design instructional priorities addressed in your classroom, school, or district?

Instructional Priority	Highly Evident	Evident	Somewhat Evident	Not Evident
1. We have to build consensus about our content standards and what they suggest about what all students should know, do, and understand.				
2. We developed performance standards and indicators to identify the types of performances that should be benchmarks to monitor students' progress relative to our content standards.				
3. Our classrooms help students to understand what they are expected to know, do, and understand at the conclusion of lessons, units, and courses of study.				
4. We organize our desired results around those standards that require students to demonstrate deep understanding and transfer.				
5. We cue students into the big ideas of our curriculum, reinforcing their ability to see patterns, connections, and interrelationships within the content they study.				
6. We anchor units around enduring understandings—statements that describe what students are expected to understand (e.g., Students will understand that . . .)				
7. We help students investigate understandings through essential questions.				
8. We clearly articulate enabling knowledge objectives to learners, with objectives clearly stating what they are expected to know and be able to do.				
9. Our objectives are framed in language reflective of one or more of the six facets of understanding.				
10. Our desired results are clearly aligned with our assessment evidence and teaching activities.				

Activity 2.5

Exploring Stage 2: Determine Acceptable Evidence

Large Group Directions

Professional development groups can use Stage 2: A Self-Reflection Questionnaire to discuss the extent to which Stage 2 design principles and elements are operational in their respective classrooms and schools. This activity is especially useful for large groups investigating issues related to balanced assessment and overcoming teach-to-the-test, worksheet-based approaches to accountability testing.

Small Study Group Directions

Small study groups can use Stage 2: A Self-Reflection Questionnaire as a catalyst for designing and implementing reading-based activities and investigations related to key Stage 2 design elements, including

- Balancing assessment, using a range of assessment tools for purposes of diagnostic, formative, and summative assessment.
- Assessing the extent to which a photo album—rather than a snapshot—of student achievement data is a consistent part of assessment practices.
- Integrating constructed-response test items into tests and quizzes.
- Encouraging students to assume an active role in the assessment process, including reflective assessment practices.
- Using performance assessment tasks and projects to anchor the assessment of student understanding.
- Ensuring alignment between the desired results and the form of assessment used to monitor student achievement.

Independent Study Directions

Individuals engaged in independent study can use Stage 2: A Self-Reflection Questionnaire to examine the level of implementation of Stage 2-related elements and strategies in their respective classrooms, schools, or districts. This questionnaire and its elements are especially useful for individuals interested in understanding research-based best practices in the field of assessment and evaluation.

Stage 2: A Self-Reflection Questionnaire

To what extent is each of the following Understanding by Design instructional priorities addressed in your classroom, school, or district?

Instructional Priority	Highly Evident	Evident	Somewhat Evident	Not Evident
1. Our core curriculum contains rigorous content and performance standards for all learners.				
2. We have designed our curriculum so that teachers can monitor all students' progress and adjust instruction to accommodate individual students' strengths and needs.				
3. Assessment clearly aligns with the desired results of our curriculum.				
4. All teachers in our school or district emphasize a photo album approach to assessment, rather than a snapshot of student achievement.				
5. Tests and quizzes include constructed-response items in which students are engaged in some form of timed or untimed performance.				
6. Self-assessment is a major part of monitoring student progress, including the ongoing use of journals, logs, other reflective writings, and peer review and coaching.				
7. Rather than merely assigning assessment activities, teachers present them in the form of academic prompts that identify format, audience, topic, and purpose.				
8. At key points in our taught curriculum students have the opportunity to engage in independent culminating performance tasks and projects.				
9. Students are an active part of the assessment and evaluation process, with continuing emphasis on their self-reflection and self-assessment relative to articulated standards.				
10. Our testing program represents only one of multiple elements of our approach to assessment and evaluation of student progress and organizational effectiveness.				

Activity 2.6

Exploring Stage 3: Plan Learning Activities

Large Group Directions

Professional development groups can use Stage 3: A Self-Reflection Questionnaire to discuss the extent to which Stage 3 design principles and elements are operational in their respective classrooms and schools. This activity is especially useful for large groups investigating issues related to designing and implementing learning activities that promote deep levels of student understanding.

Small Study Group

Small study groups can use Stage 3: A Self-Reflection Questionnaire as a catalyst for designing and implementing reading-based activities and investigations related to key Stage 3 design elements, including

- Aligning Stages 1, 2, and 3.
- Ensuring that students are clear about where they are heading and why they are heading there.
- Making diagnostic assessment an active part of teaching activities.
- Hooking and engaging students' interest and motivation.
- Employing exploration to equip students for success and understanding.
- Helping all students rethink and revise their understanding.
- Ensuring that all students self-evaluate and self-express.
- Tailoring instruction to accommodate students' readiness levels, interests, and learning styles.
- Organizing learning activities so that students move from initial experience toward growing levels of conceptual understanding and independent application and transfer.
- Evaluating students' understanding of unit objectives.

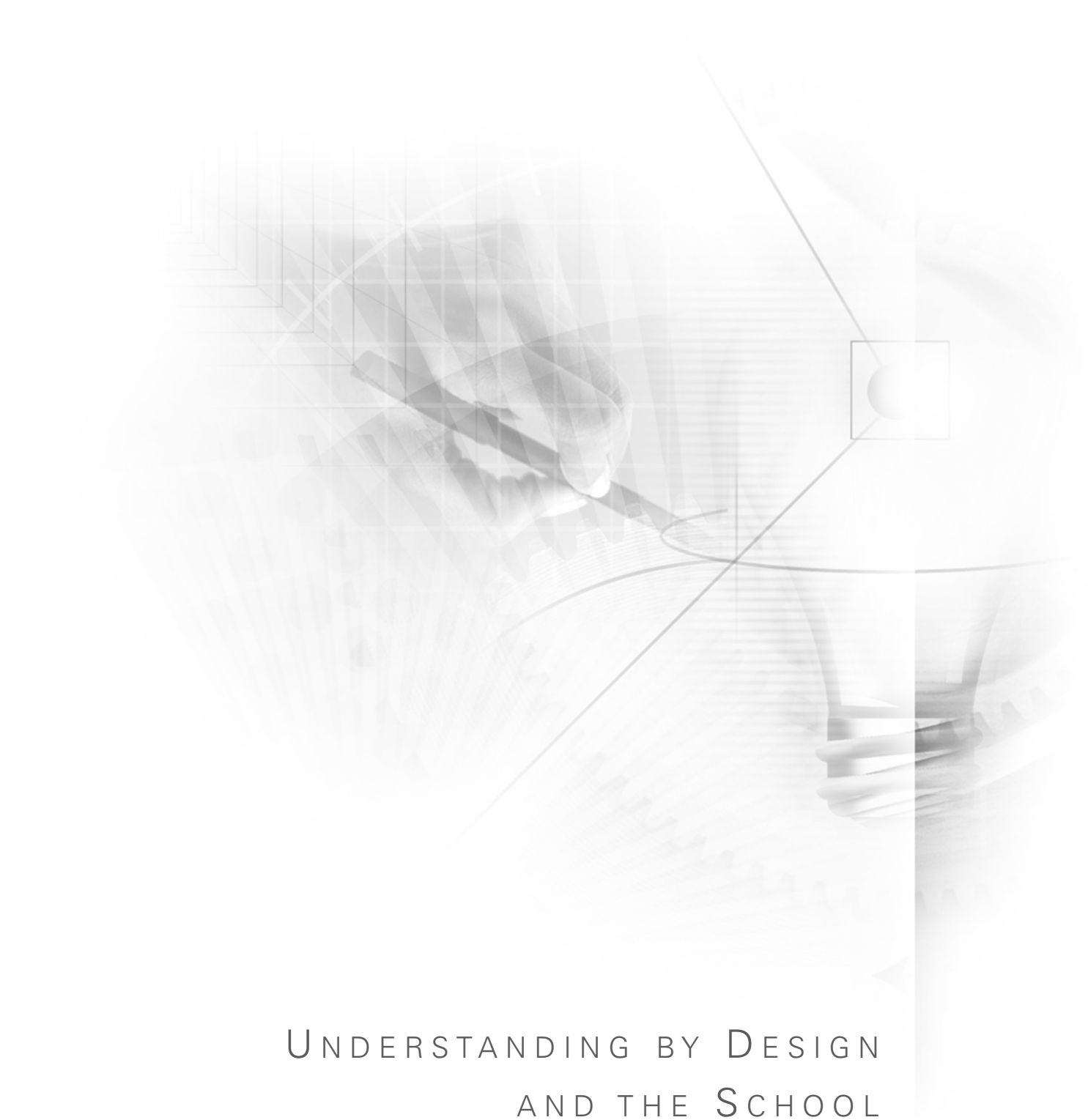
Independent Study Directions

Individuals engaged in independent study can use Stage 3: A Self-Reflection Questionnaire to examine the implementation level of Stage 3 strategies and design principles in their respective classrooms, schools, or districts.

Stage 3: A Self-Reflection Questionnaire

To what extent is each of the following Understanding by Design instructional priorities addressed in your classroom, school, or district?

Instructional Priority	Highly Evident	Evident	Somewhat Evident	Not Evident
1. Instructors emphasize unit design, rather than discrete or isolated lessons, and put the learner at the center of the learning process.				
2. Students receive ongoing support to understand where they are headed, why they are headed there, and ways they will be evaluated along the way.				
3. At key juncture points, students participate in activities to engage and hook their interest and imagination.				
4. Instructors emphasize experiential learning that allows students to engage in exploration and inquiry.				
5. Instruction encourages students to reflect, revise, rethink, and revisit their knowledge and growing understanding.				
6. On a regular basis, students have opportunities to self-evaluate and self-express.				
7. Using ongoing monitoring and assessment processes, instructors modify their teaching to accommodate students' unique strengths and needs.				
8. Instructors organize learning experiences so that students progress from (a) concrete experiences to (b) abstract conceptualization and (c) independent understanding as demonstrated through their ability to (d) explain, interpret, and apply what they have learned in new and unanticipated situations and settings.				



Understanding by Design and the School Improvement Process

Moving Forward with Understanding by Design

Understanding by Design and the School Improvement Process

This strand explores the emerging implications of Understanding by Design for the school improvement planning process. Specifically, this section will introduce participants to reflections and analyses by experts as well as educators and administrators who have been successfully using Understanding by Design to improve student achievement. This part of the program reiterates the need for helping schools to become genuine communities of inquiry and learning, emphasizing student understanding and transfer.

Using a combination of video excerpts, professional development activities, and suggested readings, this strand will help you to explore the following questions:

- How can educators promote the principles of equity and excellence using the Understanding by Design framework?
- How can educators use Understanding by Design to improve their professional development?
- What are the inevitable issues, implementation gaps, and challenges that must be confronted to implement Understanding by Design successfully in school settings?

Activity 3.1

Previewing and Postviewing

Large Group Directions

This strand invites participants to explore the implications of Understanding by Design for the school improvement planning process. Use the Previewing and Postviewing Chart to facilitate participant discussion, emphasizing the implications of the ideas presented in this section for school or district improvement planning.

Small Study Group Directions

Small study group participants can use the Previewing and Postviewing Chart to start an ongoing investigation of specific implications of Understanding by Design for their school or district. After the initial viewing and discussion sessions, small study group members might elect to take one or more of the issues and themes presented in this strand for individual or paired study. At the conclusion of their investigations, they can present their conclusions to the small study group as a whole.

Independent Study Directions

Individuals can use the Previewing and Postviewing Chart as a catalyst for self-reflection and self-evaluation. Ideally, the independent study process can be enhanced by pairing up with another educator to compare and contrast individual perceptions and conclusions.

Previewing and Postviewing Chart

Before viewing the video excerpt, fill out the Previewing column. After viewing the video excerpt, fill out the Postviewing column for any questions in which your thinking has changed.

Guiding Questions	Previewing	Postviewing
1. How do successful schools reflect the elements of backward design?		
2. How can educators promote the principles of equity and excellence using the Understanding by Design framework?		
3. How can educators use Understanding by Design to improve their professional development?		
4. What are the inevitable issues, implementation gaps, and problems that must be confronted to implement Understanding by Design successfully in school settings?		

Previewing and Postviewing Chart (*continued*)

How have your responses changed after viewing and discussing the video excerpts in this strand?

What can you take with you that will support your journey to provide learning for understanding?

Activity 3.2

Exploring Understanding by Design for School and District Use

Large Group Directions

The articles included for this activity emphasize what research and long-term practice reveal about effective school improvement planning. Guiding questions are included for each article to focus discussion. Large group professional development can involve participants engaged in a jigsaw cooperative learning activity involving the following steps:

1. Participants form "expert groups" to read and discuss one of the articles included for this strand (using the suggested guiding questions for each article).
2. Each expert group prepares a five-minute summary of the article to present to the larger group, including its major conclusions and their reactions to the ideas.
3. Ideally, this process should lead to a culminating discussion of the implications of the ideas and strategies presented for the specific school or district the workshop is being conducted for.

Small Study Group Directions

Small study groups can use the jigsaw approach described above to process the articles, using the guiding questions for each article to make notes. They may also elect to conduct a seminar on each of the articles using the Culminating Questions.

Independent Study Directions

Individuals can investigate these articles from the perspective of their individual or personal role in promoting organizational change within their school or district. They can reflect on the guiding questions for each article to focus their independent study.

Reflective Questions

After reading one of the articles included in this activity, consider in your small study group the following questions.

1. What does the research tell you about effective school improvement planning? What are the implications of the research for moving forward with Understanding by Design?

2. How can schools as learning organizations most effectively—and efficiently—change their organizational cultures and practices? In your opinion, what changes are necessary when implementing Understanding by Design?

3. What are the implications of these articles for your own school improvement planning process? How do these implications apply to Understanding by Design?

School Improvement—Aligned!

Kate M. Cassada, Carol J. Stevens, and Jamelle S. Wilson

By connecting district goal setting to school initiatives and classroom application, a Virginia school district makes accountability work.

Hanover County Public Schools enjoy a reputation for excellence by almost all measures. We have a high school dropout rate of less than 1 percent, and in 1997 we were the first school district in Virginia to receive the U.S. Senate Award for Continuing Excellence. Located in a beautiful section of the state that includes rolling farmland, extensive tree-covered acreage, and suburban areas, Hanover County has always served its students well.

But in spring 1998, every school system in Virginia was faced with the challenge of meeting new accreditation standards as the state began implementation of the Standards of Learning (SOL) exams, the assessment portion of its accountability system. Hanover County Public Schools, a school system that had met other academic challenges with relative ease, found itself in an unfamiliar position: We failed to meet Virginia's new accreditation standard on the basis of our students' performance on the SOLs. In fact, only 1 of 17 schools in the district met the requirements to receive full state accreditation.

Concerned that the results of one measure could harm the reputation of our school district, we developed a plan that propelled 100 percent of our schools to full state accreditation in just three years. For the last two years, all 17 Hanover County schools have exceeded the state accountability standards for academic performance. The key to this improvement has been alignment of goals, curriculum, instructional practices, and professional development.

Aligning Goals

To build commitment to excellence at all levels—from the school board to the superintendent to principals to teachers to the larger school community—our district established a goal-alignment structure that begins with the school board and the long-range planning process. Representatives from every stakeholder group—students, parents, teachers, support staff, business leaders, administrators, central office personnel, the superintendent, and school board members—participate on the Long-Range Planning Team. Led by a skilled facilitator, team members collaborate to establish five basic elements: beliefs, mission, objectives, parameters, and strategies.

This long-range plan guides goal setting for all district personnel. The superintendent's goals parallel the board's, while directors' and principals' goals parallel the superintendent's. For example, the school board may suggest the following goal: "The board will promote the delivery of effective instructional services as the primary responsibility of the entire school community." In alignment with this board goal, one of the superintendent's goals might be "to deliver the highest-quality education for each student while meeting and exceeding state (SOL) and national (NCLB) standards." A school principal then analyzes demographic, achievement, and trend data for his or her school and translates the superintendent's goal into specific school goals—for example, "to increase performance by all subgroups on SOL tests and to meet adequate yearly progress in English (Reading and Writing) and mathematics (Algebra I and Geometry)." The principal's goals are shared with teachers and guide the School

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Improvement Planning Team as it establishes performance targets for the school year.

Aligning Curriculum

Hanover County Public Schools also instituted a multifaceted process to align our local curriculum with the Virginia Standards of Learning (SOLs), which identify specific knowledge, skills, and concepts that students must master in English, mathematics, science, and social studies. Students are assessed for proficiency in these standards in grades 3, 5, and 8. In addition, to receive an advanced or standard diploma, students must pass not only specific high school courses but also a number of related SOL tests.

The knowledge and skills identified by the SOLs help the district determine what is important to teach and learn. This process includes mapping the curriculum by

- Developing pacing charts (tools for planning and tracking the appropriate amount of instructional time dedicated to each element of the curriculum).
- Identifying a scope and sequence for each course to align the curriculum in a logical, sequential manner.
- Establishing curriculum guides that identify the appropriate content to teach.

