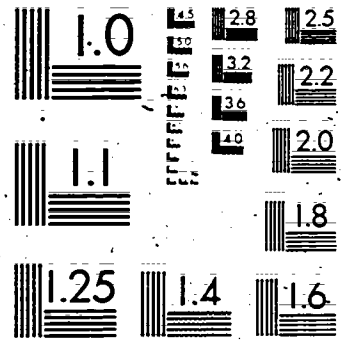

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ABSTRACT

The author examines research in the field and answers questions about educating gifted and talented students. (Sections focus on the following topics: characteristics of gifted individuals; identification procedures (including standardized group tests, creativity tests, and parent nomination); recommended identification procedures; misconceptions about the gifted; types of programs (homogeneous groups, accelerated programs, and enrichment programs); program design and evaluation; and major concerns (such as the creatively gifted, the disadvantaged or culturally different gifted, and the qualifications of teachers of the gifted). A list of selected references is included. (SHB)

What Research Says to the Teacher

Gifted and Talented Students

by Frederick B. Tuttle, Jr.

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CONTENTS

INTRODUCTION

Recently, many educators, teachers, administrators, parents, and legislative leaders have expressed a renewed interest in the education of the gifted and talented. Several factors are responsible: a backlash against the emphasis on the mentally and physically handicapped, a recognition of the lack of effort toward helping the gifted, and the desire to help a group that probably encompasses our potential social, political, and economic leaders.

Whatever the causes, the burgeoning interest is a boon to our society. But we must heed what research has shown and plan programs and strategies accordingly. In an effort to increase general awareness and help provide some of the background for program development, I have examined the research in the field and have attempted to answer some of the more common questions about educating gifted and talented individuals.

CHARACTERISTICS

Some people think gifted individuals are set apart from the rest of society by a combination of strange characteristics. Typically, a gifted person is thought to be an introverted bookworm, an uncoordinated recluse, a maladjusted, humorless, social outcast. Although these stereotypes were disproved years ago (Yoder, 1894; Terman, 1904) (50),* many still cling to them. Actually, these and other researchers have found the gifted to be social as well as intellectual leaders (Terman, 1959; Oden, 1968). After an extensive review of research in the gifted, Gallagher stated that the gifted are "almost invariably more popular and more socially accepted than children at other levels of intellectual ability." (24)

Catherine Morris Cox, in a classic study in 1926, compiled a list of characteristics of the gifted by analyzing and comparing the biographical data of 301 famous individuals in many fields. She found the following outstanding traits, which she labeled "characteristics of eminence," could be used to describe these persons: trustworthy, conscientious, influential, self-confident, self-perceptive, quick of apprehension, profound of apprehension, creative, and forceful. In addition, she found the gifted possessed extraordinary leadership, common sense, keen observation, and perseverance or "quiet determination." (13)

Other researchers have also compiled lists of personality traits, but most have reinforced Cox's list or have added additional characteristics. (14) Some studies, for example, have noted that the gifted possess a wide

*Numbers in parentheses appearing in the text refer to the Selected References beginning on page 29.

range of abilities rather than just one interest. Terman, in his *Genetic Studies of Genius*, cites many gifted individuals who demonstrate this diversity of interests. A forty-year-old actress, for example, was also a championship skater, a professional dancer, an illustrator, and the author of several plays and two novels. (77) Cox also points to this diversity of interests in her 1926 case studies. (13)

Several contemporary researchers and educators have updated the classic lists and have cited the following additional traits common to gifted and talented individuals: curiosity, large vocabulary, good reading ability, persistence, good health, good coordination, concern about world issues and problems, high goals and high expectations of self and others, mature sense of humor, ability to make unusual but valid associations and relationships, and interests in many areas. (35, 32, and 80) These lists certainly do not contain all the characteristics of the gifted, nor do all the gifted possess all of these characteristics.

Some gifted and talented individuals have difficulty coping with the tensions created when social, cultural, educational, or personal barriers prevent them from achieving their potential. Oden (58) compared 100 of the most and the least successful males in Terman's study and found differences between the two groups. The most successful were from higher socioeconomic families, were encouraged by their families, ranked higher as adolescents in volitional, intellectual, moral, and social traits, and had more self-confidence and perseverance. She also found that twice as many of the successful males graduated from college and had had fewer emotional and social difficulties. Torrance (78) stressed the need to help gifted individuals achieve their potential by designing strategies to help them cope with tensions created by personal abilities and by limiting cultural pressures. When gifted and talented individuals are allowed to achieve their full potential, they can make outstanding contributions to society. On the other hand, when frustrated in this fulfillment, they often drop out of the mainstream of society and we lose the benefit of their abilities.

In 1972 the United States Office of Education recognized that the traits of gifted individuals fall into six areas: general intellectual ability, specific academic aptitude, creative or productive thinking, leadership ability, visual and performing arts, and psychomotor ability. A gifted individual is one who possesses exceptional abilities in any of these areas, either singly or in combination. (20) In this way gifted and talented are grouped under one umbrella, although some educators still distinguish between the two categories. Stallings, for example, classifies as talented those individuals who demonstrate a single talent in one specialized area. (21) Havighurst, on the other hand, defines as gifted one "who is superior in some ability that can make him an outstanding contributor to the welfare of and quality of living in society." (31) Dorothy Sisk qualifies Havighurst's definition when she states that gifted is a general category that encompasses individuals with superior talents. (69) In this text, the

gifted and talented are meant to include those individuals who possess superior ability in one or more of the six categories cited above.

IDENTIFICATION

Background

Before the 1950s most educators and school systems tended to follow Terman's example and based most decisions about gifted individuals on IQ and scholastic achievement scores. Standardized group intelligence tests, such as the California Tests of Mental Maturity, were often used to determine IQ. In these tests educators were looking for exceptional ability in verbal or performance IQ or a combination of the two. (41) For final identification or in those programs that had sufficient financial support, educators used individual IQ tests such as the Weschler scales (WISC) and the Stanford Binet. Most considered an IQ of 130 or above to fall in the gifted range.

With the greater emphasis on intellectual superiority at the end of the fifties and early sixties, some educators and researchers turned their attention away from IQ and achievement scores to other areas of giftedness. J. P. Guilford, with his analysis of the human intellect and resultant Structure of the Intellect model, provided a theoretical basis for examining other facets of the individual apart from IQ. (30) This work was highly significant as it provided both the framework and the impetus for more research into areas of intelligence other than those measured by the IQ tests. Other researchers like Getzels and Jackson, E. Paul Torrance, Joe Khatena, and Wallach and Kogan helped create and evaluate creativity tests and methods of bringing out creativity in students. As reported by Khatena (42), E. Paul Torrance has derived six areas of creative thinking ability: *fluency*—the ability to produce many ideas to a specific stimulus; *flexibility*—the ability to produce different kinds of ideas; *originality*—the ability to produce unusual ideas; *elaboration*—the ability to add details to an idea; *synthesis*—the ability to combine two or more figures into a related whole; and *closure*—the ability to delay completion of a task to allow for the mental leaps that make possible the creation of original ideas.

