**Teaching Every Student in the Digital Age**

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**Chapter 5: Using UDL to Set Clear Goals**

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| In this chapter, you will learn how UDL can help resolve the apparent contradiction between standards and student diversity when setting goals for students.**Key Ideas*** Brain research supports the idea that clear goals are essential for learning, but teachers often lack clear goals for students, in part because our reliance on traditional, fixed media leads us to believe there is only one path to learning.
* We can apply what we know about the three brain networks and the nature of new media to separate goals from the means for achieving them, interpret standards for particular classrooms, and derive goals that all students can strive for.
* New Web-based software being researched at CAST is an example of a flexible tool that supports multiple pathways to common goals.
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Common sense tells us that setting clear goals for students is the essential first step in teaching. Clear goals allow teachers to determine the best methods and materials for reaching our objectives and also enable us to establish appropriate criteria for assessing students' success.

Recent research on how goals are represented in the brain adds a strong neurobiological rationale for shaping and communicating clear goals to students. An everyday example highlights some key findings from this research: Suppose your goal is to drink a cup of coffee without spilling any on your clean shirt. How is this goal represented in the brain?

Earlier theory suggested that our brains specify goals as a precise sequence of muscle actions (first, extend the arm toward the cup; next, open the fingers to grasp the handle; then close the fingers; and so forth). As it turns out, this is not how it works. See for yourself: Mentally set the goal of picking up a coffee cup and bringing it to your lips. Now do it. You found it routine, right? Put the cup back down, move twelve inches away from it, and attempt the same goal again. Again, it's routine, despite the fact that your muscles had to act in a slightly different sequence. Even if you placed a heavy weight on your arm, you would still have little difficulty smoothly adjusting your movements to retrieve the cup. It's difficult to reconcile this experiment with the idea that the brain represents actions with exactly specified muscle movements. If this were true, changing the necessary sequence of muscle actions would require a new mental representation, introducing a new challenge.

Neuroscientists now know that our strategic networks create internal plans based entirely upon the *goal* of an action (see Frith & Dolan, 1996; Funahashi, 2001;Levine et al., 1998). Following a plan that is based on an outcome—rather than one that is more concerned with the precise steps necessary to reach that outcome—is the surest way to preserve the outcome when external conditions change. For example, to attain the stated goal, “Drink some coffee,” there are many options open to us, including reaching for a cup in any number of ways, leaning forward to use a straw, or sipping the coffee out of a spoon. In contrast, there are limited alternative pathways through which we might attain the goal, “Reach forward six inches, grasp the handle of the cup, tighten your grip, lift to your mouth, and drink some coffee.” A goal this specific leaves little leeway to coffee drinkers. This raises an important issue: Goals that are too highly specified limit the possible strategies for reaching them, thus suppressing creative solutions and limiting the number of people who can even attempt to attain the goals.

Because strategic networks must understand the intended outcome of the goal in order to construct a plan of action, a fuzzy goal, or a goal confounded with the means to achieve it, leads to actions that lack focus. Without clear objective, it's difficult to gauge progress. In contrast, clearly communicated goals can support all three brain networks by helping students know what they are supposed to do, how to do it, and why it is important. Students who understand the goals of their schoolwork are more likely to stay focused, monitor themselves successfully, and derive satisfaction from their progress.

Setting clear goals and communicating them so that students understand them is neither as easy nor as widely practiced as we might think. It requires that teachers overcome several challenges, the most important of which is the apparent contradiction between standards and learner diversity.

**Common Standards, Diverse Student Needs**

Any teacher will confirm that standards exert a powerful and controversial influence on today's classrooms (O'Neil & Tell, 1999; Sizer, 1999; Tomlinson, 1999a).Developed by national, state, and local curriculum- writing groups and by subject area experts, standards aim to articulate the knowledge, skills, and understanding all students should gain in a particular subject, with more specific benchmarks of achievement by grade level. Standards express what schools value and, therefore, determine what teachers teach and assess. To best serve our students, we need to understand the strengths and limitations of standards as they are currently designed so that we may interpret and apply them effectively and contribute to their improvement.

