

## SYNTHESIS OF RESEARCH ON THE GIFTED



Who are the gifted? How can they best be identified? What are their needs? How should we differentiate instruction for them? Great debate over these questions has gone on for the last ten years. This review, focusing on the above questions, will attempt to convey the current "state of the art."

### Who Are the Gifted?

Who are the "gifted"? There have been many answers over the years, most of which can be classified under either a narrow or broad definition of giftedness. The narrow definition identified giftedness with intelligence as represented by the IQ metric. Lewis Terman and his Stanford-Binet Test of Intelligence had more to do with this than anyone or anything else. In 1962, Getzels and Jackson broadened the definition by reporting on two aspects of giftedness not measured by intelligence tests: creativity and psychosocial excellence. They posed some considerations about how to educate for creativity. They also suggested that social qualities, such as moral character or psychological adjustment, might be an aspect of giftedness.

Use of IQ alone to identify the gifted was also challenged by the American Association for Gifted Children. They defined the gifted individual as:

... a person whose performance in any line of socially useful endeavor is consistently superior. This definition includes those talented in art, music, drama, and mathematics as well as those who possess mechanical and social skills and those with high abstract verbal intelligence.

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Havighurst, Stivers, and DeHaan (1955) defined giftedness as including:

... every child who, in his [her] age group, is superior in some ability which may make him [her] an outstanding contributor to the welfare of, and quality of, living in society.

Included in this definition were general intellectual ability and its components such as reasoning, verbal skill, mathematical skill, and spatial imagination; ability in science, mechanics, social leadership, and human relations; and talent in creative arts such as graphic art, music, creative writing, and dramatics.

In 1970, Congress mandated a fact-finding status report on education of gifted and talented children. The study, undertaken as a needs assessment activity to determine the adequacy of federal education assistance programs being used to meet the needs of gifted and talented children, defined "gifted and talented" for purposes of federal education programs in the following ways:

Gifted and talented children are those identified by professionally qualified persons who, by virtue of outstanding abilities, are capable of high performance. These are children who require differentiated educational programs and/or services beyond those normally provided by the regular school programs in order to realize their contributions to self and society.

Children capable of high performance include those with demonstrated achievement and/or potential ability in any of the following areas singly or in combination:

1. general intellectual ability
2. specific academic aptitude
3. creative or productive thinking
4. leadership ability

5. visual and performing arts
6. psychomotor ability (dropped in 1976 under Public Law 93-380).

The U.S. Commissioner of Education's 1972 report to Congress spearheaded a resurgence of interest in programs for gifted and talented children. The report had found that small numbers of children were being served; large and significant subpopulations were not being reached (Marland, 1972).

Yet, with all the research of the 50s, 60s, and 70s and with the broadened concept of giftedness, neither professional educators nor the public were satisfied. To remedy this, Paul Torrance (1970) proposed that we return to "our belief that every human being has a right to optimum development of his [her] potentialities and that every person possesses a unique set of potentialities, interests, goals, percepts, liabilities, and assets."

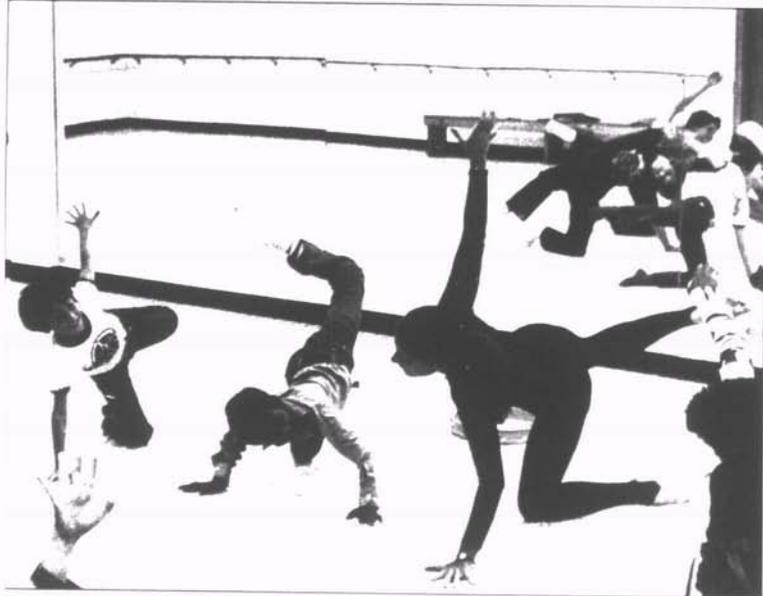
### How is Giftedness Revealed?

