DOCUMENT RESUME

ED 213 509 PS 012 697

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TITLE Early Adolescent Education: Literature Synthesis and Report.
INSTITUTION Northwest Regional Educational Lab., Portland, Oreg.
SPONS AGENCY National Inst. of Education (ED), Washington, D.C.
PUB DATE Jul 81
CONTRACT 400-80-0105
NOTE 50p.; Prepared for Oregon City School District.

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Cognitive Style; *Curriculum Design; Educational Practices; *Individual Characteristics; Junior High Schools; *Junior High School Students; Literature Reviews; Middle Schools; *School Organization; *Teaching Methods; Theories
IDENTIFIERS *Early Adolescents

ABSTRACT

This synthesis of research and literature related to the education of the early adolescent involved analysis of 83 documents. These documents were analyzed to answer the following key questions: (1) What are the characteristics of the early adolescent? (2) What are the learning theories most applicable to the early adolescent and what do these suggest for educational planning? (3) What organizational and curriculum patterns are most effective in producing desired learning outcomes while accommodating the characteristics of the early adolescent? and (4) What do the primary cognitive attributes of the early adolescent suggest for the selection of appropriate teaching strategies and instructional methods? The report is organized into four sections: characteristics of early adolescents; cognitive styles of early adolescents; organizational practices and curriculum; and instructional methods. A bibliography of the documents examined is included. (Author/MP)

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EARLY ADOLESCENT EDUCATION

Literature Synthesis and Report

Prepared for

Oregon City School District

Contract No. 718-4000

by

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and

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July 1981

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The work upon which this publication is based was performed pursuant to Contract No. 400-80-0105 of the National Institute of Education and Contract No. 718-4000 with the Oregon City School District. It does not, however, necessarily reflect the views of those agencies.

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Introduction

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- What organizational and curriculum patterns are most effective in producing desired learning outcomes while accommodating the characteristics of the early adolescent?
- What do the primary cognitive attributes of the early adolescent suggest for the selection of appropriate teaching strategies and instructional methods?

The report is organized into four sections: Characteristics of Early Adolescents; Cognitive Styles of Early Adolescents; Organizational Practices and Curriculum; and Instructional Methods. A bibliography is included.

Characteristics of Early Adolescents

Early adolescence is a time of biological instability and heightened emotionality. The young adolescent is forced by biological changes to quickly come to terms with a whole new set of urges, drives and physical capabilities, some quite difficult to control. These years are also characterized

by great physical variations between persons of the same chronological age; this can add another point of stress.

According to Peter H. Marorella (1980), adolescent developmental characteristics afford a baseline from which to initiate goal setting and instructional planning for the middle grades. These characteristics can function either as a monitor for expectations of students or as a guide for facilitating naturally evolving capabilities. If the characteristics of the adolescent influence such planning, the setting of unachievable goals is more likely to be avoided.

Erikson (1968) describes developmental issues that must be resolved by the adolescent if he or she is to form an adult identity. Basic trust is an issue as the adolescent moves from trust in parents, teachers and other adults to trust in peers and, ultimately, to trust in self. Adolescence, according to Erikson, is a time of shifting groups as relationships are redefined in response to a desire for greater independence and self-reliance. The development of autonomy is a crucial issue for the young adolescent as he or she moves away from family to greater reliance on peers in preparation for greater reliance on self. Creating a school environment which fosters healthy adolescent development calls for establishment of a balance between autonomy without limits and heavy doses of conformity that stifle the budding sense of autonomy. The development of industry and initiative is important to young adolescents who need opportunities to achieve physical and intellectual mastery. If these are

accomplished, the adolescent can sense him/herself as successful, capable of "getting the job done." It is hypothesized that a correlation may exist between lack of confidence in abilities and opportunities to test new skills and a lack of interest that many young adolescents feel about school. The development of a sense of identity as opposed to a sense of role confusion is the major task of adolescence, according to Erikson. Focusing on the development of identity is possible because of the new self-awareness that grows out of changes in cognition. The development of a capacity for intimacy rather than isolation is a major task of the adolescent. The complex nature of the development of intimacy and the importance of firm foundations in pre-adult developmental stages are stressed by Erikson if the emerging young adult is to be successful in work and love.

Looking at the work of Elkind (A Sympathetic Understanding of the Child, 1974), we see that there is a growth thrust at the age of eleven, when activity levels show a marked increase. Children of this age experience difficulty in keeping still. They demonstrate an expanded appetite for new experience, knowledge of the world, and more information about people. Emotional control for the eleven year old is low, with confrontation with peers and authority often serving as a means to define self. Elkind states that above all, the eleven year old needs to be noticed, and cannot tolerate indifference.

The twelve year old is seen as outgoing, enthusiastic

and generous, and often subject to extreme emotional swings. He or she is beginning to assert that he/she is no longer a child, and defines him/herself through friendships. With respect to schooling, twelve year olds take strong stands and either claim to love or hate it. Children of this age will respond to a strong teacher, but one who lacks skill will soon lose control of the class. Disruptive classroom behavior at this stage does not necessarily mean that either the school or the teacher is disliked.

At thirteen, there appears to be a gradual turning in, and preoccupation with self and self-evaluation. This is often the least happy of these years. Adolescents at this age are very self-conscious, and may be shy or unwilling to read or perform in front of their classmates. However, at this stage, students are better organized and use their time more constructively than they did before.

Central to most articles on the subject of cognitive development and behavior in early adolescence, and one of the most applicable to curriculum design, is the work of Piaget (1950). Three aspects of his work have strong bearing on describing the characteristics of the adolescent.

The first is that many "negative" adolescent behaviors are derived from intellectual immaturity rather than from the bad motives to which they are usually attributed. Adolescent self-consciousness, boorishness and vandalism may result from the constructing of an imaginery audience that monitors adolescents' every move and thought. This imaginery audience is made

possible by the operation of expanding adolescent intelligence. Complementing the imaginary audience is another mental construct, the personal fable, which can also give rise to behavior problems. A common fable is that young adolescents feel that their thoughts and feelings are unique, when actually common to all. They often assume that their own evaluation of themselves is automatically shared by everyone. Also, the apparent hypocrisy of adolescents is often actually a failure to distinguish between the expression of an ideal and its pragmatic realization. Piaget, then, suggests that adults look at these behaviors as "behavior typical for this age group," which should be dealt with on a rational basis, rather than reacted to with a sense of moral outrage.

The second aspect of Piaget's work related to early adolescence has to do with the stage concepts of concrete and formal operations. According to Piagetian theory, the ages of 12-15 are marked by the acquisition of formal operational thought. This thinking mode is a logical extension of the skills a child has attained during earlier stages, and is acquired gradually during adolescence. Formal operational thinking involves the ability to think about one's own thinking process, and the ability to recognize possibilities in addition to the actualities of everyday experience. Neither of these thought processes is found in younger, concrete operational thinkers of the ages 7-12. This means that the adolescent can deduce conclusions from previously given premises, reason abstractly and reason inductively.

The process of formal operational thought is neither automatic nor universal. Research with large numbers of American adolescents (Elkind, 1961; Martorano, 1977; Green, Ford, Flamer, 1971) indicates that only one-third to one-half of American seventeen year olds will respond at the formal operational level on Piagetian tasks. It should be noted that the adolescent's ability to think operationally is not related to his or her knowledge or understanding of the formal logic which constitutes the basis for a Piagetian analysis of thought processes. What has been found is that the nature of the task clearly influences the application of formal operational thought. Elkind explains that "while all adolescents of average intellectual ability probably attain formal operations, they do not apply them equally to all aspects of reality." Interestingly, a study of high school biology students (Marek, 1980) found that the more formal operational students possess a greater content knowledge than the more concrete operational students.

