Guidance of Gifted Youth

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In the spring of 1977, Eric Jablow, at age fifteen, became the youngest boy ever to graduate from New York's Brooklyn College. Five other brilliant and highly-motivated students (ages seventeen through nineteen) graduated from The Johns Hopkins University. Four of these six students received National Science Foundation fellowships to pursue graduate studies at the universities of Chicago, Cornell, Massachusetts Institute of Technology, and Princeton.[1] In most school systems, however, such brilliant youths would probably be placed in grades 9, 11, 11, 11, 12, and 13, respectively. It is apparent that some gifted and well-motivated students can accomplish much more than most school systems expect or require them to do.

These students are not as rare as one might expect. The Study of Mathematically Precocious Youth (SMPY) at The Johns Hopkins University,[2] through four talent searches in Maryland, has identified over 2,000 seventh and eighth graders whose scores on the mathematical section of the Scholastic Aptitude Test (SAT-M) were higher than the average high school senior's.[3] One seventh grader who participated in SMPY's 1974 mathematics talent search scored 760 on the SAT-M. Before the contest, his school had not intended to place him in Algebra I the next year. Upon learning the results of the contest, the school tested him on a standardized test of Algebra I. The student made a perfect score. In further testing by SMPY, the

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student made the highest possible score (800) on the College Entrance Examination Board's Mathematics Achievement II, a test that most high school seniors find difficult. He studied Algebra II and trigonometry on his own during the summer and was permitted to take geometry the next year. Without such intervention, the student would have been placed in a course at least three years behind his ability and achievement level.[4] Unless schools and school systems encourage guidance counselors and school psychologists to take an active part in the education of the academically gifted, this waste of potential is likely to continue.

There are two major aspects of counseling for gifted students through the junior and senior high school years and into college. The first is the early identification of those students who require special educational opportunities. The second is the careful matching of gifted students to "alternative" educational pathways through these important years.

The Identification of Talent

There are numerous considerations in selecting tests to identify intellectually gifted students. The most important concern is: how well do the tests predict success in the type of program (special class, college course, or acceleration) that is planned? It is helpful to know what aspects of ability and personality are related to high level achievement in various situations. Of lesser but substantial concern are questions pertaining to the cost, ease of administration, and availability of the tests to be used.

In the 1920s the first longitudinal study of intellectually gifted children was begun by Lewis Terman[5] at Stanford University. Terman used global intelligence measures, such as the Stanford-Binet, to identify gifted students (IQ scores of 140 or above). In the years since Terman's study began, many educators, such as Pegnato and Birch,[6] Witty,[7] and Gowan[8] have discussed the problem of the operational definitions of giftedness and their implications for instituting identification procedures in the schools. Torrance[9] and Gowan[10] have suggested the use of creativity measures and teacher nominations to supplement intelligence test results. Taylor[11] and Flanagan and Dailey[12] have stressed the importance of multiple ability testing.

Programs that seek to individualize instruction for gifted students will be better served by tests which provide information about a student's pattern of abilities, current level of achievement, and interests, rather than a global estimate of general intelligence.[13] Neither individual nor group intelligence tests provide this type of information. Knowing that a student has an IQ of 150 is not adequate information for deciding whether or not the student is ready for an advanced or college course in a specific subject area. While intelligence tests provide an estimate of higher learning potential, they tell little about actual level of achievement in a given subject area. In order to assess most effectively a student's educational potential, counselors should employ a variety of tests or subtests to determine the relative strengths and weaknesses of a student in both aptitude and achievement in many areas. This will provide valuable information concerning appropriate educational placement.

When counselors test very bright stu-

dents, it is particularly crucial to use tests which have enough ceiling to differentiate among them.[14] Thus, in addition to patterns of abilities, one must be careful to assess a student's levels of abilities accurately. Two students who score at the ninety-ninth percentile in the seventh grade on a number ability subtest of a standardized in-grade test such as the Iowa Tests of Basic Skills (ITBS) may still be very different in terms of mathematical aptitude and knowledge. While one of these students may be so advanced in his ability and knowledge of mathematics that he is ready to study advanced calculus in college, the other may lack the basic skills of plane and analytic geometry and Algebra II. A single test, especially a grade level one, will fail to provide this type of information. For the most able adolescents, precollege and college level tests, such as the Scholastic Aptitude Test (SAT), would be more appropriate than in-grade tests for evaluating knowledge and aptitude.

Students with similar patterns of cognitive abilities may perform quite differently in different school situations. One's willingness to work hard and achieve is influenced by factors other than ability. Direct measures of interests and values such as the Allport-Vernon-Lindzey Study of Values, the Strong-Campbell Interest Inventory, and the Vocational Preference Inventory can be useful predictors of future achievement. Students who score high on social and aesthetic values but low on theoretical values and investigative interests will probably be more successful in a small informal class that stresses the social applications of mathematics than working alone with a self-paced geometry text. Thus, knowing a student's interests as well as his or her level of ability can make the educational planning process more efficient.

