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Gifted Education in the United States: Beliefs, Research, and Policy

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The United States provides some form of special education program for gifted and talented students in all of its 50 states (Passow & Rudnitski, 1993). The way these programs are implemented, however, is as diverse as the localities in which they are found. Variation is evident in the levels of funding for gifted programs, identification of gifted students, programming, and in theoretical approaches to "giftedness". Indeed, current theories are leading researchers to redefine the concept of "giftedness," and are challenging educators both to modify existing methods of identifying and evaluating gifted students and to rethink the programming of gifted education.

In this talk, we attempt to (a) characterize the variation in gifted and talented education, (b) highlight prevailing beliefs and theoretical positions that give rise to this variation, (c) present a current, alternative conception of gifted and talented, and (d) present data on one possible alternative for identifying gifted and talented students.

Levels of Support

The level of support for gifted education varies substantially from state to state, and rises and falls with the economy. In strong economic times, support for and flexibility in programming increase; in weak economic times, support and flexibility decrease. While the country is committed to the belief that "all children deserve an education that challenges each one to be the best that he or she can be" (California State Department of Education and the California Association for the Gifted, 1994, p. v), in difficult economic times gifted education suffers the budgetary ax while in most states special education for disabled children goes untouched. In California this year, for example, $31,482,060 are available to fund Gifted and Talented education programs serving approximately 290,000 children, a drop of 1.35% from last year under continuing budget deficits in the state. The rationale, perhaps erroneous, is that the

most able can take care of themselves; the disabled cannot.

Identification and Educational Programming for the Gifted & Talented

Gifted education programs contain at least two components: identification and programming. Because of the strong belief in local control of schools in the U.S., states, not the federal government, are responsible for educating youth. States, in turn, hold local school districts responsible for creating a plan for identifying and educating gifted and talented students. Thus gifted education both within and between states is marked by diversity in identification and programming.

Identification and Definition of Giftedness

Identifying giftedness or talent presupposes some definition of what these constructs are. In defining gifted and talented students, most states include general and specific mental ability, about three-fourths include creativity, two-thirds incorporate fine and creative arts, and half leadership.

Teacher and parent referral and mental ability test scores form the backbone of the identification process. In addition, most states add the caveat that the identification process should be sufficiently dynamic and flexible so as not to overlook giftedness and talent in culturally and economically different groups. Nevertheless, most states and localities are less than successful in identifying the gifted and talented in minority populations (e.g., McKenzie, 1986).

Operationally, however, the driving force behind identification is the intelligence test, supplemented, to a greater or lesser extent, by corroborative information. The importance of high performance on an intelligence test, *in practice,* cannot be overstated. Two related views of intelligence, manifested in intelligence tests, dominate the identification process and Americans' beliefs about giftedness. One view holds that intelligence is a general, unitary construct (Spearman's "*g*") with the corollary belief that this intelligence is largely endowed by heredity. The second view holds that there are a small set of correlated abilities--most notably verbal, quantitative, and spatial--that comprise intelligence, and that these abilities arise from the interaction of heredity and

environment with the former accounting for most of the variance. These two views are well entrenched in the American way of thinking about giftedness and talent. Any change in perspective, such as a third view proposed by Gardner (1983) and Sternberg (1985), with consequences for identification and programming of gifted education, have an up-hill battle to fight with both policymakers and the public at large.

Educational Programming

Educational programming varies greatly for gifted and talented students in spite of the general consensus that intelligence is a unitary attribute or a small set of highly-correlated attributes, so that a single number, an *IQ* score, suffices to characterize giftedness. For example, the California Education Code "allows great flexibility in the way local school districts identify and serve gifted and talented pupils" (California Department of Education, 1994, p.1). This programming variation is not just state to state, or even region to region. Two school districts in a coastal town in California--Santa Teresa and Colgate (pseudonyms) -- demonstrate drastically different approaches to identification and programming as the following case studies demonstrate.

