The Center for the Advancement of Academically Talented Youth demonstrates the contribution that colleges can make to the education of students who are ready for a level and pacing of instruction not readily available in the schools. Its success also reflects the burgeoning demand for such instruction.

Early Instruction by the College: Johns Hopkins's Center for Talented Youth

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Within the last two years one national report after another has examined the state of American education and, all too often, the results have been less than positive. Low teacher salaries, lack of coherent curricula, inadequate student performance, high student and teacher dropout rates and irregular local, state, and federal funding have made the American response to educating its youth a very uncertain affair. Among the remedies often proposed is a closer working relationship between schools and colleges. It is hoped that through such arrangements or partnerships educators can begin to rectify some of the lingering difficulties of the American educational system. One major structural difficulty is that often two-thirds of the last two years of high school and the first year of college are repetitious. This situation is particularly damaging for some of our nation's most talented youth whose time and talent we may be wasting during a crucial three-year period of their intellectual and social-emotional development.

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However, school-college partnerships, while they can appear to be enticing methods to improve the quality of American education, are not always so easily created or maintained. Any dialogue between disparate levels of the American educational system can automatically bring into play the "shadow politic" of our educational ethos: the belief that different degrees of professional respect are rendered to members of precollegiate and collegiate education by the American public; a supposed lack of university understanding of what is necessary to instructing and developing precollegiate youth; the belief that university persons will summarily disregard the intellectual and pedagogical contribution of precollegiate teachers in a school-college partnership; the belief that a college's involvement in a school-college partnership can be attributed only to economic motivations, that is, robbing the cradle to meet financial needs at the university. This shadow politic is a powerful reality. It must be kept clearly in mind and confronted directly by anyone wishing to undertake a collaborative project.

It might be instructive therefore to examine carefully a school-college partnership that has been considered highly successful—The Johns Hopkins University Center for the Advancement of Academically Talented Youth (CTY)—and, through that examination, to identify both those critical components that have contributed to its success and those features of the effort that are still impaired by elements of the shadow politic.

CTY—A General Description

The Johns Hopkins University Center for the Advancement of Academically Talented Youth has gained national recognition for identifying and educating mathematically, scientifically, and verbally able youth. In 1971 the university pioneered a successful method of finding and helping talented adolescents with the founding of the Study of Mathematically Precocious Youth (SMPY) (Stanley, Keating, and Fox, 1974; George, Cohn, and Stanley, 1979; and Benbow and Stanley, 1976). Today, the Johns Hopkins Talent Search model and the academic program developed by CTY have been replicated in other schools, colleges, and universities both in the United States and abroad. The rationale underlying CTY's efforts is based on three beliefs: (1) that talented youths should have an opportunity to fulfill their intellectual aspirations regardless of the age at which their abilities first appear; (2) that those talented youths should have an opportunity to advance educationally according to their individual rate of learning and level of performance; and (3) that talented youths should have an opportunity to appropriate curricula that have been organized to respect a natural sequence of learning.

This rationale is now reflected in a comprehensive response to the education of academically highly able youth, consisting of three programmatic initiatives: (1) an annual talent search and recognition for seventh-grade students in public, independent, and parochial schools throughout the world; (2) academic programs for precollegiate youth on weekends during the spring and fall and for extended lengths of time during the summer; and (3) research and evaluation. The comprehensive program also provides a series of supplemental services, including tutorial-by-mail programs, assessment and evaluation services, a training institute for educators and parents, courses for parents, young student classes (seven to eleven years of age), and academic counseling services. This agenda involves the university in working directly not only with educators and parents but also, and primarily, with precollegiate youth (Durden, forthcoming).

Origin

The Johns Hopkins University did not begin its initiative on behalf of highly able youth as a self-generated institutional priority, but rather as a response to a community initiative. In 1969, a sixth-grader in the Baltimore schools was recommended by a member of the community to take a summer college course in computer science at Johns Hopkins. It was apparent to the young man, his parents, and his teachers that the sixth-grade science and mathematics curriculum was not challenging him sufficiently. Indeed, this estimation was accurate, and he proceeded to earn the highest grade in his college class while still a sixth-grader. The college professor, in turn, noted the extraordinary capabilities of the young man and directed him to the attention of Julian C. Stanley, professor of psychology. As a result of testing and conversation, the young man, with the consent of his parents and his school officials, entered The Johns Hopkins University as a full-time student at the age of thirteen. At that time, there were no transition programs such as CTY. This young man received his bachelor's degree in mathematical sciences at seventeen, his master's degree in mechanical engineering three months later, and, subsequently, a doctoral degree in Computer Science at Cornell University. He is currently on the staff of Cornell University and is an international authority on computer theory.