Hill (1980) states that formal operational skills allow adolescents to establish autonomy because the formal operational skills permit the adolescent to "read" other people in more differentiated and complex ways. Formal operational skills are necessary, too, in the more mature forms of intimacy and integration with sexuality. It should be remembered here that new cognitive skills can also be employed in the service of defenses and perception distortions.

Hill also suggests that because adolescents can think effectively about what is possible rather than being tied to what is, they have a personal future unlike that of a younger person. Thus, the consequences of present achievements for future accomplishments can be better appreciated. The matching that characterizes adolescent career choices appears to require formal operational thinking.

During early adolescence, identity is based on more differentiated and more integrated self-concepts. Adolescents learn to qualify terms, make distinctions between real and apparent qualities, and acquire a new ability to put together what may seem to be inconsistent or contradictory.

Formal operations are critical to this process of identity formation. As Erikson defined it, the process requires simultaneous reflection on the observed behavior of both self and others. The process requires taking a number of perspectives into account simultaneously, a feat possible only when formal-operational skills are functioning.

Growing out of research on cognitive development is Piaget's postulation (1932), that a child's moral development follows the same basic patterns as those of cognitive skills. Moral schemata are seen as based upon the child's cognitive structures. According to Piaget, a basic shift takes place in the quality of moral judgment when, at the age of twelve, concrete operational thought gives way to formal or abstract thought processes. Here we find a shift from moral realism to moral "relativism," as demonstrated by a child who no

longer blindly follows the letter of the law, but considers the intent of the law or act, with the possibility of changes. For the preoperational child, any suggested change in the rules is regarded as transgression. For him or her, moral rules have an existence of their own. For the adolescent, the age of eleven or twelve marks an orientation towards moral autonomy and development of a sense of ethical and moral responsibility based on abstract thought processes which have now become possible.

Kohlberg (1969) has created a more differentiated and elaborate theory of six stages of moral development based on Piaget's work with the stage model. Each stage of Kohlberg's theory represents a distinct moral philosophy, which has implications for social and political organization. He has proposed that these six stages are universal and that the thinking of any one stage is consistently applied to a variety of situations. According to Kohlberg, development moves step by step from lower to higher, so that no stage can be skipped, but the age that a person reaches a certain stage differs from culture to culture. Kohlberg suggests that there is a point-to-point relationship between his stages of moral development and Piaget's stages of cognitive development. Kohlberg's stages of moral development have also been related to Erikson's stages of ego-identity (Podd, 1972).

The stages of Kohlberg's theory (cited by Muuss, 1976) are: Stage One--obedience and punishment orientation, where the main motive given for obeying a rule is to avoid

punishment and to achieve gratification; Stage Two--instrumental relativist orientation, where the child can distinguish between the physical and social-moral world, but confuses individual needs and what is thought to be right or wrong; Stage Three--interpersonal concordance orientation, which Kohlberg refers to as the first stage of conventional approval seeking (i.e., "good boy, good girl"); Stage Four--orientation toward authority, law and duty, characterized by a strong belief in "law and order" as a primary value; Stage Five--social contract orientation, a post-conventional level of moral development defined in terms of general principles such as individual rights, human dignity, equality, contractual agreement, and mutual obligations. This stage is also known as the principled stage. Stage Six--universal ethical principles orientation, the highest principled stage of moral development, is viewed as a decision of conscience which is based on self-chosen ethical principles characterized by consistency, logical comprehensiveness and universality.

Much of Kohlberg's research deals with subjects in the age range from ten to sixteen, and a follow-up in their twenties (Muuss, 1976). Findings indicate that the moral thinking of stages three to six can be found in adolescents as well as adults, with Stages Three and Four being the conventional group and law-oriented levels of moral development in which most adolescents and even the majority of adults function. (Only ten percent of adults are thought to reach level six.) However, Kohlberg (1964) has argued

that in late adolescence the continued endorsement of conventional morality reflects a deficiency in moral development.

The issue of teaching moral values and behavior in public schools is a controversial one and little time and space is provided for "character education" in today's curriculum. According to Muuss, there is a fear that arbitrary values may be imposed upon unsuspecting students. Very often, moral education is disguised in "value neutral" approaches such as mental health or personality development. In addition, there very often appears to be a hidden moral curriculum (i.e., stay in your seat, make no noise) which may be at variance with what a teacher would define as his or her system of values. Earlier moral education was defined by Kohlberg as "a bag of virtues," and included such attributes as honesty, cleanliness, bravery and reverence. The problem with this approach is that there are no such psychological traits identified; the virtues are evaluative labels not consistently reflected in behavior. In studies conducted by Hartshore and May (1928-30), participation in character education programs such as provided by schools of that time, Sunday schools and Boy Scouts, did not contribute to improved moral behavior as measured by a test involving honesty, self-control and service. Kohlberg is convinced that moral thinking can be enhanced through educational procedures that aid and encourage the child in his natural developmental tendencies to take the next step in a direction to the greater moral maturity towards which the child is already predisposed.

Progress from one stage to the next is achieved, according to Kohlberg, not simply as an advance, but as a reorganization and a restructuring of earlier thinking modes. Keasy (1971) found that stages of moral development of early adolescents were positively related to the degree to which an individual was rated by himself, his peers and his teacher as high in social participation. Adolescents with a great deal of peer group involvement, role taking opportunities and social interaction advanced more rapidly than students who were socially withdrawn or who lacked opportunities for social participation.

Kohlberg's (1970) approach to teaching moral values involves an essential base of creating in the student a feeling of dissatisfaction about his concept of good and bad, and right and wrong. This is brought about by exposing the adolescent to choice situations involving a moral conflict or dilemma for which there is no easy, readily available solution. The next step is to engage the student in a discussion with peers where different interpretations, disagreements and conflicts are freely expressed, thus inviting role-taking. Ideally, the arguments should be one stage ahead of the subject's moral development. By creating a cognitive dissonance and listening to the arguments of others, the adolescent will see aspects of the moral dilemma not accessible before.

Research studies (Blatt, 1959; Kohlberg & Blatt, 1972) have shown that fifty percent of preadolescent subjects utilizing this technique moved up one stage, and an additional

ten percent moved up two stages. In a control group not exposed to moral thinking teachings, only ten percent moved up one stage during the same period of time.

A critical look at Kohlberg's Moral Stage Theory is given in depth by John C. Gibbs (1979). He cites in this essay numerous criticisms of the theory, suggesting that it is elitist, ethonocentric and excessively abstract. His primary conclusion is that Kohlberg's revisions over a twenty-year span, although important, have not gone far enough.

A challenge to traditional assumptions about the development of intelligence in the adolescent are provided by the findings of Epstein (1974) on brain growth periodization. Toepfler (1980), who collaborated with Epstein on several articles, feels that the area of brain growth periodization will prove possibly the most important area of information leading to critical improvements in middle grades education.

Epstein suggests that brain growth reaches a plateau period between the ages of 12-14 years. During this period, it becomes virtually impossible for the ninety-five percent of this age group who have not initiated formal operational thinking to develop new and higher level cognitive thinking skills.

In analyzing Eptein's theory, however, Toepfler does not recommend that formal operations be eliminated and postponed until the high school years. Rather, what he suggests is that a means be established to identify when the adolescent both enters and leaves the periods of growth and periodization.

By utilizing this information, the middle grade program will be able to identify student readiness to be challenged at varying cognitive levels. This approach would necessitate highly personalized instruction involving small groups of learners who are within common plateau parameters.

In traditional educational settings, a continued demand for an adolescent's brain to handle increasingly complex input when they are not in a position to comprehend may result in the rejection of these inputs and the possible development of negative neural networks that dissipate the energy of the inputs. Thus, as a result, it is possible that even when the subsequent growth of the brain (between fourteen and sixteen) has led to a readiness to support the development of more complex cognitive skills, a large number of individuals will be literally "turned off," and can no longer develop novel cognitive skills.

Prukey's supporting data (1970) identifies that during the middle school years poor self-concept correlates with a lack of cognitive achievement. Practice has demonstrated that experiences that reverse poor self-concept and improve this perception bring about a parallel improvement in cognitive achievement.

