Using Multiple Intelligence Theory to Identify Gifted Children

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In the sprawling Charlotte-Mecklenburg school district, thousands of children identified as gifted are tackling challenging, real-world problems. They're doing so in curriculums designed for multiple intelligences.

Emmanuel showed promise when he entered kindergarten in Charlotte, North Carolina. He was a bright-eyed, attractive child of average size. But from the beginning, he didn't seem to enjoy school. He was absent a great deal. He got low scores on school readiness tests (for example, he could not identify colors and had difficulty with the alphabet). Yet, at times, he seemed eager to learn. He had a particular passion for math and worked hard in this subject.

When he entered 2nd grade, Emmanuel was recommended for the school's Program for the Gifted. The change was dramatic. He was the first child bounding in every morning. Given choices of what to work on, he often gravitated to his strongest intellectual areas—*mathematical* and *spatial*—while being exposed to activities that called for other intelligences, such as *linguistic* or *musical*.

Emmanuel loved the hands-on materials that he used in the interdisciplinary, problem-centered curriculum. His favorite part of the week was his time in the "flow room," where he worked with children from other classes and with materials that appealed to many different interests on many different levels. He became a leader in both his classroom and in the gifted program. He continues to thrive.

“Extraordinary Problem Solvers”

Emmanuel is one of some 12,000 to 14,000 students identified for our district's Program for the Gifted—about 10 percent of our total population of 2nd through 12th graders. The program is not new; it was launched in the mid-1960s. In 1991, however, the program for the younger children was transformed when we began basing assessment, curriculum development, and teaching strategies for grades 2-5 on Howard Gardner's theory of multiple intelligences.

The program for these children—who make up about half of all our gifted students—reflects the definition of intelligence that Gardner offered in *Frames of Mind* (1983): "the ability to solve a problem or make something that is valued by a culture." Gardner thereby proposed not only a broader identification of intelligences but also the demonstration of intelligence through finding and solving problems.

Anne Udall, former director of the Program for the Gifted, focused on this aspect of intelligence, shaping the services we offer and our own definition of gifted intelligence:

Gifted students demonstrate extraordinary problem solving in the intelligences. When presented with an open-ended or challenging problem, extraordinary problem solvers demonstrate

creativity, critical thinking, and task commitment in order to reach a productive solution (Charlotte-Mecklenburg Schools Program for the Gifted 1994, p. 5).

When gifted children attempt to solve a Chinese tangram puzzle, for example, they'll always be among the first kids in their group to complete six complex constructions. Further, they'll typically approach the most difficult and open-ended problems with enthusiasm and persistence.

The formats for the gifted program vary widely at our 83 elementary schools. At some, these students attend special classes for 90 minutes a week; at others, they attend a "problem-solving academy" that meets each month. At still other schools, students work in cluster groups of 8-12 children in heterogeneous classrooms supported by a program teacher.

The programs for grades 2-5 have certain characteristics in common. The teachers and administrators are designing situations in which students must use their creative, practical, and analytical thinking to solve actual or simulated real-world problems that correlate with curricular expectations. These problems may be structured or open-ended, enabling teachers to document students' thinking processes and production over time.

In applying Gardner's principles, we developed assessment, curriculum, and instruction simultaneously. As each evolved, one element affected the other—and continues to do so.

Fusing Three Philosophies

Our approach to gifted education for our younger students could easily apply to the learning of all students—and does to varying degrees in our schools. We believe that to be truly effective, curriculum, instruction, and assessment should fuse the three characteristics that are vital to all student understanding: in addition to using multiple intelligences, they should be problem-centered and thought-demanding. To elaborate:

- *A multiple intelligences-infused classroom* personalizes and deepens students' understanding by offering them many opportunities to explore significant concepts and topics on their own, to think about a topic in many ways, and to have different ways to make sense of what they find.
- *A problem-centered classroom* offers a range of topics that appeal to wide interests, engages students in personally meaningful problem finding and problem solving, and enables students to demonstrate understanding through authentic performance assessment.
- *A thoughtful classroom* offers students opportunities to develop a tendency to think critically and creatively. It also strengthens the ability to apply knowledge and concepts appropriately in new situations, and cultivates a reflective disposition.