Professor Stanley felt that there must be other students in the United States for whom the regular curriculum was not appropriate either in pace or in level of instruction. He began a modest research project in 1971 to conceive of ways in which he could effectively identify these students. Some key decisions were made early. Stanley would concentrate on

identifying those talents that would reflect the particular strengths and educational capacities of the parent institution (The Johns Hopkins University)—mathematical and scientific reasoning abilities. He would favor a system of identification that was psychometrically valid and economically feasible. He would subject all his efforts from the beginning to stringent research and evaluation. And he would address the young students directly in all correspondence and appeals.

As a result of his initial attempts, Stanley discovered that there were indeed many other students needing an education different from that provided in the regular curriculum, not so much in subject matter as in pace and level of instruction. As a result of this discovery he began modest-sized classes in precalculus mathematics on weekends at The Johns Hopkins University, using pedagogical principles that permitted students to concentrate on what they clearly did not know rather than repeating what they already understood. A system of pretesting, prescriptive instruction, and posttesting was initiated. Nationally normed, standardized examinations were used in all situations. To interest identified students in this educational opportunity, Stanley made his appeal directly to the students themselves, thereby requiring of them a major role in their own educational planning from the start. In addition, the classes offered at the university on weekends were characterized by an overt effort to offer curricula readily available in the schools, but adjusted to a different pace and level of learning. Stanley reasoned that the slow pace of instruction for youth with demonstrated talent in a particular field was a major contributing cause of the early boredom and frustration experienced by highly able students. He believed, therefore, that acceptance of a daily school regimen often characterized by a rigid lock-step system of kindergarten through four years of college, without variation for different ability levels, was ultimately irresponsible.

As a result of a number of scholarly articles in which he scrupulously documented his efforts, Stanley's approach to the education of highly able youth began to attract local, national, and international attention. However, what moved the effort from a small research project with SMPY to a large comprehensive public service and research/evaluation effort by the university was not initially a well-structured collaboration of school systems with a university. Rather, it was an effort that focused on the identified needs of individual young students. The response to those needs with a well-defined method of education attracted, gradually and indirectly, those individuals throughout the world—parents, school teachers, administrators, and concerned citizens—who also believed in the activities undertaken by SMPY and CTY. The initial effort, then, was directed toward assisting students and not toward involving school sys-

tems. The premise, to put it bluntly, was that getting too involved with comprehensively changing the system would only impede positive change in behalf of students.

As interest in Stanley's early efforts increased dramatically, and as the focus of the program expanded into the humanities, Stanley and the administration of Johns Hopkins acted to ensure the perpetuation of the initiative as an institutional feature. In 1979, Steven Muller, President of The Johns Hopkins University, established what is now CTY as an academic center reporting directly to the Provost and Vice-President of Academic Affairs.

Objectives

Students. Even though CTY has expanded the university's commitment to precollegiate education, the initial objectives of Stanley's work have been perpetuated. CTY continues to place the student and his or her needs in the foreground. The student continues to take responsibility for his or her own educational planning. And CTY's educational approach remains roughly the same. Mathematical and verbal reasoning abilities in youth are identified through the use of nationally normed and standardized examinations, often exceeding in intellectual level the chronological age of the youth. An educational agenda is then set which develops those talents concretely, by completing the coursework found in the regular curriculum but in a manner that respects the identified abilities of the child. In so doing, the lock-step of education, the artificial borders between elementary, secondary, and collegiate education are broken.

Schools. CTY serves the schools by offering them a clearly defined, well-documented method of proceeding with the education of some of their most highly able youth. It serves those teachers and administrators who are willing to join CTY in a reexamination of an educational system that has often placed its participants (students and teachers) in a position of serving time rather than learning. CTY does indirectly provide schools models, justifications, strategies for change at the local, state, and national levels, but the desire for this service continues to be self-generated.

University. From the university's point of view, CTY permits it to be engaged in yet another area of pioneering work, confirming the university's priority of charting new approaches, and new programs that maintain the best and most valued of inherited knowledge. In addition, the extensive publicity directed to CTY's efforts both nationally and internationally underscores the university's vision of itself as an international institution (with campuses in Baltimore, Washington, Bologna, Italy, and China, and alliances with other institutions throughout the world) serving

knowledge and research. Finally, CTY's contact with precollegiate education keeps the university informed about those pre-college needs of student and teacher education that might render its own services at the undergraduate and graduate level more appropriate and timely.