First, the strengths. If properly constructed, standards can help us realize the dream of learning for all (Schmoker & Marzano, 1999). Well-designed standards focus primarily on “learning how to learn,” calling for students to gain knowledge, skills, and understanding. They leave room for teachers to shape goals and to individualize the means for attaining them. In other words, good standards represent the community's beliefs about the knowledge, skills, and understanding that all students should develop, but they allow that *how* and *to what degree* students develop and demonstrate that learning can be as varied and creative as are the teachers and students themselves.

However, many educators are concerned about the current design and application of standards(see Dempster, 1993; Rosenholtz, 1991; Schmoker & Marzano, 1999; Wolk, 1998). Howard Gardnerand the Project Zero group, in their work on teaching for understanding, warn that standards that specify particular knowledge and skills can actually lead teachers to decrease their focus on true understanding (Gardner, 1999). In such classrooms, students might acquire an impressive amount of factual knowledge, but not understand the meaning and importance of what they have studied (Blythe & Associates, 1998). The kind of understanding standards usually fail to capture is articulated by David Perkins (1998) as “the ability to think and act flexibly with what one knows . . . more like learning to improvise jazz or hold a good conversation or rock climb than learning the multiplication table. . . .”(p. 43). Critics also point out that some standards prescribe too narrowly and specifically what students should learn. Such overly specified standards can lead to a host of problems: “one-size-fits-all” approaches, cookie-cutter curricula, “teaching to the test,” and an increased need to cover large amounts of material instead of delving deeply into concepts.

We believe the key to reconciling standards with student diversity is a careful examination of the standards themselves—first to determine the true purpose of a particular standard, and then to separate that purpose from the methods for attaining it. If the goal statement reflects its true purpose, it can work for an entire class made up of diverse learners. The means, or approaches, can then be individualized.

**The Problem with the Traditional Framework: Goals and Methods Linked**

Partly because teachers have functioned for so many years with inflexible curriculum materials and methods, we tend to think narrowly about learner goals and the available pathways for their attainment. When goals are too tightly tied to methods, the logical result is that some students encounter barriers that prevent them from working toward these goals and others are not offered an appropriate level of challenge (Rose & Meyer,2000).

Consider an analogy. Imagine a woodworking instructor is setting goals and performance criteria for a class of 30 students. One of the first goals he sets is “*Students will master cutting wood with a handsaw*.” The performance criterion is for all students to use a handsaw to cut along a straight line drawn on a board. What is the likelihood that every one of the instructor's students will be able to achieve this goal?

The odds aren't very good. The wording of the goal confounds its objective with the means for attaining it, and the single performance criterion guarantees that while some students will be under-challenged, others will be over-challenged and have almost no chance of success. It's clear this goal could not be attained by a student like Sophia, who would have difficulty seeing a line drawn on a board, or by a student like Jamal, who lacks the physical ability to use a handsaw or to cut along a straight line. The goal would also be problematic for any student who fears being injured with sharp tools. Further, because students differ in coordination, strength, and physical ability, the single performance will be too high for some and too low for others.

**The UDL Solution: Goals and Methods Differentiated**

If the woodworking instructor had only a handsaw and pencil (the woodshop equivalent of traditional, inflexible instructional media and materials), he might find it very difficult to shift set and reinterpret the goal so that all of his students could make progress. However, if he had a range of modern tools to work with (the equivalent of UDL's flexible media), he could broaden the goal from “master cutting wood with a handsaw” to “cutting wood” or “learning basic carpentry,”—two outcomes that better represent his true purpose. All students could work toward these broader goals, using whatever tools suit them best, and all could strive toward levels of competency that represent individual progress.

Like the woodworking instructor, teachers who have access to only a few tools and methods for teaching and assessing learners' progress naturally tend to define goals that are closely tied to methods. Consider this goal, set by Patrick's teacher, Mr. Hernandez, as part of a class research project: “*Students will collect information from a variety of books as part of their research*.” In a traditional classroom, with only traditional fixed media available, Mr. Hernandez might logically conclude that Patrick couldn't work toward the same goal as his classmates because of his slow reading and tendency to be easily discouraged.