Furthermore, the humanistic feelings of the sixties prompted many to look for more equitable ways to identify gifted individuals of subculture groups and those with language difficulties. These attempts resulted in the creation of instruments that do not assume that all share common cultural and language backgrounds. Researchers at this time also attempted to identify the gifted and talented through the use of biographical inventories, behavioral checklists and ratings, and parent nominations.

Although researchers have long considered these other identification procedures to be important, until recently most school systems relied primarily on standardized tests and teacher nominations. In fact, with the rapid growth of interest in services for the mentally and physically handicapped during the sixties and early seventies, many schools shelved all identification procedures for the gifted. In 1972 the U.S. Office of Education Report showed a renewed federal interest in the gifted, and this began to have its effect on schools throughout the country. (20) This time many schools attempted to examine several areas of giftedness. Consequently, educators have begun to look for a variety of identification instruments that can help them locate gifted and talented individuals.

Identification Procedures

Many schools still tend to rely on standardized tests, grades, and teacher nominations for selecting students for gifted and talented programs. Before using these, however, program developers should explore some of the limitations of these measures and examine other methods of identifying students as these others are more reliable for the particular program envisioned.

Standardized Group Tests

Group tests of IQ and achievement are commonly used to identify gifted and talented students. However, group IQ and achievement tests share common limitations. First, as group tests they are designed for the average student and often fail to take into account some of the characteristics of gifted students. The ceilings in these tests are often too low to discriminate between the bright and the gifted, and the questions usually are aimed at lower level cognitive skills such as recall and comprehension. (49)

Second, as part of the objective nature of these tests, a student's answers are limited to specific choices of "correct" answers chosen from various alternatives. Because the gifted individual often has greater insight and is able to see beyond a sometimes superficial response, he or she may see all of the alternatives as "wrong" or realize circumstances in which the "wrong" answers may actually be "correct." (80) For example, when asked to select the work activity between a man or woman playing basketball and a man or woman chopping wood, a gifted student may realize that both basketball and wood chopping may be work or leisure depending on the actual situation.

Third, both IQ and achievement tests often rely heavily on the printed word. This orientation penalizes students with reading problems and students whose language background is different from that of the average

student in the United States. (49) Many gifted and talented students are members of both groups.

Wallach questions whether academic tests can predict accomplishment of students above the intermediate range. Although these tests may indicate those students who will perform well on subsequent tests, they will not accurately identify those students who may achieve high academic success. Wallach suggests that for students who score in the upper ranges of academic tests, their products in specific areas should be used as indicators of future accomplishment. (83)

Pegnato and Birch compared the effectiveness of various identification measures using an individualized IQ test as the final criterion. One of their findings was that the group IQ test used failed to identify nearly 50 percent of the gifted students. In other words, if the identification committee had used a group IQ score of 125 or better to identify an individual as gifted, the committee would have failed to include approximately half of those individuals who would score above 125 on an individual IQ test. (60)

In sum, the group IQ and achievement tests frequently fail to locate those individuals who have gifts in other areas and even many who are actually academically talented.

Individual IQ Tests

Individual IQ tests, such as the Stanford-Binet and the WISC or WISC-R, are still the most commonly used final measures of giftedness in most schools. These tests may have an advantage over the group IQ tests in that the examiner may note personal observations of the student's responses in addition to citing answers as correct or incorrect. The interview procedure of the individual IQ test also enables the examiner to make the testing situation less threatening than the group test situation. In addition, these individual tests offer a greater variety of responses, verbal and nonverbal, than most group IQ tests. One administrative drawback for schools is the expense; individual-IQ tests usually require a trained psychologist to administer and are more time-consuming than group tests.

(*Special Note:* The preceding comments on both group and individual IQ tests are based on published materials reviewed for this report. The NEA has a clearly defined position on its objections to standardized tests. For a complete statement on these issues I recommend you consult the NEA publication *Standardized Testing Issues: Teachers' Perspectives*.) (75)

Behavior Rating Scales

Based on the characteristics of gifted individuals, behavioral rating scales—such as the Renzulli-Hartman-Callahan Scale—can provide

parents, teachers, and other concerned persons with guidelines for identifying the gifted and talented. While few would suggest that such scales could be used as sole determinants of giftedness, many believe the identification process should certainly include the use of these scales in order to catch gifted individuals other instruments might overlook. (49) These rating scales provide for direct observation of one's behavior rather than inferring behavior on the basis of a test result. The scales do not, however, always measure the same attributes as IQ tests. When Lowrence and Anderson studied the effectiveness of the Renzulli-Hartman scale as an identification measure, they found only one of the sections, learning characteristics, had a significant correlation with the WISC-R. The other three sections did not. (47)

As with other instruments, such as the biographical inventories, the results of the behavior rating scales should be interpreted with regard to the resources of the school and the community and the goals of the program. In addition, persons using the scales should be trained in both the interpretation of behavior and the meaning of the ratings.

Creativity Tests

Creativity tests can be valuable indicators of flexibility, originality, fluency, and elaboration—traits often missed or even penalized by IQ and achievement tests. In a program that hopes to work with divergent and creative thinkers, it is vital to locate these individuals who might be overlooked by the other instruments. However, if the program also stresses academic performance, the individual who scores high on the creativity tests should also score high on the IQ test.

Several researchers have examined the relationship between creativity and IQ. In their classic study, Getzels and Jackson noted that students who scored high on creativity tests did as well academically as those who scored high on IQ tests. Torrance, citing evidence from eight studies that replicated the Getzels and Jackson study, stated that when both the IQ and the creativity test score were high, the student had no problem with academic efforts; however, when the IQ score dropped below 120, the individual sometimes had scholastic difficulties. (24)

Teacher Nominations

Pegnato and Birch found that teachers do not locate the gifted individual either effectively or efficiently. In this study teachers not only missed nominating over half of the gifted students, but they also identified as gifted many students who were in the average range on the IQ test used. (60) Other researchers have found teacher nomination of gifted individuals even less effective. Jacobs (37) found that primary teachers were able to identify only 10 percent of the gifted children in

their classes. In a summary of research in this area, Gear concluded that nomination by untrained teachers was of very limited usefulness, but that with some training in identification of gifted individuals, teachers can accurately nominate students for gifted programs. (26)

Teachers often fail to identify gifted individuals because of their commitment to the norm and to the class situation. Teachers tend to stress academically accepted behavior, such as neatness and punctuality, above intellectual endeavor, such as persistent questioning. Teachers often reward students for punctuality and neatness, while the gifted individual sometimes operates on other assumptions and does not always display these traits. (80) Teachers also fail to nominate gifted individuals because of the group situations in which they usually have to operate. These teachers are sometimes wary when a student's questions and answers do not focus directly on the topic under consideration. Since gifted individuals often reach beyond the issues at hand, make leaps in logic, and pursue thoughts beyond the point at which the average students and teachers stop, their answers are often viewed as incorrect. Sometimes because of their pursuit of an interest unrelated to specific classwork, gifted students do indeed give incorrect answers. In short, the gifted are often penalized for the very characteristics indicative of giftedness and thus receive poor grades and poor academic recommendations.