Aligning Instructional Practices

At the school level, principals and teachers have taken steps to ensure that instructional improvement efforts are aligned with those of the Hanover County school board, the superintendent, and central office directors. When the superintendent challenged district schools to raise SOL scores, educators studied their instructional programs to identify areas for modification and improvement.

The activities of educators at Stonewall Jackson Middle School provide several examples of this focus on improved scores. Since the 1990s, the school has provided an extended learning block for 7th and 8th grade students called CORE. During the 90-minute CORE period, which is scheduled every other day, students' team teachers provide extra support in one of the core academic subjects of language arts, mathematics, science, and social studies. When Virginia's SOL program introduced a clear vision of learning standards and the accompanying testing program, the teachers who worked with CORE realized that they could use this instructional time to supplement SOL-tested academic instruction. These teachers created a nine-week academic rotation of math (probability and statistics); language arts (poetry); science (sound and oceanography); and social studies (economics). In this way, they extended their valuable instructional time by more than 30 hours.

The school also looked at the mathematics course choices for rising 6th grade students. Observing that 100 percent of 6th grade students who enrolled in above-grade-level mathematics passed the math SOL test, teachers decided to challenge more students to handle the advanced mathematics curriculum. We began contacting the parents of students who achieved high scores on the 5th grade mathematics SOL test and received *A*s in 5th grade mathematics to discuss the option of selecting a higher-level 6th grade mathematics course. In 2002, we contacted the families of 47 students who met these criteria; 46 chose to challenge their children through a more advanced mathematics class that year. Every 6th grade student who elected to move to a more challenging mathematics class passed the state SOL assessment.

Stonewall Jackson Middle School's QUEST tutorial program provides additional support for SOL success for all students through three avenues—morning study sessions, afternoon "jam sessions," and elective tutorial classes. Morning study sessions are designed to reteach academic skills and concepts according to individual student needs. Supplemental jam sessions take place in the weeks just before testing; any students interested in a quick and intense review of key pieces of the curriculum can attend these sessions to work in large and

small groups on fun, fast-paced activities. Elective tutorial classes provide yearlong support in language arts and mathematics for students who need it; teachers of these classes purchase appropriate materials and receive a stipend through state SOL grant funding. The QUEST coordinator and participating teachers track student attendance and achievement, providing valuable data for program assessment and planning.

Aligning Professional Development

Enhanced learning for students depends on detailed, thoughtful professional development for adults. In Hanover County Public Schools, we studied and sought instructional strategies that promote higher student achievement and implemented staff development in those strategies. For example, we implemented Project CRISS (CReating Independence through Student-owned Strategies), a research-based staff development program, in each of the district's four middle schools. Project CRISS provides training for teachers in such instructional strategies as Think-Pair-Share, concept mapping, two-column notes, Power Notes, and word mapping.[1]

We also began incorporating the philosophy and principles of Total Quality Management into classrooms to create a powerful learning environment by encouraging students to become better problem solvers and critical thinkers. We contracted with an education consultant to conduct professional development on the use of Quality Tools in classrooms.[2] These tools enable students to brainstorm ideas, analyze cause-and-effect relationships, sort information by categories, and prioritize concepts through different kinds of graphic aids, such as fishbone, lotus and force-field diagrams. Thus, students become better thinkers and learners.

After principals and other key school leaders attended training on Project CRISS and Quality Tools, it was their task to introduce and facilitate the use of these initiatives with the instructional staff in their schools. The leadership team at Stonewall Jackson Middle School (including senior teachers, assistant principals, and the principal) planned specific activities.

For example, during the teacher work week before the beginning of the school year, several senior teachers planned a scavenger hunt in which teams of teachers went to interesting historical and cultural sites around Richmond, Virginia, to learn about the rich cultural offerings of the area. When each team arrived at its final location, a facilitator presented participants with a task that involved using one of the Project CRISS or Quality Tools strategies. The teachers used a KWL chart to brainstorm what they *Know* (*K*) about the historical site, generate questions about what they *want* (*W*) to know about the site, and then record what they *learned* (*L*) during the visit. Completing these tasks helped teachers in various instructional teams and departments get to know one another and introduced them to key Project CRISS and Quality Tools concepts. Participants enjoyed an active yet focused staff development day.

Follow-up Project CRISS and Quality Tools staff development included a day of rotating sessions taught by colleagues as well as faculty meeting minisessions. All teachers at Stonewall Jackson selected specific uses of Quality Tools for their annual goal setting. Students quickly caught on to these powerful, self-directed strategies, and soon the school's classrooms and halls boasted related student work displays. When the Hanover County school board enjoyed its annual tour of Stonewall Jackson, 6th grade students made presentations about their Project CRISS and Quality Tools learning experiences, demonstrated their successes, and taught attendees a related lesson.

District and School Efforts Combined

It is unfair to expect individual schools or teachers, working alone, to effect long-term improvements in student achievement. The improvement efforts in Hanover County Public Schools demonstrate that student achievement gains and school improvement depend on strategic planning and goal-setting at the district

level as well as a commitment to district goals at the school level. Through Hanover County's focus on student learning and alignment of curriculum and instruction with district objectives, we are meeting accountability mandates and moving toward the goal of leaving no child behind.

Endnotes

[1] More information about Project CRISS is available at www.projectcriss.com.

[2] Wicks, C., Peregoy, J., & Wheeler, J. (2001). *Plugged in! A teacher's handbook for using total quality tools to help kids conquer the curriculum*. New Bern, NC: Class Action.

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Guiding Questions for "School Improvement—Aligned"

1. According to this article, how did Hanover County (Virginia) Public Schools "connect district goal setting to school initiatives and classroom application"?

2. A key element of school improvement in this district involved a goal-alignment structure involving key stakeholder groups and a long-range planning process. How did team members establish the following basic elements: beliefs, mission, objectives, parameters, and strategies?

3. A powerful use of Understanding by Design is in the area of curriculum alignment. To what extent did the practices related to curriculum alignment in Hanover County reflect the backward design process?

4. Instructional improvement efforts played a major role in the Hanover County school improvement planning process. How did the district align its instructional practices? What are the implications of their process for your school or district?

5. Effective professional development is essential to the school improvement planning process. How would you summarize the major professional development principles used by Hanover County? How did professional development align with overall district priorities?

6. To what extent do you agree or disagree with the authors' concluding assertion: "It is unfair to expect individual schools or teachers, working alone, to effect long-term improvements in student achievement. [Improvement] efforts demonstrate that student achievement gains and school improvement depend on strategic planning and goal-setting at the district level as well as a commitment to district goals at the school level."

How Schools Sustain Success

Valerie Chrisman

Showing improvement in student achievement is one thing. The challenge is sustaining it year after year.

Under the microscope of increased accountability, a growing number of U.S. schools have been identified as underperforming on the basis of their low test scores. No Child Left Behind (NCLB) legislation demands that low-performing schools improve their students' academic achievement annually. Yet sustained increases in student achievement are problematic for underperforming schools. A case in point: Only 83 of the 430 schools that participated in California's Immediate Intervention Underperforming Schools Program met their students' test score growth targets for two consecutive years (Just & Boese, 2002).

To better understand the differences and similarities between the 83 low-performing schools that sustained improved student test scores and the schools that were unable to sustain this improvement, I conducted a study of California's primary and secondary reform program schools. I compared the 83 schools that sustained growth on California's academic program index for two consecutive improvement program years with the 273 schools that showed growth for only one of the two years. (The remaining 74 schools in the program showed no growth in either year and were not included in the study.)

I compared the successful and unsuccessful schools according to three criteria: analyses of test scores and school characteristics; interview responses from four teachers and the principal at each of eight representative sample schools, four from each group; and questionnaire responses from the 356 principals whose schools experienced growth in at least one of the two years of the reform program.

Analysis of sample school characteristics revealed that the successful schools actually had higher levels of student mobility and a smaller percentage of fully credentialed teachers than the unsuccessful schools. Larger schools were also more successful than smaller schools at sustaining improved student test scores.

This is not to suggest that schools should advocate for increased student mobility, uncredentialed teachers, or larger enrollments to improve student achievement. Neither specific characteristics of schools nor qualities of students seemed to account for the striking differences between successful and unsuccessful schools in this study. Rather, improved student achievement seems to be the product of how well a school operates and depends on the quality of leadership and the effectiveness of instructional programs and practices.

Teacher Leadership

Strong teacher leadership was apparent in each of the four successful sample schools. Teacher leadership appeared to develop when three conditions were present. First, the teachers had ample opportunities to make decisions about teaching and learning. Successful schools provided teachers with time to meet as grade-level or subject-matter teams. Moreover, teachers at successful schools reported that they regularly used this collaborative time to review student work and to discuss how to strengthen their classroom instruction.

Second, teachers engaged in various forms of informal action research. They used the results of their students' assessments to compare

Source: From "How Schools Sustain Success," by V. Chrisman, 2005, *Educational Leadership, 62*(5), 16–20. Copyright 2005 by the Association for Supervision and Curriculum Development.

different instructional strategies and different classroom environments to see which strategies and environments encouraged student learning. Working together in this way enabled them to create a continual improvement cycle for their instruction.

Third, teachers developed their own internal leadership structures—such as team teaching, mentoring new teachers, and collaborating to share lesson designs—to support one another's resolve to improve student achievement.

Teacher leaders at the successful schools also made policy decisions. These decisions included the design of student intervention programs, the creation of student learning groups based on the individual student's skill weaknesses, the implementation of new standards-based grading systems, and a new focus on instructional strategies, such as reciprocal teaching. The teachers implemented these new programs themselves. To ensure consistency of implementation, they met informally to monitor teacher usage of the programs. When asked which changes contributed to sustained increases in student achievement, teachers at the successful schools cited these kinds of teacher-initiated changes in teaching and learning.

Teacher leadership was strengthened in the successful schools when teachers made decisions regarding professional development. To select appropriate professional development, teachers analyzed student data and determined where students needed academic support. For example, in one middle school, students tested poorly on reading comprehension. Teachers arranged for professional development for all staff members—including mathematics, science, and social studies teachers—in how to teach reading using informational text. After receiving the professional development and implementing specific instructional strategies in the classroom, teachers reassessed the students to see whether their test scores had improved.

In three of the four successful sample schools, teachers sought professional development that focused on improved pedagogy. Their selection of professional development for staff members focused on learning how to use Marzano's nine effective teaching strategies (Marzano, Pickering, & Pollock, 2001) and on increasing the rigor of their instruction by asking questions that required students to analyze, synthesize, and evaluate new concepts. The teachers believed that their focus on pedagogy strengthened their collaborative teams.

Teachers at successful schools spent between one and four hours weekly in collaborative lesson planning. This took place informally, during lunch or after school, as well as in formal weekly planning meetings. Informal conversations focused on successful lessons or problems in teaching specific concepts. In the formal weekly planning meetings, teachers shared student assessment data, analyzed student work, and monitored their own progress toward teaching the standards. Most of the successful schools hired substitutes to provide teachers with regular collaboration time. Teachers from unsuccessful schools reported that they collaborated "when the principal scheduled it in place of a staff meeting." These meetings generally focused on planning for field trips, special events, and state testing.

Increased teacher leadership also created challenges. Teacher leaders cited personality conflicts with colleagues and perceived resentment from those teachers who were not in leadership positions. All teachers were subsequently offered professional development to improve their leadership skills. Staff development included video models of effective teacher-team meetings that foster collegial and professional relationships. Professional development included training in creating an effective agenda and conducting productive meetings. Teachers experienced in meeting management and creating consensus coached and mentored teachers who were new to leadership positions.

Principal Leadership

The successful schools in the study, as opposed to the unsuccessful ones, more often had the same principal for the last three years.

Principals from successful schools believed that their previous experience in high-performing schools helped them hold higher expectations for students in their state improvement program schools. Principals stated that few colleagues, however, voluntarily sought principal positions at such schools. One experienced principal recently assigned to a state improvement program school said that when his colleagues learned of his new assignment, they asked, "Who did you tick off?"

Principals at the successful schools were more likely to create time for teachers to collaborate and to provide them with structured support. This included the principal's frequent attendance at grade-level or department meetings and the expectation that teachers provide feedback on the meetings and let the principal know what he or she could do to help them. As a result, teachers at these schools said that they regularly reviewed student work, created rubrics and assessments, modeled lessons, and monitored how they used the professional development in the classroom.

When asked what they did to improve student achievement at their schools, principals from successful schools produced lists of programs, interventions, and professional development opportunities that contributed to this goal. These principals were comfortable using data and making changes when the data demonstrated that student achievement had not risen. "You can't feel sorry that something doesn't work; you just have to try something different," explained one principal after determining that the school would have to abandon an unsuccessful after-school program.

The principals from the unsuccessful schools were far less comfortable with data. One principal from an unsuccessful school described his attempts to use data to improve his school's effectiveness in raising student achievement as "shooting at moving targets." He claimed that the school could not achieve its state growth targets because "the failing group just keeps changing."

District Office Leadership

When asked to list three factors that were most likely to improve test scores, surveyed principals from both successful and unsuccessful schools included district leadership. All the unsuccessful sample schools demonstrated a lack of strong district leadership.

District leaders in successful schools provided more services than their counterparts in unsuccessful schools did. The successful schools benefited from focused districtwide professional development on pedagogy. Moreover, each summer the district office delivered follow-up professional development for new hires so that all teachers would have the opportunity to learn the same teaching strategies.

At the start of each school term, successful schools more often received assessment data disaggregated by teacher and by individual student than did unsuccessful schools. Teachers and principals also received training on how to use these data to improve instruction and academic achievement. In successful schools, teachers were more likely to find value in the district-provided benchmark assessments designed to track a student's learning. Teachers talked about how they used the assessment results to modify their instruction, such as creating student intervention and enrichment groups. The teachers sometimes agreed to alter their pacing calendars when they learned that the students were grasping new concepts either more quickly or more slowly than they had anticipated.

Principals from both successful and unsuccessful schools discussed their districts' practice of assigning experienced principals to schools with the greatest parent involvement and the greatest potential for parent conflicts. These schools tended to be in the highest socioeconomic areas of the district. New principals were placed in schools in which parent demands and conflicts were expected to be fewer. These schools tended to be in the lowest socioeconomic areas of the district. This practice contributed to a belief that ultimately became

part of the culture—that assignment to low socioeconomic schools was either an entry-level position for new principals or a way of penalizing them for being unable to effectively handle parent conflicts. Transferring from lower to higher socioeconomic areas naturally represented a promotion.

A few districts changed this negative perception by placing principals alternately at high-achieving schools and at state improvement program schools. Experience at both types of schools helped principals develop high expectations for their students' academic achievement and increased the number of principals who had firsthand knowledge of both types of schools. The practice also fostered a new belief that both kinds of schools offer opportunities for professional growth.

Each of the eight principals interviewed for the study stated that the workload and pressure was greater for principals at low-performing schools. Principals from the successful schools said that their districts scheduled monthly cohort meetings with all the district's state improvement program schools. The principals so valued these meetings that they have continued to meet two years after leaving the state improvement program. Said one principal,

> For the first time, I went to a meeting where I felt safe to share all the problems I was having. I say things in our cohort meeting that I would never say when all the district principals get together.

Some districts implemented a policy for state improvement program schools to receive additional district services. These services included additional professional development, additional visitations and support in curriculum and instruction from district personnel, district-provided grant writers, more comprehensive data analysis, and greater on-site visibility of the district superintendent. Unsuccessful schools did not receive these services.

Programs and Practices

Students who are learning English as a second language and students who are academically below grade level attending the successful schools had quite different experiences from those of comparable students who attended unsuccessful schools.

At the successful schools, teachers presented instruction that directly reinforced the students' understanding of how the English language works instead of teaching students conversational English. For example, rather than use curriculum that focused on teaching situational vocabulary—such as how to order a meal in a restaurant—teachers at successful schools used curriculum that focused on academic English and taught students how to use root words, suffixes, prefixes, and verb endings. Teachers believed that their focus on academic English gave all their students—both native and nonnative speakers of English—an advantage on the state test.

Teachers from the successful schools reported that students were grouped by their English language levels. The students received at least 40 minutes of instruction daily in how to read, write, and speak English. In contrast, teachers at the unsuccessful schools did not always group students by language levels and said they taught English language development "when they had time." At successful schools, students not making adequate progress in English language acquisition received personal intervention and additional instruction in a pullout program.

In the successful schools, principals and district office personnel were instrumental in supporting all newly adopted district programs. At one successful elementary school, a new English language development program received far greater district support than the unsuccessful schools received. In this particular school, the district office paid for teacher training in the first year of program implementation and repeated the training yearly for all teachers

new to the district. Administrators also made frequent classroom visits to verify consistent implementation and provide additional materials or training if needed.

Students who performed below grade level in language arts and mathematics at successful schools were far more likely to receive intervention in addition to their regular instruction than were students attending unsuccessful schools. This additional instruction occurred during the school day with credentialed teachers. One teacher in a successful school stated, "We used to have para-educators running the intervention groups until we realized that we needed our strongest teachers with our most at-risk students." When students showed proficiency in the targeted skills, they either exited the intervention programs or received additional instruction in other weak skill areas.