Toepfler (1980) suggests that in designing a middle grades program, there must be (1) a discontinuance of mass introduction of novel cognitive skills to unready students, (2) introduction of new cognitive information presented at the existing skill level of the students, and (3) curriculum

aimed at the maturing of existing cognitive skills of the middle grade students.

Another generally accepted theory is that the brain is divided into two hemispheres. According to this theory, the left hemisphere acts as the seat of analysis and sequential thinking, and specialized verbal tasks; the right hemisphere is specialized for visual-spatial abilities--that is, complex perceptual tasks not involving verbalization (Williams, 1977; Hellige, 1980). However, theorists suggest that it is possible that the hemispheres are not specialized for verbal vs. non-verbal processing per se, but rather for serial vs. parallel prccessing, or analytic vs. holistic or Gestalt-like processing.

The verbal-analytic style is extremely efficient for dealing with the object world. Our modern technology and standard of living depend heavily on highly developed, linear analytic methods. The holistic mode of information processing allows us to perceive patterns even when some of the pieces are missing; this is not possible when using a logical, sequential mode.

According to Galin (1976), the analytic and holistic modes are complementary, each providing a dimension that the other lacks. Creative persons such as artists, scientists and mathematicians report that their work is based on a smooth integration of both modes.

Though popular statements about cerebral hemisphere differences often imply that the specializations are absolute,

there is growing evidence that many specializations are partial, in the sense that both hemispheres can perform a given task, but with different levels of efficiency (Hellige, 1980).

Though much has been written about right brain/left brain differentiation, there have not been enough concrete, controlled experiments to reaoh the absolutes that would justify large-scale curriculum changes. Boten (1975) has observed, however, that we have educated our students in a lopsided way, overemphasizing analytic left hemisphere skills at the expense of holistic right hemisphere skills. This might imply that some additional right brain curriculum be added to achieve a more balanced approach.

The Mead School in Connecticut has successfully incorporated a right brain approach using art to learn mathematics, science and other traditionally left brain subjects (Williams, 1977). Much of the Mead School's present curriculum reflects the research of Houston-Masters, with the amount of arts and art-related work varying considerably from student to student. The school reports that SAT norms were generally two levels above grade level in every subject.

Before jumping on the cerebral laterality "bandwagon," Hellige (1980) suggests that while educational systems might give more emphasis than in the past to such areas as art, intuition and creative thinking, their inclusion in a school curriculum can neither be justified nor denied in light of existing research.

Cognitive Styles of Early Adolescents

If educators accept Elkind's (1981) postulation that the most efficient learning takes place when there is a definite match between the stage of the student's thought structure and the level of reasoning demanded by the curriculum material, then consideration must be given to the variation in cognitive styles of students. The term "style" refers to the pattern of thinking a person consistently uses in a variety of different intellectual activities.

According to Dunn, Price, Dunn & Saunders (1979), research studies have shown that students can identify their own learning styles, and once they are cognizant of how they learn, they should be better able to make wise decisions concerning the instructional choices that they are permitted. A Learning Style Inventory (LSI) was developed to identify how students prefer to learn in conjunction with several alternative approaches to individualized instruction, and is composed of questions in twenty-four areas. Dunn et al. hypothesize that the more confidence elicited by success with choices, the greater the student's self-esteem. This greater self-esteem seems to correlate with the traits of persistence, ability to remain in one place, and ability to learn in varied ways. Most educators value persistence, for this characteristic suggests follow-through and completion of assignments. When these characteristics are displayed, they tend to elicit praise, which increases the level of self-esteem. The fidgety, inattentive learner very often receives

negative attention, is criticized and corrected for mobility; this may contribute to a student's low self-image. Dunn et al. suggest that it is becoming increasingly important for educators to recognize individuals whose needs to learn are different from the general concept of the ready learner.

Another measure of cognitive style is field dependence-independence. A field dependent mode of perception is said to be dominated by the overall organization of the visual field, whereas field independent perception involves the experiencing of parts of a field as separate from the organized background. Extensive research in the area revealed field independent students function better in an open or unstructured atmosphere than field dependent students. Field dependent students assigned to an open educational classroom may display negative traits because they cannot optimize learning in such an environment. This seems to be particularly pronounced in academic areas such as math and English (Shein, 1978).

Witkin's studies (1972) identified the field dependent person as "global", and the field independent as "analytical." Analytical persons tend to focus in on specific elements of a problem, rather than on the whole issue. They are predominately impersonal and have little concern with social amenities. In contrast, the "globals" characteristically tend to take into account the total dimensions of a problem rather than isolated segments of it. They are socially oriented, inclined to seek out interaction with others and to take into account the point of view of others in making decisions. Neither

style is better or worse according to Marorella (1980), nor has either one been related to superior intellectual ability. They are merely decidedly different personal styles which tend to remain relatively permanent.

Desjarlais (1974) found that there are substantial indications that cognitive style is independent of intelligence and that it seemingly has little to do with the qualitative transformations in thought that accompany adolescence. However, certain kinds of contents are known to be handled best through particular cognitive modes. As an example, Desjarlais states that scientific and mathematical concepts are most effectively understood by an adolescent who is reflective and analytical in his or her studies, while an impulsive and globally reactive adolescent seems more capable and efficient in treating humanities, artistic and literary materials. Identification of the individual adolescent's style of cognition should be considered as valuable data for modification of curriculum.

Learning style and ability grouping were linked in a study of seventh graders (Marcus, 1979). The data revealed that seventy-one percent of a "below-average" group needed mobility to a very high degree. Grouping homogeneously might provide a way for "below average students to exercise their preference for mobility and informality." It is likely that responsiveness to these mobility and informality needs could enhance avoidance of many potential discipline problems. Hence, a more positive attitude towards learning could evolve.

In schools with heterogeneous grouping, it would be of benefit to make teachers aware that students who appear to be at the bottom, academically, could conceivably benefit from an assessment of their learning styles.

In another study, classroom process data from twenty-seven junior high school English classes in a large metropolitan school district were analyzed to assess the effects of class heterogeneity (Evertson, 1981). Results suggested that heterogeneity of students' entering achievement levels in a given class limits the teachers' successful adaptation of instruction to individual student academic and affective needs. Higher heterogeneity was also associated with a lesser degree of student task engagement and cooperation. The effects of extreme heterogeneity were greatest in classes taught by relatively poor managers. The results of this study did not amount to a warning to discontinue heterogeneous ability grouping in English classes, but rather suggest caution in considering the social psychologists' case against homogeneous ability grouping and tracking. An extremely heterogeneous class also becomes "special" and extraordinary demands may be placed on the teacher's time, attention and classroom management skills. The study indicated that skilled classroom managers can make many of the necessary adjustments, but less skilled classroom managers cannot. Inservice programs with a focus on classroom management were advised.

In another study by Evertson (1980), seatwork format was

correlated to attention spans of low-ability and average-ability classes. It was found that it was generally more difficult to sustain extended seatwork activities in the low-ability classes. Inattention was mitigated in one such class by incorporating some of the seatwork into the lecture in very brief segments, thus placing the responsibility for maintaining lesson continuity with the students for only a very short period of time. It was found that it was much easier to get the students to work on their own in this way, and that there was more opportunity for modifications based upon more immediate feedback than with extended seatwork activities.

Organizational Practices and Curriculum

A number of articles reviewed concluded that a good junior high school program should not be content-oriented alone, but should also offer a wide range of intellectual, social and physical experiences.