Parent Nomination

Parents are often overlooked as sources for identifying gifted and talented children because the screening committees feel they may be biased. However, many educators and researchers have discovered that parents can make excellent evaluations, especially if given the opportunity to supply anecdotal information about the gifted child. (36)

This faith in parents as a reliable source for identifying gifted children echoes the findings of Jon Jacobs in 1971. Using kindergarten children as subjects, Jacobs compared the effectiveness of parent nomination and teacher nomination with the results on an individual IQ test. He found that while the teachers could correctly nominate only 9.5 percent of the gifted students, parents were able to select 61 percent. Jacobs concluded that not only were parents more accurate in their nominations, but they were also more conservative and showed less of a tendency to overestimate their children's abilities than the teachers. (37)

Biographical Inventories

Inventories of the individual's background and interests are always valuable as they provide insights often missed by the more standardized instruments. One clear advantage these inventories have over the standardized tests is that specific items may be used separately from the rest. This allows the screening committee the opportunity to highlight

those behaviors and interests directly relevant to the program they envision for their school. The "scores" on the inventory can be derived from the number of pertinent behaviors and interests, thus ensuring a direct relation between the instrument and the program. In their 1974 survey of research, the Institute for Behavioral Research in Creativity found that biographical inventories were generally effective predictors of success in many fields. In the Institute's own study, the inventory they devised proved to be a very effective predictor of students with high potential for academic talent, leadership ability, and artistic or musical ability. (34)

Culture Fair Tests

Many objective tests of intellectual ability have been criticized for being culturally biased, for containing items that assume a common cultural background—that of the majority. The culture fair tests attempt to overcome this limitation by stressing nonverbal items. In their 1972 evaluation of a cultural fair test, Skager and Fitzgibbon found that lower scores are, indeed, particularly evident on verbal or language tests for those with cultural backgrounds different from the majority. They also concluded that in a "disadvantaged population a culture fair or nonverbal test is to be preferred." (70) Any test, however, will probably contain items that have different associations for individuals from different cultures and will therefore not be entirely culture fair.

Recommended Procedures

Many researchers are finding that a combination of approaches appears to be the most effective method of identifying gifted and talented students. Renzulli and Smith compared a traditional approach comprised of group ability tests and individual IQ tests with a case study approach comprised of aptitude and/or achievement scores, ratings by past and/or present teachers, past performance, parent ratings, and self-ratings. (64) They found the case study method is generally superior to the traditional approach in identifying gifted students, especially among minority groups. In addition, they found the case study approach is less costly and less time consuming than the traditional method. While many would concur that the case study approach is more effective, they would be surprised at the finding that it is also more efficient.

Jackson and Robinson (36) provide additional guidance for identifying the gifted and talented, especially at the preschool level. First, they suggest that children be allowed several opportunities to demonstrate their intellectual and creative skills. Second, instead of taking an individual's average score across various instruments, as is often done, the identification committee should consider the child's best performance and include him or her in the program on that basis. Third, Jackson and

Robinson found that parents' anecdotes of their children's behaviors may give more insight into early giftedness than testing situations or questionnaires and checklists. Finally, the researchers strongly suggest that any identification procedure be "tied to the program for which the children are being identified."

Pfleger, in his extensive report on the research and guidance laboratory at the University of Wisconsin, presents several premises for identification. He suggests that the identification procedure should contain a variety of techniques and should continue over a long period of time. Pfleger states that at least some of the identification techniques should be individualized, taking into account the cultural-experiential environment of the individual. He also suggests that the process requires systematic involvement of professionals who observe the individual directly and understand his or her cultural background. To examine individual performances, both self-chosen and required efforts should be assessed. (61)

The identification procedure may be viewed as a two-stage process. The first stage would consist of screening individuals through group tests, teacher nominations (by teachers trained in recognizing gifted individuals), peer recommendations, and other generally pertinent information geared to the specific kind of gifted program envisioned.

Second, based on a student's best effort, the screening committee would select a smaller number of students for more individualized identification. Special consideration should be given those students on the fringe—those with culturally different backgrounds, language difficulties, and records of discontent. In the second screening stage the individuals should be given several opportunities to demonstrate exceptional ability in the specific areas to be developed in the program. These opportunities may include biographical inventory, interviews, parental anecdotes, and examination of student work, such as papers, paintings, films, or dramatizations.

When making final decisions for the program, the committee should try to include all those students who might excel in it. Consequently, admission into the program should be based on an indication of potential, not on an average of test scores or accomplishment.

PROGRAM

Misconceptions

Three popular misconceptions seem to plague those who attempt to develop programs for gifted and talented students. As program developers raise the issue of teaching the gifted, their audience often thwarts

further exploration by suggesting that the gifted are already provided for, that gifted and talented students will succeed anyway, and that if a student is differentiated from his/her agemates, he or she will suffer from dire social and emotional problems. These misconceptions should be addressed prior to initiating any program for gifted students as they will certainly be brought up by some administrators, teachers, and parents.

Misconception One: The gifted are already provided for.

Critics of special programs often claim that we spend too much money on exceptions, that enough has already been done for the gifted or bright student. Many believe schools have already instituted programs for the gifted and that the real neglect is with the average student.

The group that should and does receive the most attention is the "average." Nearly all of teacher training concentrates on preparing the teacher to instruct the "typical" class of "average" students, as this is the group most teachers have or will have in their classes. Most of the materials purchased for instruction are directed at "average" students, as they constitute the bulk of the school population. Finally, most of the published curricular materials are designed for "average" students, as this group encompasses the largest and most profitable market. (82) We may not be doing enough for the "average" student, but we are focusing most of our resources in that direction already.

