Differentiated Instruction Reexamined
Teachers weigh the value of multiple lessons
by LAURA PAPPANO

A student presents results from a group research project as part of a new effort to differentiate instruction at Woodstock (VT) Union High School

Last year, when Sherryl Hauser, a third-year math teacher, had to plan a project to develop her teaching, it was an easy choice: differentiated instruction. "One of the reasons I picked differentiating is that I kept trying it and it kept failing," she says.

It wasn't as if she didn't understand the concept. Hauser had coauthored an article, "Constructing Complexity for Differentiated Learning," in the August 2009 issue of *Mathematics Teaching in the Middle School*. But in going from preservice grad student to full-time teacher at Sage Park Middle School in Windsor, Conn., Hauser saw a gap between theory and practice.

Suddenly, "tiering"—or varying the difficulty of work for students based on readiness—had a twist: Kids didn't like it when a classmate's paper looked a lot different or had more problems on it. As she tried flexible grouping, students who seemed to need extra support actually "got it," while those expected to glide would struggle. As Hauser put it in her write-up, "I quickly discovered that my assumptions were not always accurate."

The notion of differentiating instruction—altering teaching strategies, content, assignments, even the rules and structure of the classroom itself to teach students with varying needs, interests, and levels of preparation—has become a mainstream concept in education, considered key to raising student performance and closing the achievement gap.

This method is best embodied in the work of Carol Ann Tomlinson, whose books, videos, and DVD have been embraced by many school districts and professional developers. Her approach calls for teachers to assess individual student needs in four areas—content, process, products, and learning environments—and to tailor materials and activities to match these needs. Some educators, however, see it as a tangle of techniques that is overtaxing teachers, requiring endless juggling of logistics during the day and hours of prep time after hours.

As a result, the practice is spurring confusion, pushback, and even controversy. How much differentiation is possible? What is really necessary and productive? And, honestly, what does "differentiated instruction" really mean? Following Tomlinson's detailed approach? Or merely doing the natural thing that good teachers do: helping kids with weaknesses as they need it and providing extensions for fast learners? Or something in between?

A Controversial Method
The issue was the subject of a heated exchange in *Education Week* last December between Tomlinson and education consultant and author Mike Schmoker, who claims differentiated instruction has "corrupted both curriculum and effective instruction" by requiring so much of a single classroom teacher. At the heart of the debate—theirs and the broader one—is a disagreement about how individualized instruction should be.

Tomlinson, chair of educational leadership, foundations, and policy at the University of Virginia's Curry School of Education, contends that the idea of shaping instruction to the learner is as old as Confucius. ("People differ in their gifts and talents; to teach them you have to start where they are.") While she would never say that differentiating instruction "is a piece of cake," Tomlinson believes the approach is a path to more expert teaching. Like someone asked to make a meal, Tomlinson says, "You could have dinner with butter on toast with an egg. But if you want to grow as a cook, you need to expand your ingredients list." Her four "non-negotiables"—a high-quality curriculum with clear goals, the use of data to monitor and provide feedback on student learning, the ability to recognize when something isn't jelling and modify it to fit the student, and the creation of an environment in which students are supported and challenged—she says, "are not about differentiation. They are about a good classroom. That is good teaching."

But Tomlinson also argues that teachers must assess students' readiness, interests, and "learning profile" (which includes recognition of a child's culture and background) well enough to understand their needs in relation to specific lessons or learning goals, and should use that knowledge in selecting approaches to best help each child learn. For example, while some children might be working with a storyline and developing writing for a project, teachers may allow others to act out what they are learning, while still others may draw timelines or make diagrams. "It simply opens up the classroom," says Tomlinson.

But critics say differentiated instruction encourages teachers to categorize students based on popularized notions that may not actually be accurate or helpful in making content more accessible. In particular, one aspect of Tomlinson's approach calls on teachers to address students' "preferred ways of learning." It's a quick leap from there to "learning styles," widely construed to be what Howard Gardner and other experts say is a misinterpretation of Gardner's theory of multiple intelligences (see sidebar "Research on Learning Styles"). **Research on Learning Styles**

• Learning styles has become an influential and widely accepted idea in education. Researchers, however, are raising doubts about using these perceived differences to shape classroom decisions. Among recent findings:
• There is little agreement on what learning styles actually means, according to British researcher Frank Coffield, who studied 13 instruments for determining learning styles with three other colleagues in 2004. While some researchers think of learning styles as fixed and stable qualities, Coffield says, others argue that they are context specific, shaped by previous learning experiences, and changing from task to task.
• Different definitions are "guided by contrasting and disputed theories from psychology, sociology, education, and policy studies," according to Coffield and ¬colleagues. Some definitions of learning styles are rooted in theories about brain function, while others spring from psychological theories about personality traits, for example.
• Research confirms both that individuals express preferences about how they like information presented and that they have aptitudes for particular ways of processing information. But there is no evidence of an interaction, or "mesh," between these two, says Harold Pashler, psychology professor at the University of California San Diego, and others in a 2008 article for *Psychological Science in the Public Interest*. In fact, several studies "flatly contradict the popular meshing hypothesis," they write, concluding that there is "no evidence to justify incorporating learning-styles assessments into general educational practice."Tomlinson insists that learning styles is a small part of her approach but acknowledges that of the bodies of research supporting it, the evidence for learning styles is "the weakest and most contested."