Evaluation: Some Successes

The Talent Search. CTY believes that exceptional mathematical and verbal reasoning abilities among young students can be identified by a systematic and valid means: the talent search. Since 1979, CTY has identified more than 79,000 highly able adolescents through this method. The identification process relies on nationally-normed standardized tests, particularly the College Board's Scholastic Aptitude Test (SAT). Seventh-grade students (usually twelve to thirteen years of age) who score as well as the average college-bound high school senior on the SAT are eligible for specially designed coursework.

The talent search also allows students to assess their strengths and weaknesses in mathematical and verbal areas. "To see how well I do," or "To see what I need to work on" were responses given by over 50 percent of the 300 top-scoring students in the 1981 talent search. The self-evaluation made possible by SAT score reports and the compiled results of all participants encourage the students to carefully plan their education and adjust it closely to their specific academic aptitudes. In addition, every student who participates in the CTY talent search receives a certificate of merit applauding his or her high academic potential; an Educational Planning Guide to assist student, parent, and teacher in selecting appropriate educational experiences; invitations to various CTY counseling and career workshops; and a listing of summer and fall/winter opportunities for out-of-school educational opportunities. Top-scoring students are invited to attend award ceremonies and are eligible for one-course scholarships to attend local colleges while still in high school. The talent search thus extends well beyond the mere identification of academic talent, both by recognizing academic potential at an early age and by allowing teachers and parents to gain additional information to help students develop that potential appropriately during the remaining school years.

Academic Programs. CTY academic programs are distinctive both in their content level and in their pacing. Students not only have the opportunity to study challenging traditional subject matter (writing, Latin, Greek, physics, biology, and so on), they also can advance educationally according to their own pace and level of learning in an area of identified strength. For many young students, CTY provides the first opportunity to match achievement to ability. For example, in the math program, some students complete two to four years of high school math

in just a few weeks. The key to this process is to discover initially what the students already know of math before they begin a subject such as algebra or geometry, and then to devise a course of study that focuses upon what they clearly do not know. In addition, many students advance to college-level math and obtain college credit while still in junior high school or high school, thus challenging the traditional sequencing of the learning process.

CTY's special attention to diagnostic and prescriptive instruction in math, the humanities, and the sciences not only accelerates the pace of education, it also provides an atmosphere in which students develop as independent, self-motivated learners.

Residential programs, established in 1980, provide the opportunity for talented students from all over the United States and abroad to come together at a college campus and pursue intensive academic and cultural activities. The programs are held in the summer and consist of two three-week sessions. Each class meets four to six hours per day, five days per week. Courses are offered in languages, expository writing skills, precalculus math, computer theory, and high school biology, physics, and chemistry. In 1980, 109 students from nine states and Washington, D.C., participated in one three-week session. In 1985, more than 2,500 students from forty-five states, Washington, D.C., and several foreign countries attended. The residential program is the most rapidly growing academic effort at CTY.

The commuter program component of CTY offers courses throughout the year that supplement the regular in-school education of those students identified in CTY talent searches. The courses are similar to those offered in the summer residential program and take place on weekends during the academic year and on weekdays during the summer. The commuter opportunity, originally offered only at the Baltimore campus of The Johns Hopkins University, has expanded to other parts of the country through satellite centers.

Academic programs associated with CTY do not attempt to teach "creativity." Rather, the task is to give form to the creative impulse. Here action is taken in historical context. Much creativity has been wasted in the absence of a form with which to represent it—for example, expository writing techniques, literary genres, symphonic modes, or mathematical formulation. For CTY, creativity naturally emerges for intellectually talented youths when the circumstances include substantive material for study, highly motivated students, and teachers who are both highly able in their subject and passionate about its instruction.

Students. CTY's proudest achievements are directly related to the accomplishments of the young students with whom it associates. This accomplishment is well-documented in the form of a series of longitudinal

studies, but several anecdotal highlights may be appropriate here. In 1985, three of the top seven high school mathematicians selected to represent the United States in the International Mathematics Olympiad received part or all of their mathematics education through CTY's fast-paced coursework. In 1985, the second place winner in the International Science and Mathematics Fair Competition was a young person who received his math, science, and writing education in large part through CTY. Finally, in 1983, two fourteen-year-old CTY writing students had short stories accepted for an international anthology about growing up in America, published by the Rowohlt Publishers of the Federal Republic of Germany.