When we compare allocations of resources for different areas of exceptionality, we find that the gifted do not fare well. In a 1970 report of 27 model school districts in five states with superior programs for exceptional children, the allocation of monies and programs was described by type of exceptionality. (56) The results were:

Type of exceptionality	*Money per pupil (above normal allotment)*	*Number of programs*
Physically handicapped	$1,729	15
Auditorily handicapped	1,303	18
Visually handicapped	1,290	17
Emotionally disturbed	1,199	14
Multiple handicapped	1,133	4
Special learning disorders	760	20
Trainable mentally retarded	721	22
Educable mentally retarded	570	22
Homebound/Hospital	275	21
Speech handicapped	118	21
Intellectually gifted	92	5

These figures do not suggest that the other areas of exceptionality are receiving too much attention. Rather, these data indicate that in relation to other areas of exceptionality, the gifted student is not "already provided for."

In 1972 the U.S. Office of Education concluded that the federal role in providing services to the gifted and talented was "all but nonexistent." The report found that 21 states did not provide any services for their gifted, and no state provided for a majority of its gifted. When elementary and secondary school principals were asked about programs for their gifted, 57.7 percent stated they did not have any gifted students in their schools. The report concluded that at least three-fourths of the gifted population in the United States receives no special attention of any kind. (20) According to Dorothy Sisk the situation has not changed between 1972 and 1978. Even in 1978 only about 12 percent of the gifted individuals in our society were being served. Even the federal allocation of funds for the gifted was minimal—approximately one dollar per gifted student. (69) In summarizing the recommendations of the Council of Exceptional Children about education of the gifted, Zettel and Ballard state, "Most importantly, too many gifted and talented children are suffering from neglect that derives from the failure to provide the special educational support required to meet their unique learning needs." (85)

Misconception Two: The gifted will succeed anyway.

It is widely believed that special programs for the gifted and talented are unwarranted because gifted individuals will succeed on their own. Actually, the opposite is too often the case. Many gifted students do not succeed within the present academic setting and drop out of school or fail to continue their education beyond high school. After studying the dropout rate of gifted students in Iowa in 1962, Green found that 17.6 percent of the gifted students in that state were not completing high school. (29) A significant number of gifted students who remain in the system and should be performing at the highest levels achieve only average or below average grades. In 1957 Miner reported his examination of the achievement of 251 gifted children. He concluded that 54.6 percent were working below levels of which they were intellectually capable, and that a majority of these students were working at least four grade levels below their potential. (85)

These findings are not so surprising when we consider some of the personality and behavioral characteristics of gifted individuals—divergent and critical thinking and persistence in demands and questions. Many of these traits not only go unrewarded in classrooms but are often penalized as teachers sometimes regard them as unacceptable behaviors. This is borne out by the grades many gifted students receive and by the

unreliability of teacher nomination of gifted students. In their investigation of gifted children in regular elementary classroom situations, Gallagher and Crowder found that the gifted students were poorly motivated and frustrated by the rigidity and intellectual sterility of the regular classroom. (25)

While gifted and talented individuals often suffer in classes where no provisions have been made to accommodate their special abilities, they seem to succeed in special classes. In an extensive study of 929 gifted students, grades 1-12, in California, Simpson and Martinson found that gifted students in special programs made significantly greater gains in academic achievement than gifted students in regular classes. The gifted in special classes advanced an average of two academic years while the equally gifted in regular classes advanced only one academic year. (68) In short, the gifted individual may be able to maintain average growth if kept in a regular class, but the same individual will probably not achieve full potential unless special provisions are made to accommodate and build upon her or his special gifts.

The lack of challenge and realistic goal-setting for the gifted may foster poor academic attitudes and lazy study habits that could further impede full academic achievement. The attitudes and habits instilled in the young become increasingly difficult to eradicate each year they are reinforced.

Misconception Three: The gifted student in a special program will have emotional and social problems.

Many, including parents, teachers, and administrators, believe that the gifted and talented student will suffer severe problems with peers and self if set apart from agemates. Most research has shown this to be false. Indeed, many problems are brought on by the frustration of ability. In her report for the U.S. Office of Education, Ruth Martinson stated that researchers have found that gifted individuals who participated in special programs did not suffer social or personality problems, become conceited, or have additional health problems. (50) Walter Barbe, after surveying graduates of Cleveland's Major Work Program, found the participation in special classes for the gifted helped a majority of these individuals adjust to different groups. (2)

One cause of the myth that gifted persons in special programs will have emotional and social problems is the story of William James Sidis, who entered Harvard College in 1909 at age 11 and died alone at age 46, having failed to achieve the heights that his giftedness portended. After researching this story and the lives of many other gifted individuals, Kathleen Montour concluded that Sidis's tragedy was unique and that many other gifted individuals who are allowed to proceed at their own rate and in accordance with their own goals lead successful and happy lives. (53) Cecilia Solano also explored the relationship between

precocity and subsequent achievement. She concluded that the gifted are successful adults and continue to demonstrate exceptional abilities and success, especially if their achievements are viewed in relation to their own goals. (72)

In summary, our society has not provided sufficient funding or programs for gifted students, either in comparison with the average student or even with other areas of exceptionality. Research has demonstrated that the gifted and talented student does benefit from special programs, and some evidence demonstrates that the gifted individual may even be penalized if not provided with special attention. Finally, the gifted individual is not harmed socially, emotionally, or physically by being placed in a special program designed to help him or her achieve full potential. On the contrary, many educators believe that emotional problems may occur more readily if the gifted individual is not placed in a special program.

Types of Programs for Gifted and Talented

For purposes of discussion I have classified the various types of programs and learning experiences for gifted and talented students as either homogeneously grouped programs, accelerated programs, or enriched programs. Many variations exist within each category and, indeed, many programs involve all three types. The programs are similar in that each type assumes some kind of differentiated instruction is necessary for the gifted individual, and the most successful learning experiences build upon the characteristics of the gifted individuals within the respective programs.

Homogeneous Groups of Gifted

When we identify specific criteria for programs and select students for those programs on the basis of these criteria, we are grouping homogeneously. The basic assumption behind this type of program is that the gifted will benefit from interaction with gifted peers and from instruction designed to meet their particular areas of strength.

Homogeneously grouped programs range from separate schools for gifted students to summer or weekend institutes for gifted individuals. Schools such as the City Honors School in Buffalo, New York, Hunter Elementary and High Schools and the Bronx School of Science in New York City, the Houston School for Performing Arts in Texas, and the Major Work Program in Cleveland establish entrance criteria for students within their geographic area and gear instruction throughout the school to especially benefit the gifted and talented. Other systems, such as the A-Two program in Brockton, Massachusetts, set aside part of a school and faculty for the instruction of gifted students. In these situations students identified as gifted usually receive separate, special academic

instruction and participate in classes such as art and physical education with the rest of the student body.

Many schools have homogeneous groupings for specific classes, such as English or science, or for specific areas of giftedness, such as visual or performing arts. The programs in these schools vary from special classes within a subject area to weekend or summer programs for specific gifted individuals. The Talcott Mountain Science Program in Avon, Connecticut, for example, provides weekend projects for students with particular gifts in science.