What if, in addition to books, the resources available to Mr. Hernandez's students included digital text with reading support, a variety of image-rich sources, videos, and scaffolds to help Patrick stay focused and organize his information? In this classroom, it would be clearer that the goal's true purpose—learning to collect and synthesize information—does not depend upon the use of printed text. Mr. Hernandez might restate the goal more generally: “*Students will collect information from a variety of sources*.” This rewording separates the goal from the methods for attaining it, broadening the options for the entire class. Patrick, instead of having to lower his sights because of difficulty accessing a particular medium, could rely on scaffolds and supports to achieve the same goal as his peers.

UDL offers educators practical guidance for reconciling common standards with diverse needs. Remembering that our overarching intent is for each student to learn, we can use the UDL framework to

* Structure our analysis of the nature of a standard, goal, or unit of curriculum so that we can determine its true purpose, then separate the desired outcome from the means to attain it.
* Guide selection and assembly of flexible media and materials that can support diverse pathways to the goal for different students.
* Help us communicate goals and means to students so they know what they are doing, how they might do it, and why it is important.

**Applying UDL to Separate Goals from Methods**

The framework of the three brain networks guides interpretation of learning standards in two ways. First, by considering the wording carefully we can determine if the true purpose of the standard centers on learning information (recognition networks), learning skills or processes (strategic networks), or engagement (affective networks). When we can pinpoint the main focus of the goal, we can identify the aspects that must be held constant for all students. Second, and equally important for the process of individualizing instruction, knowing the real purpose of a goal helps determine where we can offer flexible options and where we can provide scaffolds without removing the challenge. Let's take a closer look at what's involved.

**Determining Which Network is Central to a Standard**

You may recall that setting goals and monitoring progress are the domains of strategic networks. Still, attaining any goal involves the whole brain. To illustrate, consider what is involved in attaining your goal of drinking a cup of coffee: Your *recognition networks* are in full gear, enabling you to identify the cup; its size, location, and heft; recognize the table and your hand; and monitor the changing location of your arm and hand as you reach for the cup. *Strategic networks* are centrally involved in setting the goal, initiating your reach, monitoring your progress, and making any necessary course corrections. Affect motivates you to lift the cup because you are curious about our experiment, thirsty, or tired and in need of caffeine.

Although pursuing goals involves the whole brain, most learning goals do tend to fall primarily into the domain of one brain network, one kind of “knowing.” Some goals emphasize information and facts, the *“what”*of learning—the domain of recognition networks. Some goals emphasize skills and processes, the *“how”* of learning—the domain of strategic networks. Less common (but we believe, just as important) are the goals that emphasize the value and importance of ideas and connections to students' lives, the*“why”* of learning—the domain of affective networks. Determining which network is central to a standard is the first step in separating goals from methods. Below, we provide some general guidelines.

**Recognition goals.** Standards that ask students to identify “who, what, when, and where” prioritize the *learning of specific content*.This is the domain of recognition networks. Examples of such standards include

* Understands the genetic basis for transfer of biological characteristics from one generation to the next.[1](http://www.ascd.org/publications/books/101042/chapters/Using-UDL-to-Set-Clear-Goals.aspx%22%20%5Cl%20%22fn1)
* Knows the location of places, geographic features, and patterns of the environment.[2](http://www.ascd.org/publications/books/101042/chapters/Using-UDL-to-Set-Clear-Goals.aspx%22%20%5Cl%20%22fn2)
* Understands and applies basic and advanced properties of functions and algebra.[3](http://www.ascd.org/publications/books/101042/chapters/Using-UDL-to-Set-Clear-Goals.aspx%22%20%5Cl%20%22fn3)

**Strategic goals.** Standards that ask students to learn “how” to do something emphasize *skills and strategies*, the province of strategic networks. Examples of these standards include

* Demonstrates competence in general skills for reading a variety of literary texts.[4](http://www.ascd.org/publications/books/101042/chapters/Using-UDL-to-Set-Clear-Goals.aspx%22%20%5Cl%20%22fn4)
* Demonstrates competence in the general skills and strategies of the writing process.[5](http://www.ascd.org/publications/books/101042/chapters/Using-UDL-to-Set-Clear-Goals.aspx%22%20%5Cl%20%22fn5)
* Understands the nature of scientific inquiry.[6](http://www.ascd.org/publications/books/101042/chapters/Using-UDL-to-Set-Clear-Goals.aspx%22%20%5Cl%20%22fn6)