Our participation last year in Harvard University's Project Zero Institute helped us to synthesize our problem-centered approach and our practices in teaching for understanding (that is, making sure students grasp concepts, skills, or principles sufficiently to apply them to new situations). David Perkins (Tishman et al. 1995), codirector of Project Zero, and Sandra Kaplan (Kaplan and Gould 1996) have been influential in our development of thought-provoking classrooms.

Ongoing professional training, demonstration teaching, and collegial collaboration form the cornerstone of our efforts to identify potentially gifted children and develop appropriate curriculum and teaching strategies for them. And we have found that scholarly thinking enlightens our teaching and makes it more creative.

Who Is Gifted?

To identify our younger gifted students, we use a problem-solving assessment. The assessment measures linguistic, logical-mathematical, and spatial intelligences through activities that call for creative, analytical, and practical problem-solving abilities. The process thus synthesizes the problem-solving approaches of Gardner (1983) as well as those of Robert Sternberg (1985), whose triarchic model for identifying, assessing, and teaching gifted children served as the basis for the Yale Summer Psychology pilot project.

Our approach is a departure from our state's more traditional standardized IQ and achievement tests. While we meet state requirements for gifted education by identifying the potentially gifted, we do it with less socioeconomic bias. As a result, about 26 percent of the 2nd graders we placed in the gifted program this year are from low-income families.

Our identification system has two phases: preassessment and assessment.

Preassessment. Program for the Gifted teachers conduct a series of model lessons in regular classrooms that provide opportunities for demonstration teaching and coteaching. During this phase, children solve problems similar to those they will confront during the assessment.

The lessons incorporate materials and activities that correlate with the North Carolina Standard Course of Study, while focusing on linguistic, logical-mathematical, and spatial intelligences. They also address the analytical, creative, and practical aspects of intelligence through activities such as problem-solving with a map, math story puzzlers, and open-ended problems where students use any combination of intelligences and any strategies they choose.

Both the Program for the Gifted teacher and the classroom teacher take notes on each child's problem-solving behaviors, and examine and score their work.

Students save the work in a portfolio—a valuable item because it documents the child's problem-solving strengths over a period of time. The teachers jointly review the portfolio before deciding which students should participate in the actual assessment. They may bring in other information or student work as needed.

We have found that this collaboration encourages classroom teachers to develop curriculum and teaching strategies that enhance the students' problem-solving abilities.

Assessment. Trained observers—including retired and substitute teachers—administer the assessment in a casual classroom setting. There is one observer for every five children, and the observers serve on a rotating basis.

As the children engage in hands-on problem solving, the observers take careful notes on individual observation cards—a listing of problem-solving behaviors that Maker and colleagues (1994) have identified in their research. For example, here are some behaviors that we look for when children are working on the tangram puzzles—one of the tasks used to identify spatial and logical problem solving:

- Uses logical strategy for adding or substituting pieces without clues.
- Incorporates clues and new information.
- Solves complex problems quickly.
- Persists in difficult tasks.
- Seems excited and absorbed in work.
- Doesn't want to stop.

After selecting the most exemplary products produced for each task, the observers rate each student's total performance on a four-point scale: *always evident, strongly evident, evident,* or *not evident*. (Emmanuel was identified as a *strongly evident* problem solver in math and spatial intelligences and he showed *evidence* of linguistic ability.)

If a child receives scores of *strongly* or *always evident* in two out of the three intelligences, the team identifies the child for a variety of interdisciplinary services offered by teachers in the Program for the Gifted. These range from direct services, such as instructing students in small homogeneous groups, to coplanning and coteaching in classrooms.