Some schools provide summer programs for gifted and talented students. The Governor's School in North Carolina, for example, selects students from throughout the state to participate in special summer experiences in various academic areas. Other summer programs emphasize creative and productive abilities, such as Horizon's Unlimited program in Keene, New Hampshire. These kinds of programs usually identify individuals in specific areas of giftedness and then provide part-time instruction to help them achieve their potential in these selected areas.

While research in homogeneous grouping has been inconclusive, some studies have indicated that it is successful for gifted, especially if provided across age groups and accompanied by special teacher training and preparation for the particular group. After reviewing the research in this area, Martinson concluded, "Those who oppose [homogeneous] grouping have relied on opinion rather than evidence. Recent studies have shown that administrative arrangements [without curricular modification] for the gifted as such produce no change. Any plan must include active and appropriate intervention to succeed." (50) The homogeneous group programs, it seems, must be more than just administrative pipe dreams. The students need materials, curricula, and instruction different from that found in regular classes. When these provisions are made, some researchers have found that the gifted in homogeneously grouped situations fared better than gifted in heterogeneous classes. (68)

Accelerated Programs

One of the more controversial approaches to education for the gifted and talented is the accelerated program. These programs may take different forms, including early admission to kindergarten, high school, and college, rapid movement through grades, and the bypassing of grades in specific subject areas. Critics of this type of program suggest that acceleration is not appropriate because the individual will not be able to mature socially and emotionally with chronological peers.

In 1938 Keys reported studies of the effects of acceleration on students who entered the University of California at age 16.5 or less with a control group of students who entered at age 17 or above. He found that the accelerated group was significantly superior in all areas of academics,

including grade point average, scholarships, and academic awards. The accelerates held more class offices than the non-accelerates, and took part in more activities, including athletics. Finally, Keys found that those with the greatest number of behavior problems were either non-accelerated bright students or accelerated students of average intelligence. (40) He concluded that given an IQ of 140 or above a boy should enter college at about age 16 and a girl half a year younger.

Twenty-two years later, Morgan reaffirmed this finding. She compared 25 gifted children five years after 12 of them had been accelerated in elementary school. She found the accelerated students to be superior to the non-accelerated students in academic distinctions and social leadership. She also found that the accelerated students tended to show better social adjustment than the non-accelerated students. (54)

Some educators have indicated that acceleration not only helps the gifted and talented, but that the failure to accelerate may harm the individual: While citing advantages of acceleration, Bish states that emotional problems may result from keeping gifted students in classes that do not challenge them, and that acceleration tends to contribute to increased social maturity in gifted students. (5)

After surveying the research in acceleration, Stanley states that acceleration through college will not hurt the emotional development of the gifted individual. He concludes that non-acceleration often frustrates the learning pace of the gifted student and results in emotional and academic problems. (76)

One of the major reasons for acceleration is to enable the gifted student to enter the professional world earlier and thereby have a greater opportunity for production than would be possible if this entrance were delayed by school. Lehman in 1953 and Pressey in 1962 provide support for this strategy. Lehman analyzed different professions and the ages at which members of these professions were most productive. He concluded that the most productivity occurred into the early thirties and then declined. (27) Pressey found a high correlation between early earning of doctorates and professional success. (27)

In addition, Bish indicates that acceleration also results in lower costs for both the individual and the school as less time is spent going through the academic system. (5) Jackson supports this economic factor, indicating that one year of acceleration saves the individual $7,500 in costs and adds about $10,000 in earnings. (36) These findings, coupled with the findings of high academic achievement and lack of emotional and social disorders, make a strong case for acceleration.

Milton Gold, after reviewing the research in acceleration, concludes that when standards for acceleration are maintained, the accelerated individual will probably reach higher levels of academic achievement and will not suffer more emotional problems than non-accelerated students. He cautions, however, that acceleration should not exceed two years throughout the 12-year program. (27) Gold also cautions against more

acceleration without modification of the curriculum to meet the gifted individual's unique abilities. (19) Renzulli, too, warns against acceleration without modification, as instruction would probably not be geared to gifted individuals but rather to older students in regular classes. "Then everyone ends up marching to the tune of the same drummer, albeit at a faster rate." (62)

Program developers considering accelerated programs should be sure to avoid the rapid grade-skipping that results in gaps in learning. Each student should be considered individually, taking into account his or her social and emotional growth as well as his or her intellectual capacity. Havighurst suggests that acceleration is valuable for the truly gifted but would not be appropriate for average or bright-average students. (31) Keys suggests the best time to accelerate is in the elementary grades, as this timing will help avoid many of the problems that might hinder the accelerated individual. (27) This suggestion has been borne out by other researchers who have found that students who were accelerated early maintained their superiority throughout their school years. (4, 33) Although Jackson and others see a potential difficulty with motor skills, they believe the alternative to acceleration of the young gifted individual is deceleration. (19)

In sum, acceleration can benefit the gifted individual, especially if care is taken with the selection and the program. It seems most advantageous to initiate acceleration early, selecting those gifted individuals who display social maturity as well as intellectual superiority. Finally, the accelerated program should provide more than just rapid movement through the grades. The curriculum should be modified to build upon the particular learning characteristics of the gifted and talented individuals involved in the program.

Enrichment Programs

These programs usually involve supplementing the regular curriculum with activities that provide more insight into a specific topic or area of study. The varieties of enrichment are limited only by the imagination and include independent study, supplemental learning kits or packets, field trips, and mentors.

Successful enrichment programs for gifted students usually require the student to move beyond the routine acquisition of knowledge to examine relationships among different areas or delve very deeply into a few areas. The less effective programs fail to differentiate among students and require the gifted to do the same as everyone else, only faster and more often. These programs do not take into account characteristics of the gifted such as their ability to draw abstract generalizations, to pursue topics of interest in great depth, and to demonstrate ideas in a variety of ways.

 Another problem with some of the enrichment programs for gifted

students is that they tend to stop below the levels of the students. These programs provide a variety of exciting activities, but often they do so without sequence, direction, or ultimate goals. Successful enrichment programs for gifted and talented individuals build upon the characteristics of the particular gifted students and challenge them to explore new areas of thinking and responding. Enrichment programs should provide a sequence of experiences designed to promote systematic fulfillment of the gifted student's potential.

The mentor type of enrichment program has offered valuable learning experience for gifted and talented students, but mentors must be carefully selected to sufficiently challenge the student. Bruce Boston suggested that in programs that stress interaction between gifted students and mentors, emphasis should be on observation, perception, and problem-setting and solving, rather than on verbal dissemination of information to the gifted individual. Boston also suggested that both the gifted student and the mentor should be specifically selected for the program and should be carefully matched. (7) Enrichment through mentor-pupil interaction may be especially valuable for it not only puts the gifted student in contact with a specialist in a given field, but can also involve the community in the program. Again, care must be taken with pupil and mentor selection, and program developers must work with the pairs to be sure the experiences fulfill the needs of the individual and the goals of the program.