Encouraging News

The results of this study support the research studies of Mintrop (2003), Darling-Hammond (1997), and Barth (1990), which suggest that the solutions to improving education lie inside the schoolhouse. Schools and districts can replicate the successful strategies discussed here if they are willing to change in crucial ways.

One of the study's sample schools did just that. The overcrowded urban elementary school, with a student population of 1,119, is on a year-round multitrack and has a staggered schedule for 1st and 2nd grade. This schedule requires two teachers and 40 students to share a classroom for nearly two hours daily. Each 3rd through 6th grade class has 40 students enrolled. Eighty percent of students are English language learners, and 95 percent receive free or reduced-price lunch. In the last four years, the school has had three principals and a 40 percent turnover in teaching staff. In 2003, the school moved to a temporary school site to allow for the construction of new classrooms. The school is scheduled to return to the original site sometime this year.

Despite the challenges, the school made its growth targets for four consecutive years.

When asked how they transformed their school from one that had the lowest test scores in the state to one noted for sustained improvement in student achievement, teachers credited changes in the district office's support of the school and changes in the school's instructional practices and programs. "We became very focused," said one teacher. Another teacher cited evidence that these efforts are working. "Now the teachers *want* to be here," she said. "Last year we only lost two teachers." A telling comment made by a teacher revealed the staff's optimistic view of the school's future:

> When we return to the original school site in 2005, we won't be overcrowded and sharing classrooms. We're going to make even bigger jumps in student learning.

Schools and districts can bring about student achievement and sustain that achievement if they are willing to examine their practices and embrace change. All schools can replicate these strategies and make improved education available to everyone.

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Guiding Questions for "How Schools Sustain Success"

1. This article reinforces the idea that a major challenge of school improvement is sustaining it year after year. What are the major challenges the article presents? To what extent are these challenges confronting your current school or district?

2. What are the processes related to teacher leadership cited by the author as making a major difference in sustaining school improvement efforts? How successfully has your school or district implemented the practices identified by Valerie Chrisman?

3. According to this article, why is teacher-based decision-making an essential part of effective professional development?

4. What does the article suggest about the significance of the principal in sustaining school success? To what extent do principals in your district reflect the experiences and background expertise identified in this article?

Guiding Questions for "How Schools Sustain Success" (*continued*)

5. District office leadership is essential to sustaining school success, according to the author. What practices related to district leadership does Chrisman identify as having particular significance for the school improvement planning process?

6. What programs and practices described by Chrisman—particularly those related to students learning English as a second language and students who are academically below grade level—have parallels in your school or district? Are there additions or modifications in your current practices that you might recommend?

7. Chrisman ends her article with Encouraging News. What is this news? What are its implications for your school and district?

8. How do Chrisman's recommendations and conclusions reflect aspects of Understanding by Design, especially the elements of the backward design process?

What Is a "Professional Learning Community"?

Richard DuFour

To create a professional learning community, focus on learning rather than teaching, work collaboratively, and hold yourself accountable for results.

The idea of improving schools by developing *professional learning communities* is currently in vogue. People use this term to describe every imaginable combination of individuals with an interest in education—a grade-level teaching team, a school committee, a high school department, an entire school district, a state department of education, a national professional organization, and so on. In fact, the term has been used so ubiquitously that it is in danger of losing all meaning.

The professional learning community model has now reached a critical juncture, one well known to those who have witnessed the fate of other well-intentioned school reform efforts. In this all-too-familiar cycle, initial enthusiasm gives way to confusion about the fundamental concepts driving the initiative, followed by inevitable implementation problems, the conclusion that the reform has failed to bring about the desired results, abandonment of the reform, and the launch of a new search for the next promising initiative. Another reform movement has come and gone, reinforcing the conventional education wisdom that promises, "This too shall pass."

The movement to develop professional learning communities can avoid this cycle, but only if educators reflect critically on the concept's merits. What are the "big ideas" that represent the core principles of professional learning communities? How do these principles guide schools' efforts to sustain the professional learning community model until it becomes deeply embedded in the culture of the school?

Big Idea #1: Ensuring That Students Learn

The professional learning community model flows from the assumption that the core mission of formal education is not simply to ensure that students are taught but to ensure that they learn. This simple shift—from a focus on teaching to a focus on learning—has profound implications for schools.

School mission statements that promise "learning for all" have become a cliché. But when a school staff takes that statement literally—when teachers view it as a pledge to ensure the success of each student rather than as politically correct hyperbole—profound changes begin to take place. The school staff finds itself asking, What school characteristics and practices have been most successful in helping all students achieve at high levels? How could we adopt those characteristics and practices in our own school? What commitments would we have to make to one another to create such a school? What indicators could we monitor to assess our progress? When the staff has built shared knowledge and found common ground on these questions, the school has a solid foundation for moving forward with its improvement initiative.

As the school moves forward, every professional in the building must engage with colleagues in the ongoing exploration of three crucial questions that drive the work of those within a professional learning community:

- What do we want each student to learn?
- How will we know when each student has learned it?

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- How will we respond when a student experiences difficulty in learning?

The answer to the third question separates learning communities from traditional schools.

Here is a scenario that plays out daily in traditional schools. A teacher teaches a unit to the best of his or her ability, but at the conclusion of the unit some students have not mastered the essential outcomes. On the one hand, the teacher would like to take the time to help those students. On the other hand, the teacher feels compelled to move forward to "cover" the course content. If the teacher uses instructional time to assist students who have not learned, the progress of students who have mastered the content will suffer; if the teacher pushes on with new concepts, the struggling students will fall farther behind.

What typically happens in this situation? Almost invariably, the school leaves the solution to the discretion of individual teachers, who vary widely in the ways they respond. Some teachers conclude that the struggling students should transfer to a less rigorous course or should be considered for special education. Some lower their expectations by adopting less challenging standards for subgroups of students within their classrooms. Some look for ways to assist the students before and after school. Some allow struggling students to fail.

When a school begins to function as a professional learning community, however, teachers become aware of the incongruity between their commitment to ensure learning for all students and their lack of a coordinated strategy to respond when some students do not learn. The staff addresses this discrepancy by designing strategies to ensure that struggling students receive additional time and support, no matter who their teacher is. In addition to being systematic and schoolwide, the professional learning community's response to students who experience difficulty is

- *Timely*. The school quickly identifies students who need additional time and support.
- *Based on intervention rather than remediation*. The plan provides students with help as soon as they experience difficulty rather than relying on summer school, retention, and remedial courses.
- *Directive*. Instead of *inviting* students to seek additional help, the systematic plan *requires* students to devote extra time and receive additional assistance until they have mastered the necessary concepts.

The systematic, timely, and directive intervention program operating at Adlai Stevenson High School in Lincolnshire, Illinois, provides an excellent example. Every three weeks, every student receives a progress report. Within the first month of school, new students discover that if they are not doing well in a class, they will receive a wide array of immediate interventions. First, the teacher, counselor, and faculty advisor each talk with the student individually to help resolve the problem. The school also notifies the student's parents about the concern. In addition, the school offers the struggling student a pass from study hall to a school tutoring center to get additional help in the course. An older student mentor, in conjunction with the struggling student's advisor, helps the student with homework during the student's daily advisory period.

Any student who continues to fall short of expectations at the end of six weeks despite these interventions is required, rather than invited, to attend tutoring sessions during the study hall period. Counselors begin to make weekly checks on the struggling student's progress. If tutoring fails to bring about improvement within the next six weeks, the student is assigned to a daily guided study hall with 10 or fewer students. The guided study hall supervisor communicates with classroom teachers to learn exactly what homework each student needs to complete and monitors the completion of that homework. Parents attend a meeting at the school at which the student, parents, counselor, and classroom teacher must sign a contract clarifying what each party will do to

help the student meet the standards for the course.

Stevenson High School serves more than 4,000 students. Yet this school has found a way to monitor each student's learning on a timely basis and to ensure that every student who experiences academic difficulty will receive extra time and support for learning.

Like Stevenson, schools that are truly committed to the concept of learning for each student will stop subjecting struggling students to a haphazard education lottery. These schools will guarantee that each student receives whatever additional support he or she needs.

Big Idea #2: A Culture of Collaboration

Educators who are building a professional learning community recognize that they must work together to achieve their collective purpose of learning for all. Therefore, they create structures to promote a collaborative culture.

Despite compelling evidence indicating that working collaboratively represents best practice, teachers in many schools continue to work in isolation. Even in schools that endorse the idea of collaboration, the staff's willingness to collaborate often stops at the classroom door. Some school staffs equate the term "collaboration" with congeniality and focus on building group camaraderie. Other staffs join forces to develop consensus on operational procedures, such as how they will respond to tardiness or supervise recess. Still others organize themselves into committees to oversee different facets of the school's operation, such as discipline, technology, and social climate. Although each of these activities can serve a useful purpose, none represents the kind of professional dialogue that can transform a school into a professional learning community.

The powerful collaboration that characterizes professional learning communities is a systematic process in which teachers work together to analyze and improve their classroom practice. Teachers work in teams, engaging in an ongoing cycle of questions that promote deep team learning. This process, in turn, leads to higher levels of student achievement.

Collaborating for School Improvement

At Boones Mill Elementary School, a K–5 school serving 400 students in rural Franklin County, Virginia, the powerful collaboration of grade-level teams drives the school improvement process. The following scenario describes what Boones Mill staff members refer to as their *teaching-learning process*.

The school's five 3rd grade teachers study state and national standards, the district curriculum guide, and student achievement data to identify the essential knowledge and skills that all students should learn in an upcoming language arts unit. They also ask the 4th grade teachers what they hope students will have mastered by the time they leave 3rd grade. On the basis of the shared knowledge generated by this joint study, the 3rd grade team agrees on the critical outcomes that they will make sure each student achieves during the unit.

Next, the team turns its attention to developing common formative assessments to monitor each student's mastery of the essential outcomes. Team members discuss the most authentic and valid ways to assess student mastery. They set the standard for each skill or concept that each student must achieve to be deemed proficient. They agree on the criteria by which they will judge the quality of student work, and they practice applying those criteria until they can do so consistently. Finally, they decide when they will administer the assessments.

After each teacher has examined the results of the common formative assessment for his or her students, the team analyzes how all 3rd graders performed. Team members identify strengths and weaknesses in student learning and begin to discuss how they can build on the strengths and address the weaknesses. The entire team gains new insights into what is working and what is not, and members discuss new strategies that they can implement in their classrooms to raise student achievement.

At Boones Mill, collaborative conversations happen routinely throughout the year. Teachers use frequent formative assessments to investigate the questions "Are students learning what they need to learn?" and "Who needs additional time and support to learn?" rather than relying solely on summative assessments that ask "Which students learned what was intended and which students did not?"

Collaborative conversations call on team members to make public what has traditionally been private—goals, strategies, materials, pacing, questions, concerns, and results. These discussions give every teacher someone to turn to and talk to, and they are explicitly structured to improve the classroom practice of teachers—individually and collectively.

For teachers to participate in such a powerful process, the school must ensure that everyone belongs to a team that focuses on student learning. Each team must have time to meet during the workday and throughout the school year. Teams must focus their efforts on crucial questions related to learning and generate products that reflect that focus, such as lists of essential outcomes, different kinds of assessment, analyses of student achievement, and strategies for improving results. Teams must develop norms or protocols to clarify expectations regarding roles, responsibilities, and relationships among team members. Teams must adopt student achievement goals linked with school and district goals.

Removing Barriers to Success

For meaningful collaboration to occur, a number of things must also *stop* happening. Schools must stop pretending that merely presenting teachers with state standards or district curriculum guides will guarantee that all students have access to a common curriculum. Even school districts that devote tremendous time and energy to designing the *intended* curriculum often pay little attention to the *implemented* curriculum (what teachers actually teach) and even less to the *attained* curriculum (what students learn) (Marzano, 2003). Schools must also give teachers time to analyze and discuss state and district curriculum documents. More important, teacher conversations must quickly move beyond "What are we expected to teach?" to "How will we know when each student has learned?"

In addition, faculties must stop making excuses for failing to collaborate. Few educators publicly assert that working in isolation is the best strategy for improving schools. Instead, they give reasons why it is impossible for them to work together: "We just can't find the time." "Not everyone on the staff has endorsed the idea." "We need more training in collaboration." But the number of schools that have created truly collaborative cultures proves that such barriers are not insurmountable. As Roland Barth (1991) wrote,

> Are teachers and administrators willing to accept the fact that they are part of the problem? . . . God didn't create self-contained classrooms, 50-minute periods, and subjects taught in isolation. We did—because we find working alone safer than and preferable to working together. (pp. 126–127)

In the final analysis, building the collaborative culture of a professional learning community is a question of will. A group of staff members who are determined to work together will find a way.

Big Idea #3: A Focus on Results

Professional learning communities judge their effectiveness on the basis of results. Working together to improve student achievement becomes the routine work of everyone in the school. Every teacher team participates in an ongoing process of identifying the current level of student achievement, establishing a goal to improve the current level, working together to achieve that goal, and providing periodic evidence of progress. The focus of team goals shifts. Such goals as "We will adopt the Junior Great Books program" or "We will create three

new labs for our science course" give way to "We will increase the percentage of students who meet the state standard in language arts from 83 percent to 90 percent" or "We will reduce the failure rate in our course by 50 percent."

Schools and teachers typically suffer from the DRIP syndrome—Data Rich/Information Poor. The results-oriented professional learning community not only welcomes data but also turns data into useful and relevant information for staff. Teachers have never suffered from a lack of data. Even a teacher who works in isolation can easily establish the mean, mode, median, standard deviation, and percentage of students who demonstrated proficiency every time he or she administers a test. However, data will become a catalyst for improved teacher practice only if the teacher has a basis of comparison.

When teacher teams develop common formative assessments throughout the school year, each teacher can identify how his or her students performed on each skill compared with other students. Individual teachers can call on their team colleagues to help them reflect on areas of concern. Each teacher has access to the ideas, materials, strategies, and talents of the entire team.

Freeport Intermediate School, located 50 miles south of Houston, Texas, attributes its success to an unrelenting focus on results. Teachers work in collaborative teams for 90 minutes daily to clarify the essential outcomes of their grade levels and courses and to align those outcomes with state standards. They develop consistent instructional calendars and administer the same brief assessment to all students at the same grade level at the conclusion of each instructional unit, roughly once a week.

Each quarter, the teams administer a common cumulative exam. Each spring, the teams develop and administer practice tests for the state exam. Each year, the teams pore over the results of the state test, which are broken down to show every teacher how his or her students performed on every skill and on every test item. The teachers share their results from all of these assessments with their colleagues, and they quickly learn when a teammate has been particularly effective in teaching a certain skill. Team members consciously look for successful practice and attempt to replicate it in their own practice; they also identify areas of the curriculum that need more attention.

Freeport Intermediate has been transformed from one of the lowest-performing schools in the state to a national model for academic achievement. Principal Clara Sale-Davis believes that the crucial first step in that transformation came when the staff began to honestly confront data on student achievement and to work together to improve results rather than make excuses for them.

Of course, this focus on continual improvement and results requires educators to change traditional practices and revise prevalent assumptions. Educators must begin to embrace data as a useful indicator of progress. They must stop disregarding or excusing unfavorable data and honestly confront the sometimes-brutal facts. They must stop using averages to analyze student performance and begin to focus on the success of each student.

Educators who focus on results must also stop limiting improvement goals to factors outside the classroom, such as student discipline and staff morale, and shift their attention to goals that focus on student learning. They must stop assessing their own effectiveness on the basis of how busy they are or how many new initiatives they have launched and begin instead to ask, "Have we made progress on the goals that are most important to us?" Educators must stop working in isolation and hoarding their ideas, materials, and strategies and begin to work together to meet the needs of all students.

Hard Work and Commitment

Even the grandest design eventually translates into hard work. The professional learning community model is a grand design—a powerful new way of working together that profoundly

affects the practices of schooling. But initiating and sustaining the concept requires hard work. It requires the school staff to focus on learning rather than teaching, work collaboratively on matters related to learning, and hold itself accountable for the kind of results that fuel continual improvement.

When educators do the hard work necessary to implement these principles, their collective ability to help all students learn will rise. If they fail to demonstrate the discipline to initiate and sustain this work, then their school is unlikely to become more effective, even if those within it claim to be a professional learning community. The rise or fall of the professional learning community concept depends not on the merits of the concept itself, but on the most important element in the improvement of any school—the commitment and persistence of the educators within it.

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Guiding Questions for "What Is a Professional Learning Community"?

1. What is a professional learning community, according to author Richard DuFour? To what extent does your school or district reflect the values and practices he identifies?

2. DuFour begins his article by asserting: "To create a professional learning community, focus on learning rather than teaching, work collaboratively, and hold yourself accountable for results." What does he mean by each of these recommendations? How do these ideas align with Understanding by Design and the backward design process?