**Affective goals.** Standards related to affect are still rather rare and are relatively easy to identify. Examples include:

* Students should enjoy, appreciate, and use mathematics, just as they should enjoy, appreciate, and use music, art, and literature.[7](http://www.ascd.org/publications/books/101042/chapters/Using-UDL-to-Set-Clear-Goals.aspx%22%20%5Cl%20%22fn7)
* Students will select a variety of materials to read for discovery, appreciation, and enjoyment, summarize the readings, and connect them to prior knowledge and experience.[8](http://www.ascd.org/publications/books/101042/chapters/Using-UDL-to-Set-Clear-Goals.aspx%22%20%5Cl%20%22fn8)

**Determining a Standard's True Purpose**

Knowing which network is most central to a particular standard helps us determine what its true purpose is. Only then can we know which aspects must be held constant if the standard is to be met and which aspects can be varied to support individual learning differences. Speaking very broadly, the following guidelines apply:

* For recognition goals, focused on *specific content*,that content is key.
* For strategic goals, focused on *a specific process or medium*,that process or medium is key.
* For affective goals, focused on *a particular value or emotional outcome*, that emotional outcome is key.

**Considering Multiple Means to Goal Attainment**

When the true purpose of a standard is understood, teachers can explore the various means students might use to attain that standard and various supports we might provide to help them do so.

Consider this standard: “*The student will demonstrate competence in the general skills and strategies of the writing process*.” This standard focuses on *process* and is rooted in strategic networks. Because the content is not specified and is not key to this particular standard, we could increase students' engagement by encouraging them to select content that interests them and setting the challenge at individually appropriate levels.

A tougher question is whether a teacher could be flexible about supporting the actual writing skills targeted in the standard. The writing process involves the ability to create a draft, elicit and use feedback, and revise and share one's work—processes that can be learned and practiced in numerous media, including text, sound, animation, images, and video. Although it is true that for students to attain this standard, they must ultimately be able to compose in text, we could scaffold their learning by encouraging composition and editing in these other media. Further, because this goal focuses on writing*process* and not writing *mechanics*, we could use text-related scaffolds, including speech recognition, word prediction, spell checking, and text-to-speech.

Here is another example: “*Students will identify and express the major causes of the United States Civil War*.” This goal is content-specific—rooted in recognition networks—but both the means of obtaining the content and demonstrating knowledge are open to interpretation. Students could derive their understanding of the causes of the Civil War by exploring Internet sites, viewing appropriate videos (such as the 1990 series created by Ken Burns), reading text resources with or without support for decoding, visiting a museum, or interviewing Civil War experts in person or online. Moreover, we could allow them to demonstrate their knowledge in many ways.

When affect is more widely recognized as a critical component of learning, specific affective goals will become more commonplace. In fact, many teachers already pursue affective goals. For example, Mr. Hernandez placed the affective goal of recharging Patrick's emotional batteries front and center. Other goals became secondary as he supported and built on Patrick's enthusiasm. For some students, at some times, it may be more important to build engagement than to attempt to develop knowledge or skills. Balancing these three networks as we develop goals is in part a fine art.

**Applying UDL to Reframe Standards as Clear Classroom Goals**

Students' individual differences in recognition, strategy, and affect require that we set our goals carefully. As we have established, a goal that restricts students to one type of content or one method of expression is not likely to be attainable for the entire class. By reframing goals to allow for multiple media and means for expression and engagement, we can offer more palatable options for *all* students.

To illustrate the possibilities, consider the following example from the sport of high jumping. At one time, every high jump competitor used the same tried-and-true technique. Learning the sport of high jumping was a matter of mastering that particular technique—the goal had become confused with the means. However, Oregon athlete Dick Fosbury broke the mold with a new technique, despite attempts by his coaches to train him in the traditional method. In the 1968 Olympics, Fosbury startled the world by winning the gold medal with an idiosyncratic technique, shown in Figure 5.1, dubbed “The Fosbury Flop.” The Flop enabled others to continue to break high jumping records, and it has since become the standard technique for jumpers everywhere.

