

THE ADOLESCENT INTELLECT

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AMERICAN adolescents have been exceedingly well studied. They are known to be bothered by acne, to reject adult authority, and to have an awakening interest in the opposite sex. They conform slavishly to peer group standards, and, except for a few abnormal ones, they are either overly aggressive, submissive, withdrawn, or characterized by psychosomatic symptoms. All but about 95 percent are juvenile delinquents. The female type reaches puberty approximately two years before her male age-mates and between ages 11 and 13 exceeds them in height as well as in school marks.

According to James Coleman, adolescents value popularity and athletic prowess; according to Robert Havighurst, they have nine developmental tasks to carry out; according to Erik Erikson, they have four such tasks, the first being to achieve industry while working toward identity, fidelity, and intimacy. It is widely recognized that they have changing bodies, ambivalent feelings, and numerous problems, worries and needs, but until recently few have suspected that they also have intellects.

Indeed, the very term "intellect" is rare in the literature of education. The

crucial concept has been "intelligence," a global capacity for solving problems, according to David Wechsler; existing in three forms—*theoretical, social and mechanical*—according to E. L. Thorndike; composed of general and specific factors, according to Charles Spearman; and increasingly differentiated at puberty into some seven or more primary mental abilities, according to L. L. Thurstone. But intelligence has been viewed as an attribute that is largely determined genetically, subject to cumulatively substantial, but nevertheless comparatively limited, modification by environmental influences. Educators have seen intelligence essentially as the raw material for their work, providing possibilities and imposing limits. Their preeminent goal has been "intelligent behavior," overt and observable, rather than the development of any such inferred abstract quality as intelligence, much less one as abstruse as an intellect.

Finally, however, a time was reached when the world had been so drastically changed by intellectual efforts that attention was drawn to the intellect's increasing importance. Belatedly, scholars began to participate in curriculum reform.

Curriculum Reform

Jerome Bruner called attention to the value of students' discovering fundamental relationships among key concepts within a disciplinary structure and suggested that intellectually honest discovery in some form is possible with children at any age. Joseph Schwab stressed the importance of both the conceptual and the syntactic structures of disciplines. Philip Phenix defined learning not as a change in behavior but as the discovery of meaning, and he classified meanings as symbolic, empiric, aesthetic, ethical, synoetic, and synoptic. B. O. Smith took a new look at the teaching act and saw logical operations on subject matter as an important element. We were reminded of Jean Piaget's earlier contention that in acquiring meanings children pass through a stage of concrete operations before entering, sometime before reaching puberty, the stage of formal operations.

Piaget's studies show that, while the sequence in which stages are reached is invariant, the specific age is affected genetically, experientially, and culturally. Even in Martinique, where development is slower, the stage of formal operations is reached before the period known in America as the junior-high-school years. Moreover, it has been demonstrated that when children are given appropriate intellectual experiences, prevalent notions about readiness prove to be untenable. Robert Davis has found that fifth graders can not only readily discover truth sets for open mathematical statements, an achievement traditionally considered difficult for ninth graders, but can also invent

mathematical laws of their own, something that students are seldom encouraged to do at any level. Patrick Suppes has successfully taught young children to engage in mathematical reasoning.

Professional reaction to these demonstrations and to the shift in goals and changes in curriculum that they imply has been interesting and, to a degree, disturbing. In many schools, to be sure, enlightened teachers and administrators have eagerly seized the opportunity to experiment with radically revised curriculum arrangements and new instructional approaches that challenge students and inject an unwonted intellectual vigor into their schooling. But from those who have resisted have come expressions of concern regarding undesirable "pressures" on children and youth and protestations that social-emotional development is fully as important as intellectual growth, that education should provide practical preparation for living and earning, that learning experiences should be "life-like," and that recent reforms represent a return to "subject-matter centeredness."

These are sincere reactions and understandable ones, given the clearly demonstrated and freely admitted lack of intellectual interest in the society as a whole and among a large segment of the teaching corps. Of all the reactions, however, the most disturbing is that based on the erroneous belief that the current ferment is a retrogression to the uninspiring peddling of vast quantities of unrelated, out-dated, inert factual minutiae for rote memorization by apathetic students. Many lackluster traditional teachers who characteristically practice such vapid peddling share this

belief and mistakenly applaud recent developments on the assumption that their practices are vindicated thereby.

Given this misconstrual of intellectual activity on the part of some and the antipathy toward it on the part of others, it is extremely difficult to assess the true characteristics of the adolescent intellect. Certainly it is no compliment to junior high school students to assert that most of them are quite as capable of engaging in intellectual activity as is the average adult.

Those who come from homes in which intellectual interest exists, located in communities in which intellectual achievement is valued, and attending schools in which intellectual activity is stressed at all levels—those adolescents can be expected to conceptualize, reason, and engage in inquiry of a far different order from that which can be expected where one or more of these three factors is missing. Significantly, the only place where the vicious cycle can be broken is in the school, though perhaps this is impossible without a substantial infusion of new teachers who themselves have a strong intellectual orientation and commitment.

A Sound Base

Unfortunately, beginning teachers of such persuasion will not long remain in a school where the principal's primary concern is the athletic program and where only a few teachers read, have a scholarly interest in their subjects, and prefer serious discussion to faculty lounge gossip. Where enough kindred spirits are to be found, however, a substantial transformation of the junior high school, giving greater play to the adolescent intellect, can be effected.