3. How does DuFour suggest that educators move from the promise of "learning for all" as a cliché toward genuine and sustained organizational practice? What are the specific recommendations he makes to help ensure the achievement of this goal?

Guiding Questions for "What Is a Professional Learning Community"? (*continued*)

4. How does DuFour suggest the schools achieve a "culture of collaboration"? To what extent do schools with which you are familiar reflect his principles?

5. School improvement, according to DuFour, requires effective and sustained collaboration. How do DuFour's suggestions in this area align with current practices in your school or district?

6. How can professional learning communities remove barriers to success, according to DuFour?

7. A major recommendation presented by DuFour is the commitment to focus on results. What practices and processes does DuFour emphasize? What parallels can you identify related to Understanding by Design's backward design process?

Pathways to Reform: Start with Values

David J. Ferrero

Educators' deeply held philosophical beliefs point to many diverse pathways, all leading to school excellence.

The Northtown Academy campus of Chicago International Charter School (CICS) combines a commitment to classical learning with innovative citizenship education grounded in public debate. KIPP Academies rely on academic pressure and tough love to help students meet state standards. At Withrow University High School in Cincinnati, Ohio, students wear uniforms and boys and girls attend separate classes. The Francis Parker Charter School in Harvard, Massachusetts, boasts a democratic-communitarian ethic in which students take an active role in school governance and pursue learning through thematic group projects. Students at The Met in Providence, Rhode Island, pursue a curriculum composed entirely of self-designed projects and internships. At the Oakland School for Social Justice and Community Development in Oakland, California, students learn community organizing and critical theory. And at High Tech High in San Diego, California, students pursue project-based courses of study keyed to careers in technology industries.

These are just seven of the many great small high schools that I have had the privilege of getting to know through my work at the Bill & Melinda Gates Foundation. These schools differ profoundly in their curriculum, instruction, and culture. An individual teacher or student might feel at home in one or a few of these schools, but certainly not in all of them. Yet these small schools have important things in common. They all have high percentages of minority and low-income students. They all strive to offer students a supportive, rigorous, and coherent learning environment in compliance with state standards. They all aim to prepare students for higher education, work, and citizenship.

Common ends, diverse pathways. School reformers have embraced this vision, but we still face the question of how to achieve it. We know most of the structural conditions necessary to make such a vision a reality: site-based autonomy, family and faculty choice, performance-based accountability, data-driven decision making, and research-based practice. But these structural features only get us so far. They explain what these schools have in common, but they don't account for what makes them distinctive.

Belief Systems and Practice

One crucial but often overlooked source of the distinctiveness among high-performing schools is *philosophy*—the beliefs and values that create our sense of what makes life worth living, and therefore what is worth teaching and how we should teach it. In our drive to be "research-based," we tend to forget that between the science of learning and the practice of teaching lie important value judgments that color our reading of the research and the implications for practice we derive from it. These value judgments reflect deeply held philosophical worldviews.

Few of us went into education out of a burning desire to raise students' test scores. We went into it out of a deep sense of what's good for kids and society, what's worth knowing and thinking about, what it means to be a good citizen and person—indeed, what it means to lead a good life. Philosophy matters.

In fact, education's fiercest and most intractable conflicts have stemmed from differences

Source: From "Pathways to Reform: Start with Values," by D. J. Ferrero, 2005, *Educational Leadership, 62*(5), 8–14. Copyright 2005 by the Association for Supervision and Curriculum Development.

in philosophy. Take the 100 Years War between "progressives" and "traditionalists."[1] To oversimplify an already oversimplified dichotomy, progressives incline toward pedagogical approaches that start with student interests and emphasize hands-on engagement with the physical and social environments, whereas traditionalists tend to start with pre-existing canons of inquiry and knowledge and emphasize ideas and concepts mediated through words and symbols.

The evolution of these differences is not grounded in science, but in history, philosophy, and ideology. So-called progressivism evolved over the 19th and 20th centuries out of a complex interaction of romanticism, socialism, pragmatism, and progressive politics. So-called traditionalism has Aristotelian origins refracted through Renaissance humanism and later through romanticism, as well as pre-libertarian forms of conservatism. The former could be described as populist, small-*d* democratic, and attuned to the flux of modern life; the latter could be characterized as aristocratic, small-*r* republican, and attentive to the continuities that underlie and influence modern change.

Notice that romanticism appears as a source for both philosophies. This is not the only point of overlap. Education progressives and traditionalists from the 19th century to the present have shared certain overarching perspectives. For example, all espouse liberal democratic values inherited from the Enlightenment, such as rights, liberty, and popular government. All subscribe to a developmental theory of childhood and learning. All strive to produce young adults who are good citizens, caring people, critical thinkers, and productive contributors to the economy. All believe that learning should be relevant to students. They simply disagree about the exact meaning of these ideals and their curricular and pedagogical implications. Does a relevant education start with student interests and backgrounds, current needs of the job market, and current events? Or should we teach students to recognize the relevance of ancient Greek thought, the Copernican revolution, and Shakespeare's soliloquies?

How can we devise a study to adjudicate these different views empirically? We can't. Normative questions are not easily settled by empirical means because our normative points of view color how we understand empirical evidence.

Not that empirical research is meaningless. On the contrary, research has produced many insights that help us distinguish between good teaching and bad. We know, for example, that the mind constructs knowledge—that people learn by connecting new information to existing understandings and conceptual frameworks. We know that teaching needs to attend to both basic and higher-order skills, and to both cognitive and noncognitive development. We know that students learn best in safe, challenging, personally supportive, and authoritative communities.

These findings, however, must be interpreted and translated into practice. For some educators, constructivist learning theory justifies discovery learning driven by student interests; for others, it merely describes what happens whenever a learner's brain takes in information, even "passively" through a lecture. Which interpretation is correct? On this question and many others, even the most rigorous and credible research provides little guidance.

Within the bounds of shared values and research-based principles lie a range of legitimate practices, and between science and practice lie a number of judgments that are irreducibly values-based. This idea was once cause for concern, because it belied the quest for the single code of "best practices" that would certify teachers as true professionals. But we need not view the influence of philosophical values as an embarrassment anymore. As reformers and education professionals have moved away from large, tracked, one-size-fits-all comprehensive schools and toward small, focused schools of choice that offer multiple pathways to postsecondary opportunity, we have begun to recognize what should have

been obvious all along: There are many ways for a school to be "good" (see Cuban, 2000).

Reflecting on Key Questions

From time to time we remind ourselves about the importance of values, beliefs, and culture to education. But we are not conditioned to take them seriously in our deliberations about what schools should be. We need help, because enabling educators, parents, and other constituents to be more articulate about their convictions and the philosophical judgments behind them is a crucial step in forming effective learning communities. This step involves answering key questions both individually and collectively.

The following questions can help educators and their constituencies organize into philosophically and pedagogically coherent learning communities. The process of reflecting on these questions is especially useful for groups of educators who are creating new, small high school learning communities, such as schools-within-schools, but it applies to any school community striving to transform practice around shared goals.

What motivated me to go into teaching? We all know that teaching is a vocation. We don't do it for money or glory, but for some intrinsic reward. Was it a passion for a particular subject? A social service mission? A desire to help young people realize individual talents? This gut check will tease out your deep motivation and basic orientation toward practice.

What do I think students should know and be able to do? We need to answer this question as concretely as possible; otherwise everyone's answers will sound the same. We all believe in developing students' literacy, mathematical facility, critical thinking, citizenship, workforce competence, and commitment to lifelong learning. This level of collective affirmation is important; it reminds us that whatever our differences, we are ultimately on the same side. But these broad values need to be unpacked with more pointed questions.

To become literate, what kinds of books should students read, and why? What should be the ratio of printed text to other media? Who should choose the medium—student or teacher? Which comes first in teaching literacy—decoding skills or comprehension? What should take priority in teaching mathematics—numeric manipulations or mathematical reasoning? Regarding science, is it OK if students graduate from high school without knowing what gravity is as long as they have mastered the scientific method? When it comes to citizenship, does living in a North Atlantic democracy like the United States mean that a student should leave school with a deep knowledge of the history and traditions that made North Atlantic democracies possible, or do immigration and globalization necessitate a more multicultural curriculum?

Notice that many of the foregoing are questions of priority rather than forced choices. Most sober educators would argue "both" in many instances—at least in the abstract. But priorities imply choices and different ways to organize learning. Our broad affirmations of consensus values usually degenerate into unproductive bickering when the hard work of constructing an instructional program begins.

Who are the influences on my education philosophy? Because our deep motivations and priorities tend to form without conscious reflection, they often remain inchoate. One good way to become articulate fast is to read. I would start with books that survey thought and debate about education in a schematized way. My favorites, because of their clarity and even-handedness, are Gerald Gutek's textbookish but readable *Philosophical and Ideological Voices in Education* (Allyn and Bacon, 2004) and Herbert Kliebard's *The Struggle for the American Curriculum, 1893–1958* (Routledge, 1995). Such books will furnish your group members with a common vocabulary and framework for situating themselves in the landscape of modern education thought.

Most participants will identify quickly with certain philosophies. They can then choose

from a menu of books that represent and develop those points of view. (See "Readings on Vision" for a selection.) Browse around for the book that gets you most excited, and pay close attention to its vision of the ideal school. Chances are that the kind of school the book describes or suggests is the kind of school in which you would feel most fulfilled.

Which colleagues share my vision? Once people have made their initial self-identifications, they might want to do their vision readings together with like-minded colleagues. Teachers in a school probably know some colleagues well and have already gravitated toward those who share certain core beliefs about their work. Forming reading groups on the basis of these affinities can extend and deepen those networks, help members develop a shared normative vocabulary, and form the basis of design groups for small schools or school-within-a-school learning communities.

What do parents, students, and local citizens want, need, and believe? Ideally, other constituents would engage in the same exploration that teachers and administrators do. If that proves unrealistic, the school should conduct some kind of outreach to ascertain the degree to which parents and students share the points of view that emerge among educators. Reaching out to the community early helps create broad ownership and ensures that there will be demand for the learning communities that are likely to grow out of this exercise.

Initially these reflective and deliberative exercises will be self-initiated and self-guided—hence the heavy dose of reading. School change consultants, coaches, and workshop leaders are no more proficient at disentangling the empirical from the normative than the typical faculty. In fact, like most of us, education consultants are so habituated to reading research through the lens of their own normative value systems that they are more likely to steer school communities in a preferred direction than to help them identify their own direction. After the nascent learning communities have organized themselves, they can choose consultants with more care and begin the usual planning efforts.

Readings on Vision

One way to become more articulate about one's deep motivations is to read the books of authors who have formally expressed kindred beliefs and translated them into ideal school models. Below, a small sample of readings represents the range of thought within the "traditionalist" and "progressive" visions.

Traditionalist

- Mortimer J. Adler, *The Paideia Proposal* (Macmillan, 1982).
- Jacques Barzun, *A Jacques Barzun Reader* (HarperCollins, 2001).
- Earl Shorris, *Riches for the Poor* (W. W. Norton & Company, 2000).
- E. D. Hirsch Jr., *Cultural Literacy* (Vintage, 1988).
- Lisa Delpit, *Other People's Children* (New Press, 1996).
- William J. Bennett, *Curriculum for American Students* (Diane Publishing Company, 1988).

Progressive

- Deborah Meier, *The Power of Their Ideas* (Beacon Press, 1996).
- Theodore R. Sizer, *Horace's School* (Mariner Books, 1997).
- Eliot Levine, *One Kid at a Time* (Teachers College Press, 2001).
- Paulo Freire, *Pedagogy of the Oppressed* (Continuum International Publishing Group; 30th Anniversary edition, 2000).
- George S. Counts, *Dare the School Build a New Social Order?* (Southern Illinois University Press, 1978).
- David Stern et al., *Career Academies* (Jossey-Bass, 1992).

Grappling with Dilemmas

The shift to a true system of distinct pathways for students will likely heighten anxiety over certain issues. When we introduce candid talk about values and pluralism, the following questions are likely to arise almost immediately.

Won't this lead to segregation? It certainly can. Suppose that after deliberation, educators and parents at a comprehensive high school agree to create the following four small learning communities: a women's leadership school, an International Baccalaureate (IB) school, a high-tech school, and a school of African American and Latin American Studies. Each small school reflects a significant group of constituents within the existing school, among whom it enjoys strong support. But the women's leadership school will draw more girls, the IB school more affluent Asian American and white students, the high-tech school (probably) more boys, and the African American and Latin American Studies school more black and Hispanic students.

It is possible to mitigate this problem, but not to eliminate it. Educators and other constituents must address up-front how much separation by race, gender, and aptitude they are willing to tolerate. If the tolerance is low, then schools that explicitly target gender, cultural, or racial groups will prove too divisive; the planners must rule out women's leadership and African American and Latin American Studies schools and recognize that authentically integrating IB and high-tech schools will require aggressive outreach. If constituents are willing to accept less-than-perfectly-integrated schools in the interest of better serving different constituencies and drawing on teacher strengths, it will be crucial to monitor those schools for resource equity and academic quality and to provide students with frequent opportunities to interact meaningfully with students from the other learning communities.

What about the common school? Underneath the anxiety over segregation lies the ideal of the common school as a crucible where children of diverse backgrounds come together to forge a common citizenry. If we allow schools to reflect our pluralism, what institution will bind us together as a people?

This question, although important, underestimates the degree to which both research and consensus values can enforce certain common goals and common learning for all students, regardless of school type. We should prohibit all schools from teaching anti-liberal values, such as ethnic hatred or the rejection of secular government; we should require all schools to teach the principles of the U.S. Constitution and to provide civic education that goes beyond the minimal expectations of tolerance and cooperation. But schools need latitude with regard to how they accomplish these goals. Some will emphasize service learning, others critical theory, and still others immersion in the traditions of Western political thought. All of these approaches reflect credible ways of thinking about democratic citizenship.

Those who still recoil at the thought of schools designed to teach different things in different ways to different kids might ask themselves this: Do I want a national curriculum? Not *my* national curriculum, but the one we'd likely get if one were developed? The United States has rejected a national curriculum for good reasons, and these include the pedagogical pluralism we've been exploring (see Gardner, 2000, pp. 222–228).

If we base pedagogical choices on value judgments, won't we undermine teacher professionalism? For a century now, educators have sought recognition as a profession on par with medicine—self-governing, restrictive with respect to who can practice, and scientifically based. This aspiration has abetted the suppression of philosophical differences in education decision making by derogating these differences as "ideology" and "politics." If only we could eliminate such distractions, say the professionalizers, we could enact evidence-based policy and practice. But as we have seen, the research isn't enough.

Acknowledging that teaching isn't a science in no way implies that it isn't a profession

that requires considerable apprenticeship and skill to perform well. There remains a body of empirical evidence that teachers must internalize, and centuries of accumulated craft knowledge that they must master. Between the ideal of the teacher-as-physician and the notion that anyone with a bachelor's degree, a high SAT verbal score, and a clean arrest record can teach lies a craft model of professionalism that upholds rigorous quality standards while honoring diverse approaches. A more philosophically informed self-understanding can help the profession flourish within this zone.

Recognizing the value judgments that both guide research and color the multiple legitimate inferences that we draw from it could generate several favorable outcomes for the education profession. First, such recognition would defuse a lot of the internecine bickering—the Reading Wars, Math Wars, Culture Wars—that make us look silly and faddish to outsiders. Second, it would facilitate the formation of communities of practice capable of developing coherent courses of study in settings where parents, students, and teachers share a common understanding of the enterprise—all qualities associated with teacher satisfaction, parent approval, and high student achievement. Third, the resulting system would require certain policies that educators have long championed—such as site-based autonomy, streamlined performance standards, and flexible approaches to state assessment—because multiple pathways depend on an accountability system supple enough to support all of them.

If we allow educators to organize schools around coherent philosophies, won't those educators be imposing adult values on students? We like to tell ourselves that schooling is about the kids, not the adults, and that the needs of the former must trump those of the latter. Hence we naïvely strive for a pose of dispassionate diagnosis and treatment in our work and advocacy. But whether we like it or not, schooling is an extension of child-rearing. We're not aiming to produce high test scores; we're striving to create good people. This aspiration is by definition normative.

Take the goal of helping students become autonomous, self-governing persons—the same goal that makes us uncomfortable "imposing" adult values on them. The importance we assign to personal autonomy itself reflects a philosophical point of view stemming from our liberal democratic worldview. In many cultures, past and present, qualities such as deference to elders and loyalty to tribe or nation have held higher priority. So the expectation that children grow up to be autonomous and critical is itself an imposition of values. We're fooling ourselves if we think we can meet our highest aspirations for students without seeking to shape them according to a normative ideal.

Isn't conflict educative? If we permit students to self-segregate on the basis of education philosophy—to attend schools where everyone else shares their values—won't we deprive students of exposure to differing points of view? This would be a serious drawback. But it overstates the case I've been arguing.