"A lot of the time when we talk about differentiating instruction there is an implicit theory about the mind and the idea that different kids learn in different ways—and not only that, but that we have a deep enough understanding that we can then categorize kids on that basis," says Daniel T. Willingham, professor of psychology at the University of Virginia. Further, he says, we assume that matching a teaching approach that plays to a kid's strengths is the best way to teach. Or, he asks, should we work to attack areas of weakness? And how do we know if a teacher has correctly identified a child's strengths? "Differentiation sounds great, but on what basis are we differentiating? What do we know about this kid—and how do we know it?" asks Willingham.

Research on the effectiveness of differentiation is difficult to do because it involves the use of many different strategies at once (click here to see "Differentiation Model,"). Because of such uncertainties, Schmoker, a former school administrator, believes teachers should forget creating different versions of lessons and plan just one—a really, really good one. "Good lessons start with a clear, curriculum-based objective and assessment, followed by multiple cycles of instruction, guided practice, checks for understanding (the soul of a good lesson), and ongoing adjustments to instruction," Schmoker wrote in *Education Week*.

The problem with multiple versions of projects in a classroom, he argues, is that you lose the common curriculum. "Everyone has their own curriculum," Schmoker contends. He says that having some students "making things out of papier-mâché in history class" is the sort of misguided instruction that "can cause students to be involved in learning activities that aren't effective."

Teach People, Not Lessons

And yet classroom teachers can see that all students are not identical—and that different students need particular help at some times but not others. This has fed confusion and frustration. Sean P. Connors, assistant professor of English education in the department of curriculum and instruction at the University of Arkansas, says his students get stuck thinking that differentiated instruction means "simplifying content or creating 30 different lessons for 30 different students."

Differentiation, according to Connors, is what happens when you teach *students*, not curriculum. One common critique of his teachers-in-training, he says, is the extreme focus on their prepared material. "I'll say, 'I just saw you facilitate a lesson plan. I didn't see you teach people,'" he says. Now he tells his teachers to be tuned in to students so they can make adjustments and recognize interests—for instance, by offering students a choice of literary texts to discuss in their final paper.

Likewise, Megan Staples, assistant professor of math education at the Neag School of Education at the University of Connecticut, is working on a research project to give middle school students math problems that encourage them to come up with multiple approaches. In one problem, for example, students must compute the perimeter of 25 hexagons standing side by side. "When you have a task with many different entry points, students self-differentiate," she says.

Giving students choice, some education experts argue, may be as important as deciphering ability levels before differentiating. "We continue to neglect the problem of student motivation—and that is where differentiation matters," says Tony Wagner, Innovation Education Fellow at the Technology and Entrepreneurship Center at Harvard University. By high school, "students need to be able to make significant choices" in order to practice the critical thinking and problem-solving skills needed in the current economy, he says.

Wagner and others believe technology will make differentiating easier. David H. Rose, a neuropsychologist who is chief education officer at the Center for Applied Special Technology (CAST) in Wakefield, Mass., wants textbooks to vanish from classrooms in favor of

online texts that allow customized student interaction. By putting content on computers and building rich programs, says Rose, students who need a word definition can quickly get it (as on the Kindle) or can see an experiment demonstrated (watching multiple times if needed). The teacher then adjusts software settings to suit student learning goals (say, turning off one child's spell checker while giving another access to comprehension questions).

A Saner Approach?

At Woodstock Union High School in Vermont, school leaders last year eliminated levels for ninth-grade science and next year will eliminate levels for ninth-grade world history. Jennifer Stainton, science department chair and ninth-grade integrated environmental science teacher, says the move upset parents. "They were concerned that we were aiming for mediocrity instead of excellence," she says. In a meeting with parents, Stainton offered an answer to their concerns: differentiated instruction.

This year, all 50 members of the freshman class completed a research project that measured mercury levels in the environment. Students collected dragonfly nymphs from Pogue Pond in the Marsh-Billings-Rockefeller National Historic Park along with samples of soil, leaf litter, and human hair. The samples were analyzed by a Dartmouth College lab and data were returned to the class. Students then worked in groups to devise their own research questions and hypotheses (such as "A Comparison of Mercury Levels in the Hair of Human Vegetarians Versus Human Omnivores"). They took relevant parts of the data to analyze and developed scientific posters, which they presented in February at a gathering of 200 people, including Dartmouth scientists.

Stainton said the nature of the project—the fact that it had many parts, from developing questions and describing the scientific method in writing to creating a poster and doing the oral presentation—allowed students with different abilities to participate, learn, and succeed together. "I have a student who reads at a third-grade level, but when given the opportunity to explain a science concept verbally, you would assume he was a gifted student," says Stainton. "On the poster night, he shined."

Stainton says she specifically paired that student with one who was very organized and had strong visual presentation skills. Both students, she knew, had weaknesses in writing (for which they receive services), so at that point in the assignment, Stainton spent more time with them. "In that case the differentiation happened because I knew my students well, and I knew when I had to insert myself and provide some extra help," she says. Eight of the ninth-graders decided to do further work on their projects, including writing an abstract, so they could submit them to the state science fair.

Stainton views ideas from experts like Tomlinson as tools to draw on when she needs them, but not as recipes to be followed. She uses formative assessments to know where students are and offers students a variety of ways to interact with a topic, though not necessarily in each lesson.

Still, she grapples with the concept. "What is *differentiation*—this word that is put to this idea?" she asks. "I wish they would get rid of the word."

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