Hoffman (1979) suggests that the organization of a junior high school or middle school should not follow the "self-destructive" model characteristics of the high school--the fragmented rosters; large, unmanageable lunch-room situations; inordinate disciplining; tracking; focus on subject rather than student; bells and changes of classes; "floating" teachers; detention rooms, and so on. He recommends as a model the Rhodes Middle School in Philadelphia. There, each teacher is a generalist who teaches all of the

main subject areas in his or her classroom. Modeling the school after the elementary school, all fifth and sixth graders are together, as are seventh and eighth graders. This makes possible a standard class size for all teachers, which simplifies scheduling, and if greater heterogeneity is found, allows much greater ease in moving towards individualization of instruction.

Scannella (1977) feels that it is essential for the early adolescent to receive individualized instruction which involves working within flexible time patterns and interacting on many interpersonal levels. Team teaching and an abundance of materials geared to a variety of ability levels can allow for the flexibility and individualization desired. Students at this level need to have opportunities for exploratory study and enrichment activities.

Stewart (1975) is concerned that a subject-by-subject teaching approach with its overriding emphasis on content poses a serious threat--that of obscuring the phenomenon of adolescence. This approach usually features a school week that is subdivided into five "look-alike" days with each day further broken down into time slots of 40-50 minutes each. Subject matter is then arbitrarily fitted into these time slots. As students are expected to advance through standardized materials in lock-step fashion, this approach has little in it to accommodate the adolescent, according to Stewart.

A study by McMullin (1978) indicates that the timetables

of the junior high school closely resemble those of the schools of the past. Subjects are studied in periods, usually between 40-60 minutes in length. These spread out through the week, so that in any one day the students are expected, upon the sound of a bell, to punctually change their mental habits and responses six to eight times. This implies passive absorption and denies the importance of motivation and interest.

As an option to the traditional timetable, it may be useful to take a look at how the Poway City Unified School District has designed their multi-age program (1979):

> This option provides for continuous progress over a three-year period. Individualized instruction is a major emphasis. A typical schedule might be:
>
> | M.A. 6th | | M.A. 7th or 8th | |
> |---|---|---|---|
> | Multi-age | 3 hours | Multi-age | 1 hour |
> | Physical Ed | 1 hour | Science/M.A. Elec. | 1 hour |
> | Lunch | ½ hour | Physical Ed | 1 hour |
> | Multi-age | 1 hour | Lunch | ½ hour |
> | Chorus | 1 hour | Multi-age | 1 hour |
> | | | Math | 1 hour |
>
> Seventh and Eighth Grade: Seventh and eighth graders retain a block of Basic Ed time and participate in Physical Ed, Math, Science and exploratory electives. A sample daily program might be:
>
> | | |
> |---|---|
> | Math | 1 hour |
> | Elective | 1 hour |
> | Science/Basic Ed | 1 hour |
> | Lunch | ½ hour |
> | Basic Ed | 2 hours |
> | P.E. | 1 hour |
>
> The major characteristic of the Basic Ed Program is the use of large blocks of time to provide for continuity and make extensive teacher contact with individual students.

Though considering the goals of the high school rather than the junior high school per se, Martin (1980), states that the length of our current school day is excessive, and that there is additional pressure to make it longer, largely reinforced by the philosophy of comprehensiveness in an innocent way. An inadvertent byproduct of the lengthy schedule is that it isolates young people from significant contact with adults other than teachers and family. Historically, after the rites of passage, youth of all ages were expected to perform as adults in their work, religion and family. This provided a transfer of powerful informal education.

Feeney (1980) states that although rigidly constructed time blocks of usually less than an hour are not responsive to the adolescents' individually different needs for physical activity, it does at least guarantee an opportunity for movement every hour.

According to Feeney, a developmentally based curriculum focused upon the lives and daily needs of the young adolescent would support the movement from concrete operations to formal thought, inquiry and problem solving. Young adolescents need more experiential learning with greater emphasis on the relevance of the curriculum to their own lives and interests. In particular, young adolescents need more direct experience outside of the school setting to test skills and learn more about themselves.

Feeney states that many schools today are using learning centers for individualized study, hence allowing for individual

differences in cognitive ability. Classes are divided into smaller working groups to give students an opportunity for more peer interaction.

Because most young adolescents have had little experience with flexible scheduling and a range of options in activities, it is suggested that they not be turned loose with more freedom of choice than they can handle, but rather that they learn to choose in a carefully structured setting with necessary limits and support for their development.

Coppock (1977) recommends a concept-based curriculum as an alternative to traditional secondary models. Her emphasis is on presenting an interdisciplinary cluster of related subjects in an attempt to integrate and synthesize knowledge. The middle years are a time to encourage exploratory programs, and devote core-type blocks of time to subject oriented areas like English. Coppock suggests that if a course of open classrooms, interdisciplinary courses and emphasis on individualized learning is pursued, the interfacing of a well-endowed media center with an expert media specialist is of utmost importance. The proposed standards and guidelines for middle/junior high schools in New Hampshire (New Hampshire State Department of Education, 1976) support this approach.

The Detroit middle schools are meeting the challenge to develop an optimum learning curriculum with flexible approaches to instruction which utilize team teaching, flexible scheduling, individualized instruction, independent study and tutorial programs. The Detroit schools also teach required special

courses such as art and home economics in departmental form, frequently with an interdisciplinary or multidisciplinary approach. Their guidance program has been set up as a distinct entity to fill the special needs of the adolescent. Limited attention is given to interschool sports and social activities, thus holding down the social pressures for the students.

Kunsmiller Junior High School reorganized a traditionally structured school in 1975 with a plan called "A Grade Level House Plan" (Seick, 1976). Their innovative plan was surveyed and evaluated in the spring of 1976, and the results were judged to be positive, indicating that the objectives set were met, with a few minor exceptions. All of the curriculum innovations were judged so successful that they were continued into the following school year. Curriculum changes included the incorporation of team teaching in two disciplines such as science and mathematics, social studies and English. Low-achieving seventh grade students were selected for placement in a self-contained classroom program taught by one teacher. This was to meet the students' security and reinforcement needs.

Kunsmiller's science curriculum was revised because both teachers and students were unhappy with a relatively unproductive experience. Eight areas of study were then developed as mini-courses from which a student could select four--two per semester. Placing some choice in the hands of the students renewed vitality and interest.

Another change involved going from "forced" electives in the eighth grade for the sake of schedule flexibility to a real choice of electives, with a student being able to change at the semester if the experience was not rewarding. This scheduling revision has also proven successful.

Kunsmiller also adopted an exploratory program in careers designed for students who would not be going on to college, and which aims at exposure to a career and vocational-centered curriculum.

Instructional Methods

There is little doubt that effective teachers are the key to success in the middle school. The personal qualities of a teacher are essential, and according to Feeney (1980), those who work with the young adolescent would do well to have some of the same characteristics possessed by good teachers of young children. Knowledge of the variability of developmental characteristics in the young adolescent could help middle grade teachers respond as flexibly to their students' behavior and idiosyncracies as do most early childhood educators.

Teachers who are secure in their adult identity, able to recall their own teenage vulnerability, and who are comfortable with their sexuality are capable of supporting children's good feelings about themselves and can understand and respect their students' sensitivity to criticism, desire for group acceptance and feelings of being acutely conspicuous.

Feeney suggests that young adolescents respond best to adults who exercise natural authority rather than those who exhibit arbitrary authority or who abdicate authority. Adolescents need adults who are trustworthy, who are fair and consistent, who set reasonable limits, and who realize that adolescents need to have someone to push against while testing those limits.

Elkind (1981) defines the good teacher as one who has learned that the intellective unconscious cannot be reached by reflection after the fact. The good teacher knows that to understand the structure of a skill, its components and their organization, and the process of acquiring it, one has to observe the skill being acquired. Thus, the good teacher watches the learner and relates his or her demonstrations to those observations. As an example, to discover the difficulties children are encountering in learning math, it is necessary to observe the errors that are made as they go along. Insightful observation requires not only watching the learner carefully, but knowledge of the task as well.

Gatewood (1975) reports on a list of twenty competencies required for effective middle school teaching developed in the state of Florida. He feels that these competencies must be met if the middle school is to fulfill its function. Self- and other awareness, flexibility and cooperativeness are competencies stressed.