Other types of enrichment include accelerated subject matter units, team-teaching in specific areas, small group interaction, lectures and demonstrations, and instructional television programs. (56) These techniques may provide valuable learning experiences for all students in a class, including the gifted. But unless the focus is on systematic development of abilities, these experiences may fail to provide the gifted individual with sufficient challenge and sequence. They may be interesting and fun but not so fulfilling as they might otherwise be.

Renzulli has developed a sequence of enrichment activities that begins with involvement on the part of all students and finally allows the gifted students to pursue areas of interest in depth. His "triad" begins with exploration of many potential areas of interest, leads through a series of exercises and games in which students may refine skills necessary for the development of thinking and feeling processes, and finally challenges the gifted students to conduct in-depth investigations of specific areas of interest. The last stage of the triad differentiates the gifted from the other students as it presumes the ability to pursue areas of interest, draw generalizations from many different areas, and produce quality work as an expert in a specific field. (62).

Program Design

In a national survey of programs for gifted students, Gourley et al.

listed the characteristics of good programs: clearly stated objectives, in-service training, one or more teachers designated solely for working with the gifted, a consistent relationship among identification, procedures, and goals, selection of the top three to five percent of the population, sequential development of abilities, annual planning and evaluation, and, finally, qualitative differences between programs for the gifted and programs for other students. (28) The major distinguishing feature of successful programs for gifted and talented students is that they are carefully designed for a particular group and not just tacked on to the regular curriculum.

To achieve the best possible program, program developers should proceed carefully and methodically through a series of steps to be sure they have covered all areas that should be considered. Several educators have provided their interpretations of these steps. William Vassar listed the following essential areas to be explored by a program development team consisting of teachers, administrators, curriculum specialists, pupil personnel staff, and parents:

1. need for the program in the specific school district
2. philosophy and objectives of the program
3. type(s) of gifted to be included in the program
4. screening and identification criteria
5. professional and lay staff to work with the program
6. physical facilities and transportation
7. inservice training
8. differentiated learning and thinking activities for the gifted individuals
9. administrative design
10. community resources
11. special funding
12. evaluation
13. role of parent(s)
14. special consultative services
15. articulation. (81)

Catmull includes many of these items in her list, emphasizing also the need to involve the entire staff in the program. She further suggests that program developers should review the literature on teaching the gifted. (10) Early in the planning stage, leadership should be assigned, and at some point the program design should take the form of a written document. (39)

The steps in designing a program are not necessarily sequential, but, rather, indicate areas that should be considered before attempting to implement the program. Program philosophy and objectives, for example, should reflect the needs and values of the community and should also provide a basis for selecting and identifying the gifted. However, philosophy and objectives cannot be finalized until the prospective population and available resources are known. Consequently, until each

of the individual areas has been initially explored, consideration of all areas should remain open.

Program Evaluation

There are several reasons for evaluating programs. First, a researcher may wish to determine the effectiveness of a given program as it exists without modification. Second, one may wish to describe a program to a specific audience, such as a school board, to justify requests for additional funds. Third, an evaluator may be interested in both the program and in ways in which the program may be improved.

For most school systems the last approach would be the most beneficial. The evaluator makes suggestions for improvement throughout the procedure even though these suggestions may alter the structure of the program. The researcher, on the other hand, would not modify the program while in progress, as it would affect many of the measures used. The describer or fundseeker would probably not look for areas of difficulty, since they might reflect negatively on the effectiveness of the program. A complete program evaluation should do more than just describe what is happening. Reynolds states, "The purpose of evaluation in education is simply to contribute to improvements in instruction, certainly not to justify projects." (65)

Joseph Renzulli highlights the goals of program evaluation as follows: determining whether or not the objectives of a program are being fulfilled, discovering unplanned and unexpected results of the program, determining the effect of underlying policies and related activities on the program, providing continuous feedback about the program to participants, and suggesting both realistic and ideal program modifications. (63) Prior to evaluating the fulfillment of objectives, the program evaluator should examine the relationships among the objectives, program goals, identification procedures, curriculum, and the unique characteristics of the gifted population selected for the program. All elements should reflect the special attributes of the gifted and talented students.

Since the evaluation should include continuous feedback and modification where necessary, the evaluator should become involved with the program in its initial stages. In this way questions concerning the relationships among different elements may be asked, and the program objectives can be carefully constructed to assist the evaluation.

Renzulli suggests care should be taken with the program objectives so that the growth of higher mental processes is a top priority. (63) Because it is difficult to measure growth in this area and in the affective or attitudinal areas, program developers sometimes state only easily measured, lower-level objectives, such as the acquisition of knowledge. But it is vital for program developers and the evaluator to work together to delineate the higher level objectives—analysis, synthesis, and evaluation of ideas, as well as more affective objectives, such as attitudes toward

moral issues. In addition to describing these objectives, the program developers and evaluator should explore the many ways fulfillment of these objectives may be demonstrated. As Freeman and Sherwood (1965) conclude, if a program evaluator is to be an effective agent for social change, he or she must be engaged in program development. (65)

Some program evaluators, especially those interested in the research aspects of the program, use standardized tests to determine growth in specific areas. Because of the inappropriateness of standardized tests, evaluators of programs for gifted and talented students should concentrate on specific goals and objectives for the particular program under consideration.

While the examination of goals and objectives will probably constitute a major portion of the evaluation, the evaluator should also explore other unexpected results of the program. As Renzulli suggests, valuable outcomes are sometimes unplanned. (63) These outcomes should be recognized by the evaluator and, possibly, built into a revised program.

Finally, as William Vassar has stated, the program for the gifted students should be significantly different from the regular curriculum. (82) These differences should be documented by the program evaluator, as should the points of intersection between the regular curriculum and the program for the gifted. In this way the program evaluator confronts questions concerning the necessity of programs for the gifted and their place in a particular system.

In summary, program evaluation should include: early involvement of the program evaluator; continual examination of the relationship between goals and objectives, identification procedures, curriculum, and characteristics of the gifted population; clarification of the objectives and methods of demonstrating fulfillment of objectives; determination of the effects of unplanned and unexpected results on the program; specification of those aspects of the program that make it identifiably different from the regular curriculum; explanation of relationships between the program for the gifted and talented and the regular programs; and dissemination of results to appropriate personnel.