First, there's a practical limit to how far we can take this. If our goal were to form learning communities where everyone agreed on *all* normative questions, we would end up with universal homeschooling—and even that would work only until children were old enough to start questioning their parents' worldviews. But there's a more principled reply: The point here is *not* to create homogeneous communities of value, but rather to create homogeneity with respect to certain core beliefs concerning curriculum, instruction, norms of comportment, and civic virtue. This arrangement leaves plenty of room for students to encounter diverse points of view on substantive matters. Every philosophy of education, every approach to every curriculum, generates disagreements and provides a shared framework for deliberations about them.

Diversity as Opportunity

I recognize how strange all this talk about philosophy and pluralism must sound. We

have become so accustomed to thinking of our work as a service commodity, in which adult professionals provide student-clients with diagnoses and treatments, that we sometimes forget that schooling is always and inevitably about cultivating persons. Not that the standards movement is misguided, or that we don't need research to guide practice. Both common standards and research, along with certain broadly shared societal ideals, help us define good schooling and provide necessary limits to diversity. But these boundaries still admit a rich variety of approaches.

The move to small, distinctive schools of choice provides an opportunity to exploit that richness. Such schools will not make a difference if their goal is merely diversity for diversity's sake. Rather, we should treat the creation of these schools as a means to enhance the reflectiveness of educators, develop authoritative communities of practice, provide meaningful options for families, and improve academic, civic, and personal outcomes for young people.

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Endnote

[1] I dislike the terms "progressive" and "traditionalist" because they paper over a lot of diversity and disagreement that exist *within* the two philosophies. Of the seven schools mentioned in my introduction, three are traditional and four are progressive, but all are philosophically and pedagogically distinct—in many cases, profoundly.

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Guiding Questions for "Pathways to Reform: Start with Values"

1. David Ferrero suggests that "one crucial but often overlooked source of the distinctiveness among high-performing schools is *philosophy*—the beliefs and values that create our sense of what makes life worth living, and therefore what is worth teaching and how we should teach it." To what extent do the staff members in your school or district share a common philosophy of education?

2. Like Understanding by Design, Ferrero's recommendations for school improvement emphasize the power and value of reflecting on key questions. What are the essential questions the author presents to "help educators and their constituencies organize into philosophically and pedagogically coherent learning communities"?

3. How do Ferrero's key questions align with the principles of Understanding by Design and the backward design process?

4. What questions does the author suggest "are likely to arise almost immediately" when educators introduce candid talk about values and pluralism? How have the questions presented in this section of the article been addressed by your school or district?

5. Ferrero emphasizes throughout this article the significance, power, and challenge of values as a key element underlying educational decision-making and school improvement planning. How is the movement toward consensus-driven values affecting your school or district?

6. Why does Ferrero place so much emphasis on vision? How does the author justify the following statement at the conclusion of his article: "Both common standards and research, along with societal ideals, help us define good schooling and provide necessary limits to diversity. But these boundaries still admit a rich variety of approaches."

Leadership for Lasting Reform

Linda Lambert

Principals and teachers travel through three phases as their schools build high leadership capacity that sustains improvement.

A number of years ago, as I anticipated my fourth and final year as principal of San Jose Middle School in Novato, California, vice principal Joel Montero and I discussed our concern about the sustainability of the good work that members of the school community had done together. Teacher leadership in the school was strong—but was it strong enough to survive a major change in administration?

To ease the transition, Joel and I decided to switch many of our roles. During that school year, I found out how difficult the job of vice principal was. And Joel prepared himself magnificently for the principalship that he assumed the following September. For the next 15 years, every principal at San Jose Middle School came from within the school. San Jose continues to be at the forefront of school improvement today.

In the meantime, as I moved on to other administrative roles, the challenge of sustainability continued to intrigue me. What had been the pathway to sustainable school excellence at San Jose? Did other successful schools follow the same pathway? Working with thousands of school leaders over the years as an instructor, coach, advisor, and presenter, I have encountered the same question again and again: Once you create a great school, how do you maintain a close approximation of that high quality for the long term?

Study of High Leadership Capacity Schools

Some colleagues and I recently set out to discover how 15 schools made the journey toward *high leadership capacity*, which we defined as broad-based, skillful participation in the work of leadership.[1] I had worked personally with some of the schools in the study; other schools were nominated by colleagues working with initiatives that emphasized the characteristics of high leadership capacity schools. We gathered information for the study by visiting the schools and interviewing principals and teachers. Through a set of open-ended questions, we invited participants to describe the leadership capacity of their schools, including obstacles and factors affecting sustainability. In two daylong conversations, our group of researchers identified patterns, made inferences, and drew conclusions about what promotes high leadership capacity.

The participating schools were located in North Carolina, Ohio, Missouri, Kansas, Texas, California, Washington, and Alberta, Canada. They included 3 high schools, 1 junior high school, and 11 elementary schools. All shared key elements related to leadership capacity. At each school, a system of shared governance and distributed leadership supported a dynamic leadership culture built around a vision-driven, student-focused conceptual framework for school improvement. Student performance data served as the heart of each school's inquiry approach to school improvement. Each school had design features—structures, processes, and roles—that promoted leadership capacity.

Most of the schools in the study were urban and high-poverty. One-third of them had consistently been high-performing schools and continued to show improvement; two-thirds had transformed themselves from low-performing schools to successful schools in the last few years. Some had hit bottom and

Source: From "Leadership for Lasting Reform," by L. Lambert, 2005, *Educational Leadership, 62*(5), 62–65. Copyright 2005 by the Association for Supervision and Curriculum Development.

had nowhere to go but up. For example, in 1999, Vantage Elementary[2] earned 315—one of the lowest ratings in California—on the state's Academic Performance Index (API), a numeric scale that defines a school's performance level on the basis of statewide testing results. Even the school's mascot—a trout—was uninspiring. Despite the fact that the nearby creek had hosted an occasional trout decades ago, this mascot evoked little school pride. By 2002, however, Vantage Elementary boasted significantly higher student performance, having raised its API to 447. Teacher professionalism had improved, and the trout mascot had been replaced by a bold graphic that symbolized the school's renewed hope and pride.

In each of the 15 schools we studied, the principal played a major role in building shared leadership and a professional culture. As one principal commented,

> I'm trying to lead for whenever I may not be here any longer—by building both the capacity of systems through school design choices and people's capacity for leadership.

Evolving Phases of School Improvement

Of course, the principals in the study schools differed in their personalities and in their management strengths and weaknesses. But all the principals shared certain characteristics that contributed to their schools' evolving culture of leadership, including

- Understanding of self and clarity of values;
- A strong belief in equity and the democratic process;
- Strategic thought about the evolution of school improvement;
- A vulnerable persona;
- Knowledge of the work of teaching and learning; and
- The ability to develop capacity in colleagues and in the organization.

These characteristics played out differently during three major phases of development that we defined as *instructive, transitional*, and *high capacity*. The three phases did not end and begin with clean borders; on the contrary, many behaviors emerged, dissolved, and reappeared as the struggle to build leadership capacity progressed.

The Instructive Phase

School improvement begins with a period of organization as the school initiates new collaborative processes that relate to norms, teams, vision, use of data, shared expectations, and ways of working together. In the instructive phase, the principal's roles are to insist on attention to results, start conversations, solve difficult problems, challenge assumptions, confront incompetence, focus work, establish structures and processes that engage colleagues, teach about new practices, and articulate beliefs that eventually get woven into the fabric of the school.

The principal of Kinder Elementary School jump-started change by gathering teachers together on a borrowed houseboat to develop a school vision to which they could all commit. At Johnson Junior High School, the principal helped establish a steering committee and cadres to involve everyone in the process of leadership.

Principals in the study reported that they encountered some patterns of teacher resistance, disengagement, and dependence during this stage. More than one principal struggled with a staff message of "You just tell us your vision for the school, and we'll act on it."

Most of the principals displayed "strength" as a purposeful strategy during this phase. Although they believed that they needed to demonstrate assertive leadership to jump-start the process of moving out of low-performance status, they also understood that this assertive leadership was a temporary stage in building schoolwide leadership capacity.

The Transitional Phase

During the transitional phase, the principal's role is to gradually let go, releasing some authority and control while providing continued

support and coaching as teachers take on more responsibility. Teachers often feel tempted to abandon the effort at this point—it seems too hard. The principal provides support by continuing the conversations, keeping a hand in the process (rather than accepting quick fixes), coaching, and problem-solving within an atmosphere of trust and safety. To navigate this phase successfully, the principal must engage in a strategic thought process, understanding where the school culture is going and when to pull back as teachers emerge as leaders.

Principal's Role in High Leadership Capacity Schools

Displays the following personal attributes and behaviors:
- Learns continually.
- Thinks strategically.
- Is value- and vision-driven.
- Continues and expands behaviors initiated in earlier phases.

Participates with other members of the community to
- Share concerns and issues.
- Share decisions.
- Monitor and implement shared vision.
- Engage in reflective practices (reflection/inquiry/dialogue/action).
- Monitor norms and take self-corrective action.
- Think strategically.
- Build a culture of interdependency.
- Self-organize.
- Diversify and blend roles.
- Establish criteria for self-accountability.
- Share authority and responsibility (dependent on expertise and interest rather than on role).
- Plan for enculturation of new staff and successor.

Uses his or her formal authority to
- Implement community decisions.
- Mediate political pressures.
- Work with less-than-competent staff.
- Work with legal and reform challenges.

In the study schools, teachers emerged as leaders at varying rates. Many were more than ready to think differently about their work and expand their identities to incorporate teacher leadership; others moved more cautiously and deliberately. Because of the wide range of teachers' development as leaders, principals often found the transitional phase to be the most challenging. Some teachers still clung to their dependent behaviors, expecting the principal to continue to play an instructive role; other teachers were awakening as more independent professionals; and still others had advanced to the high leadership capacity stage and displayed self-organizing behaviors.

The transitional phase was a time of epiphanies for both principals and teachers in our study. The principal of Caravell High School noted that her strategy of strength may have been getting in the way of others' growth. As a result of this insight, she pulled back, encouraging more collaboration and peer conversations to diminish the staff's reliance on formal authority. When the California State Department of Education identified Caravell as a low-performing school, a dramatic turning point occurred. The principal laid out the harsh reality of the school's low-performing status at a faculty meeting and declared, "I don't know what to do. We'll have to figure this out together."

They did. Teachers and parents joined action teams to examine student performance data and student work, conducted action research to discover new data, developed a cadre of peer coaches, and expanded their staff development program. Teachers abandoned their isolated practice by turning to one another.

The willingness of the principal to be vulnerable was a crucial motivator during the transitional phase. When teachers became aware that the principal didn't claim to have all the answers, they actively increased their participation.

Study principals provided encouragement to teachers during this phase through both direct and subtle approaches. The principal of Garson Elementary School framed the need to address the achievement gap more aggressively:

> Just remember that a change in practice or instruction will always come from the outside if you don't create it from your own action research.

The principal's declaration of the consequences of inaction clarified the reality of the situation for teachers and encouraged them to act. Together, principal and teachers formed Peer Enquiry Program (PEP) teams. These teams used constructivist conversations to pose questions about groups of students who lagged behind, to locate and organize data, and to design new practices. Their conversations took place in faculty meetings as well as in separately organized team meetings.

One of the most challenging aspects of the transitional phase is the need to break through dependencies. In a dependent culture, teachers believe that they need to ask the principal's permission for most actions—and they come to expect the principal to make the decisions and take care of them. During the transitional phase, principals need to hand decisions and problem solving back to the teachers, coaching and leading for teacher efficacy while refusing to hold tight to authority and power.

The principal of Toledo Elementary School asked teachers to decide what to do when the vice principal position was eliminated. They resolved the issue by voluntarily dividing the vice principal's tasks among themselves. After Riverside Elementary staff had evolved to a high level of self-responsibility, they suggested to the district that they could do fine without a principal—and they did. And at Verde Elementary, the principal willingly relinquished responsibility for convening meetings and coordinating tasks when the teachers came to her and said, "We think it is time for you to let go."

The High Leadership Capacity Phase

During the high leadership capacity phase, the school encourages the teachers to play more prominent leadership roles. The principal takes a lower profile and focuses on facilitation and coparticipation rather than dominance. Teachers begin to initiate actions, take responsibility, discover time for joint efforts, and identify crucial questions about student learning.

Strikingly, principals and teachers often become more alike than different during this phase. A leveling of relationships occurs as reciprocity develops between the principal and the teachers. Teachers find their voices, grow confident in their beliefs, and become more open to feedback. The principal no longer needs to convene or mediate the conversations, frame the problems, or challenge assumptions alone. Principal and teachers begin to share the same concerns and work together toward their goals.

For example, teachers and administrators at Poe High School developed leadership rubrics to guide their work. And Riverside Elementary teachers developed a set of agreements that guided their shared leadership work: (1) No one is above the other; (2) We are teachers first; (3) We are a community; and (4) We must learn together.

Teachers Take On Leadership

An intriguing criterion for deciding whether a school has reached the high leadership capacity phase may be its ability to exist and thrive without a principal, whether or not it chooses to do so. Of the 15 study schools, 2 had progressed to the point where they operated with a part-time principal, and 1 operated without any principal.

Is it desirable to operate without a person in a full-time, formal role as principal? It depends. There are many reasons for having a principal. One person can more easily take responsibility for convening and facilitating conversations, securing focus, monitoring progress, working through personnel-related or legal difficulties, working with the district,

and handling political pressures. In spite of the problems that may arise from giving so much responsibility to one person, principals continue to be the key to school improvement. Unless a school has already developed high leadership capacity, teacher behavior is often a function of principal behavior.

Schools that have developed high leadership capacity take on a different character, however. Even if the principal is reassigned while the school is still in the transitional phase—which often happens—staff commitment can survive the change and even energize the new principal. Teachers find leadership in one another, assigning both credibility and authority to their peers. They tap into mutual authority by expecting others to identify problems and bring them to the group.

When principals lead for "whenever they will not be there," as most of the principals in our study did, teachers share responsibility for the effectiveness of the school. Broad-based, skillful participation in the work of leadership contributes to lasting school improvement that is all too rare.

Endnotes

[1] For a more detailed discussion of the study, see *Lasting Leadership: A Study of High Leadership Capacity Schools* (Lambert Leadership Development, 2004).

[2] The names of all schools and educators in the study are pseudonyms. San Jose Middle School and Joel Montero are actual names.

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Guiding Questions for "Leadership for Lasting Reform"

1. What does author Linda Lambert suggest are the most significant processes and practices associated with leadership that promote lasting reform?

2. What does Lambert suggest are the universal elements associated with sustaining school excellence? To what extent are these elements present in your current school or district?

3. Lambert and her colleagues designed and developed a research study of how 15 schools made the journey toward high leadership capacity, which they defined as "broad-based, skillful participation in the work of leadership." How would you summarize the major conclusions from this study?

4. Lambert describes three phases that principals and teachers travel through as their schools build high leadership capacity that sustains improvement. What are these phases? How do these phases differ? How are they mutually supportive—and somewhat inevitable, according to the author?

Guiding Questions for "Leadership for Lasting Reform" (*continued*)

5. The author describes a series of behaviors and practices exhibited by principals in high leadership capacity schools. What are the implications for your school or district of the behaviors Lambert identifies for each of the following areas:
   - Personal attributes and behaviors?
   - Participation with other members of the community?
   - Use of formal authority?

6. Like all the authors represented in this activity, Lambert reinforces the need for teachers to take on leadership roles. What does the author suggest about this area of high leadership capacity schools?

7. How do Lambert's conclusions align with the ideas and principles of Understanding by Design, particularly the backward design process?

Activity 3.3

Schools That Promote Understanding

Large Group Directions

Participants can use the Self-Reflection Checklist to discuss Organizational Review Questions and their implications for the school improvement process in their learning organization.

Small Study Group Directions

Small study groups can use the elements of the Self-Reflection Checklist to investigate and research the Questions for Further Investigation related to ensuring that schools promote understanding.

Independent Study Directions

Individuals can use the Self-Reflection Checklist to reflect on a school they are familiar with and answer the Organizational Review Checklist Questions to determine the extent to which their learning organization promotes understanding.

Self-Reflection Checklist

Organizational Principle	Highly Evident	Evident	Somewhat Evident	Not Evident
1. Our vision and mission emphasize our commitment to helping all students achieve deep understanding of our curriculum.				
2. Our learning organization consistently reflects the best in what we now know about the learning process.				
3. We offer a curriculum that is clearly articulated with standards that promote understanding for all students.				
4. We have designed our curriculum to ensure that it identifies the big ideas, conceptual understandings, and essential questions critical for student understanding.				
5. Our curriculum emphasizes what all students should know, be able to do, and understand.				
6. We structure our written curriculum to ensure that teachers and students have the time and resources to explore it in depth, rather than for superficial coverage.				
7. Our curriculum management process reinforces alignment between and among our written, tested, taught, supported, and learned curricula.				
8. Our assessment and evaluation process emphasizes multiple forms of assessment to capture the full range of student understanding and performance.				
9. All instructors effectively use multiple forms of assessment as a tool for monitoring student understanding and achievement.				
10. Assessment emphasizes the need to identify and address the strengths and needs of all students relative to their understanding of our curriculum and its standards.				
11. Teachers differentiate instruction to accommodate the strengths and needs of students, as identified by our assessment and evaluation processes.				
12. Instruction ensures that all students understand where they are headed, why they are heading there, and ways in which they will be evaluated.				