Recent studies (Good, Biddle, Brophy, 1975; and Rakow, Airasian, Maddus, 1978) provide strong support for the idea

that teachers do make a difference in student learning. Certain teachers elicit much more student learning than others, and their success is tied to consistent differences in teaching behavior. While there is no support for the existence of a pool of generic teaching skills, data integrated at a higher level of generality show several patterns are consistently related to learning gains.

One of these patterns involves the influence of teacher expectations and role definitions. Teachers who believe that instructing students in the curriculum is basic to their role, who fully expect to conduct such instruction, and who fully allocate more of their time to do so in the classroom, are more successful than teachers who do not.

Another basic cluster of effective teaching behaviors includes such variables as classroom management skills, student engagement/time-on-task, and student opportunity to learn materials. Effective teachers know how to organize and maintain a classroom learning environment that maximizes time engaged in productive activities (time-on-task), and minimizes the time lost during transitions, periods of confusion, or disruptions that require disciplinary action.

Brophy (1979) finds that another cluster of effective teaching behaviors indicates support for the various elements of direct instruction. Direct instruction is a relatively new concept, developed independently by a number of researchers over the past years. Direct instruction refers to those activities directly related to student progress in specific

subject areas and to the settings that promote such activities (Rosenshine, 1979). Direct instruction involves academically focused, teacher-directed classrooms in which sequenced and structured materials are used. Goals are made clear to students, time allocated for instruction is sufficient and continuous, coverage of content is extensive, student performance is monitored, questions are at a low cognitive level so that students may produce many correct responses, and feedback to the students is immediate and academically oriented. In direct instruction, the teacher controls instructional goals, chooses materials appropriate to the student's ability and paces the instruction. Interaction is structured, but not authoritarian. The goal is to move the students through a sequenced set of materials or tasks until mastery is achieved.

Other studies (Gage, 1978; Inman, 1977; Stallings and Hentzell, 1978) consistently reveal that students taught with a structured curriculum do better than those taught with individualized or discovery learning approaches, and those who receive more instruction directly from the teacher do better than those expected to learn on their own or from one another. Teacher lectures and demonstrations are important, as are recitation, drill and practice. It appears from these studies that most forms of open education or individualized instruction involve unrealistic expectations about the degree to which students in the early grades can manage their activities and learn independently. It should be noted that most of these studies focus on grades 1-6, and findings may or may not relate to students in the middle grades.

Evertson, Anderson and Brophy (1978) obtained strikingly different results for seventh and eighth grade English classes. Significant relationships between classroom process variables and student learning in these English classes were infrequent, and there was little support for the direct instruction model. The major factor underlying this finding appeared to be that basic skill mastery is not a primary goal of seventh and eighth grade English classes. Instructional objectives pursued in these classes are more numerous and variable than than in math classes, and many, such as those for poetry composition, oral dramatization, or literature appreciation are not easily or even appropriately pursued with the direct instruction method.

To be effective within any given grade level, teachers working with low ability students need to move at a slower pace and provide more repetition and individualized monitoring. They must make sure that overlearning is attained before moving on to objectives that assume prior mastery of present objectives. They must be willing to supply greater warmth, encouragement and personalized teaching, but with less challenge and fewer demands or criticisms (Brophy and Evertson, 1976).

Some studies have found that combining time-on-task and direct instruction with group mastery learning can be quite powerful (Burns, 1979; Katims, 1979; Block, 1971).

In simplest terms, mastery learning involves the identification of topics within a curriculum area and the development of objectives that test the learners' mastery of each

of these topics. The group-based approach to mastery learning is an approach in which the teacher teaches a class, then uses feedback as the basis for individualizing the corrective procedures for the students.

Klein (1979) suggests that to implement mastery learning, a model should be developed in four steps: (1) setting standards that specify the qualitative characteristics of the program; (2) selecting the patterns of instruction; (3) selecting the form of instruction; and (4) establishing the instructional programming procedures.

Does mastery learning work? According to Burns (1979), research evidence shows that mastery learning is much more effective than conventional methods. What is not known is whether it works equally well for all kinds of learning and for all kinds of students. Equally important, though not well studied, are questions as to what are mastery learning's personal and societal implications. Block (1979) states that one striking feature is the degree to which it encourages cooperative individualism in student learning as opposed to selfish competition.

Mastery learning has been used in the Chicago Public School system in reading for the past six years. Katims (1979) states that to be actively engaged in mastery learning instruction, teachers and students must experience success. He believes that the effects of success can be so powerful that they eliminate the effects of years of failure. Some evidence of this was apparent in the Chicago summer school of 1978 which he describes.

Though research from mastery learning indicates that approximately ninety-five percent of our students can learn everything the schools have to teach, and that they can learn it at a mastery level with little additional expenditure of instructional effort (Block, 1971), it still is not as widely used as it could be. Horton (1979) states that for mastery to succeed: (1) carefully and specifically stated educational goals have to be outlined and agreed upon; (2) more and better diagnostic and assessment tools should be readily available to teachers trained in their use and interpretation; (3) corrective or remedial instruction treatment must be available at each step in the form of resources and well-defined alternate instructional modes. If this component fails, the entire process fails. Although research suggests that the ninety-five percent mastery rate can be achieved with as little as a ten to twenty percent increase in instructional effort, most teachers perceive themselves to be working at full capacity now. Unless a teacher is completely dedicated to the concept of mastery learning, the enormity of the task is likely to hinder widespread adoption of mastery learning into the classrooms. Block suggests that there must be increased emphasis on early childhood education in relation to mastery learning and that an awareness should be developed of the difficulty of defining curriculum for mastery. He points out that the traditional uses of time and content must be reversed for mastery learning to succeed. In most schools, time is a fixed variable, while the amount of content mastered is a

flexible variable. Mastery learning requires flexible time slots, but assures a fixed mastery of content--that is, most of the students would achieve mastery, although at varying rates. While this is appealing, no practical means for implementing this concept in the real world of day-to-day school planning has been invented. Also, mastery learning may assume skills that teachers do not usually possess in the amount needed to assure success. Educators who are humanistically oriented generally look askance at any model for teaching grounded in behaviorism. For mastery learning to succeed, teachres will have to be convinced that it can contribute to divergent and creative learning styles. If it is perceived to be at variance with most teachers' experiences of a good learning environment, it cannot succeed.

Evertson and Anderson (1978) explored the specifics involved in organizing and managing the classroom, and the interactions between management and instruction. Results from the study strongly support the major generalizations that: (a) classroom organization and management skills are intimately related to instruction skills--that is, good instructors tend to be good managers; and (b) successful classroom managers spend a great deal of time early in the year conducting semi-formal lessons to familiarize students with rules and procedures.

Brophy and Putnam (1979) and Evertson and Anderson (1978) have investigated what constitutes effective classroom management and how it interacts with effective instruction.. Brophy

and Putnam note strong support for most of the variables stressed by Kounin (1970). These variables are "with-itness," overlapping, signal continuity and momentum during lessons, and variety and challenge during seatwork. Recent studies do not support Kounin's variables of group alerting and accountability, which call for teachers to be random and unpredictable in their questioning, call on non-volunteers frequently, and require students to comment on one another's responses. Apparently, teachers who do all the other things that Kounin stresses, and therefore are successful in maximizing student attention and engagement, should not need to use group alerting and accountability very often.

The next studies described yielded information related to specific subject areas. They are categorized by area.

