DOCUMENT RESUME

ED 306 668 EA 020 916

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TITLE Effective Practices and Structures for Middle Grades Education. Policy Issues.
INSTITUTION Appalachia Educational Lab., Charleston, W. Va.; Center for Research on Elementary and Middle Schools, Baltimore, MD.
SPONS AGENCY Office of Educational Research and Improvement (ED), Washington, DC.
PUB DATE Mar 89
CONTRACT 400-86-0001
GRANT OERI-G-86-90006
NOTE 42p.; Prepared by the Policy and Planning Center.
AVAILABLE FROM Publications, Appalachia Educational Laboratory, Inc., P.O. Box 1348, Charleston, WV 25325 ($5.00 prepaid).
PUB TYPE Information Analyses (070) -- Reports - Research/Technical (143)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Academic Achievement; *Adolescents; Change Strategies; Educational Change; Educational Development; *Educational Improvement; Educational Quality; Junior High Schools; *Middle Schools; *School Organization; School Policy; Student Evaluation

ABSTRACT

This document draws upon theory and research about early adolescence and about the effects of middle grades structures and practices on student outcomes. The purpose is to identify specific problem areas and promising innovations that should be considered by policymakers as they establish guidelines for the restructuring of education in the middle grades. The first part of the document considers research on evaluation and authority structures. The second part focuses on the strengths and weaknesses of departmentalization and discusses ways of reorganizing schools to mitigate the weaknesses of the departmentalized approach while retaining its strengths. The paper then discusses various states' approaches to these issues and considers the policy implications of making the recommended changes in middle grades education. Appended are 64 references. (Author/SI)

POLICY ISSUES

Effective Practices and Structures for Middle Grades Education

by Douglas Mac Iver
Center for Research on
Elementary and Middle Schools
The Johns Hopkins University

March 1989

Prepared by:
POLICY AND PLANNING CENTER
Appalachia Educational Laboratory
P.O. Box 1348, Charleston, WV 25325

Funded by:
OERI
OFFICE OF EDUCATIONAL RESEARCH AND IMPROVEMENT
U.S. Department of Education

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This publication is based on work sponsored by the Office of Educational Research and Improvement, U. S. Department of Education, under contract number 400-86-0001 (to the Appalachia Educational Laboratory) and under grant number OERI-G-86-90006 (to the Center for Research on Elementary and Middle Schools). Its contents do not necessarily reflect the views of OERI, the Department, or any other agency of the U. S. Government. Address correspondence to the Policy and Planning Center at the address above or to the author at: Center for Research on Elementary and Middle Schools, The Johns Hopkins University, 3505 North Charles Street, Baltimore, MD 21218.

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EXECUTIVE SUMMARY

Many states are beginning to attempt school reform in the middle grades. This paper draws upon theory and research about early adolescence and about the effects of middle grades structures and practices on student outcomes. Its purpose is to identify specific problem areas and promising innovations that should be considered by policymakers as they establish guidelines for the restructuring of education in the middle grades.

Theory and research about the middle grades are converging to define important needed reforms that will make schools more effective in (a) motivating early adolescents to perform up to their capacity, and (b) creating school conditions that support both the provision of high quality subject matter instruction and the development of caring, responsive relations between students and teachers. These needed reforms involve modifications in evaluation structures, authority structures, and staffing practices.

What Are the Problem Areas?

One of the most important goals of education is that students will reach their potential, that they will make the most of their opportunities to learn. For educators to accomplish this goal, it is essential that they use structures that foster students' motivation to learn.

Evaluation structures. Traditional evaluation structures (based on norm-referenced or percent-correct standards) have been shown to

interfere with many early adolescents' motivation to learn by leading them to conclude that they lack the ability necessary for success. In both norm-referenced and percent-correct (criterion-referenced) evaluation systems, disadvantaged students--who by the middle school years are significantly behind more advantaged classmates in academic skills--may find it impossible to obtain a high grade (or even a passing grade), even if they work hard. These evaluation systems do not adequately recognize the progress that disadvantaged students make, because even dramatic progress may still leave them near the bottom of the class in comparative terms or far from the percent-correct standard needed for a good grade.