Underlying any such transformation is a basic change in the "climate" of the school. Some junior high schools today are characterized by a repressive rigidity and stultifying stagnation; others by a sentimental indulgence of the frivolous and the trivial. Neither type exalts either ideas or inquiry. The desired atmosphere is one in which the examples set by teachers and the policies set by the school give clear indication that intellectual pursuits are valued above all others. In view of the long-standing entrenchment of counter-values, the mere honoring of intellectual accomplishment will probably be insufficient. Temporarily, at least, it may well be necessary not only to ignore and de-emphasize, but actually to discourage, occasions for extolling popularity and athletic performance.

Equally as important for adolescent intellectual development as a hospitable atmosphere in the junior high school is an appropriate grounding in the elementary school. A sound conceptual base must be established through long experience with concrete operations in the empirical realm. Even more vital, however, is close attention to linguistic and mathematical symbolic structures. The outlook in mathematics is hopeful, with the increasing emphasis on correct terminology, properties of the real number system, and unifying mathematical principles. In the area of reading, however, nothing short of a complete overhaul of the system that prevails today seems likely to bring about the necessary reform.

Regardless of how unsatisfactory for currently accepted purposes the insipid stories in conventional readers and the excessive reliance on a look-say ap-

proach may be, these defects are minor compared to the general overemphasis on entertainment and neglect of language structure. Children must at an early age come to view reading primarily as a source of ideas and information and secondarily as a means of recreation. At the same time, whether pupils are encouraged to recognize words at sight or decode them analytically, they must attend not merely to the meanings of words but to their functions and positions in sentences.

Intellectual Emphasis

By the time they reach the junior high school the majority of students should be ready for formal operations. They should then regularly engage in framing definitions, identifying assumptions, dealing with cause-and-effect relations, classifying individual phenomena, generalizing from recurring particulars, and determining necessary and sufficient conditions for a conclusion. In short, they should, in the terms of Robert Ennis's definition of critical thinking, become able to assess statements correctly. Concurrently, they should be gaining fundamental insights into matter, energy, and biological phenomena and acquiring a conceptual basis for explaining man's interaction with his geographical environment and with his fellow men, through economic, political and social institutions. Students should continue to advance in mathematical sophistication instead of endlessly applying elementary concepts to every conceivable practical situation.

These intellectual activities assume their rationale under a conception of general education which, in the terminology of Harry Broudy, B. O. Smith

and Joe Burnett, emphasizes the "interpretive" use of knowledge. A junior high school guided by this conception will abandon the notion of prevocational exploration and premature vocational decisions. It will consider its intellectual emphasis the most practical kind of preparation for both the vocational and the leisure-time realities of the future, and its teachers will refuse to acknowledge students' demands to know the specific practical value of their studies. It will protect students from having to attempt to devise solutions to complex social problems until they have mastered the fundamental concepts of the relevant disciplines and are aware of both the assumptions and the methods of inquiry underlying the disciplined search for truth.

Particularly bothersome is the problem of providing a coherent program in the humanities. Efforts must be made to maintain the highest possible artistic standards in selecting works for study in literature and the fine arts. The cultivation of critical tastes demands a radical departure from current desultory efforts in the arts and requires continuation throughout the senior-high-school years, which is impossible until the diverse elective program at that level is abandoned.

It is an affront to adolescents to assume that they cannot or will not respond to a program with a serious intellectual emphasis. Provided with a suitable background and placed in a setting in which intellectual activity is not deprecated, most of them are quite capable of dealing formally with abstract notions that serve to explain the world around them and invest their experiences with meaning. Dealing with

ideas diverts adolescents from their preoccupation with themselves. Even the slower learners can more readily grasp significant ideas than retain masses of inconsequential facts. By definition they cannot progress as rapidly as the average adolescent can toward the consideration of more complex concepts, and the program must account for such differences. A curriculum that is arranged on the basis of the level of intellectual comprehension required cannot, of course, be bound to conventional grade designations. Until a more coherent curriculum has been arrived at, however, teachers will have to rely on the use of a discovery approach to gauge the intellectual level at which a particular group of students is ready to function.

Charles Armstrong and the late Ethel Cornell found that most individuals pass through two cycles of mental growth, the second beginning around puberty, often after a plateau period of relatively little progress. Possibly this plateau is the result of the school's failure to confront the young adolescent with a timely challenge to his changing intellect. It seems unlikely that the physiological and emotional aspects of maturing at that stage usurp so great a proportion of some fixed reserve of psychic energy that little is left for intellectual activity. Indeed, when an individual is putting away childish things, he is anxious to think about serious matters.

The adolescent intellect deserves more respect and greater expectations.

The school said no

WHEN Tom entered junior high his parents were pleased that he still seemed to have afternoons and weekends for his many interests. Bookish people, living in an expensive suburb, they provided opportunities and equipment for their children. Tom had become skilled in camping and water sports; played baseball and football; had developed a lucrative hobby based on historical research. He had an above-average IQ, had always attended schools in a nationally respected school system.

Tom ended the first semester with Cs and Ds, and was moved to a "different" section. Those "free" afternoons and weekends, his parents learned, had not been so free for his classmates, who had been devoting hours to research, team-projects, writing. In short, homework.

"He simply doesn't do it," his counselor said. "He's inattentive, polite, unconcerned, underachieving. If he ever reads any books, he never turns in reports."

In the new section, where he remained throughout junior high, "homework" was limited to what could be accomplished within the school day, under supervision. No outside projects, no deadlines, no conflicts. By the end of 9th grade, Tom was still getting a C minus average. In a situation calling for less effort, he was making less effort than was called for.

"We live in a degree-demanding world," say the parents. "Can Tom discipline his interests enough to build a career without that symbol of achievement? Doesn't the school have an obligation to keep a bright child among his peers and teach work habits?"

The school said no—too late.

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