Science/Mathematics. The process approach to teaching is often viewed as incompatible with the content or product approach to science. While processes represent a cognitively active problem-solving environment, products are often presented to be learned in a passive reception mode. This need not be the case, since our scientific knowledge is developed through the use of process skills (Tobin and Capie, 1980). Process teaching is still relatively uncommon, and even when implemented, there is still a question about the effectiveness of instruction. Tobin and Capies' study of 400 students in grades six to eight revealed that the majority were unable to use integrated science processes related to planning and conducting an investigation. It is possible that middle

school students are unable to use the thought processes required in integrated process skills. Thirty percent of the variation in process skill achievement was attributable to differences in the formal reasoning ability of the learners. Students with higher levels of formal reasoning ability achieved at a higher level. The implications can be construed to mean that integrated science processes should not be taught in middle schools or that integrated science processes should constitute a fundamental component of middle school curriculum as teaching the integrated science processes will promote the development of formal reasoning ability. It is suggested by Tobin that several logically related skills be introduced at the same time in a problem solving context in the science program. The main advantage of this approach is that lesson sequences can be planned to provide continuity of content as well as opportunities for process skill development.

Supporting this approach, Yoetis and Hosticka (1980) state that middle level education is a logical place to begin instruction of critical thinking and formal operational thought, particularly through the development of problem solving skills in science and mathematics. They propose a three-phase model for teaching problem solving to the middle school student--cue attendance, verbalizing or thinking aloud, and developing a diagram of the steps of the solution.

English/Language Arts. Horst and Johnson (1981) feel that the most obvious observation in teaching English/language

arts is that young adolescents cannot be asked to perform at the formal operations level before they are biologically and physiologically ready. They propose that formal grammar instruction be postponed until the student has exhibited the ability to reason abstractly. Abstract activities such as archetypal literary criticism, analysis of complex literary conventions, and writing papers that require complex analysis of abstract topics are seen as being inappropriate until students have achieved the ability to reason abstractly.

The findings of Wisand (1978) are that in most reading programs there is still a tendency to make skill-oriented curriculum decisions. The movement from achievement tests to criterion-referenced tests has not caused notable changes in the teaching process, as the criterion-referenced tests are still skills-oriented. Wisand feels that it is imperative that educators be retrained in processes which support the change to child-oriented curriculum decision making. Teachers need to be aware of the variety of developmental models which could enable them to determine the uniqueness of any child's stage of development. In addition, Wisand feels that much more emphasis should be placed upon the validity of the teacher's observation as a legitimate curriculum decision making base.

Drawing upon the research of Piaget, Ritter (1981) states that the degree to which the adolescent has mastered formal operational thought will influence his or her ability to succeed in and learn from a speech class. Viewing the early

adolescent as a predominately concrete thinker, Ritter suggests that speech curriculum be tied to "doing" communication, i.e., video, audiotape or writing with direct observation of communicative behavior. In support of this, Erikson's concept of adolescent group identification clarifies the position of some students in speech classes, where tensions between peer group pressure and personal values may be brought to the surface.

Social Sciences. Martorella (1980) suggests that a social sciences curriculum should derive principally from the needs and interests of students and society and should be holistic in nature. Curricular innovation is most effective through incrementalism, with a sensitivity to established institutional constraints. According to Martorella, the middle grades are a time for exploring the here and now, a time for making the community and school a social laboratory in which the student can expand, particularly in the area of social sciences.

Industrial Arts. Ritz (1977) presents the possibility of combining home economics, art and industrial arts as an interdisciplinary approach labeled "unified arts." The result of this would be that the middle grade learners would be treated more holistically and their developing concepts would not be segregated into individual subject areas. A diagram of this approach is presented.

UNIFIED ARTS SCOPE AND SEQUENCE
GRADES FIVE THROUGH EIGHT

GRADE 5	GRADE 7
weeks	weeks
1 - Unifying Experience and Orientation (Wall Hanging Project)	1 - Unifying Experience and Orientation (School Pennant Project)
4 x 3 - Introduction to Art Introduction to Home Economics Introduction to Industrial Arts	4 x 3 - Art Independent Unit: Forming Home Economics Independent Unit: Production Sewing Industrial Arts Independent Unit: Audio and Audio-Visual Communications
4 - Unifying Experience: Materials and Processes	4 - Unifying Experience: Consumerism
5 x 3 - Art Independent Unit: Constructing Home Economics Independent Unit: Housing Industrial Arts Independent Unit: Manufacturing	5 x 3 - Art Independent Unit: Printing Home Economics Independent Unit: Foods Industrial Arts Independent Unit: Construction
4 - Unifying Experience: Puppet Show	4 - Unifying Experience: Problem Solving
GRADE 6	**GRADE 8**
weeks	
1 - Unifying Experience and Orientation (Mobile Unit)	1 - Unifying Experience and Orientation (Ecology Box Project)
4 x 3 - Art Independent Unit: Drawing Home Economics Independent Unit: Human Development and the Family Industrial Arts Independent Unit: Transportation	4 x 3 - Art Independent Unit: Painting Home Economics Independent Unit: Family Economics Industrial Arts Independent Unit: Material Processing
4 - Unifying Experience: Design	4 - Unifying Experience: Careers
5 x 3 - Art Independent Unit: Weaving and Stitchery Home Economics Independent Unit: Basic Sewing Industrial Arts Independent Unit: Visual Communications	5 x 3 - Art Independent Unit: Aesthetic Appreciation and Creative Activities Home Economics Independent Unit: Home Management Industrial Arts Independent Unit: The Enterprise System
4 - Unifying Experience: Crafts Fair	4 - Unifying Experience: Model Community

FIGURE 1

BIBLIOGRAPHY

Arth, Alfred A., John H. Lounsbury and Carol Baribeau. "The Psychological Side of Curriculum Change: Teacher Concerns When Moving Towards Middle Schooling." HIGH SCHOOL JOURNAL, v61n6, March 1978, pp. 290-295.

Bach, Deborah A. "From Alpha to Beta." TEACHER, v98n7, March 1981, pp. 66, 69-70.

Barenboim, Carl. "Developmental Changes in the Interpersonal Cognitive System From Middle Childhood to Adolescence." CHILD DEVELOPMENT, v48n4, December 1977, pp. 1467-1474.

Berzonsky, Michael D. "Formal Reasoning in Adolescence: An Alternate View." ADOLESCENCE, v13n50, Summer 1978, pp. 279-290.

Billings, Ronald L. "Musts for A Middle School." CLEARING HOUSE, v49n8, April 1976, pp. 377-379.

Block, James H. "Mastery Learning: The Current State of the Craft." EDUCATIONAL LEADERSHIP, v37n2, November 1979, pp. 114-117.

Blyth, Dale A., Roberta G. Simmons and Diane Bush. "The Transition Into Early Adolescence: A Longitudinal Comparison of Youth in Two Educational Contexts." SOCIOLOGY OF EDUCATION, v51n3, July 1978, pp. 149-161.

Brophy, Jere E. "Teacher Behavior and Student Learning." EDUCATIONAL LEADERSHIP, v37n1, October 1979, pp. 33-38.

Broughton, John M. "The Divided Self in Adolescence." HUMAN DEVELOPMENT, v24n1, 1981, pp. 13-32.

Cardellichio, Thomas C. "The School in the Middle Is Not an Accordian." ENGLISH JOURNAL, v66n4, April 1977, pp. 38-41.

Chilman, Catherine S. ADOLESCENT SEXUALITY IN A CHANGING AMERICAN SOCIETY. School of Social Welfare, Wisconsin University, 1978. (Available from Superintendent of Documents, SN017-046-00050-1.)

Clements, Barbara S. THE RELATIONSHIP OF TEACHER PERCEPTIONS TO CLASSROOM PROCESSES AND STUDENT OUTCOMES. R&D Report No. 6109. Research and Development Center for Teacher Education, Texas University, Austin, Texas, February 1980.

Coppock, Nan and Norman Hale. "Middle Schools." ACSA SCHOOL MANAGEMENT DIGEST, Series 1, No. 4, ERIC/CEM Research Analysis Series, No. 31. Association of California School Administrators, 1977.

Cooper, Pamela. "Developing Nonverbal Communication Competencies in Children." Paper presented at the Annual Meeting of the American Educational Research Association, Boston, Massachusetts, April 1980.