Authority structures. The term "adolescence" is derived from the Latin verb adolescere, "to grow up". For emerging adolescents, one of the most salient prerogatives associated with being grown up is the opportunity to have a voice in the decisions that affect them. However, in a trend that goes against early adolescents' increased need for autonomy, students are frequently given a less meaningful role in classroom decisionmaking in the middle grades than in the upper elementary grades.

Staffing practices. As James McPartland has pointed out, two generally agreed upon goals in the middle grades are the development of positive teacher-student relations and the provision of high-quality subject matter instruction. Unfortunately, staffing practices that best serve one of these goals may sometimes interfere with the accomplishment of the other. Proponents of departmentalized staffing believe that such

an approach increases the quality of instruction received by students. However, by increasing each teacher's student load, departmentalization may contribute to a deterioration of teacher-student relations in the middle grades.

What Does the Research Show?

One of the strongest predictors of change in early adolescents' level-of-effort during a course is change in their individual ability perceptions--students who conclude that they are less talented in a given subject than they thought they were typically show marked declines in effort, those who conclude that they have more aptitude than they initially thought display increased effort.

Few students lose confidence in their ability when the marking system in a classroom makes it possible for a large proportion of students to earn good grades and when there is a relatively modest variation among students in grades received. For example, when individually-referenced evaluation criteria are used to determine marks (a) more students are able to earn good grades, (b) there is less variation among students in grades received, (c) few students conclude they are incompetent, and (d) few students give up trying to master the subject matter of the course.

Slavin and his colleagues have designed several alternative evaluation-reward systems that use individually-referenced feedback as a supplement to traditional grading. The research indicates that this type of feedback can be quite effective in raising student performance. For example, one method of rewarding students for improvement called

individual learning expectations (ILE) has been found to significantly improve student achievement in comparison with classes using only traditional grading. ILE has been shown to be particularly effective in raising the achievement of blacks in desegregated schools, presumably because this evaluation-reward system makes it clear that success is not "for whites only" but is within the grasp of all who strive for it.

The research on authority structures in the middle grades indicates that a failure to provide students with the decisionmaking opportunities that they feel are justified results in declines in students' valuing of school subjects, attitudes toward school, self-reliance, and achievement. In contrast, when students are given a decisionmaking role that fits their needs they assume greater personal responsibility for their actions in the classroom and exhibit increased self-reliance which lead them to raise their report card grades and achievement test scores.

The research on departmentalization indicates that use of subject matter specialists does not always result in higher student achievement, because the increases in instructional quality that accompany departmentalization are sometimes outweighed by the negative effects of departmentalization on teacher-student relations and on other factors that influence student motivation and achievement. These findings suggest that alternatives to strict departmentalization (such as the creation of interdisciplinary team organizations) must be explored. Unfortunately, at the present, it is difficult to make definitive statements concerning the effectiveness of such alternatives.

Review of Various States' Approaches

It appears that many states are just beginning to grapple with issues concerning evaluation and authority structures in the middle grades; few specific policies have been developed to assist restructuring in these areas. On the other hand, in the area of staffing practices, several states have concluded that interdisciplinary teacher teaming is a promising practice, have recommended its use, and have provided assistance and incentives to schools willing to implement this recommendation.

Implications for Policy

This paper argues that states must take the initiative in defining, sharing, and supporting a "new vision" concerning education in the middle grades. Defining the new vision involves adopting written policies that provide guidelines for middle grades education reform efforts by local school boards. The new vision must urge local school boards to adopt (a) dual evaluation systems (systems that reward students both for doing better than they have in the past and for high levels of achievement), (b) more responsive classroom decisionmaking practices, and (c) alternatives to strict departmentalization.

Each state engaged in middle grades reform will need to make use of a variety of forums for sharing the vision for restructuring (e.g., hearings, conferences, pilot/demonstrations, clearinghouses) and will need to do its part in removing obstacles to implementation (e.g., by revising certification regulations that inhibit interdisciplinary teaming). Further, middle grades restructuring will require state-

sponsored staff development efforts and state-initiated reforms in teacher/administrator training programs. The state may also need to seek additional money (from the legislature, the U. S. Department of Education, and/or foundations) to fund incentives for schools and teachers who implement recommended innovations or to pay for technical assistance programs. Finally, the state must systematically evaluate the effects of implemented reforms to accurately gauge progress and to discover unintended negative consequences that need to be addressed.