Dick Fosbury's unique strategic networks created a major innovation that benefited many other athletes as well as himself. Had he pursued the goal of mastering the traditional approach to high jumping, he would probably never have been more than a mediocre jumper, much less an Olympic champion and the catalyst for the revolution of the sport. Fortunately, his goal was to jump as high as he could, by whatever method worked!

There are two lessons to take from this example. First, it shows us again why it's wise to avoid too much specification when we set goals. Second, it points out that we should always consider whether particulars of expression, recognition, or affect are germane to the goals we set. If we give students appropriate latitude and supports to pursue goals in their own fashion, they can be both creative and successful.

For example, suppose Mr. Costa set the goal for everyone in his class to learn about culture in the United States by interviewing someone who emigrated to this country, writing interview notes on paper, reading about their interviewee's homeland, and writing a report. If Mr. Costa carefully considered the diversity of his students, he would realize that as stated, this goal excludes some. For example, Sophia's visual difficulties limit her ability to recognize visual content and to express herself on paper. Further, as specified, the task might not especially engage her.

By considering the UDL framework, Mr. Costa could keep the fundamental goal intact, but reframe it to accommodate different recognition, expression, and engagement networks in his class. He might modify the goal as follows: “Learn about culture in the United States by interviewing someone who emigrated to this country, *recording*the interview, and *collecting and presenting* information about your interviewee's home country and its culture.” By removing specific mention of writing on paper, Mr. Costa gives his students more options. Sophia, for example, could collect her information through audiotape, read about her subject's homeland supported by digital text and text-to-speech software, and create an audiotape or a digital multimedia presentation in PowerPoint that could even include songs from both cultures.

**ACTIVITY:**

For help using the UDL framework to derive teachable goals from curriculum standards, see the tutorial at<http://www.cast.org/TeachingEveryStudent/goals>

As this example shows, with a diverse array of resources and a steady focus on the true goal, achieving flexibility in means and methods is relatively straightforward.

**Using the UDL Framework to Individualize Scaffolds and Performance Criteria**

Once a teacher has interpreted and refined the true purpose of a standard and reframed it as a classroom goal that allows for multiple methods, the next step is to set the level of challenge appropriately for individual students.

In order for learning to be successful, the performance criterion should relate to learners' particular recognition, strategic, and affective networks. If the demands on these networks are too great, students may become frustrated and are likely to learn little. On the other hand, a performance criterion that doesn't sufficiently tax these networks fails to provide the challenge necessary for growth. When students can complete tasks without thinking or working, boredom and disengagement are right around the corner. Vygotsky's (1962) concept of the zone of proximal development characterizes the ideal challenge as a level just beyond easy reach, but attainable with scaffolds or help from others. Faced with an insufficient challenge, students can complete a task without thinking or working; faced with too much challenge, students have little incentive to stay engaged.

Research supports the positive effects of deep engagement that creates a sense of total involvement with a task. Csikszentmihalyi (1997) calls this state “flow” and explains that it's only possible when the level of challenge is just right:

Flow tends to occur when a person's skills are fully involved in overcoming a challenge that is just about manageable. . . . When goals are clear, feedback relevant, and challenges and skills are in balance, attention becomes ordered and fully invested. Because of the total demand on psychic energy, a person in flow is completely focused.(pp. 30–31)

This state of flow is also noted by Malone (1981) in his studies of video games, in which the challenge escalates as players develop skill, so that they're always playing just above their current level of competence. The video game Lode Runner, for example, includes more than 100 levels, with each level slightly harder than the level beneath it. Mastery of one level opens the door to the next; the difference between successive levels is small, presenting a highly motivating challenge. This same kind of incremental challenge can foster engagement in the classroom. To adjust performance criteria appropriately, we should look to students' strengths and weaknesses in recognition and strategy, as well as their preferences.

So far, we have seen that deriving clear goals from standards requires teasing out the central purpose of a standard by separating the goal from the means for attaining it, restating the goal in a way that is attainable for all students, and then individualizing the pathways to the goal and performance criteria for measuring success. Let's see how one of our classroom example teachers might follow this process.