Damon, William. "Social Development From Infancy to Adolescence." NEW YORK UNIVERSITY EDUCATION QUARTERLY, v10n4, Summer 1979, pp. 2-9.

DeBlassie, Richard R. "Counseling With Culturally Disadvantaged Adolescents." ADOLESCENCE, v13n50, Summer 1978, pp. 221-229.

Desjarlais, Lionel and others. NEEDS AND CHARACTERISTICS OF STUDENTS IN THE INTERMEDIATE YEARS, AGES 12-16. A COMPREHENSIVE REVIEW OF THE LITERATURE 1930-1974 WITH RECOMMENDATIONS FOR EDUCATIONAL PRACTICE. Ottawa University, Ontario, Canada, 1975.

DeVries, David L. and others. "Small Group Versus Individualized Instruction: A Field Test of Their Relative Effectiveness." Paper presented at the Annual Convention of the American Psychological Association, New York, New York, September 1979.

Dunn, Rita, Gary E. Price, Kenneth Dunn and William Saunders. "Relationship of Learning Style to Self-Concept." CLEARING HOUSE, v53n3, November 1979, pp. 155-158.

THE EDUCATION OF ADOLESCENTS. The Final Report and Recommendations of the National Panel on High School and Adolescent Education. Office of Education (DHEW), Washington, D. C., 1976.

Elkind, David. "Adolescent Thinking and the Curriculum" NEW YORK UNIVERSITY EDUCATION QUARTERLY, v12n2, Winter 1981, pp. 18-24.

----------. "Understanding the Young Adolescent." ADOLESCENCE, v13n49, Spring 1978, pp. 127-134.

Epstein, Herman T. and Conrad F. Toepfer, Jr. "A Neuroscience Basis for Reorganizing Middle Grades Education." EDUCATIONAL LEADERSHIP, v35n8, May 1978, pp. 656-660.

Epstein, Joyce L. and James M. McPartland. SEX DIFFERENCES IN FAMILY AND SCHOOL INFLUENCE ON STUDENT OUTCOMES. Center for the Study of Social Organizaiton in Schools, Johns Hopkins University, Baltimore, Maryland, September 1977.

Evertson, Carolyn M. DIFFERENCES IN INSTRUCTIONAL ACTIVITIES IN HIGH AND LOW ACHIEVING JUNIOR HIGH CLASSES, R&D Report No. 6106, Research and Development Center for Teacher Education, Texas University, Austin, Texas, March 1980.

----------, Julie P. Sanford and Edmund T. Emmer. "Effects of Class Heterogeneity in Junior High School." AMERICAN EDUCATIONAL RESEARCH JOURNAL, v18n2, Summer 1981, pp. 219-232.

Feeney, Stephanie. SCHOOLS FOR YOUNG ADOLESCENTS: ADAPTING THE EARLY CHILDHOOD MODEL. Center for Early Adolescence, University of North Carolina at Chapel Hill, Carrboro, North Carolina, 1980.

Fillmer, H. Thompson. "The Middle Schoolers' Reading Program." LANGUAGE ARTS, v52n8, November/December 1975, pp 1123-1136.

Galin, David. "Educating Both Halves of the Brain." CHILDHOOD EDUCATION, v53n1, 1976, pp. 17-20.

Gatewood, Thomas E. and Charles A. Dilg. THE MIDDLE SCHOOL WE NEED. A REPORT FROM THE A.S.C.D. WORKING GROUP ON THE EMERGING ADOLESCENT LEARNER. Association for Supervision and Curriculum Development, Washington, D. C., 1975.

Gibbs, John C. "Kohlberg's Moral Stage Theory, A Piagetian Revision." HUMAN DEVELOPMENT, v22n2, 1979, pp. 89-112.

Goebel, Barbara L. and Elizabeth L. Harris. "Cognitive Strategy and Personality Across Age Levels." PERCEPTUAL AND MOTOR SKILLS, v50n3, part 1, June 1980, pp. 803-811.

Hanisch, Ronald M. THE FEASIBILITY OF THE UTAH MODEL FOR INDUSTRIAL ARTS FOR SERVING CAREER EXPLORATION PURPOSE IN MIDDLE AND JUNIOR HIGH SCHOOLS. FINAL REPORT. American Industrial Arts Association, Washington, D. C., June 1978.

Hannon, Joseph P., assisted by Michael Katims. "The Chicago Plan: Mastery Learning in the Chicago Public Schools." EDUCATIONAL LEADERSHIP, v37n2, November 1979, pp. 118-119.

Hellige, Joseph B. "Cerebral Hemisphere Asymmetry: Methods, Issues and Implications." EDUCATIONAL COMMUNICATION, v28n2, Summer 1980, pp. 83-95.

Hill, John P. and others. UNDERSTANDING EARLY ADOLESCENCE: A FRAMEWORK. AN ANNOTATED BIBLIOGRAPHY. School of Public Health, North Carolina University, Chapel Hill, North Carolina, 1980.

Hoffman, Jacob. "Let's Keep Self-Destructive Elements Out of Our Middle Schools." TEACHER, v96n8, April 1979, pp. 24-25.

Horst, Bill and Rebecca Kelch Johnson. "Brain Growth Periodization and Its Implications for Language Arts." ENGLISH JOURNAL, v70n1, January 1981, pp. 74-75.

Horton, Lowell. "Mastery Learning: Sound in Theory, But...." EDUCATIONAL LEADERSHIP, v37n2, November 1979, pp. 154-156.

Jones, Cloyzelle K. "Dynamics of Transescence in the Middle School Setting." THE URBAN REVIEW, v11n1, Spring 1979, pp. 37-43.

Jones, Robert S. and C. Kenneth McEwin. "Creative Learning Environments for the Middle School." CHILDHOOD EDUCATION, v56n3, January 1980, pp. 146-150.

Johnson, Simon O. "Better Discipline for Middle School Students." CLEARING HOUSE, v53n2, October 1979, pp. 86-89.

Johnston, J. Howard. "Middle School Research: What We Need to Know and What We Need to Find Out." PERSPECTIVES ON MIDDLE SCHOOL RESEARCH, Cincinnati University, Cincinnati, Ohio, 1980, pp. 7-13.

Jurenas, Albert C. "Junior High to Middle School--One School's Conversion." MIDDLE SCHOOL JOURNAL, v11n2, May 1980, pp. 26-30.

Klein, Jerry W. "Designing A Mastery Learning Program." EDUCATIONAL LEADERSHIP, v37n2, November 1979, pp. 144-149.

Lester, Frank K., Jr. "A Procedure for Studying the Cognitive Processes Used During Problem Solving." JOURNAL OF EXPERIMENTAL EDUCATION, v48n4, Summer 1980, pp. 323-327.

Levin, Tamar. "Instruction Which Enables Students to Develop Higher Mental Processes." EVALUATION IN EDUCATION, v3n3, 1979, pp. 173-220.

Lewis, Frank W. "A Piagetian Critique of Kohlberg's 'Moral Development' and of Simon's 'Values Clarification.'" Paper presented at Eighth Annual International Interdisciplinary UAP Conference on Piagetian Theory and Its Implications for the Helping Professions, Los Angeles, California, February 1978.

Lipsitz, Joan Scheff. "Public Policy and Early Adolescent Research." HIGH SCHOOL JOURNAL, v63n6, March 1980, pp. 250-256.

Maher, Carolyn Alexander and John J. O'Brien. "A Study of the Relationship Between Long-Term Memory and Formal Cognitive Development for Eighth-Grade Students: A Confirmation of Piagetian Theory." Paper presented at the Annual Meeting of the American Educational Research Association, Boston, Massachusetts, April 1980.

Manaster, Guy J., Charles D. Saddler and Linda Wukasch. "The Ideal Self and Cognitive Development in Adolescence." ADOLESCENCE, v12n48, Winter 1977, pp. 547-558.