INTRODUCTION

In making education policy, it is essential that policymakers don't lose sight of one of the most important goals of education: that students reach their potential, that they make the most of their opportunities to learn. One important way of judging the potential effectiveness of an education policy is to ask whether the policy will help schools create and maintain educational environments that assist more students in reaching their potential.

If we want to see more early adolescents perform up to their capacity, we must place them in developmentally appropriate educational environments (see Eccles & Midgley, in press-b). Many researchers believe that there is a mismatch between the needs of early adolescents and the educational environments typically provided for them (e.g., Eccles & Midgley, in press-a; Lipsitz, 1977; Sprinthall, 1985). This mismatch may be largely responsible for the general declines we observe in academic motivation over the early adolescent years (Eccles & Midgley, in press-a). Furthermore, the negative consequence of experiencing a developmentally inappropriate environment may be most severe for disadvantaged students who are at risk of entering a downward spiral during the middle grades that eventually leads "to academic failure and school drop out" (Eccles & Midgley, in press-b, p. 1).

To succeed with students who are at high risk of not fulfilling their potential, extra efforts must be made to make middle schools especially responsive to at-risk students. Currently, most schools are

rather unsuccessful and unappealing places for students who are:

> below average in academic skills, failing in one or more subjects, socially immature or isolated, or without clear goals for life after high school. For these students there is a poor fit and few connections between the schools' programs and the students' needs. Neither the academic nor the social organization of the school is designed to help these students define or attain success. The students receive few rewards and many punishing evaluations, and are largely excluded from school life (Epstein, 1987, p. 4).

What light does the research literature shed on the issue of how to correct the lack of fit between early adolescents and their educational environments? What changes in school and classroom structures might be particularly beneficial for average- and low-performing students? The first part of this paper considers research on evaluation and authori structures (see Epstein, 1987 for an introduction to these [and other] basic school and classroom structures). The second part of the paper focuses on the strengths and weaknesses of departmentalization and discusses ways of reorganizing schools to mitigate the weaknesses of the departmentalized approach while retaining its strengths. The paper then discusses various states' approaches to these issues and considers the policy implications of making the recommended changes in middle grades education.

MOTIVATING EARLY ADOLESCENTS: EFFECTIVE EVALUATION AND AUTHORITY STRUCTURES

Adjustments in two areas of the educational environment--evaluation and rewards structures, and student involvement in decisionmaking--can positively affect the motivation and achievement of early adolescents.

Evaluation Structures

One of the primary reasons that evaluation and reward structures are an area of concern for policymakers is that these structures can have a potent impact on students' self-perceptions of ability. Ability perceptions are important because they affect student motivation and learning and thus have practical educational significance (Bandura, 1982; Covington & Beery, 1976; Dweck & Reppucci, 1973; Mac Iver, Stipek, & Daniels, 1989; Stipek & Mac Iver, in press; Weiner, 1986). For example, one of the strongest predictors of change in early adolescents' level of effort during a course is change in their individual ability perceptions--students who conclude that they are less talented in a given subject than they thought they were typically show marked declines in effort, those who conclude that they have more aptitude than they intially thought often redouble their efforts (Mac Iver, Stipek, & Daniels, 1989).

Grades and students' self-perception of their ability. Individual teachers differ in the average mark they assign within a typical class and in how widely the grades assigned within a class vary across students (e.g., Geisinger & Rabinowitz, 1980; Mac Iver, 1988). Both the average mark and the mark dispersion within a classroom influence the proportion of students within the class who will conclude that they lack ability. Fewer students decide that they are incapable when the evaluation system in a classroom results in relatively high average grades and/or a relatively modest variation among students in grades received. For example, in one sample of 67 fifth- and sixth-grade mathematics classes,

a decline in the average math grade received within a class (e.g., from B to B-) was associated with a .03 rise in the proportion of pupils who felt that they were poor at math. Similarly, if the within-classroom variance in math grades rose one point, the proportion of pupils who f t that they were poor at math increased by .02 (Mac Iver, 1988).