ISSUES

In the previous sections we have considered characteristics of the gifted and talented and procedures for identifying these individuals. In addition, we have explored some of the major concerns about program design and development. Three other issues, however, merit special emphasis: the creatively gifted, the disadvantaged or culturally-different gifted, and, finally, the qualifications of teachers of the gifted.

Creatively Gifted

In a recent NEA report, E. Paul Torrance explored the research in creativity, examined curricular materials, and discussed methods teachers might use in the classroom to motivate and teach creativity to their students. Torrance listed activities which promote creative behavior, among them brainstorming and problem-solving experiences. Creativity is also encouraged through rewards for creative achievement and through the establishment of a warm, creative relationship between teacher and students by having some learning experiences without evaluation. (79) Although Torrance does discuss identification of the creatively gifted, this issue remains a major concern of those interested in establishing programs for the gifted.

Most educators agree that traditional measures, such as group IQ tests, achievement tests, and teacher recommendation fail to identify individuals who excel in the creative- or productive-thinking areas. The tests tend to measure convergent thinking rather than divergent and creative abilities. While most standardized tests are looking for one "right" answer, creatively gifted and talented individuals tend to have many "right" answers, different from those the test would accept. Michael Wallach compared scores on traditional measures (including aptitude tests, grades, and achievement tests) with actual attainments in science research. He found in nearly half the comparisons the relationship between the measures and attainment was negative. Those who scored low on the measures often scored high in attainment, while those who scored high on the measures scored low in attainment. (83) Teacher judgment, according to Ryall and Rykken, is also an unreliable source for identifying persons gifted in creative and productive thinking. (67)

The traditional instruments also seem to measure abilities different from those measured by creativity tests. Torrance found fundamental differences between high creativity and high IQ individuals. He suggests that if only the upper 20 percent of the scores on an IQ test were considered fit for a program, about 70 percent of those identified as gifted by creativity tests would be overlooked. (79) Frank Barron echoed this finding, stating that there are "many factors in creativity that bear only slight relationship to scores on conventional intelligence tests." (3) In short, it seems the traditional measures of student ability fail to provide reliable help with the identification of the creatively gifted and talented.

While some tests for measuring creativity and divergent thinking have been developed, their effectiveness as predictors of creative achievement remains a controversial issue. Cropley examined creativity tests as predictors of nonacademic attainment in creative areas such as art, music, literature, and drama, five years after administration of the tests. His findings concurred with those of Torrance, indicating that there is a substantial longitudinal relationship between scores on creativity tests and nonacademic, creative attainment. (15) Kogan and Pankove, on the

other hand, studied how accurately divergent thinking measures given in elementary school predict nonacademic attainments in high school and found the relationship to be low. Kogan and Pankove suggest the most consistent data in their study showed a high relationship between nonacademic attainment in tenth grade and nonacademic attainment in twelfth grade. (44)

Actual achievement of potentially gifted and talented students in creative and productive thinking seems to be a good predictor of future success in creative areas. Wallach states the "judgment by sophisticated peers based on creative work comes as close as one may ever be able to get after all, to a valid index of quality—short of awaiting the verdict of history." One method of identifying the creatively gifted, then, would be to judge the quality of their creative works. (83) Richards, Holland, and Lutz demonstrated through their study that actual creative attainments in high school are continued through college and probably beyond. (66)

A second way to identify the creatively gifted that receives a good deal of support from researchers is the use of biographical and autobiographical instruments. Khatena, describing the use of the Khatena-Torrance Creative Perception Inventory as a measure of potential creativity, concluded that such a measure can be used to identify creative adults and adolescents. It can also be used to place individuals in appropriate educational situations, design programs, and for additional research. (43) Davis and Rimm concluded that biographical inventories also provide good vehicles for identifying creatively gifted individuals. (16) These instruments may offer program developers an opportunity to identify potentially gifted and talented individuals in creative areas in general. These creative abilities may then be more accurately assessed by examination of actual creative attainment.

Disadvantaged

The term "disadvantaged" has been defined in many ways. John Curtis Gowan defines as disadvantaged those children "being reared by poor, lower-class native parents out of the cultural mainstream." (21) This definition allows us to look beyond the Black, Chicano, First American, and Asian and include all who do not share in the material, economic, and educational benefits of the majority. Although the suggestions below are appropriate for the mainstream as well as the disadvantaged, they are essential for the disadvantaged because they allow the gifted and talented in this group to participate in programs designed to help them achieve full potential. Carole DeMonbreun stresses the need to identify the gifted disadvantaged and provide appropriate programs for them early on because "there has been a well-documented geometric decline, across time, of disadvantaged student performance." (17)

Identification of the Disadvantaged Gifted

It is often difficult to identify the gifted in disadvantaged groups primarily because of the socioeconomic and cultural differences they display. Most of the commonly used IQ tests have been standardized in communities of middle- or upper-class children, and therefore do not take into account some of the economic and cultural realities in many disadvantaged communities.

Mercer examined the relationship between social and cultural factors and IQ test results by studying the IQ scores of a group of Black children from middle-class families. These middle-class were characterized by two parents, four or less children, father with an occupation rated 30 on an occupational rating scale, and a mother with aspirations for college for the children. She found the mean IQ of these Black children matched the mean IQ of the white, middle-class children with whom the test had been standardized. The spread of scores on the test also matched. When she replicated this study with Chicanos, she found the same results. (8) One difficulty, then, apparently lies with the economic and social levels. After twelve years of research Torrance found that individuals from disadvantaged groups performed as well as nondisadvantaged individuals on the Torrance Tests of Creative Thinking, which contain many figural and nonverbal items without direct cultural associations. (78)

During the First National Conference on the Disadvantaged Gifted, 1975, many authorities in the field shared suggestions on identifying gifted individuals from disadvantaged groups. Citing the cultural biases and language dependencies of the traditional IQ tests, several experts suggested a greater reliance on anecdotal reports and on observation of these children interacting with their immediate environment. Stallings, for example, suggested using teacher observation and instruments designed to relate specifically with the school environment, such as street signs found within an eight block radius. (21) In another article, Stallings recommended that teachers should rank students only in relation to their classmates and that peer evaluations with a sociogram should be part of the identification process. (74)

During this conference Meeker suggested a modification of the Stanford-Binet Intelligence Test using her Structure of the Intellect model, based on Guilford's design. In this model Meeker modified the Stanford-Binet by focusing on the individual characteristics of the disadvantaged child. In summarizing the discussions of identification of the disadvantaged, Renzulli suggested using the Torrence Tests of Creative Thinking, the Alpha Biographical Inventory, and Meeker's Structure of the Intellect profile. Alexinia Baldwin concurred with Renzulli's list and added the Torrance-Khatena ("What Kind of Person Are You?") Inventory. (31) These instruments focus on the different experiences of the disadvantaged student through inclusion of biographical information, creativity indices, and modification of the standardized

tests to recognize characteristics of the disadvantaged.