Marcus, Lee. "Learning Style and Ability Grouping Among Seventh Grade Students." CLEARING HOUSE, v52n8, April 1979, pp. 378-380.

Marek, Edmund A. "Correlations Among Cognitive Development, Intelligence Quotient and Achievement of High School Biology Students." JOURNAL OF RESEARCH ON SCIENCE TEACHING, v18n1, January 1981, pp. 9-14.

Martin, John Henry. "Reconsidering the Goals of High School Education." EDUCATIONAL LEADERSHIP, v37n4, January 1980, pp. 278, 280-281.

Martorella, Peter H. "Social Studies Goals in Middle Grades." JOURNAL OF RESEARCH AND DEVELOPMENT IN EDUCATION, v13n2, Winter 1980, pp. 47-59.

McGarvey, Jack. "The Overlooked Basic: The Child." ENGLISH JOURNAL, v67n3, March 1978, pp. 72-74.

McMullen, Tim. INNOVATIVE PRACTICES IN SECONDARY EDUCATION. THE LOWER SECONDARY STAGE: PROBLEMS AND POSSIBILITIES. Organization for Economic Cooperation and Development, Centre for Educational Research and Innovation, Paris, France, 1978.

McNassor, Donald. "The Night World of Preadolescence." CHILDHOOD EDUCATION, v51n6, April/May 1975, pp. 312-318.

Muuss, Rolf E. "Kohlberg's Cognitive-Developmental Approach to Adolescent Morality." ADOLESCENCE, v11n40, Spring 1976, pp. 39-59.

Neimark, Edith D. "Current Status of Formal Operations Research." HUMAN DEVELOPMENT, v22n1, 1979, pp. 60-67.

Nielsen, Linda. "An In-Service Program for Secondary Learning Disabilities Teachers." JOURNAL OF LEARNING DISABILITIES, v12n6, June/July 1979, pp. 423-427.

Paizer, Doris M. "Parent Power at Pennwood Junior High." NASSP BULLETIN, v59n392, September 1975, pp. 102-103.

Passow, A. Harry. AMERICAN SECONDARY EDUCATION: THE CONANT INFLUENCE. A LOOK AT CONANT'S RECOMMENDATIONS FOR SENIOR AND JUNIOR HIGH SCHOOLS. National Association of Secondary School Principals, Reston, Virginia, 1977.

Phillips, Beverly. ADOLESCENT THOUGHT: CURRICULUM IMPLICATIONS. Research report. 1978.

PROPOSED STANDARDS and GUIDELINES FOR MIDDLE/JUNIOR HIGH SCHOOLS. Bicentennial Edition. New Hampshire State Department of Education, Concord, New Hampshire, February 1976.

Rebrova, L. V. and P. R. Svetlova. "The Problem-Solving Approach--A Way to Insure Solid and Thorough Learning." SOVIET EDUCATION, v18n4, February 1976, pp. 75-84.

Richey, Marjorie H. and Harold W. Richey. "The Significance of Best-Friend Relationships in Adolescence." PSYCHOLOGY IN THE SCHOOLS, v17n4, October 1980, pp. 536-540.

Ritter, Ellen M. "The Social-Cognitive Development of Adolescents: Implications for the Teaching of Speech." COMMUNICATION EDUCATION, v30n1, January 1981, pp. 1-10.

Ritz, John M. "Integrating Home Economics, Art and Industrial Arts at the Middle Grades." MAN/SOCIETY/TECHNOLOGY, v37n3, December 1977, pp. 24-26.

Rosen, Sidney and Evan R. Powell. CLASSROOM ORGANIZATIONAL RESTRUCTURING TO OPTIMIZE SOCIAL-EMOTIONAL AND COGNITIVE GROWTH. FINAL REPORT. National Institute of Education (DHEW), Washington, D. C., December 1977.

Sanford, Julie P. COMPARISON OF HETEROGENEOUS AND HOMOGENEOUS JUNIOR HIGH CLASSES, R&D Report No. 6108, Research and Development Center for Teacher Education, Texas University, Austin, Texas, February 1980.

Sawyer, Diane J. "Linguistic and Cognitive Competencies in the Middle Grades." LANGUAGE ARTS, v52n8, November/December 1975, pp. 1075-1089.

Scanella, Anthony and John Rabuck. "Planning and Teaching for the Middle School/Junior High School." ENGLISH JOURNAL, v66n4, April 1977, pp. 55-56.

Schaffer, Marilyn C. and Louise Loomis. INCREASING ADOLESCENTS' INTELLECTUAL SKILLS. Collaborative Research Study of the Dean's Council, New England Teacher Corps Network, Portsmouth, New Hampshire, June 1980.

Seick, Roger E. THE REORGANIZATION OF A TRADITIONALLY STRUCTURED JUNIOR HIGH SCHOOL TO AN INNOVATIVE GRADE LEVEL HOUSE PLAN CONCEPT. Practicum Report submitted in partial fulfillment of requirements for Doctor of Education degree, Nova University, New York, May 1976.

Shayer, M. "Has Piaget's Construct of Formal Operational Thinking Any Utility?" BRITISH JOURNAL OF EDUCATIONAL PSYCHOLOGY, v49pt.3, November 1979, pp. 265-276.

Simmons, Roberta G. and others. "The Impact of Junior High School and Puberty Upon Self-Esteem." Paper presented at the Biennial Meeting of the Society for Research in Child Development, New Orleans, Louisiana, March 1977.

Stelle, Alice and Helen Wallace. "Meeting Learning Needs of the Young Adolescent." THRUST FOR EDUCATIONAL LEADERSHIP, v8n3, January 1979, pp. 25-27.

Stewart, William J. "What Causes A Middle School to Be Ineffective?" CLEARING HOUSE, v49n1, September 1975, pp. 23-25.

Thompson, Eugene M. and Henry Shein. AN EVALUATION OF THE MIDDLE YEARS ALTERNATIVE PROGRAM, Ann Arbor Public Schools, Ann Arbor, Michigan, 1978.

Tobin, Kenneth G. and William Capie. "Teaching Process Skills in the Middle School." SCHOOL SCIENCE AND MATHEMATICS, v80n7, November 1980, pp. 591-600.

Toepfer, Conrad F. Jr. "Brain Growth Periodization Data: Some Suggestions for Re-Thinking Middle Grades Education." HIGH SCHOOL JOURNAL, v63n6, March 1980, pp. 222-227.

----------. "Brain Growth Periodization in Young Adolescents: Some Educational Implications." Paper presented at the Annual Meeting of the American Educational Research Association, Boston, Massachusetts, April 1980.

----------. "A Realistic Expectation for Cognitive Growth During Transescence." Paper presented at the Annual Meeting, Association for Supervision and Curriculum Development, Houston, Texas, March 1977.

Trump, J. Lloyd. A SCHOOL FOR EVERYONE. DESIGN FOR A MIDDLE, JUNIOR OR SENIOR HIGH SCHOOL THAT COMBINES THE OLD AND THE NEW. National Association of Secondary School Principals, Reston, Virginia, 1977.

Williams, Roger M. "Why Children Should Draw." SATURDAY REVIEW, v4n23, September 1977, pp. 11-16.

Winsand, Jean E. "Middle School Reading Focus: Content or Child?" Paper presented at the Annual Meeting of the College Reading Association, Washington, D. C., October 1978.

Yeotis, Catherine and Alice Hosticka. "Promoting the Transition to Formal Thought Through the Development of Problem Solving Skills in Middle School Mathematics and Science Curriculum." SCHOOL SCIENCE AND MATHEMATICS, v80n7, November 1980, pp. 557-565.

SELECTED REFERENCE ADDENDUM

Johnson, Mauritz, ed. TOWARD ADOLESCENCE: THE MIDDLE SCHOOL YEARS. National Society for the Study of Education. Seventy-ninth Yearbook, 1980, Part I.