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| ***Setting “Universally Designed” Goals***Mr. Hernandez is faced with a new social studies standard calling for students to learn characteristics of the 50 states in the U.S. by studying one state in depth. The suggested benchmark for students at his grade level (6th grade) is that they be able to write seven paragraphs about that state. Mr. Hernandez's class includes one student designated as mildly mentally retarded, two brothers who recently arrived from Africa and speak very little English, a student who spends half of his day in a residential psychiatric institution, and two students with language-based learning disabilities (one of whom is Patrick).To derive a clear goal from this standard that will be suitable for everyone in the class, Mr. Hernandez takes the following steps:1. He identifies the standard's chief purpose. This one is designed to measure students' knowledge of specific content (U.S. states) and also their ability to carryout specific strategic processes: finding, organizing, and presenting information.
2. He derives a classroom goal that accommodates this focus: *“Students will collect and organize information about one state into a coherent presentation that must have some text but can also include images.”*
3. He considers the barriers to recognition, strategy, and affect inherent in existing materials and tools and selects additional resources to help students overcome them. Because some of his students have difficulty reading printed text, he decides to make all textual resources available digitally and let students use software that reads the text aloud. He also provides materials at different reading levels.
4. He fashions the parameters of each student's assignment, the scaffolds available to each, and the performance criteria based on individual differences in recognition, strategy, and affect. For example:
	* Students struggling with recognition barriers in traditional materials will use digital text materials with text-to-speech and collections of digital images, while those with recognition strengths will be encouraged to assemble their own resources.
	* Students with strong writing skills will write a number of paragraphs about their state, with the option of including pictures and other media. Less adept writers will use on-screen templates to design presentations based primarily on pictures and sounds.
	* Students who require greater challenge to get them engaged will be asked to create longer and more in-depth pieces and perhaps use a medium completely new to them. Students needing less challenge will be asked to create more modest pieces and will take advantage of templates and pre-assembled resources.

Although all Mr. Hernandez's students will be pursuing the same goal—researching, organizing, and presenting information about a state—the scaffolds and performance criteria are individualized for each student. |

**Communicating a Shared Understanding of Goals**

In their work on teaching for understanding, Howard Gardner and the staff at Project Zero emphasize the importance of defining clear goals (which they call *through lines*)and communicating them to students:

Making these through lines explicit for students helps to ensure that the students stay focused on developing the most essential understandings. By making such goals explicit for students, you give them the opportunity to monitor their own growth and the power to separate the relevant from the irrelevant, the useful work from the interesting-but-distracting work. (Blythe & Associates, 1998, p. 50)

Within a print-based curriculum, where the means to achieving learning goals are essentially the same for everyone (reading and writing), the need to articulate clear goals is less apparent than when multiple pathways are possible. However, in a UDL classroom, which offers diverse media, tools, and content, the need for clearly articulated goals is obvious. When students work with new tools and try new approaches, they need to know what they are trying to accomplish in order for the tools and approaches to have a positive impact on learning. Using a multimedia CD-ROM or the Internet just for the sake of using it won't help students progress. For students starting on the journey of developing skills with new tools and methods, knowing the destination is more important than ever.

**Applying New Media to Support Clear and Appropriate Goals**

CAST's research explores ways to build flexible scaffolds into learning tools and media so that diverse learners can *mindfully* pursue common goals. In CAST's eTrekker project, we developed a series of prototypes designed to support student inquiry and research on the Internet.

The eTrekker prototype was conceived to help students with learning and organizational difficulties learn to search, evaluate, organize, and present information in the complex, distracting world of the Internet. Figure 5.2 illustrates one of the eTrekker prototype's designs, showing three functional regions on the main screen.

**Figure 5.2. Flexible Support for the Three Brain Networks: The eTrekker Main Screen**



eTrekker is a step along the way toward developing a UDL tool that will help students keep their goals front-and-center and, at the same time, support varied recognition, strategic, and affective networks. The prototype shown is designed to help students define the goal of an Internet search before they get online. Once the student sets the goal, it will remain at the top of the screen throughout successive searches. In addition, eTrekker incorporates a variety of options that support students' differing pathways for learning.

To support *multiple recognition pathways*, students can select

* A text or an image-based password.
* One of two formats for displaying search results.
* A text or speech presentation (listening via a screen reader or text-to-speech browser).