While some attention has been directed to disadvantaged Blacks and Chicanos, Chen and Goon indicate little has been directed to the disadvantaged Asian. In their study they compared the identification of gifted and talented with the rest of the population, using standardized tests and teacher nomination. They found that the total number of gifted Asians was 11.8 percent across seven sixth-grade classes, compared with 4.75 percent in the normal population. In addition, they found that when the total number of Asians increased, so did the proportion of gifted, while the reverse was true in the normal population. They suggested directing more attention to individual behaviors, such as independent research and creative projects, to help identify the gifted Asian. (12)

Catherine Bruch has summarized the problems of identifying the gifted among disadvantaged groups. First, the less a child is acculturated into the mainstream, the more closely the procedures of identification should reflect the child's own cultural background. Second, the standardized test instruments used should take into consideration the language of various culturally-different groups. In addition, the testing situation should accommodate test-taking behaviors and anxieties of those being tested. Third, administrators and teachers are usually trained and motivated to work with middle class students and often have different expectations for or lack sensitivity to individuals in culturally different or disadvantaged groups. Consequently, teachers and administrators working with the disadvantaged or culturally different should be sensitized to their needs and characteristics so they can better identify those who excel. (9)

Although the suggestions above are directed toward culturally different and disadvantaged groups, they could also apply to all potentially gifted and talented individuals. Most of the suggestions involve focusing attention on the individual's behaviors in relation to the characteristics considered outstanding by a particular group's standards. It is recommended that one use multiple criteria for identification of gifted rather than depending on one or two sources. The emphasis is on including all potentially gifted individuals rather than on excluding some students who may not be gifted and talented. Inclusion requires looking for signs of giftedness and may err on the side of including those who are not gifted. Exclusion, on the other hand, focuses on keeping the nongifted out of the program and may result in excluding many gifted along with the nongifted. I believe it is more important to include the gifted than to exclude the nongifted.

Programs for the Disadvantaged Gifted

Successful programs for gifted disadvantaged children can take many forms, but all seem to take into consideration the unique situations shared by disadvantaged students. In Gallagher's report of Riessman's suggestions for programs for the disadvantaged gifted, the following characteristics are stressed: (a) instruction should be primarily physical and

visual rather than aural as it is in most middle class situations; (b) the initial focus should be on content rather than form, as these students need the knowledge before they can explore the processes; (c) the curriculum should be problem-centered rather than abstract-centered, emphasizing inductive reasoning over deductive; and (d) the teacher should pace the instruction in a slow, careful, and patient manner rather than in a quick, clever, and flexible way, as these students require structure and control. (21) Alexinia Baldwin stressed the need to focus on problem-solving using the students' cultural context, as well as the need to work from lower cognitive levels to higher ones, thus helping these students acquire the skills necessary for success at the higher cognitive levels. Baldwin also stressed work in creative thinking activities. (1)

In his report, Torrance outlined a specific program designed to help the disadvantaged gifted, especially in the areas of creativity. In this program he stressed activities such as brainstorming about uses of common objects, role playing, problem solving, and work in specific creative areas, such as music and creative writing. Finally, he has the students explore the future and design activities around this exploration. (78)

Stallings has outlined another approach for working with the disadvantaged gifted—a four-phase program revolving around occupational goals. In the first phase the students explore and plan occupational goals with a great deal of assistance from the teacher. In phase two they work with individuals from the community, examining specific occupations in depth. In the third phase, the parents work with the teacher in an effort to understand their own feelings and attitudes and their relationship with their children. Finally, in phase four, the students are evaluated and rewarded for having achieved the goals of the program. Stallings emphasizes that as the gifted student develops an area of interest, basic skills in reading, writing, and arithmetic may be introduced and developed. (74)

Although educators have presented different programs for the disadvantaged gifted, some aspects are common to all programs. First, these students need to develop basic academic skills, since often they do not acquire the necessary background for them at home. Second, there is a strong emphasis on the concrete, the practical, and the familiar—attempting to use the immediate environment and the student's own goals as part of the instructional program. As Passow suggested, the programs should develop skills and work that involves the entire community, not just the classroom. In addition, he stressed recognition of language needs and the "richness of cultural differences" of the students. (59) We should remember, however, that these recommendations are general, and that specific individuals have unique learning styles regardless of class or economic situation, and the teacher should react accordingly.

As with the suggestions for identification, these recommendations would be valuable for all gifted and talented students, but they are vital for the disadvantaged and culturally different.

Teachers

Who should teach gifted and talented students? This question assumes that certain teacher characteristics are especially conducive to working with gifted individuals. After reviewing the research and literature in this topic, June Maker cited the following teacher characteristics as generally recommended: highly intelligent, flexible and creative, self-confident, variety of interests, sense of humor, sympathy with problems of the gifted, self-understanding, love of learning, facilitator rather than director of learning. As Maker indicated, these characteristics would be highly desirable in any teacher, but they are vital in the teacher of the gifted. Of all of these traits, Maker highlights three as most important: high intelligence, knowledge of subject matter, and emotional maturity. (48) Since gifted and talented students tend to be persistent in their search for knowledge and especially perceptive of erroneous or superficial answers, the teacher of these students needs both the intellectual background to provide answers or direction and the emotional maturity to be able to admit lack of answers.

William Bishop explored the characterstics of teachers identified as especially successful by their gifted students. Many of his conclusions reinforce Maker's list: emotional maturity, preference for teaching the gifted, and intellectual superiority. He adds, however, other characteristics: enthusiasm about the subject, pursuit of literary and cultural interests, businesslike classroom behavior, and preference for special educational provisions for gifted students. (6) When McNary (1967) studied the relationship between teacher characteristics and change in students' divergent thinking (providing a variety of alternative solutions) and convergent thinking (looking for one solution), she discovered that personality characteristics such as emotional maturity, energy, and persistence were the most important factors in producing change in divergent thinking. For changing convergent thinking, she found submissiveness, dependence, alertness, and warmth to be the most important. (51) Solano found that unless a teacher has had some experience with gifted students, or courses in teaching the gifted, the teacher would probably hold a stereotyped image of the gifted. This image is usually negative toward gifted boys and positive toward gifted girls. (73) In a similar study, Smidchens and Seliin also emphasized the need for special training and services in order to convert regular classroom teachers into teachers of the gifted. (71)

In summary, the characteristics of the teacher are important when selecting teachers for gifted and talented students. The most valuable traits are emotional maturity, high intelligence, wide variety of interests, and desire to work with gifted individuals. While many teachers share the first three characteristics, the teacher of the gifted must particularly have knowledge of and sincere interest in teaching gifted students. This is important both for developing curriculum and for maintaining a positive, constructive attitude.

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