The first step in an identification program for the gifted in the junior high school years would be to establish a "reservoir of talent,"[15] a master list or pool of all children in the school or school system who seem likely to be very gifted. Counselors should begin by carefully screening students on the basis of in-grade test results from a standardized achievement test such as the Iowa Tests of Basic Skills (ITBS). (For economic and pragmatic reasons, one should take advantage of the existing records.) A single criterion or multiple criteria could be used to select all students who scored at or above the ninety-fifth percentile overall on national or local grade norms. In addition, one could add the names of students who scored below the ninety-fifth percentile overall but who scored at or above the ninety-eighth percentile on either the total numerical or verbal subtest of the ITBS or other standardized test. Teacher nominations could also be included in the initial pool.[16]

The second step of identification would be to test the pool of "potentially gifted" on difficult tests of aptitude and achievement in order to identify those who need immediate attention. A method which would seem practical for schools is the utilization of existing precollege testing services. The Preliminary Scholastic Aptitude Tests (PSAT), administered, scored, and reported under the supervision of the Educational Testing Service (ETS), are given in high schools throughout the country every fall on the last Saturday in October. Although they are primarily taken by eleventh graders, there is no reason

why gifted seventh, eighth, and ninth graders could not be tested.[17] After the PSAT scores are reported, counselors could compile a list of students who scored at various levels on the test. Those students who scored at least fifty on the quantitative section and above forty on the verbal section would be eligible for accelerated mathematics classes. Counselors could administer various cognitive measures such as the Differential Aptitude Tests (DAT), Sequential Tests of Educational Progress (STEP), the Cooperative Mathematics Tests, and affective measures such as the Allport-Vernon-Lindzey Study of Values, Strong-Campbell Interest Inventory, or the Vocational Preference Inventory before counseling each individual.

The Facilitation of Talent

The initial identification of gifted students is probably the easiest step to plan and conduct. More difficult to implement is a process by which the student and the counselor work out long-range educational plans involving one or more of the alternative methods. Theoretically, at least, there are many possible variations by which one could progress from seventh grade to college. The task of the school is to maximize the number of options without becoming inundated with administrative problems. Fortunately, these possibilites can be organized into general strategies that are moderately flexible. The nature of the strategies will be dependent upon several factors: physical aspects of locations of students, junior high schools, senior high schools, and colleges; the number of students involved; the various talents of the students; the students' personalities; and the parents' and students' goals.

A few inexpensive general strategies that have been found successful for the mathematically talented youths are presented here. These could be translated to meet specific situational demands and extended to other subject matter areas. (For an extensive discussion of the alternatives, the reader is referred to Fox.)[18, 19]

Subject Matter Acceleration

The idea of subject matter acceleration is fairly straightforward. This concept seems to be missing, however, from both the educational literature and educational practice. The usual objection to more than one year of acceleration (although not documented as a true problem) is the idea that students' social and emotional well-being may suffer from being placed in school with students who are chronologically older. Partial acceleration might serve to facilitate the educational development of highly precocious youth in those subject areas where they most need to be accelerated, but they would not need to be advanced in those areas in which they are less ready for advanced work.

Fast-Paced Classes

Homogeneous classes for the purpose of fast-paced instruction during or after school have been shown to be highly effective for the mathematically gifted.[20,21,22,23] In the first such class tried at The Johns Hopkins University in 1972, thirteen students (mostly seventh graders) met once a week for two hours and completed the four and one-half years of precalculus mathematics in 108 hours of instruction.[24] Since that time,

several school systems in Maryland have developed their own fast-paced class model with great success.[25] There are three requirements for a successful fast-paced math class: (1) identify well-qualified students through appropriately difficult mathematics tests (it is much better to err in terms of overselectivity—selecting only students who have a high probability of success); (2) select a mathematics teacher whose knowledge of mathematics is well above the content of the course; and (3) make student participation in the course *voluntary*.[26]

College Courses

Some junior high school students are so advanced in their knowledge and understanding of mathematics and science, they can do excellent work in college courses such as algebra and trigonometry or computer science. Since college courses are usually fast-paced, as compared to high school courses, they often prove to be an excellent supplement to the precocious youth's high school program. There are numerous advantages to this type of bridging mechanism. Not only do the courses provide rich sources of intellectual stimulation, they also seem ideally geared to the high achieving student's already developed learning pattern. The courses usually take about one-fourth as many classroom hours as an equivalent high school class would on the same material. The student is encouraged to work independently and often rapidly and to use the college instructor and class as a resource for getting help with difficult problems and occasionally for more exciting theorizing.