Self-Reflection Checklist (*continued*)

Organizational Principle	Highly Evident	Evident	Somewhat Evident	Not Evident
13. At key points in every instructional episode, students' interest and engagement is hooked through experiential activities and inquiry-based learning opportunities.				
14. All students are equipped for success through learning experiences that help them explore big ideas and essential questions.				
15. Instructors design learning activities to equip all students for success on final culminating projects and related performance tasks.				
16. All students are self-aware and self-evaluative as a result of organizational commitment to the values of reflecting, revising, rethinking, and refining.				
17. All students exhibit their evolving understanding and mastery of standards through final performances and products.				
18. Instruction equips all students to move from concrete experience toward abstract conceptualization and understanding.				
19. All instructional and professional development activities reflect the backward design process: Stage 1—Determining Desired Results; Stage 2—Monitoring and Assessing Achievement of Desired Results; and Stage 3—Designing Learning Activities to Promote Desired Results.				
20. Our learning organization reinforces six major behavior patterns and habits of mind: explanation, application, interpretation, perspective, empathy, and self-knowledge.				

Organizational Review Questions

Use the Self-Reflection Checklist to discuss the following questions.

1. How successfully does your school—or the schools in your district—reflect the elements of the vision presented here for aligning learning organizations with Understanding by Design principles?

2. Which components have you already implemented successfully?

3. Which components need further attention and emphasis? Why?

Questions for Further Investigation

1. What are the implications for your school or district of each of the principles and ideas presented in this checklist for aligning learning organizations with Understanding by Design principles?

2. How knowledgeable are you about the rationale for each item? How could you enhance your understanding of items you are not familiar with?

3. What are the implications of this activity for your own school improvement planning process?

Organizational Review Checklist Questions

1. To what extent does that school site embody the principles and ideas expressed in this vision for schools that promote understanding?

2. How might the members of that learning community move toward adopting and achieving the goals implicit in each part of the checklist?

Activity 3.4

Professional Development That Promotes Understanding

Large Group Directions

An essential part of successful Understanding by Design implementation involves sustained professional development. Large group professional development emphasizing this part of the program can use the Evaluating Professional Development Questionnaire as a catalyst for a discussing the implications of Understanding by Design on multiple levels. The Large Group Guiding Questions will help focus discussion.

Small Study Group Directions

A powerful small study group focus can be staff members' investigation and discussion of current research-based best practices involving professional development. For example, the group can use the strategies and suggestions in the Evaluating Professional Development Questionnaire to discuss and debate the quality of their current professional development activities. They can also discuss the implications of this questionnaire for improving current training practices. Finally, small study groups can use this questionnaire to explore its implications for professional development planning in their respective schools or districts.

Independent Study Directions

This Evaluating Professional Development Questionnaire can be used as a catalyst for self-reflection and self-evaluation by individuals interested in or involved with school-based and district professional development. The Reflection Questions will help focus reflection.

Evaluating Professional Development Questionnaire

Professional Development Descriptor	Highly Evident	Evident	Somewhat Evident	Not Evident
1. Our professional development is ongoing and job-embedded, addressing the specific needs of all participants.				
2. Our staff development emphasizes participant understanding, rather than just "knowing—doing."				
3. Through initial training and appropriate follow-up, participants grow in their ability to use training knowledge and skills and exhibit one or more of the facets of understanding in their professional practice.				
4. Professional development programs and practices emphasize the need for a collaborative community of learning.				
5. When new training content is introduced, variations of small study groups represent the preferred mode of delivery.				
6. Participants receive ongoing opportunities to engage in inquiry and exploration of training content and strategies.				
7. Professional development generally culminates in some form of action research, exploring how the use of key training elements affects student achievement.				
8. We are able to determine the "value added" of our training and professional development, especially its effect on student achievement, staff performance, and organizational productivity.				
9. Professional development is designed to help participants move along predictable stages of concern, from initial knowledge to ultimate internalization and independent application of training elements.				
10. Through collaboration and ongoing program evaluation, we modify our professional development activities and practices to ensure maximum impact and participant understanding.				

Large Group Guiding Questions

Use the Evaluating Professional Development Questionnaire to address the following questions.

1. To what extent does your professional development use the principles of Understanding by Design to address the needs of the adult learner?

2. If your school or district is currently providing Understanding by Design training, how closely does the professional development related to Understanding by Design embody the ideas and strategies presented here?

3. If your school or district is planning to implement Understanding by Design, how can you ensure that you successfully address each of the design principles presented here?

Reflection Questions

1. To what extent do you agree or disagree with the principles and strategies presented here?

2. How can you help your school or district to adopt these principles—or use them to enhance the success of your professional development activities and programs?

Activity 3.5

Implementation Challenges

Large Group Directions

As participants use this part of the program to explore the implications of Understanding by Design for school improvement planning, they may benefit from discussing the Comparison Matrix. It identifies generic school and district goals and "unpacks" the implications for using Understanding by Design to address those goals. Participants should consider the Comparison Matrix Reflection Questions.

Small Study Group Directions

Small study groups can use the Comparison Matrix to investigate research-based best practices associated with the school improvement planning process. They can begin by discussing the implications of this Comparison Matrix for their individual school or district. Next, they can study how currently underutilized areas might be addressed more successfully within their respective schools or districts.

Independent Study Directions

This Comparison Matrix can be used by individuals in an independent study mode to reflect on the Independent Reflection Questions.

Comparison Matrix

School or District Goal	Understanding by Design Implications
1. Ensure that all staff members understand district standards and their implications for high-stakes accountability testing.	1. Provide Understanding by Design training to help educators "unpack" district standards and their implications for required testing.
2. Reinforce students' understanding of the big ideas and interconnections within the curriculum they study.	2. Integrate enduring understandings and essential questions as "cueing" devices within all curriculum content areas.
3. Make certain that all students achieve high levels of understanding, not just formulaic knowledge and recall.	3. Emphasize the six facets of understanding: application, interpretation, explanation, perspective, empathy, and self-knowledge.
4. Ensure that assessment provides a complete and balanced portrait of what all students know, can do, and understand.	4. Adopt the Understanding by Design "photo album" metaphor.
5. Help students to move along a continuum from concrete to abstract, from teacher-guided to independent learning.	5. Organize units so that students' learning spirals toward independent application.
6. Reinforce all students' sense of efficacy, purpose, and authenticity.	6. Integrate the "W" element of W.H.E.R.E.T.O. in daily lesson design and delivery.
7. Engage student interest and ownership.	7. "Hook" students in key sections of all lessons.
8. Equip all students for success through experiential learning opportunities.	8. Reinforce the first "E" of W.H.E.R.E.T.O. to equip students with the knowledge and skills to explore the topic.
9. Reinforce students' ability to monitor their own comprehension (i.e., metacognition and self-regulation).	9. Stress the four Rs: reflect, revise, rethink, refine.
10. Encourage students to self-evaluate and self-express.	10. Use strategies such as think-pair-share, journaling, interviews, and presentations.
11. Differentiate instruction to accommodate the needs and strengths of all learners.	11. Tailor learning activities to address all students' strengths and needs.
12. Organize instruction to maximize learning for all students, including special populations.	12. Organize learning around big ideas and essential questions, revisiting core knowledge and skills with increasing complexity.

Comparison Matrix Reflection Questions

Use the Comparison Matrix to focus a discussion on the following questions.

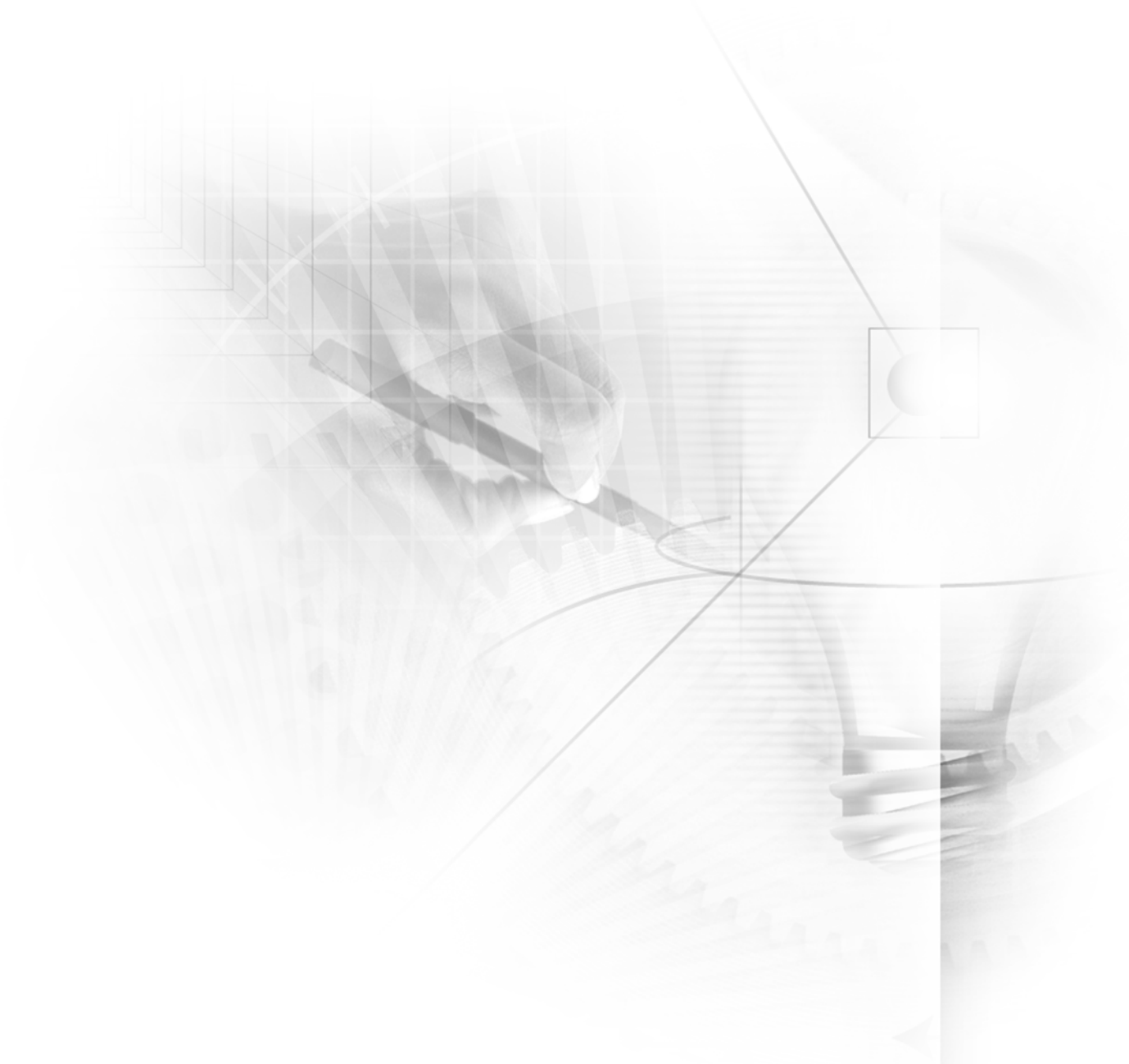
1. To what extent does the list of school and district goals reflect priorities in your school or district?

2. How might you address the Understanding by Design implications as part of your school improvement planning efforts?

Independent Reflection Questions

1. To what extent is your school or district currently addressing each of the identified school or district goals?

2. How useful are the suggestions presented in the Understanding by Design Implications for your particular school or district?



Understanding by Design: The Experts and Practitioners Speak

Moving Forward with Understanding by Design

Understanding by Design: The Experts and Practitioners Speak

This strand provides participants with an opportunity to reflect on how the Understanding by Design experts Grant Wiggins and Jay McTighe and practitioners respond to key questions related to Understanding by Design implementation.

These video excerpts, professional development activities, and suggested readings provide an ideal set of resources for small study groups and inquiry teams interested in investigating and debating the principles and evolving uses of Understanding by Design and its implications for their work with professional development.

Activity 4.1

Large Group Questions and Strategies

Directions

Within your large group, complete the Previewing and Postviewing handout, then determine which of the topics listed under Getting Started with Understanding by Design reflect participants' needs. Consider breaking the large group into smaller groups based on participants' topic choices.

Previewing and Postviewing

1. Before viewing this strand of the program, what do you predict the experts and practitioners will say regarding the following questions?
   - Where do we start?
   - How long does it take to become proficient with the backward design process?
   - What are the challenges?
   - What does Understanding by Design look like in the classroom?
   - How does Understanding by Design work at a school or district level?

2. After viewing this video for this strand, what can you take away with you that will support your journey to promote learning for understanding? How might you use the recommendations and suggestions to guide and inform your journey?

Getting Started with Understanding by Design

1. According to Jay McTighe, there are multiple pathways for getting started with Understanding by Design. Discuss which of his suggestions you have already used and which you might consider implementing:
   - Read the *Understanding by Design, Expanded 2nd Edition.*
   - Design small study group activities involving the text.
   - Attend an introductory workshop.
   - Design a unit using the backward design process, working with a topic participants are very comfortable with.
   - Get feedback from colleagues about the unit and its draft design.
   - Try out the unit to determine what students understand from it and modify it to work out the rough spots.
   - Provide participants with resources to enhance their implementation of Understanding by Design.

2. In this strand, the experts and practitioners emphasize the critical role of professional development in successful Understanding by Design implementation. To what extent do you agree or disagree with the following statements?

Statement	Agree	Somewhat Agree	Disagree
A. Introductory professional development should emphasize key elements and principles, building consensus about the importance of teaching for understanding and using the design principles of the Understanding by Design framework.			
B. Professional development related to Understanding by Design requires work over time.			
C. Effective professional development should be collaborative, including small study groups and action research.			
D. Teachers need support and coaching to ensure that they field-test their units and revise those units using peer feedback.			

3. Grant Wiggins and Jay McTighe suggest that Understanding by Design is a challenging planning framework. For this topic, share your reactions to the following challenges, as identified by Wiggins and McTighe.

Challenge	Agree	Somewhat Agree	Disagree
A. Teachers need to know their content thoroughly with understanding.			
B. Old planning habits need to be broken, particularly with coverage-oriented and activity-based design and replaced by the three stages of backward design.			
C. Textbooks need to be used as resources, not as curriculum.			

Activity 4.2

Small Study Group Questions and Strategies

Directions

Within a small study group, participants determine which of the following options best reflect their indicated areas of interest. Breaking the small study group into smaller pair groups based on participants' option choices may prove helpful.

Small Study Group Options

1. As a small study group, participants discuss which of the following processes appear to have the greatest potential for successful implementation of Understanding by Design in their school or district:
   - Read *Understanding by Design* (text and workbook).
   - Attend an introductory workshop.
   - Design a unit using the backward design process, working with a topic participants are very comfortable with.
   - Get feedback from colleagues about the unit and its draft design.
   - Try out the unit to determine what students understand from it and modify it to work out the rough spots.
   - Provide participants with resources to enhance their implementation of Understanding by Design.

2. Small study groups can organize their initial investigation of Understanding by Design by discussing the following key concepts:
   - Plan backward, clarifying desired results for organizational improvement and change.
   - Build consensus about what staff want to accomplish by introducing Understanding by Design.
   - Incorporate Understanding by Design into district curriculum planning.
   - Use the three stages of backward design in all aspects of action planning.

Small Study Group Options (*continued*)

3. Grant Wiggins and Jay McTighe suggest that Understanding by Design is a challenging planning framework. For this topic, share your reactions to the following challenges, as identified by Wiggins and McTighe.

Challenge	Agree	Somewhat Agree	Disagree
A. Teachers need to know their content thoroughly with understanding.			
B. Old planning habits need to be broken, particularly with coverage-oriented and activity-based design and replaced by the three stages of backward design.			
C. Textbooks need to be used as resources, not as curriculum.			

4. In this strand, Wiggins and McTighe and practitioners emphasize the critical role of professional development in successful Understanding by Design implementation. Small study groups may wish to explore this important issue, beginning with a discussion of the National Staff Development Council's Standards and recommendations for successful professional development.

Activity 4.3

Independent Study Questions and Strategies

Directions

Individuals engaging in independent study should use the Guiding Questions in this activity to navigate through the activity.

Guiding Questions

1. Before viewing the video for this strand, what do you predict the experts and practitioners will say regarding the following questions?
   - Where do we start?
   - How long does it take to become proficient with the backward design process?
   - What are the challenges?
   - What does Understanding by Design look like in the classroom?
   - How does Understanding by Design work at a school or district level?

2. After viewing the video for this strand, how do you believe Understanding by Design promotes the learning of all students? How might you use the recommendations and suggestions to guide and inform your journey?