To support *multiple strategic pathways*, students can access

* Screen helps that divide the search process into visibly labeled and highlighted steps.
* A “breadcrumb trail” that records previous searches and results.

Finally, to support *multiple affective pathways*, students find

* A highly interactive digital environment.
* Open-ended choice of content.
* Playful language.
* Navigational landmarks.
* A simple, distraction-free layout.

How might teachers apply a tool like eTrekker in their classrooms?

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| ***eTrekker Application in the Classroom***Ms. Chen and Ms. Abrams have assigned a science research project with the following goal: *“Students will understand how to conduct inquiry-based research using a variety of source materials.”* This is a process-oriented goal that allows for different content and media within the subject area of science. It requires students to make progress in the following strategic skills: * Defining a research goal.
* Keeping that goal in mind throughout the project.
* Learning search strategies such as asking good questions, selecting key words, and finding relevant information.
* Monitoring their own progress.
* Finding sources of information.
* Evaluating the quality of information.
* Keeping track of information collected and returning easily to sources.
* Organizing and assembling the information into a meaningful presentation.

An electronic curriculum tool such as the eTrekker prototype can support these steps and processes by separating them in sequence, making them explicit, and providing scaffolds to reinforce student skills.Ms. Chen's student, Charlie, and Ms. Abrams's student, Kamla, encounter different barriers when they begin this activity. Charlie has difficulty organizing and self-monitoring; he needs a lot of structure and direction during his search. Kamla is wary of text; she needs help staying engaged in the task and maintaining her confidence. Ms. Chen and Ms. Abrams could use eTrekker's inherent flexibility to provide individualized support to both Charlie and Kamla while each pursues the same goal.eTrekker can provide the structure and direction Charlie needs in the form of* An initial prompt to continue an old project or start a new one.
* A “Create Project” screen with a place to record important information (see Figure 5.3).
* Prompts guiding goal definition and expression.
* Step-by-step guides through the search process.
* A search term suggestion tool.
* Highlighted markers (status bars) at the top of the screen indicating the current stage of the search process (see Figure 5.4).
* A listing of search results by educational value.
* A note-taking tool.

With eTrekker, Kamla gets the supports she needs in the form of* An alternative to the traditional textbook format.
* The option of a trading card search result display format (see Figure 5.5).
* A step-by-step structure that makes the search process less daunting.
* An automatic spell checker (see Figure 5.6).
* Screen reader compatibility that enables selected text to be read aloud.
* A dictionary, thesaurus, and encyclopedia.
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| **EXAMPLE:**Students benefit from a supported Internet search tool. See CAST's prototype at<http://www.cast.org/TeachingEveryStudent/search> |

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| **Figure 5.3. Individualized Support: eTrekker “Create Project” Page**http://www.ascd.org/ASCD/images/publications/books/rose2002_fig5.3.gif |
| On this page, Charlie can create a project name and record important information, such as the due date and project requirements. This information helps him keep track of the purpose for his searches and the timetable of assignments. Charlie is further supported by prompts that remind him when he forgets to fill in all of the needed information. |

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| **Figure 5.4. Individualized Support: eTrekker Status Bar**http://www.ascd.org/ASCD/images/publications/books/rose2002_fig5.4.gif |
| Wherever he is in the program, Charlie needs only to glance up at the top of the screen to be reminded of what project stage he's working on and what his project goal is. |

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| **Figure 5.5. Individualized Support: eTrekker Trading Cards**http://www.ascd.org/ASCD/images/publications/books/rose2002_fig5.5.gif |
| Kamla can chose a “trading card” format for displaying the information she finds—tying the sports content to a sports format. |

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| **Figure 5.6. Individualized Support: Etrekker Spellcheck**http://www.ascd.org/ASCD/images/publications/books/rose2002_fig5.6.gif |
| Kamla gets spelling help before she searches, improving the likelihood of success. |

These classroom examples illustrate interactive media's potential to adjust to a variety of learners, providing the right degree of support and challenge. The eTrekker prototype typifies the promise of flexible, digital curriculum materials that will support multiple pathways to common goals, help teachers to individualize instruction and performance criteria, and ensure productive learning experiences for all students.