Santa Teresa has created a magnet school with some classes exclusively for gifted students drawn from all nine of its elementary schools. Giftedness is seen as an innate quality within the student or a combination of ability and background that enables the student to demonstrate their giftedness on traditional group-administered *IQ* and achievement tests. Accordingly, students qualify for the gifted program if they score 132 or above on the *Cognitive Abilities Test* or if they score above the 95th percentile on two or three tests on the *Comprehensive Test of Basic Skills.*

The growing program currently includes one combination 3rd/4th grade class and one combination 5th/6th class, each with about 30 gifted students; additional classes are expected next year. Because students are identified solely on the basis of their standardized test scores, the classes are exceedingly homogeneous in ethnicity and socioeconomic makeup. Teachers know that their students excel at traditional, formal learning; students know they are "gifted." Educational programming includes an accelerated curriculum with enrichment acitivities and special projects.

The program is supported by a combination of special "gifted education" funds from the state and the regular cost-per-child funds.

Just a few miles up the coast is Colgate, a district which also serves 9 elementary schools. Its gifted program, based on the Renzulli model (e.g., Renzulli, 1984), selects students to participate in the program on the basis of the "gifted behaviours" they demonstrate, rather than solely or primarily on test scores or grades. Teachers, principals, parents, and students themselves can nominate participants for the program. Teachers are given a checklist of characteristic gifted behaviors to help them select students. Then a team of teachers makes a final judgment about each student, gathering as much information as they can from different sources. Scores on the CTBS are considered (those above the 95%ile are automatically included) but studednt also included with much lower scores. The program director estimates that approxi -mately 20% of the students in the program would not have been chosen on the basis of their grades or test scores alone. Special emphasis is given to including minority students and separate criteria are used for their selection.

The Colgate gifted program is conducted in the summer. It lasts for 4 weeks, and students attend class 4 hours a day. The program is staffed by 8 teachers in self-contained classrooms, and the teachers work as a team, planning themes together. The themes for the fifth year of the program are technology, telecommunication, and multi-media presentations.

For Colgate, giftedness is operationally defined as a combination of ability, task commitment, and creativity resulting in "gifted behaviors" that may come and go in any one student. For this reason, students are chosen for programs of a relatively short duration and students revolve in and out of the program based on their performance. Students selected for the program are made aware that it is a combination of their ability and their "task commitment," of hard work, that has given them this special opportunity to learn.

Framework for Linking Identification and Programming

Recent research on intelligence and giftedness provides a contrast to prevailing identification and programming practices.

This research points out the shortcomings of current practices of depending heavily on IQ scores to qualify students for gifted and talented education programs (Sternberg, 1986, pp. 144-145) and even goes so far as to propose a set of intelligences, numbering up to seven at present, that are *Independent* of one another (Gardner, 1983).

Here is where research directly confronts strong beliefs held by policymakers and the American public. The notion of multiple, independent intelligences flies in the face of American tradition stemming from the work of Terman, Spearman, and even Thurstone. This framework for conceiving intelligence complicates matters. It creates gray areas and a diversity that is not easily managed. It suggests a strong educational component including mentoring and extended practice that can be enhanced, perhaps by building up weak intelligences using a student's strong intelligences. It identifies a greater number of students than the IQ framework because a diversity of intelligence is valued. Finally, the framework creates a rationale for multiple types of gifted programs thereby increasing costs. All of this is tough medicine for policymakers and the taxminded public to swallow, especially in a society that is currently grappling with how to reconcile equity and excellence in education and its work force. Make no mistake, bringing about this change in belief is not small matter and may even take generations to accomplish.

Politics and beliefs notwithstanding, the *multiple-intelligences framework* provides a rationale and guide for gifted education policy and practice. It suggests changes in the ways students are *identified* and the kinds of instruments used to identify them. It focuses *policy* on specific programs both for the gifted and talented, and for all students. And it suggests methods for *evaluating* the performance of gifted and talented students and programs. Succinctly put:

> In my view, it should be possible to identify an individual's intellectual profile (or proclivities) at an early age and then draw upon this knowledge to enhance that person's educational opportunities and options. One can channel individuals with unusual talents into special programs (Gardner, 1983, p.10.)