3. According to the experts and practitioners, schools and districts getting started with Understanding by Design need to address several challenges. What are some of the issues identified? How would you recommend your school or district address them?

Activity 4.4

Assessing Teaching and Professional Development

Large Group, Small Study Group, and Individual Study Directions

Professional development cohorts, small study groups, and individuals engaged in independent study of this fourth strand may wish to read Wiggins and McTighe's article "Examining the Teaching Life." In this article, the authors contend that educators need to assess teaching practices and professional development activities in light of sound principles about how learning works. Use the suggested guiding questions for reading and discussing the implications of this article.

Examining the Teaching Life

Grant Wiggins and Jay McTighe

We need to assess teaching practices and professional development activities in light of sound principles about how learning works.

A school is in business to cause and promote learning. It should therefore model for all institutions what it means to be a learning organization. A school is not merely a place that expects students to learn; it must encourage and support everyone's learning.

For a school to be a model learning organization, all faculty members should be professional learners: They should engage in deep, broad study of the learning they are charged to cause. What works? What doesn't? Where is student learning most successful, and why? How can we learn from that success? Where are students struggling to learn, and why? What can we do about it? Effectively tackling these questions is what the "professional" in "professional practice" means.

How Learning Works

We are advocating for something more than the professional learning communities that DuFour and others have so eloquently described. School leaders need to create job requirements that make learning about learning mandatory. Moreover, we need the equivalent in schools of a Learning Bill of Rights—standards and structures that help us research and decide, as a staff, whether a given teaching practice is truly professional and consistent with our mission and state standards. These learning principles, like the Bill of Rights, should serve as criteria for safeguarding a learning-centered mission in which teachers regularly engage in peer review and self-assessment as part of their jobs.

Resources for Developing a Set of Learning Principles

- *Classroom Instruction That Works: Research-Based Strategies for Increasing Student Achievement.* Robert J. Marzano, Debra Pickering, and Jane E. Pollock. (2001). Alexandria, VA: ASCD.
- *How People Learn: Brain, Mind, Experience, and School.* John D. Bransford, Ann L. Brown, and Rodney R. Cocking. (Eds.). (2000). Washington, DC: National Academy Press.
- *Inventing Better Schools: An Action Plan for Educational Reform.* Phillip C. Schlechty. (1997). San Francisco: Jossey-Bass.
- Learner-Centered Psychological Principles: A Framework for School Redesign and Reform. *American Psychological Association.* (1997). Available: www.apa.org/ed/lcp.html
- "Making America Smarter." Lauren B. Resnick. (1999). *Education Week* (Century Series), 18(40), 38–40.
- *Powerful Learning.* Ron Brandt. (1998). Alexandria, VA: ASCD.

In a true learning organization, staff members should work together to arrive at their own common principles. In departmental, team, or school meetings, faculty could first review the list of principles that follows or consult various authoritative resources to develop one of their own (see "Resources for Developing a Set of Learning Principles"). A committee composed of supervisors and teacher leaders could then hone the list into a draft for

Source: From "Examining the Teaching Life," by G. Wiggins and J. McTighe, 2006, *Educational Leadership, 63*(6), 26–29.
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approval by the entire staff. Because teachers will hold themselves accountable for the learning principles, they must own them at a deep level for significant reform to occur and for schools to truly become learning organizations.

To help you get started, we offer the following nine principles that we have developed to reflect an understanding about how learning works:

1. A key goal of learning is fluent and flexible transfer—successfully using one's knowledge and skill on worthy tasks in important, realistic situations.

2. Engaged and sustained learning, a prerequisite for understanding, requires that learners see the value of their work and experience a growing sense of efficacy when facing worthy challenges.

3. Success at transfer depends on understanding the big ideas that connect otherwise isolated or inert facts, skills, and experiences, enabling learners to meet and understand new challenges.

4. An understanding is a realization that the learner experiences about the power of an idea. We cannot give understandings; we need to engineer them so that learners see for themselves how an idea can empower them to make sense of things.

5. Learners require clear priorities and a practical knowledge of the work products involved to meet goals and understand standards of excellence.

6. Learners require regular, timely, and user-friendly feedback to understand goals, produce quality work, and meet high standards.

7. Learners attain understanding only through regular reflection, self-assessment, and self-adjustment as they apply prior learning to new situations and tasks through assessments that demand reflection and transfer.

8. The capacity to deeply understand depends on the capacity to reexamine our thinking because any insight typically requires us to refine our earlier ideas. Being willing and able to rethink requires a safe and supportive environment for questioning assumptions and habits, as well as a curriculum designed to foster rethinking.

9. Instruction is most effective when it is personalized—when we sufficiently honor learners' interests, curiosity, strengths, contributions, and prior knowledge, making learners feel that they are an important part of something larger than themselves.

Like the Bill of Rights, these principles, although clear, are necessarily pregnant with possibilities and implications that we can tease out only through continual analysis of the cases that come before us. Staff, team, departmental, and grade-level meetings should focus in large part on considering such professional matters as pedagogical questions, selection of instructional materials, and persistent achievement problems through the lens of learning principles.

The cases considered would be impersonal, a summary of individual classroom issues that raise an important question for staff to consider. For example, a team leader might invite members to bring samples of their strongest and weakest tests for a general discussion of the validity of local assessments related to standards. Or a department head might ensure that one meeting each semester is devoted to analyzing student feedback from a staff-developed survey about student engagement in various assignments and practices.

The Unexamined Teaching Life

Four characteristics distinguish professionals in any field. Professionals (1) act on the most current knowledge that defines their field; (2) are client-centered and adapt to meet the needs of the individuals whom they serve; (3) are results-oriented; and (4) uphold the standards of the profession in their own practice and through peer review.

A great weakness of our craft is that we typically do not require faculty members to justify their teaching methods, course designs, and assessments against a set of learning principles. Indeed, in some academic settings, even raising

this point is viewed as an assault on academic freedom. As a result, many well-intentioned teachers end up in the grip of unexamined habits of teaching.

The inherent and perpetual isolation of staff in schools only makes matters worse. Without regular opportunities to consider, observe, and analyze best practice and receive helpful, non-evaluative feedback, how likely are teachers to engage in continual professional improvement? Indeed, teachers can be remarkably thin-skinned when someone questions their methods or decisions, and many of us resist seeking or receiving feedback from students, parents, colleagues, and supervisors. When students fail to learn, some teachers end up blaming the students, without an honest investigation of where student fault ends and teacher responsibility begins.

Nothing Personal, But . . .

The nine learning principles can serve as a vital touchstone and as a counterweight to bad habits that impede a school's mission. They can help define best practice and depersonalize the feedback necessary to improve teaching. In a pedagogical disagreement, teachers and supervisors too often revert to defensive postures. "He just doesn't like my teaching style" and "I've been teaching for a long time, and I know that. . . ." are frequent laments in supervisory or collegial talk. These discussions can never come to a meaningful professional conclusion unless we refer to valid standards for learning.

Depersonalized feedback is productive because it is disinterested: "Nothing personal, but lecturing 80 percent of the time is inconsistent with the school goal of engaging learners in making meaning for themselves." Or, "Nothing personal, but widespread use of multiple-choice departmental exams is out of sync with our mission to teach and assess for understanding and transfer." Or, "Nothing personal, but only one-quarter of your students, when surveyed, report that they find their classwork meaningful." Without explicit learning principles—and clear course goals linked to standards—there will be no end to tiresome debates and disingenuous posturing about practice. In other words, no matter how common specific teaching practices have been historically, they are only "professional" when they are defensible in terms of the school's mission and its adopted learning principles.

The need to vigorously and continually question what happens in the name of learning would be obvious to all educators if we weren't so comfortable with our habits, and hence so blind to their shortcomings. Some teachers think nothing of failing a student for a given project or even an entire semester because of one zero "averaged in" to the student's grade, even though such a practice has no counterpart in the wider world and strikes the very notion of fairness (not to mention the notions of validity and reliability). Some administrators don't bat an eye when faculty members fail to consider students' learning styles in scheduling classes or designing lessons. We defend many comfortable school customs by saying, "Hey, it worked for me and my kids!" or "We've always done it this way!"

In a model learning organization, such responses are the opposite of what we would expect and demand. Rather, we educators would continually ask the following questions: For whom is school currently not working as a place for learning? Why? How can we improve learning for all?

Examining Staff Learning

If our learning principles are valid, they should apply not only to student learning but also to professional development of staff members. Consider just two of these principles:

- Instruction is most effective when it is personalized—when we sufficiently honor learners' interests, curiosity, strengths, contributions, and prior knowledge, making learners feel they are an important part of something larger than themselves.

- A key goal of learning is fluent and flexible transfer—successfully using one's knowledge and skill on worthy tasks in important, realistic situations.

Many inservice programs for teachers neither personalize learning nor focus on the teachers' need to eventually transfer the learning to their classrooms. Much of what passes for inservice professional development is neither professional nor adequate for developing new learning by staff. In the worst cases, it is merely a day-filling smorgasbord, a tasting of interesting tidbits that teachers are free to try out or ignore.

Time again for our mantra: "Nothing personal, but many inservice experiences seem to be contrary to the learning principles. Staff members' criticisms have reflected this for years. How can we make changes, on the basis of our learning principles and staff feedback?" Indeed, if we were to agree to evaluate all professional development against the learning principles, we could quickly eradicate the most pointless aspects of so-called professional development activities—such as a mandatory one-size-fits-all "sit 'n' git" inservice day whose agenda teachers have little say in—with less hurt to and resistance from program planners than leaders might fear.

Unsound and unprofessional practices are also abetted by the failure of school leaders to provide staff with ongoing, organized opportunities to learn about learning and the effects of their teaching as part of the job. Practically speaking, that means providing the time and support necessary to ensure ongoing, collaborative staff research and development. True professional practice requires a continual, in-depth investigation into what is and isn't working locally, with ongoing adjustments to instruction on the basis of analysis and best practice. For example, each department or grade-level team would be expected to routinely analyze the assessments it uses each semester to ensure that they assess according to state standards. Faculty members would analyze assessment results and devise an action plan that targets key weaknesses in student performance.

Leadership in a learning organization means leading by being a model learner and by demanding learning. The leadership team in a school or district must be seen as a group of professional learners, whether the purview is budgets, buses, or books. Not just because continual learning is desirable, but because it is essential: Each new school year brings extraordinary change to the institution as another large group of new students (and perhaps teachers) arrives. The job of education leaders in the 21st century is to continually demand significant new learning, clarifying which timeworn aspects of schooling advance learning and which unwittingly impede it.

Owning the Principles

If our message is to continually learn about learning, it would hardly do for us to recommend that you unthinkingly adopt our learning principles. So, do not accept our principles as gospel; do not demand that staff or colleagues bow down before them.

Rather, think of these principles as a rough draft for developing a set of understandings about learning that faculty willingly sign off on as representing their views about how people best learn. Consider the principles as a jump start for the challenging yet invigorating task at the heart of learning about learning.

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Guiding Questions for "Examining the Teaching Life"

1. Do you agree or disagree with the authors' suggestion that in effective learning communities, "School leaders need to create job requirements that make learning about learning mandatory"?

2. In the section How Learning Works, Wiggins and McTighe present nine principles to reflect their understanding of how learning works. In your opinion, which of their principles have the greatest truth or significance? Are there any you disagree with or question? To what extent are these nine learning principles generally operational in your school or district?

3. According to the authors, four characteristics distinguish professionals in any field. Do you perceive these characteristics to be operational in the field of education? To what extent do you agree with the authors that organizational barriers and problems impede educators' demonstration of these characteristics?

Guiding Questions for "Examining the Teaching Life" (*continued*)

4. In the section entitled Nothing Personal, But . . . , Wiggins and McTighe assert that, "In a pedagogical disagreement, teachers and supervisors too often revert to defensive postures." How do you react to the arguments and assertions presented in this section? Do you agree or disagree with the authors?

5. In the section Examining Staff Learning, the authors suggest that their learning principles should apply to professional development as well as student learning. They emphasize the need for instruction of the adult learner to be personalized as well as promote fluent and flexible transfer. To what extent are your professional development experiences consistent with—or at odds with—the recommendations presented in this section of the article?

6. The article concludes with the authors' recommendation that readers "think of these principles as a rough draft for developing a set of understandings about learning that faculty willingly sign off on as representing their views about how people best learn." How might your school or district go about accepting Wiggins and McTighe's challenge?

Classroom Examples

Classroom Examples

The elementary, middle, and high school examples provide participants with an opportunity to view key elements of units that were presented over an extended period of time. The examples emphasize the continuum of experiences that are an important—and inevitable—part of successful Understanding by Design implementation. Participating educators vary from those in their first year of using the Understanding by Design framework to those with multiple years of experience.

These video excerpts and professional development activities provide an ideal set of resources for small study groups and inquiry teams interested in investigating and debating the principles and evolving uses of Understanding by Design in the classroom.

Activity 5.1

Observing Backward Design in Classroom Examples

Large Group, Small Study Group, and Individual Study Directions

Professional development cohorts, small study groups, and individuals engaged in independent study may wish to view the elementary, middle, and high school classroom examples included in the program. Use the Backward Design Observation Checklist to evaluate the quality and levels of use of the three stages of backward design. The checklist and users' additional comments can be used as catalysts for discussing the implications of Understanding by Design on multiple levels.

Backward Design Observation Checklist

Use the observation checklist to evaluate the quality and levels of use of the three stages of backward design in the elementary, middle, and high school classrooms. You may wish to apply the following rating scale to each element:

4 = Extensive evidence of effective use in all classroom examples.
3 = General evidence of effective use in all classroom examples.
2 = General evidence of effective use in some classroom examples.
1 = Minimal evidence of effective use in classroom examples.
0 = No evidence of effective use in any of the classroom examples.

Stage 1: Desired Results			
Backward Design Element	**Elementary School**	**Middle School**	**High School**
1. The examples clearly reflect emphasis on key "power standards" and established goals.			
2. All learners are clear about the "big ideas" of the lessons or units.			
3. The instructors communicate and organize learning activities around conceptual cues, including essential questions.			
4. Lesson and unit objectives clearly articulate what all learners are expected to know and do, with emphasis on one or more of the six facets of understanding (i.e., explanation, interpretation, application, perspective, empathy, self-knowledge).			
Additional comments			

Backward Design Observation Checklist (*continued*)

Stage 2: Assessment Evidence			
Backward Design Element	**Elementary School**	**Middle School**	**High School**
1. The collection and analysis of assessment evidence are ongoing.			
2. Students are actively engaged in the assessment process and show a clear understanding of the desired results they are responsible for.			
3. Assessment appears to be "balanced," with the instructors collecting a range of evidence to monitor students' achievement of desired results.			
4. Assessment activities appear to help students move toward growing levels of independent use and transfer of key content.			
5. The activities presented reinforce students' ability to engage in culminating performance tasks and projects.			
6. Overall, the instructors appear to use assessment for a variety of purposes, including diagnostic and formative as well as summative assessments.			
Additional comments			

Backward Design Observation Checklist (*continued*)

Stage 3: Learning Activities			
Backward Design Element	**Elementary School**	**Middle School**	**High School**
1. The instructors appear to use activities to monitor and diagnose how individual students are progressing.			
2. At the beginning of instructional episodes, the instructors "hook" students' interest.			
3. Students are equipped for success via experiential learning, exploration, and inquiry.			
4. Students revise and rethink their learning.			
5. At key points in the episodes, students have opportunities to self-evaluate their understanding.			
6. Where appropriate, the instructors appear to tailor learning activities to accommodate individual student readiness levels, interests, and learning styles.			
7. Overall, the episodes reflect students' growth toward conceptual understanding and transfer in authentic, real-world settings.			
Additional comments			

RESOURCES

Glossary of Understanding by Design Terms

Application
One of the six facets of understanding and a time-honored indicator of understanding. The ability to apply knowledge and skill in diverse situations provides important evidence of the student's understanding.

Assessment
Techniques used to analyze student accomplishments against specific goals and criteria. A test is one type of assessment. Others include observations, self-assessments, and surveys. Good assessment requires a balance of techniques. In an assessment, the teacher makes thoughtful observations and disinterested judgments and offers clear and helpful feedback. Assessment is sometimes viewed as synonymous with evaluation. A teacher can assess a student's strengths and weaknesses without placing a value or a grade on the performance.

Authentic Assessment or Authentic Task
An assessment composed of performance tasks and activities designed to simulate or replicate important real-world challenges. The heart of authentic assessment is realistic performance-based testing—asking the student to use knowledge in real-world ways, with genuine purposes, audiences, and situational variables. Authentic assessments are meant to do more than "test": they should teach students what the "doing" of a subject looks like and what kinds of performance challenges are actually considered most important in a field or profession. The tasks are chosen because they represent essential questions or challenges facing practitioners in the field.

Backward Design
An approach to designing a curriculum or unit that begins with the end in mind and designs toward that end. Although such an approach seems logical, it is viewed as backward because many teachers begin their unit design with the means—textbooks, favored lessons, and time-honored activities—rather than deriving those from the end—the targeted results, such as content standards or understandings.