**The Value of UDL in Goal Setting**

When a goal is clear, our strategic networks can devise many different ways to reach it. For teachers, clear goals are the foundation for individualizing teaching. Goals specifying which aspects of instruction and assessment are central (and therefore, must be held constant) and which aspects are not central (and therefore, can be varied). Goals help students understand the true purpose of their efforts and what they need to do to make progress.

A common problem with current standards is that they are often stated too explicitly or confounded with the medium of presentation or expression—most often printed text. Broader, richer goals, such as helping students learn to think like historians or scientists, leave avenues open for the use of flexible tools and media capable of accommodating diverse learners.

The UDL framework provides a structure for reviewing and reinterpreting standards' fundamental purpose and deriving appropriate goals for individual students. Considering the three brain networks can help determine whether a goal is focused on information(recognition networks), on process (strategic networks), or on significance for students(affective networks). Of course, all learning requires the whole brain, and goals do cross boundaries, but thinking broadly in this way helps us understand and refine our priorities, making learning goals clearer for teachers *and* students.

With the goal stated clearly and separated from the methods, teachers can use flexible media to individualize means, scaffolds, and performance criteria to suit individual students' recognition, strategic, and affective networks. This variability helps teachers to focus the challenge at the right level and on the right content or skill targeted by the goal, freeing students from the confines of inappropriate media and materials.

**\* \* \***

The next step in paving all students' path to high proficiency is to provide them with instruction that helps them achieve the goals. In the next chapter, we show how to use digital tools and materials—the heart of the UDL classroom—to individualize materials and methods.

**Endnotes**

[1](http://www.ascd.org/publications/books/101042/chapters/Using-UDL-to-Set-Clear-Goals.aspx%22%20%5Cl%20%22ref1) Mid-Continent Research for Education and Learning([http://www.mcrel.org/](http://www.mcrel.org/%22%20%5Ct%20%22)).

[2](http://www.ascd.org/publications/books/101042/chapters/Using-UDL-to-Set-Clear-Goals.aspx%22%20%5Cl%20%22ref2) National Geography Standards([http://www.ncge.org/publications/tutorial/standards](http://www.ncge.org/publications/tutorial/standards%22%20%5Ct%20%22)).

[3](http://www.ascd.org/publications/books/101042/chapters/Using-UDL-to-Set-Clear-Goals.aspx%22%20%5Cl%20%22ref3) National Council of Teachers of Mathematics([http://standards.nctm.org/](http://standards.nctm.org/%22%20%5Ct%20%22)).

[4](http://www.ascd.org/publications/books/101042/chapters/Using-UDL-to-Set-Clear-Goals.aspx%22%20%5Cl%20%22ref4) National Council of Teachers of English([http://www.ncte.org/standards/standards.shtml](http://www.ncte.org/standards/standards.shtml%22%20%5Ct%20%22)).

[5](http://www.ascd.org/publications/books/101042/chapters/Using-UDL-to-Set-Clear-Goals.aspx%22%20%5Cl%20%22ref5) National Council of Teachers of English([http://www.ncte.org/standards/standards.shtml](http://www.ncte.org/standards/standards.shtml%22%20%5Ct%20%22)).

[6](http://www.ascd.org/publications/books/101042/chapters/Using-UDL-to-Set-Clear-Goals.aspx%22%20%5Cl%20%22ref6) Mid-Continent Research for Education and Learning (<http://www.mcrel.org/>).

[7](http://www.ascd.org/publications/books/101042/chapters/Using-UDL-to-Set-Clear-Goals.aspx%22%20%5Cl%20%22ref7) Electronic Learning Marketplace ([www.elm.maine.edu/mlr/math.stm](http://www.elm.maine.edu/mlr/math.stm)).

[8](http://www.ascd.org/publications/books/101042/chapters/Using-UDL-to-Set-Clear-Goals.aspx%22%20%5Cl%20%22ref8) Madison Metropolitan School District Content Standards and Grade Level Performance Standards([www.madison.k12.wi.us/tnl/lang01.htm](http://www.madison.k12.wi.us/tnl/lang01.htm%22%20%5Ct%20%22)).

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