In order to go beyond a framework to make policies and programs work in practice, a new *technology* of measuring human potential and performance is

needed. We now turn to a small sample of our research that is attempting to develop one possible testing technology (for alternative, see Sternberg, 1984, 1985, 1986, 1990; Gardner, 1983; Gardner & Hatch, 1989; see also Hatch & Gardner, 1986).

Measuring Human Potential

From both a theoretical and operational point of view, new assessment techniques need to be developed to help gifted program developers and teachers identify and evaluate students who are truly gifted along a range of intelligences not previously recognized or appreciated. Because teachers tend to be unreliable predictors of giftedness (e.g., Tuttle, Becker & Sousa, 1988) and many school districts rely on teacher referrals to identify gifted students who do not show up on standardized tests, special talent may go unnoticed.

Assessment techniques are needed that give students opportunities to demonstrate their problem solving ability in real world contexts, using complex strategies like those they use in everyday life (Gardner, 1989; see also Sternberg, 1986). For example, Gardner (& Hatch, 1989) reports on the use of portfolios, and Maker (1992) reports on a series of problem-solving tasks with manipulatives that are linked to Gardner's multiple intelligences. Here we focus on performance assessments (we are developing for elementary science classrooms which show promise) for identifying highly talented performance in the area of scientific thinking (e.g., Shavelson, Baxter, & Pine, 1992).

A science performance assessment consists of a task, a response format, and a scoring system. The task presents students with a well-contextualized science problem to solve. Students are given concrete materials with which to solve the problem, materials that react to what the student does, as happens in the "real world." Finally the task admits to multiple solution paths, thus permitting a wide range of creative performances of more or less scientific merit. Typically, students report their investigations in a "laboratory notebook," recording procedures, findings, and inferences. The notebook is scored by the teacher who judges not just the correct answer, but the reasonableness of the procedures used to solve the problem.

One example of this kind of performance assessment, based on a

classic comparative investigation originally developed by the British Applied Performance Unit, is called "Paper Towels". In this assessment students conduct an investigation to determine which of three brands of paper towels holds, soaks up or absorbs the most water, and which holds, soaks up or absorbs the least. Arrayed before the student are pieces of lab equipment such as a spring scale, trays, measuring cups, beakers, scissors, an eyedropper, tweezers, a ruler and so forth. Obviously some of this equipment is relevant to a particular solution and some is not. It is up to the student to design the investigation, carry it out using relevant materials, and draw his/her conclusions based on the results.

The "Laboratory Notebook" for the assessment gives the student complete freedom in describing his or her procedures, but later probes for pieces of information necessary to scoring the assessment in the event the student neglects to explicitly mention certain important details. For example, it is important to know if the student recognizes the need to completely saturate all three towels, so on the last page of the assessment notebook the student is simply asked if all towels were "completely wet."

The assessment is scored using a procedure-based scoring system for judging the quality of the investigation; (Baxter, Shavelson, Goldman & Pine, 1992). As can be seen from the scoring form, the assessment does not require specific science content knowledge, but rather requires logical, scientific problem solving skills that lead to the manipulation of some variables and the control of others.

When we began pilot testing this assessment we gave the test to two groups of students, one from a district that had an extensive hands-on science teaching program, and one from a district that taught a minimal science program using only textbooks. Among other issues, we were looking for information about the ability of the test to discriminate between students with different curricular backgrounds. Although, as expected, the test did discriminate, with the hands on group performing higher, we also found talented performances by students in the textbook group.

First of all, we discovered that a small group of gifted students had taken the test, even though they were intentionally excluded from the sampling plan. As might be expected, these

students did very well on this test of basic scientific reasoning ability in spite of their lack of hands-on experience in the classroom. Their mean scores (slide 16) were significantly above those of their classmates (gifted mean=12.25; non-gifted mean=7.12), and above the mean performance of the students in the hands-on teaching district (mean=9.13). But of greater interest to us were the correlation between scores on standardized tests and the performance assessment. The correlations between scores on the *Cognitive Abilities Test* and the Paper Towels Assessment was moderately positive (r=.49) suggesting the Paper Towels assessment was measuring somewhat different aspects of knowledge than the standardized ability test. We found that the correlation between the Paper Towels Assessment and the *Comprehensive Test of Basic Skills* science achievement section was even lower (r=.23).