If giftedness is defined broadly, a broader identification program, generally using standardized tests and observations, is needed. However, despite the problems in their use, IQ tests continue to be the chief instruments for screening and finally selecting gifted students.

Human observation and judgment in screening and selecting gifted children play a major role. Observations can be obtained from teachers, children, and other adults who are acquainted with a given child. Screening is an ongoing process; longitudinal studies strongly suggest that ability emerges in different patterns (Keating, 1980). There must be constant watchfulness for the combination of circumstances that will cause individual talent to display itself.

Work samples obtained and rated

**"There would be an ongoing process in which parents, teachers, and talent developers would continually be recognizing and acknowledging children's potentialities."**



under standardized conditions by a panel of expert judges probably provide the best identification procedure for screening children with aptitudes in the fine arts.

Much of the current identification literature focuses on discovering and nurturing giftedness in the culturally different, in the under-achieving gifted, in the creatively gifted, and on alternatives to IQ testing.

Paul Torrance (1979) says that the identification of the gifted and talented should be a dynamic, creative process over time. He favors "a responsive environment approach in which intellectual and creative potentialities would be assessed in situations the child initiates." Torrance continues, "There would be an ongoing process in which parents, teachers, and talent developers would continually be recognizing and acknowledging children's potentialities."

Torrance's model for identifying creative giftedness depicts abilities, motivations, and skills as interacting variables. In each of these dimensions many different kinds of measures may be used: psychometric data, teacher ratings, peer ratings, self-evaluations, interviews, auditions, creative products. "A high level of creative achievement can be expected only from those who have the motivations and skills to accompany the abilities," he says.

### Conceptualizing the Programs

Different administrative arrangements (multiple groupings, accelerated classes, individualized instruction) marked the pre-1950s efforts to differentiate education for the gifted. After Sputnik, what went on inside the classroom took on new significance. Attention focused on content, skills, and settings which would best enhance the potentialities of youth, with clear implications for today's educational leaders. If persons with responsibility for qualitatively differentiated programs for the gifted are to move beyond administrative arrangements or haphazard collections of fun-and-game activities, they need to be aware of the relevant empirical research, theories, and models that exist.

The research that addresses the basic concepts and, therefore, has the greatest implications for school practice, includes the following:

1. Structure of the Intellect (SOI)
2. Creativity
3. Developmental Stage Theory
4. Qualitatively Differentiated Curriculum.

### Structure of the Intellect

Guilford's Structure of the Intellect Model (1956, 1967) did much to broaden the concepts of giftedness in the 60s. His "periodic table" of different kinds of intellectual functioning inspired a number of innovations in

the education of gifted children. Mary Meeker (1969), for one, applied it to change the focus of education from what children learn to how they learn.

### Creativity

Guilford's Structure of the Intellect not only expanded the concept of intelligence but also placed creativity among the characteristics of the gifted child.

The work of Getzels and Jackson (1962) and Torrance (1962) identified creativity as an important area for research. Others who contributed to the surge of interest in creativity since 1950 include Calvin Taylor, Sidney Parnes, A. H. Maslow, and C. R. Rogers. Getzels and Jackson found that basic differences existed between children identified as highly intelligent and those identified as highly creative. Torrance, in replication studies, corroborated these findings. Torrance (1970) found that identifying the upper 20 percent of a



Figure 1. Model for Studying and Predicting Creative Behavior (Torrance, 1979).

given population on an intelligence test alone would miss 70 percent of those who would be identified as gifted by a test of creative thinking. "Of the many definitions of creativity the two which have been the most productive of instrument development," says Khatena (1976), "are Guilford's divergent thinking and re-definition abilities as components of Structure of Intellect model and Torrance's definition of creativity as a process of becoming sensitive to problems, deficiencies, gaps in knowledge, missing elements, disharmony, and so on; identifying the difficulty; searching for solutions, making guesses, or formulating hypotheses about the deficiencies; testing and re-testing these hypotheses and possibly modifying and retesting them; finally communicating the results" (Torrance, 1974).