Students who remain in high school but who attend selected college courses during the summer, in the evening, or on released time from high school are able to have the intellectual stimulation of their college teachers and classes and still participate in social and athletic events with their age peers. At first mention this may seem to be an extreme measure. Research to date, however, has shown that this is a satisfactory approach for many able youngsters. By the end of the summer of 1976, 144 precollege youths had taken a total of 312 college courses with an overall grade point average of 3.57 on a 4-point scale.[27] One student took a college course each semester or summer term from age twelve to fifteen, and entered The Johns Hopkins University at age fifteen with thirty-nine credits.[28]

Credit by Examination

A different way of earning college credits before entering college full-time is by means of advanced placement (AP) courses and examinations. There are nineteen AP examinations in thirteen different subject areas. Students who pass Advanced Placement exams in three or more areas are given sophomore standing at Harvard. Each college and university has its own rules governing the use of AP courses and exams. Many large high schools offer at least one such course for seniors. What would be desirable would be to have all AP courses available to students every year and not restrict these courses to seniors. School systems might conduct countywide AP courses and allow gifted ninth, tenth, and eleventh graders to participate. Fast-paced mathematics and calculus classes can be geared to the Advanced Placement Examinations.[29] Students in schools which do

not have the classes can, of course, study the AP syllabus on their own and take the examination.

The AP courses are really a subset of the broader method of earning credit by examination. This method, used widely at the college level, is rarely employed at the junior or senior high level. Students who have learned a subject on their own should be able to get high school credit and exempt the course by taking an examination.

Early Admission to College

One major type of facilitation for academically gifted students which is now gaining a great deal of support across the country is early admission to college. Certainly, the concept of entering college at the end of the tenth or eleventh grade is not new. For many years this policy was practiced successfully under the sponsorship of the Ford Foundation.[30, 31] Today, many colleges, universities, and community colleges have some variation of an early admission program.

Early admission is an excellent educational opportunity for highly precocious youth. Such a program enables the student to telescope his or her educational experience and save time toward earning an advanced degree. College campuses offer these students an opportunity to find a considerable number of intellectual equals. The more advanced nature of the courses provides the needed challenge and stimulation to the student, and often makes available courses not offered in the high school. SMPY's first "radical accelerant" entered Johns Hopkins University at age thirteen after completing the eighth grade at a Baltimore City Public School. By seventeen years and ten months, he had completed the requirements for a M.S. Engineering Degree in Computer Science. Presently he is completing his dissertation in Computer Science at Cornell.[32] Another early entrant entered Hopkins after the tenth grade. He took forty credits his freshman year (made all A's) and then transferred to Princeton, where he has been very successful.[33]

The Counselor's Role

If schools are to have more individualized programming for the gifted student, counselors will need to take a more aggressive role in planning and implementing changes in both testing and counseling programs. Counselors who are well trained in psychological testing could take an active part in the identification process. In large talent-rich systems, counselors could work in teams to devise and carry out large-scale testing programs. In smaller systems, counselors could test students individually or in small groups, or simply arrange for gifted students in the seventh and eighth grades to take the PSAT or SAT. It is imperative in both situations to use the appropriate testing model.

Counselors should also work more closely with gifted students in their schools to help them develop long-range plans. Counselors can help students arrange to skip a grade, get advanced placement in courses, or plan to fulfill high school requirements in less than the usual time. Counselors can advise students of available college courses that they could take before graduating from high school.

Students who are immature or who have a history of emotional or social

adjustment problems in school should be carefully interviewed. It is possible, of course, that their behavior problems are a result of their frustration from being bored in school, and that special classes will actually alleviate the problem. On the other hand, students who have serious emotional problems may be unable to respond to intellectual challenges in a positive way. The experience of acceleration or college courses could be more than they can handle. Great caution should be used in these cases.

Conclusion

The model for identification and long-range planning presented in this article is based on experience with successful programs for the mathematically gifted conducted by SMPY and the Intellectually Gifted Child Study Group (IGCSG)[34] as well as selected school systems in Maryland. There is much that can be done for the gifted student without radically changing the existing school structure. Subject matter acceleration, fast-paced special classes, college courses, and early college admission are likely to be the most effective methods of educating the academically gifted youth. Unless students receive good counseling about these possibilities, however, they may never take full advantage of them. The needs of the gifted would be best served at the least cost by providing guidance counselors with the necessary training and skills to identify gifted students and counsel them about ways to meet their special educational needs within the framework of limited but real opportunities. Although large scale efforts and careful program planning and implementation do take time and effort, there is no justification for delaying efforts to help the academically gifted child. Small changes which increase options for the gifted could be accomplished readily, if counselors and educators would accept the challenge.