Stage 1: Identify Desired Results
Stage 1 emphasizes desired results, including established goals (i.e., the most significant content standards students are expected to

Source: Adapted from *Understanding by Design, Expanded 2nd Edition* (pp. 336–354), by G. Wiggins and J. McTighe, 2005, Alexandria, VA: Association for Supervision and Curriculum Development.

understand at the conclusion of the unit), enduring understandings, essential questions, and enabling knowledge objectives (i.e., what students should know and be able to do at the conclusion of the unit).

Stage 2: Determine Acceptable Evidence
Stage 2 emphasizes the need to use a balanced, photo album approach to monitoring student achievement and collecting evidence of student understanding, including constructed-response test items, reflective assessments, academic prompts, culminating performance tasks and projects, and engaging students in self-evaluation via rubrics and other scoring tools.

Stage 3: Plan Learning Activities
Stage 3 involves the design of learning activities consistent with W.H.E.R.E.T.O. design principles.

Big Idea
In Understanding by Design, the core concepts, principles, theories, and processes should serve as the focal point of curricula, instruction, and assessment. By definition, big ideas are important and enduring. Big ideas are transferable beyond the scope of a particular unit, e.g., adaptations, allegory, significant figures. Big ideas are the building material of understanding. They can be thought of as the meaningful patterns that enable one to connect the dots of otherwise fragmented knowledge.

Such ideas go beyond discrete facts or skills to focus on larger concepts, principles, or processes. These are applicable to new situations within or beyond the subject. For example, students study the enactment of the Magna Carta as a specific historical event because of its significance to a larger ideas, the rule of law, whereby written laws specify the limits of a government's power and the rights of individuals, such as due process. The big idea transcends its roots in 13th century England and is a cornerstone of modern democratic societies.

Concept
A mental construct or category represented by a word or phrase. Concepts include both tangible objects (e.g., chair, rabbit) and abstract ideas (e.g., democracy, bravery). Overarching understandings are derived from concepts.

Coverage
A teaching approach that superficially teaches and tests content knowledge irrespective of student understanding or engagement. The term generally has a negative connotation. It implies that the goal is to march through a body of material (often a textbook) within a specified time frame.

Design Standards
The specific standards used to evaluate the quality of unit designs. Rather than treating design as merely a function of good intentions and hard work, standards and a peer review process provide a way for teachers' work to be assessed in the same way that student work is assessed against rubrics and anchors. The design standards have a dual purpose: (1) to guide improvements and (2) to provide a mechanism for quality control, a means of validating curricular designs.

Desired Result
A specific educational goal or achievement target. In Understanding by Design, Stage 1 sums up all desired results. Common synonyms include target, goal, objective, and intended outcome. Desired results in education are generally of five kinds: (1) factual or rule-based declarative knowledge (e.g., a noun is the name of a person, place, or thing); (2) skills and processes (e.g., rendering a perspective drawing, researching a topic); (3) understandings and insights derived from inferences into ideas, people, situations, and processes (e.g., visible light represents a very small band within the electromagnetic spectrum); (4) habits of mind (e.g., persistence, tolerance for ambiguity); and (5) attitudes (e.g., appreciation of reading as a valuable leisure-time pursuit).

Empathy
One of the six facets of understanding. Empathy, the ability to "walk in another's shoes," to escape one's own emotional reactions to grasp another's, is central to the most common colloquial use of the term understanding. When we try to understand another person, people, or culture, we strive for empathy. It is thus not simply affective response; it is not sympathy. It is a learned ability to grasp the world from someone else's point of view.

Enduring Understanding
The specific inferences, based on big ideas that have lasting value beyond the classroom. In Understanding by Design, designers are encouraged to write them as full-sentence statements, describing what, specifically, students should understand about the topic. The stem

"Students will understand that . . . " provides a practical tool for identifying understandings.

Enduring understandings are central to a discipline and are transferable to new situations. For example, in learning about the rule of law, students come to understand that "written laws specify the limits of a government's power and articulate the rights of individuals, such as due process." This inference from facts, based on big ideas such as "rights" and "due process," provides a conceptual unifying lens through which to recognize the significance of the Magna Carta as well as to examine emerging democracies in the developing world.

Essential Question
A question that lies at the heart of a subject or a curriculum and promotes inquiry and uncoverage of a subject. Essential questions do not yield a single straightforward answer but produce different plausible responses about which thoughtful and knowledgeable people may disagree.

Explanation
One of the six facets of understanding. Understanding involves more than just knowing information. A person with understanding is able to explain why it is so, not just state the facts. Such understanding emerges as a well-developed and supported theory, an account that makes sense of data, phenomena, ideas, or feelings. Understanding is revealed through performances and products that clearly, thoroughly, and instructively explain why things work, what they imply, where they connect, and why they happened.

Facets of Understanding
A way in which a person's understanding manifests itself. Understanding by Design identifies six kinds of understanding: application, empathy, explanation, interpretation, perspective, and self-knowledge. True understanding is revealed by a person's ability to

- Explain: Provide thorough, supported, and justifiable accounts of phenomena, facts, and data.
- Interpret: Tell meaningful stories; offer apt translations; provide a revealing historical or personal dimension to ideas and events; make something personal or accessible through images, anecdotes, analogies, or models.
- Apply: Effectively use and adapt knowledge in diverse contexts.
- Have perspective: See points of view with critical eyes and ears; see the big picture.

- Empathize: Get inside, find value in what others might find odd, alien, or implausible; perceive sensitively based on prior direct experience.
- Have self-knowledge: Perceive the personal style, prejudices, projections, and habits of mind that both shape and impede understanding; be aware of what is not understood and why it is so hard to understand.

G.R.A.S.P.S.
A design tool to assist in the creation of performance tasks. Performance tasks typically present students with a problem: a real-world goal set within a realistic context of challenges and possibilities. Each letter of the G.R.A.S.P.S. acronym corresponds with a task element: goal, role, audience, situation, performance, standards.

Interpretation
One of the six facets of understanding. To interpret is to find meaning, significance, sense, or value in human experience, data, and texts. It is to tell a good story, provide a powerful metaphor, or sharpen ideas through an editorial.

Leading Question
A question used to teach, clarify, or assess for knowledge. Unlike essential questions, leading questions have correct and straightforward answers. Leading questions have a useful role in teaching and checking for understanding, but their purpose is different from the purpose of essential questions.

Performance Task
A task that uses one's knowledge to effectively act or bring to fruition a complex product that reveals one's knowledge and expertise. Music recitals, oral presentations, art displays, and automechanic competitions are performances in both senses.

Perspective
One of the six facets of understanding. The ability to see other plausible points of view. It also implies that understanding enables a distance from what one knows, an avoidance of getting caught up in the views and passions of the moment.

Prerequisite Knowledge and Skill
The knowledge and skill required to successfully perform a culminating performance task or achieve a target understanding. Typically, prerequisites identify the more discrete knowledge and know-how

required to put everything together in a meaningful final performance. For example, knowledge of the USDA food pyramid guidelines would be considered a prerequisite to the task of planning a healthy, balanced diet for a week.

Resultant Knowledge and Skill
Knowledge and skill that are meant to result from a unit of study. In addition to the targeted understanding, teachers identify other desired outcomes. Resultant knowledge and skill differs from prerequisite knowledge and skill. Resultant knowledge is the goal of the unit. Prerequisite knowledge is what is needed to accomplish the goals of the unit.

Self-Knowledge
One of the six facets of understanding. As discussed in the context of the facets theory, self-knowledge refers to accuracy of self-assessment and awareness of the biases in one's understanding because of favored styles of inquiry, habitual ways of thinking, and unexamined beliefs. Accuracy of self-assessment in this case means that the learners understand what they do not understand with clarity and specificity.

Transfer
The ability to use knowledge appropriately and fruitfully in a new or different context from that in which it was initially learned. For example, students who understand the concepts of balanced diet transfers that understanding by evaluating hypothetical diets for their nutritional values and by creating nutritional menus.

Understanding
An insight into ideas, people, situations, and processes manifested in various appropriate performances. To understand is to make sense of what one knows, to be able to know why it's so, and to have the ability to use it in various situations and contexts.

Unit
Short for "unit of study." Units represent a coherent chunk of work in courses or strands, across days or weeks. An example is a unit on natural habitats and adaptation that falls under the year-long strand of living things, under 3rd grade science, and under science.

W.H.E.R.E.T.O
An acronym for **W**here is it going?; **H**ook the students; **E**xplore and **E**quip; **R**ethink and **R**evise; **E**xhibit and **E**valuate; **T**ailor to student needs, interests, and learning styles; and **O**rganize for maximum

engagement and effectiveness. Considered in greater detail, W.H.E.R.E.T.O. consists of the following components:

- **W**here is the work headed? Why is it headed there? What are the student's final performance obligations, the anchoring performance assessments? What are the criteria by which student work will be judged for understanding?
- **H**ook the student through engaging and provocative entry points: thought-provoking and focusing experiences, issues, oddities, problems, and challenges that point toward essential questions, core ideas, and final performance tasks.
- **E**xplore and equip. Engage students in learning experiences that allow them to explore the big ideas and essential questions and that cause them to pursue leads or hunches, research and test ideas, and try things out. Equip students for the final performances through guided instruction and coaching on needed skills and knowledge. Have them experience the ideas to make them real.
- **R**ethink and revise. Dig deeper into ideas at issue. Revise, rehearse, and refine as needed. Guide students in self-assessment and self-adjustment based on feedback from inquiry, results, and discussion.
- **E**valuate understanding. Reveal what has been understood through final performances and products. Involve students in a final self-assessment to identify remaining questions, set future goals, and point toward new units and lessons.
- **T**ailor the work to ensure maximum interest and achievement. Differentiate the approaches used and provide sufficient options and variety to make it most likely that all students will be engaged and effective.
- **O**rganize and sequence the learning for maximal engagement and effectiveness, given the desired results.

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Resources

Audios

Davis, K. (Presenter). (2003). *Theory into practice: Understanding by Design in early childhood.* Alexandria, VA: Association for Supervision and Curriculum Development.

This presentation delivered at the 2003 ASCD Annual Conference discusses the first years of school as critical in laying the foundation for learning.

Emberger, M. A., Williamson, C., & Hershberger, D. H. (2002). *Understanding by Design: Backmapping our instruction and assessment to meet the needs of every child.* Alexandria, VA: Association for Supervision and Curriculum Development.

This presentation delivered at the 2002 ASCD Annual Conference explains how staff members from a Maryland public school collected evidence of understanding and helped educators use that evidence for instructional decision making about how to meet the needs of every student. The presenters share a staff development model and a sample unit.

Emberger, M., and Hershberger, D. (2002). *Understanding by Design: Using backwards mapping to develop depth and breadth for middle schoolers.* Alexandria, VA: Association for Supervision and Curriculum Development.

Participants in this 2002 ASCD Annual Conference session examine an interdisciplinary unit to experience how educators are successfully organizing using the *Understanding by Design* model.

Katherman, H., Hubbard, D. M., Robinson-Simpson, G., & Pugh, C. (2002). *What does Understanding by Design have to do with professional development?* Alexandria, VA: Association for Supervision and Curriculum Development.

At the 2002 ASCD Annual Conference, presenters from an urban school district demonstrate how to use *Understanding by Design* to design professional development for educators.

McTighe, J. (2004). *Strategies for effective questioning: Essential questions as doorways to understanding.* Alexandria, VA: Association for Supervision and Curriculum Development.

In a presentation at the 2004 ASCD Annual Conference, McTighe explores the characteristics of good essential questions, reviews examples, and shows how to generate questions for curriculum planning.

McTighe, J., & Thomas, R. S. (2002). *Applying Understanding by Design to school improvement planning.* Alexandria, VA: Association for Supervision and Curriculum Development.

This 2002 ASCD Annual Conference session examines how the Understanding by Design framework can lead to a deeper understanding of assessment data as well as the root causes of current levels of student performance. It also examines how the three stages of backward design can help determine effective actions to increase achievement.

McTighe, J., & Wiggins, G. (2002). *Understanding by Design: Structures and strategies for designing school reform.* Alexandria, VA: Association for Supervision and Curriculum Development.

At the 2002 ASCD Annual Conference, presenters in this session explore how teaching for understanding affects leadership practices, school structures, and decision making in districts.

Wiggins, G. (2001). *Designing instruction around questions, not content.* Alexandria, VA: Association for Supervision and Curriculum Development.

This session from the 2001 ASCD Teaching and Learning Conference focuses on the role of questions in curriculum design, drawing on the most recent work from the authors of *Understanding by Design,* and explores participants' questions through a series of thought-provoking and practical exercises and design experiences.

Wiggins, G. (2004). *Strategies for student self-evaluation.* Alexandria, VA: Association for Supervision and Curriculum Development.

In a presentation from the 2004 ASCD Annual Conference, Wiggins explores how teaching students to self-assess and self-adjust are keys to high levels of performance. Participants explore 13 concrete and proven strategies for improving student self-evaluation in any subject.

Wiggins, G., McTighe, J., & Tomlinson, C. A. (2003). *Understanding by Design and Differentiated Instruction: Partners in classroom success.* Alexandria, VA: Association for Supervision and Curriculum Development.

In a presentation from the 2003 ASCD Annual Conference, Wiggins and Tomlinson examine the important connections between the Understanding by Design and Differentiated Instruction models.

Zmuda, A. (2003). *Asking what matters: Essential questions.* Alexandria, VA: Association for Supervision and Curriculum Development.

In this session from the 2003 ASCD Annual Conference, Zmuda examines how essential questions function as a bridge between engagement and understanding—an integral component of both a differentiated classroom and the Understanding by Design model.

Books

Aseltine, J. M., Faryniarz, J. O., Rigazio-Digilio, & A. J. (2006). *Supervision for learning: A performance-based approach to teacher development and school improvement,* Alexandria, VA: Association for Supervision and Curriculum Development.

Although traditional ways of supervising and evaluating educators focus on their inputs—their lesson plans and instruction—what really matters most are the outputs: how students perform. This book helps you transform your supervisory system into a performance-based model that connects to student achievement and teacher professional development.

Brown, J. L. (2004). *Making the most of Understanding by Design.* Alexandria, VA: Association for Supervision and Curriculum Development.

Explore how high-level users of ASCD's Understanding by Design have applied this framework to improve both student achievement and organizational effectiveness.

D'Acquisto, L. (2006). *Learning on display: Student-created museums that build understanding.* Alexandria, VA: Association for Supervision and Curriculum Development.

Through photographs and lots of classroom examples, the author—an experienced curriculum director, teacher, and museum educator—guides you through every step of designing museum projects that teach students core content, along with valuable research and communication skills.

Tomlinson, C. A., & McTighe, J. (2006). *Integrating Differentiated Instruction and Understanding by Design: Connecting content and kids.* Alexandria, VA: Association for Supervision and Curriculum Development.

Find out how a curriculum built on the goal of student understanding, integrated with instructional approaches that emphasize reaching every learner, can provide educators with more specific teaching targets and more flexible ways to reach them.

Wiggins, G., & McTighe, J. (2004). *Understanding by Design professional development workbook.* Alexandria, VA: Association for Supervision and Curriculum Development.

Implementing an Understanding by Design program is much easier when you use this in-depth resource for workshops, curriculum teams, and teacher training.

Wiggins, G., & McTighe, J. (2005). *Understanding by Design: Expanded second edition.* Alexandria, VA: Association for Supervision and Curriculum Development.

In this expanded second edition, educators from kindergarten through college can get everything they need—guidelines, stages, templates, and tips—to start designing lessons, units, and courses that lead to improved student performance.

Online Products

Understanding by Design: An Introduction. Available through http://pdonline.ascd.org

This seven-lesson course introduces educators in all grades and subjects to the Understanding by Design program for curriculum, instruction, and assessment.

Understanding by Design: The Six Facets of Understanding. Available through http://pdonline.ascd.org

This seven-lesson course explores the six facets of understanding. These six interrelated behaviors provide avenues through which educators can observe and evaluate students' growing understanding of the curriculum they are studying.

Understanding by Design: The Backward Design Process. Available through http://pdonline.ascd.org

This six-lesson course is designed to help practitioners describe, explain, and apply the design principles and strategies associated with the Understanding by Design framework.

Understanding by Design Exchange, Version 2. Available at http://ubdexchange.ascd.org

Through the Exchange, you can create and send original units for expert and peer reviews. While working within the Exchange, search the extensive database for units to edit and add to your unit repository.

Video

Kiernan, L. J. (Producer). (1998–2000). *Understanding by Design video staff development series*. Alexandria, VA: Association for Supervision and Curriculum Development.

Through the three parts of this program (What Is Understanding?; Using the Backward Design Process; Refining Unit Designs), Grant Wiggins and Jay McTighe explain the six facets of understanding and guide you through the steps of designing curricular units that promote deep understanding of content. Interviews with educators describe real-world applications of the unit-planning process.

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