Teacher Selection. CTY searches the country for the most highly qualified instructors for its academic year and summer programs. Its basic criteria are expert knowledge in a particular liberal arts discipline, an ability to work with precollegiate students, and a sense of humor and of the outrageous. With these basic guidelines CTY seeks its staff from all levels of instruction—elementary, secondary, and college. And it is this healthy mix of teachers from all levels working for a common purpose—the education of youth—that helps break down some of those artificial barriers that often impede communication among various levels of instruction.

Evaluation: Some Problems

Robbing the Cradle to Fill a Freshman Class. CTY is sometimes accused that its efforts are merely a ruse to get qualified students to attend The Johns Hopkins University—the younger, the better. While such a charge might appear plausible at first glance, its validity disappears on closer examination. The Johns Hopkins University is one of those fortunate institutions of higher education whose pool of highly qualified applicants to the freshman class has been growing steadily for the last decade. The freshman class, which is limited to approximately 650 students annually, is chosen from several thousand candidates, only a small number of whom are associated with CTY. Under these circumstances, a talent search effort, dealing with tens of thousands of students and carrying a substantial price tag, would certainly be outrageous institutional overkill to fill a class of only 650 students.

Credit and Placement. CTY coursework often covers work treated in the local school, but at a more rapid pace and at a greater depth than instruction in the regular setting. Some schools, however, still refuse to accept student achievements in the CTY experience despite the careful documentation of progress through the use of standardized testing (that is, College Board High School Achievement and Advanced Placement Examinations). Some students who have successfully completed, for example,

Algebra I and II with CTY in a three-week intensive summer program, are required to repeat the program the following year in the schools. The shadow politic discussed earlier is manifested in the refusal of home schools to acknowledge individual differences and to believe that knowledge can advance more rapidly than is typical in the school system.

However, as CTY continues to publish data on achievement, not only during CTY programs but through longitudinal studies, the case is becoming more compelling for the acceptance of advanced placement or credit in the local schools. A recent survey of students returning from one of CTY's summer mathematics programs revealed that of the 144 students responding, 121 received appropriate credit or placement upon returning to their local school.

Personnel. An organization like CTY needs to recruit a strong leadership cadre. Because of the need for persons with both a strong liberal arts background and a knowledge of various levels of education (precollegiate and collegiate), good staff members are not easily found. Again, the organization confronts elements of the shadow politic of education. School persons are often suspected of lacking a comprehensive knowledge of a liberal arts discipline and a familiarity with university practice. Conversely, liberal arts students at the graduate level or young professors may consider the essentially precollegiate focus on CTY beneath their dignity as potential scholars. Regrettably, both viewpoints currently restrict the availability of a comprehensive CTY leadership cadre. It may be necessary therefore, to create that cadre through special degree programs at the university or through special teacher training activities for personnel from the precollegiate school system.

Quality Control. As CTY programs proliferate throughout the nation and abroad, there is a constant tension between those who recognize the need to adhere to the highest standards for both student identification and the academic programs and those who want the program to be more broadly accessible. Maintenance of quality control must remain a paramount responsibility requiring comprehensive methods of teacher orientation and training as well as careful review and evaluation procedures by the CTY main office in Baltimore. But that responsibility for quality control will continue to produce conflict with those persons who want to do everything for everyone in the name of non-elitism.

Recommendations and Warnings

School-college collaboration is a seemingly attractive way for attending to some of the inadequacies and inconsistencies of the American educational system. However, those schools and colleges that wish to engage

in this practice must not be naive. If partnership is to be more than an easy, insubstantial gesture; if collaboration is to be more than another method of preserving the educational status quo, at two levels of education rather than one; if what is sought is a true partnership in which the peculiarities and definitions of each level of instruction are examined, evaluated, and adjusted; if the progress and well-being of the child are to be placed in the foreground, and not the self-interested preservation of the system; then school-college partnership must confront directly the shadow politic of education. Suspicions, prejudices, and assumptions developed over centuries which separate the various levels of educational institutions must be confronted and addressed. School-college collaboration can involve periods of tough in-fighting both between and among school educators and college educators. Partnerships that survive will be those that recognize the complexity of the effort, try not to please everyone, persist, and keep in mind the real focus of the effort—the well-being of the young people involved.

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