Notes

1. "Smorgasbord for a 150 IQ," *Time,* June 6, 1977, p. 64.
2. The Study of Mathematically Precocious Youth at The Johns Hopkins University is funded by the Spencer Foundation of Chicago and is under the direction of Dr. Julian C. Stanley.
3. Julian C. Stanley and Cecilia Solano, "Using the Scholastic Aptitude Test to Find Highly Precocious Seventh and Eighth Graders" (Paper presented at the meeting of the Psychometric Society, Iowa City, Iowa, April 1975), p. 8.
4. Lynn H. Fox, "Identification and Program Planning: Models and Methods," in *Intellectual Talent: Research and Development,* ed. Daniel P. Keating (Baltimore, Md.: The Johns Hopkins University Press, 1976), p. 40.
5. Lewis M. Terman et al., *Genetic Studies of Genius, Vol. I-V* (Stanford, Ca.: Stanford University Press, 1925-1959).
6. Carl W. Pegnato and Jack W. Birch, "Locating Gifted Children in a Junior High School," *Exceptional Children* 25 (March 1959):300-04.
7. Paul A. Witty, "The Education of the Gifted and Creative in the U.S.A.," *Gifted Child Quarterly* 15 (Summer 1967):109-16.
8. John C. Gowan, "Identifying Students for a Gifted Program," in *Educating the Ablest,* ed. John C. Gowan and E. Paul Torrance (Itaska, Il.: F. E. Peacock Publishers, 1971), pp. 153-55.
9. E. Paul Torrance, "Broadening Concepts of Giftedness in the 70's," *Gifted Child Quarterly* 14 (Winter 1970):199-208.
10. Gowan, "Identifying Students," p. 155.
11. Calvin W. Taylor, "Be Talent Developers," *Today's Education* 57 (December 1968):67-69.
12. John C. Flanagan and John T. Dailey, "Project Talent: The Identification and Utilization of Human Talents," *Personnel and Guidance Journal* 38 (February 1960):504-05.
13. Fox, "Identification and Program Planning," p. 38.
14. Daniel P. Keating, "Discovering Quantitative Precocity," in *Intellectual Talent,* pp. 26-28.

15. Gowan, "Identifying Students," p. 155.
16. Fox, "Identification and Program Planning," pp. 43-44.
17. William C. George and Cecilia H. Solano, "Identifying Mathematical Talent on a Statewide Basis," in *Intellectual Talent,* pp. 55-56.
18. Fox, "Identification and Program Planning," pp. 45-54.
19. Lynn H. Fox, "Facilitating the Educational Development of Mathematically Precocious Youth," in *Mathematical Talent: Discovery, Description and Development,* ed. Julian C. Stanley, Daniel P. Keating, and Lynn H. Fox (Baltimore, Md.: The Johns Hopkins University Press, 1974), pp. 47-70.
20. Lynn H. Fox, "A Mathematics Program for Fostering Precocious Achievement," in *Mathematical Talent,* pp. 101-26.
21. Lynn H. Fox, "Sex Differences in Mathematical Precocity: Bridging the Gap," in *Intellectual Talent*, pp. 183-214.
22. Julian C. Stanley, "Special Fast Mathematics Classes Taught by College Professors to Fourth-through-Twelfth-Graders," in *Intellectual Talent,* pp. 132-59.
23. William C. George and Susanne A. Denham, "Curriculum Experimentation for the Mathematically Talented," in *Intellectual Talent*, pp. 103-31.
24. Ibid., p. 103.
25. Lynn H. Fox, Annual Report to the Spencer Foundation on its Three-Year Grant to the Intellectually Gifted Child Study Group in The Evening College and Summer Session of The Johns Hopkins University covering the Second Year of the Grant—September 1, 1975 through August 31, 1976, pp. 66-80.
26. George and Denham, "Curriculum Experimentation," p. 125.
27. Julian C. Stanley, "Concern for Intellectually Talented Youths: How it Originated and Fluctuated," *Journal of Clinical Child Psychology* 5 (Winter 1976):40-41.
28. Julian C. Stanley, "Identifying and Nurturing the Intellectually Gifted," *Phi Delta Kappan* 58 (November 1976):234.
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30. Fund for the Advancement of Education of the Ford Foundation, *Bridging the Gap Between School and College* (New York: Research Division of the Fund, 1953).
31. Fund for the Advancement of Education of the Ford Foundation, *They Went to College Early* (New York: Research Division of the Fund, 1957).
32. Julian C. Stanley, "Intellectual Precocity," in *Mathematical Talent,* pp. 12-14.
33. Julian C. Stanley, "Educational Non-Acceleration: An International Tragedy" (Paper presented at the Second World Conference on the Gifted and Talented in San Francisco, California, August 1977), p. 9.
34. Intellectually Gifted Child Study Group is funded by the Spencer Foundation and is under the direction of Dr. Lynn H. Fox at The Johns Hopkins University Evening College and Summer Session.

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