Calvin Taylor (1968), another researcher in creativity, was responsible for one of the more powerful multi-talent models of giftedness to come out of the 60s. His talent totem poles are based on world of work needs and include in addition to academic talent: creative and productive talent, evaluative and decision-making talent, planning talent, forecasting talent, and communication talent. Taylor suggests that if all six talent groups are considered, about 90 percent will be above average in at least one group and almost all others will be nearly average in at least one of them. He believes that in classrooms where multiple talents are cultivated all students will learn more.

#### **Developmental Stage Theory**

Gowan (1974) combined the work of Piaget (1950) on cognitive stages and that of Erikson (1950) on affective stages and called for an understanding of developmental stage theory as an aid to "helping gifted children become creative." The theory is compelling. Two of the central issues of the theory will be stressed here, the first relating to the significance of "dysplasia" (malformation in development). Gowan (1978) says, "Since the most common dysplasia is the one that prevents cognitive escalation to creativity in young adulthood, this problem becomes at once a prime focus for guidance for the gifted." According to Gowan, "the real function of guidance for the gifted and talented is the escalation of



all parts of the psyche beyond the fifth developmental stage (cognitive formal operations and affective identity period) so that the individual can become fully creative and self-actualizing." A second compelling component of the developmental stage theory also relates to creativity, involving research on the functions of the right hemisphere of the brain (Gowan, 1978; Jaynes, 1976; Williams, 1977).

The drop in creativity in most children at about the fourth grade level is well documented by Torrance (1962) and others. No reason other than a cultural one has been given. Gowan (1980) suggests that the drop is due to the extinction of right hemisphere imagery caused by overteaching of the left hemisphere functions of reading, writing, and arithmetic and the lessening or lack of right hemisphere stimulation procedures. How to stimulate right hemisphere imagery is

an important research topic. Indirect stimulation by removing the left hemisphere function, in an altered state of consciousness, has been suggested. Art and music teachers have long maintained that their efforts directly stimulate the creative imagery of the right hemisphere (Williams, 1977). Some say that science, if properly taught in an empirical, discovery-oriented manner, may also stimulate right hemisphere imagery (Ferguson, 1977). The idea that imagery-building activities should be part of the math curriculum for gifted children is supported by the research of Wheatley and Wheatley (1979) and Wheatley (1977).

#### **Qualitatively Differentiated Curriculum**

The organizing principles of much of the new curricula of the 60s were directly in line with the special educational needs of gifted children. Jerome

## HIGHLIGHTS FROM RESEARCH ON THE GIFTED

The definition of "gifted" has broadened from intelligence as measured by IQ tests to include creativity and talents. Giftedness broadly defined necessitates a broad identification program. Research with the implications for school practice includes:

### STRUCTURE OF THE INTELLECT

Guilford's model offers a "periodic table" of different kinds of intellectual functioning.

### CREATIVITY

Getzels and Jackson found important differences between children identified as highly intelligent and as highly creative. There are many creative children whose behavior problems stem from the "incompatibility between their abilities and learning skills on one hand, and the teaching methods and system of rewards of the school on the other."

Most people can develop the ability to produce new relevant combinations.

Stimulation of the right hemisphere of the brain, that part associated with nonlinear, intuitive, divergent thinking, is very important. Gowan suggests that the drop in creativity in most children at about the fourth grade level is caused by overteaching left hemisphere functions—reading, writing, and arithmetic—and the lessening or lack of right hemisphere stimulation.

### DEVELOPMENTAL STAGE THEORY

Human beings go through fairly discrete stages of development and each stage calls for rather special educational treatment. The function of guidance is the escalation of all parts



greatest  
practice

of the psyche "beyond the fifth developmental stage so that the individual can become fully creative and self-actualizing."