It was apparent that some students who tested poorly or moderately well on both the CAT and CTBS showed remarkable scientific thinking ability on this performance assessment. In fact, their scores were indistinguishable from those of the gifted group. These results, and results from subsequent research conducted by our group, suggest that performance assessments may give students opportunities to demonstrate strengths, or intelligences, previously unrecognized as gifted, but no less remarkable.

One student in particular illustrates this point. Danny, a 5th grade Hispanic student in a Santa Teresa elementary school, was to be placed in a Special Education class for language-disabled students because he had trouble spelling English words. When we gave him the Paper Towels assessment his procedure was logical, efficient, and of the highest quality according to our scoring criteria. This student scored right up there with the gifted population, displaying extra -ordinary talent in practical application of scientific principles. When we discussed these results with Danny's teacher she was amazed. The decision to place him in Special Education was rescinded.

The tragic side of this story is that there may be untold numbers of "Dannys" particularly in our minority populations, sitting in classrooms with intelligence profiles that show giftedness in previously untapped and unappreciated areas. These students need nurturing and challenging if they are to reach their full potential as thinking, productive

adults. The multiple intelligences framework's greatest value lies, perhaps, in the search for such individuals and in the legitimization of this talent as gifted.

References

Baxter, G. P., Shavelson, R. J., Goldman, S. R., & Pine, J. (1992) Evaluation of procedure based scoring for hands-on science assessment. *Journal of Educational Measurement, 29,* 1-17.

California Department of Education.(1994). *Application for gifted and talented education funds.* Sacramento, CA: California Department of Education.

California Department of Education and the Califormia Association for the Gifted (1994). *Differentiating the core curriculumn and instruction to provide advanced learning opportunities.* Sacramento, CA: California State Department of Education.

Gardner, H. (1983). *Frames of mind: The theory of multiple intelligences.* New York: Basic Books.

Gardner, H., & Hatch, T. (1989). Multiple intelligences go to school: Educational implication of the theory of multiple intelligences. *Educational Researcher, 18,* 4-10.

Hatch, T. C., & Gardner, H. (1986). From testing intelligence to assessing competencies: A pluralistic view of intellect. *Roper Review, 8,* 147-150.

Maker, C. J. (Fall 1992). Intelligence and creativity in multiple intelligences: Indentification and development. *Educating Able Students,* (pp. 12-19).

McKenzie, J. A. (1986). The influence of identification practices, race and SES on the identifiction of gifted students. *Gifted Child Quarterly, 30,* 93-95.

Passow, A. H., & Rudnitski, R. A. (1993). *State policies regarding education of the gifted as reflected in legislation and regulation: Executive summary.* Storrs, CT: National Reseach Center on the Gifted and Talented.

Renzulli, J. S. (1984). The triad/revolving door system: A research-based approach to identification and programming for the gifted and talented. *Gifted Child Quarterly, 28,* 163-171.

Shavelson, R. J., Baxter, G. P., & Pine, J. (1992). Performance assessments: Political rhetoric and measurement realitly. *Educational Researcher, 21,* 22-27.

Sternberg, R. J. (1984). (Ed.) *Human Abilities: An Information-processing approach.* New York: Freeman.

Sternberg, R. J. (1985). *Beyond IQ: A triarchic theory of human intelligence.* New York: Cambridge University Press.

Sternberg, R. J. (1986). Identifying the gifted through IQ: Why a little bit of knowledge is a dangerous thing. *Roper Review, 8,* 143-147.

Sternberg, R. J. (1990). Thinking styles: Keys to understanding student performance. *Phi Delta Kappan,* January Issue.

Tuttle, F. B., Becker, L. A., & Sousa, J. A. (1988). *Characteristics and identification of gifted and talented students:* Washington, D.C.: National Education Associatoin, Professional Library.