Differences among teachers in the mean level and within-classroom variance of marks assigned are partly due to differences in the frame of reference used in determining marks. For example, teachers who use a norm-referenced evaluation system assign relatively low marks compared to teachers who rely on individually-referenced evaluation criteria (Geisinger, 1980; Mac Iver, 1988). Similarly, when a teacher relies primarily on a norm-referenced evaluation system, he or she typically assigns marks that are less bunched (the grades assigned to students within a class vary more widely) compared to when individually-referenced criteria are used (Deutsch, 1979; Mac Iver, 1988). Thus, when teachers use a norm-referenced evaluation system in a course, a greater proportion of students decide that they cannot succeed in the course even if they choose to try; that is, students often translate, "I am not as good as most students in this subject" into "I cannot learn this subject" (Mac Iver, 1988). This is likely to lead them to give up, and "by giving up..., low self-concept children condemn themselves to failure. Their failures, in turn, confirm their low self-concept, creating a failure-prone cycle" (Eccles & Wigfield, 1985, p. 190).

Individually-referenced criteria and student motivation. When individually-referenced criteria are used to determine marks, few

students conclude that they are incompetent. Use of individually-referenced marking systems may have a particularly beneficial impact on the ability perceptions of disadvantaged students. In such systems, every student has the opportunity to earn a high grade, if they show sufficient improvement, regardless of their absolute achievement level. In contrast, in both norm-referenced and percent-correct (criterion-referenced) systems, disadvantaged students--who by the middle school years are significantly behind more advantaged classmates in academic skills--may find it impossible to obtain a high grade (or a passing grade), even if they work hard. These evaluation systems often do not adequately recognize the progress that disadvantaged students make, because even dramatic progress may still leave them near the bottom of the class in comparative terms or far from the percent-correct standard needed for a good grade.

Slavin and his colleagues have designed several alternative evaluation-reward systems that use individually-referenced feedback as a supplement to traditional grading (e.g., Beady & Slavin, 1981; Beady, Slavin, & Fennessey, 1981; Slavin, 1978, 1980). Most of the research on these systems suggests that they can be quite effective in raising student performance. For example, in one study (Slavin, 1980), middle school students in language arts classes were given recognition in a weekly newsletter, if their performance on that week's quiz exceeded a base score (an individual learning expectation based on past performance) by a certain amount. (Because top students have "less room for improvement," any student with a perfect paper received recognition in

the newsletter regardless of their base score.) Students in classes that used this evaluation-reward system performed better on a standardized posttest, controlling for pretest scores, than did students in control classes. Such alternative evaluation methods have been shown to be particularly effective in increasing the achievement of blacks in desegregated schools, presumably because these evaluation systems help combat the perception that "success in my school is for whites only" by making it clear that--under the new rules of evaluation--success is within the grasp of all who strive for it (e.g., Beady & Slavin, 1981).

Unfortunately, none of the studies referred to above have been conducted over a long enough time period to allow one to evaluate the long-term feasibility of these particular individual-referenced approaches. (None of the individual learning expectations [ILE] experiments lasted longer than 11 weeks.) Some modifications in these approaches might be needed to make them sustainable over an entire academic year. In one ILE experiment, teachers were required to find the median quiz score for their class each week and to translate students' quiz scores into adjusted scores (scores were adjusted to take into account variations in the difficulty of weekly quizzes), and then to consult a chart to find (a) the number of "plus points" each student had earned based on individual improvement and, (b) the new "base" score for each student (Slavin, 1980). It seems likely that few teachers would be willing to follow such a procedure every week for an entire school year. Similarly, computation of "grades" in some individually-referenced systems is complicated enough to make it difficult to explain to students

and parents exactly how they were computed. Fortunately, Slavin (1988) has developed a much simplified version of ILE that appears to resolve these problems.