### QUALITATIVELY DIFFERENTIATED

#### CURRICULUM

To comprehend a subject, it is necessary to understand the fundamentals. The human memory retains detail that is placed into a structured pattern. Therefore, an understanding of fundamental principles and ideas appears to be a good way to facilitate transfer of training.

Skills that enhance creative performance and problem-solving capabilities enable gifted students to:

- address novel situations
- feel comfortable with ambiguity, incompleteness, and the tentativeness of knowledge
- develop imagery
- separate promising from unpromising avenues
- communicate adequately.

Two models that address these "guidelines for school practice" are D. J. Treffinger's Self-Directed Learning model and J. S. Renzulli's Enrichment Triad Model.

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LeMahieu, Bethene, "Synthesis of Research on the Gifted." *Educational Leadership* 38 (November 1980).

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Bruner (1966) described these principles very well:

The first is that understanding fundamentals makes a subject more *comprehensible*. . . .

The second point relates to human memory. Perhaps the most basic thing that can be said about human memory is that *unless detail is placed into a structured pattern, it is rapidly forgotten*. . . .

Third, *an understanding of fundamental principles and ideas appears to be the main road to adequate transfer of training*.

Two models for qualitatively differentiated curricula which have implications for school practice are D. J. Treffinger's Self-Directed Learning Model (1975) and J. S. Renzulli's Enrichment Triad Model (1976, 1977). Commonalities exist; both are trying, in the words of Treffinger, "to make school learning more applicable to the challenges of the day-to-day world and more flexible in meeting the unique needs of every child."

Treffinger's model has four basic components (see Figure 2). Self-directed learning may be fostered through deliberate efforts by the teacher in relation to each of these four components of the basic model of instruction. These efforts can be systemized to provide students with experiences involving increasing degrees and kinds of self-management.

The Renzulli model consists of three interrelated types of enrichment activities. The first two types, General Exploratory Activities (Type I Enrichment) and Group Training Activities (Type II Enrichment), are considered to be appropriate for all learners. They have significance in the overall enrichment of gifted and talented students in that they: 1. deal with strategies for expanding student interests and developing thinking and feeling processes; and 2. represent logical input and support systems for Type III Enrichment (Individual and Small Group Investigations of Real Problems). Type III Enrichment is the real focus of the model. "Approximately one-half of the time that gifted students spend in enrichment activities should be devoted to these types of experiences," say Renzulli and Smith (1978).

Acceleration is another means of differentiating instruction. The benefits to be gained are evident in the longitudinal Study of Mathematically Precocious Youth by J. C. Stanley

Figure 2. A Basic Model of Instruction (Treffinger, 1975).



and William C. George (1980) at Johns Hopkins University. Since 1978, physics, chemistry, and biology have been added. Stanley and George work with junior high and high school students who reason unusually well mathematically and are eager to move ahead. "The time saved, zest gained, and boredom and frustration prevented are priceless," the authors say. Individual instruction makes it possible for each student to progress at his or her own pace.

Emphasis has been given to enhancing creative performance and problem-solving capabilities in gifted students, enabling them to:

- address novel situations
- feel comfortable with ambiguity, incompleteness, and the tentativeness of knowledge
- develop imagery
- separate promising from unpromising avenues
- communicate adequately, "so there is a production to be evaluated in a social context—that is, outside the individual."

In some cases Bloom's Taxonomy or Guilford's Structure of the Intellect have been adopted as the sum and substance of a differentiated, skills-focused, "learning-how-to-learn" curriculum for the gifted. Unfortunately, misunderstanding of how to use these models has resulted in highly structured, rigid uses of them that can ultimately fractionate learning and block experiences in real discovery, creativity, and inquiry.

### Conclusion

"How many types of giftedness can your program tolerate?" (Taylor, 1978). "Can we be equal and excellent, too?" (Gardner, 1961). These are compelling questions for persons with responsibility for qualitatively differentiated programs for the gifted. The resolution, it seems, lies in recognizing, nurturing, prizing, and rewarding the gifts of all children. This requires reaffirmation of our belief that every human being has a right to optimum development of his or her potentialities; and it also requires changes in our perception of children.

Flexibility in scheduling, a variety of groupings, diversity of settings for learning—all are necessary if we are to give children the chance to develop their potentialities optimally. ■

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