Even though all schools have special programming for the gifted, these students obviously are gifted all week long. We must offer appropriate, high-quality services in every setting, including the heterogeneous classrooms where they spend most of their time. The student profiles that result from the assessments help teachers understand the students' strengths and personalize their instruction.

Our initial research indicates that within two years, students identified as gifted perform 17 percent to 20 percent higher on standardized math and reading tests than do students who were referred but not identified as gifted. But the benefits are not limited to the gifted students: As we work more collaboratively with classroom teachers, we find that we are creating problem-centered and thoughtful environments for all students.

Curriculum in Action: Food for Thought

An essential goal of learning is to explore and understand the connections among things. Our 4th grade curriculum for gifted students, called *Food for Thought*, centers on this goal.

Global themes/big ideas. The curriculum begins with a *global theme* that has had great significance for many cultures down through the ages—universal concepts such as change, relationships, systems, and conflict. Students explore *big ideas* or hypotheses related to the theme, first developing a series of *big idea* statements.

For example, one 4th grade class's global theme was "Systems." The teacher began by asking, "What would you most want your grandchild to understand about this theme?" Based on this question, the children decided to explore the following *big ideas* in their study of systems:

- Systems create order.
- Systems are interdependent.
- Systems work together to complete a mission.
- Systems can bring about change.

Thinkpoints. Next, teachers and students identify a *problem-centered thinkpoint* associated with the big idea—an important, engaging topic that has great depth and significance, leads to genuine inquiry, and can be investigated from a variety of discipline-related *entry points* or perspectives. Gardner's (1991) five entry points are narrative, quantitative, foundational/existential, aesthetic, and experiential/hands-on.

Our 4th graders chose "What can we do about hungry children?" as their thinkpoint. They investigated the question through the perspectives of various stakeholders: a nutritionist (experiential/hands-on), a journalist (narrative), an economist (quantitative), a legislator and a nonprofit agency (foundational), and an advertiser and a social activist (aesthetic).

Vital questions. Teachers must also be very clear about what they want their students to understand. Once teachers clarify the focus, they can then develop appropriate questions (*vital question links*) that explicitly connect the big ideas to the thinkpoint. This series of questions weaves throughout the curriculum, also incorporating connections between the entry points and content goals.

Our vital question links included

- What is a system?
- How do systems work together?
- What are my ethical responsibilities as a subsystem member?
- How do systems change?
- What can I do to change a system?

Understanding performances. Students demonstrate that they understand through hands-on activities with "minds-on purpose" (*understanding performances* that connect classroom content, thinking, and research). These activities call for rigorous content, thinking, and research skills, engaging students and helping them develop thoughtful, intellectual—even scholarly—dispositions. Understanding performances connect students' personal experiences and intelligences to rich, often collaborative learning. They range from structured exploration to open-ended "culmination."

For example, the teacher might ask

- As a legislator, identify any bias or discrimination in hiring or housing practices that results in people's inability to afford food.

- As a journalist, gather information to support a viewpoint about hunger that opposes your own.
- As a nutritionist, invent a food distribution system to help hungry children.

Authentic Performance Assessments

Authentic and reflective performance assessments—whether done by students, teachers, or community members—show students that they truly understand. Rubrics consist of clear criteria that correspond to the vital question links and content goals.

Performance assessments for our hunger study included reflective journals, a Kids' Cafe that students created to serve meals to hungry kids, and a presentation that the students made to their peers at our school district's annual Kids' Conference for community problem solvers.

Students write their responses in reflective journals and portfolio collections, enabling teachers to track their developing understanding throughout the study. Appropriate assessment should answer the question "So what?" and lead to the question "Now what?"

As we noted earlier, we developed our assessment methods at the same time as we were developing our curriculum and instructional approaches. We will continue to develop even closer connections between assessment and curriculum.

Because the multiple intelligences theory has helped us to recognize students' strengths, our teachers are better able to shape classrooms that truly engage children's curiosity and enable them to learn and create in many ways. Ideally, these are places where intriguing problems ignite children's passion for learning, crystallize their interests, and lead to purposeful action.

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