Dual evaluation systems. Natriello (1987) summarized the literature on the purposes of evaluation by identifying four generic functions that evaluations sometimes serve: certification, selection, direction, and motivation. One objection frequently raised by critics of individually-referenced evaluation systems is that these systems do not adequately fulfill certification and selection functions. For example, a good grade under an individually-referenced system does not necessarily indicate that a student has mastered the most important objectives of a course nor does it help schools select students for special programs that are based on students' achievement levels (such as advanced or remedial programs). Therefore, it is not surprising that both proponents (Slavin, 1978) and critics (Terwilliger, 1977) of individually-referenced grades suggest that schools using individually-referenced grades should also assign norm-referenced or criterion-referenced grades. For example, under a dual evaluation system, individually-referenced grades might be given frequently (e.g., weekly) and norm-referenced grades might be assigned only once per semester (Slavin, 1978). Norm-referenced evaluations should not be given often, because "the more frequently they are given the more likely they are to discourage students who cannot hope to receive high evaluation from giving their best efforts" (Slavin, 1978, p. 99).

Authority Structures

The term "adolescence" is derived from the Latin verb adolescere, "to grow up". For emerging adolescents, one of the most salient prerogatives associated with being "grown up" is the opportunity to make decisions for oneself or (at least) to have a voice in the decisionmaking process (e.g., Strang, 1957; Mac Iver & Reuman, 1989). Furthermore, a very common complaint of adolescents is that they are not allowed sufficient opportunities for choice and self-determination (Duvall, 1965; Lee, Statuto, & Kedar-Voivadis, 1983; Mac Iver, Klingel, & Reuman, 1986; Mac Iver & Reuman, 1989; Midgley & Feldlaufer, 1987; Reuman, Mac Iver, Klingel, Midgley, Feldlaufer, & Hermalin, 1984). Thus, it is appropriate that many theorists have emphasized the emerging adolescents' need for increased autonomy (e.g., Epstein, 1987; Havinghurst, 1951; Rank, 1945; Youniss, 1980). In response to this need, the National Middle School Association recommends that early adolescents should be given ample decisionmaking opportunities (Alexander, 1977).

Unfortunately, it is rare for educators of early adolescents to provide students with the decisionmaking opportunities that students think they should have in the classroom (Lee, Statuto, & Kedar-Voivodas, 1983; Midgley & Feldlaufer, 1987; Mac Iver, Klingel, & Reuman, 1986; Reuman, Mac Iver, Klingel, Midgley, Feldlaufer, & Hermalin, 1984). In a trend that goes against early adolescents' increased needs for autonomy, middle graders are frequently given fewer choices and a less meaningful role in decisionmaking in junior high or middle school than in upper elementary school (e.g., Rounds & Osaki, 1982; Mac Iver & Reuman, 1989).

Considerable evidence has accumulated indicating that this failure to provide students with the decisionmaking opportunities they feel are justified is partly responsible for declines during early adolescence in many students' valuing of school subjects, attitudes toward school, self-reliance, and achievement (Epstein, 1983, 1984; Mac Iver & Reuman, 1989; Mac Iver, Klingel, & Reuman, 1986). For example, Mac Iver and Reuman (1989) demonstrate that when students lose decisionmaking opportunities in their mathematics classes after the transition to junior high school, they display an educationally significant decrease in their interest and enjoyment in mathematics and are also increasingly likely to conclude that their math coursework is not useful in helping them reach their long- and short-range goals. In contrast, when students are given choices that fit their needs this creates in them a feeling of freedom, encourages them to take personal responsibility for their actions, gives them a feeling of ownership over their actions in the classroom, increases their self-reliance, and leads them to raise their report card grades and achievement test scores (deCharms, 1968, 1976, 1984; Epstein, 1983, 1984). Results such as these have led Epstein (1984) to conclude that "schools that withhold or prevent student participation [in classroom decisionmaking] may be seriously limiting the potential for positive student development" (p. 395).

DEPARTMENTALIZATION, NONDEPARTMENTALIZATION, AND INTERDISCIPLINARY TEAM TEACHING

One goal of education policymakers is to facilitate the creation of balanced educational environments for middle graders--environments where a variety of organizational and instructional approaches are combined to meet all of the most important of the varied needs of early adolescents.

As McPartland (1987) points out, two generally agreed upon goals of education in the middle grades are the development of positive teacher-student relations and the provision of high quality subject matter instruction. Unfortunately, staffing practices that best serve one of these goals may sometimes interfere with the accomplishment of the other.

Proponents of departmentalized staffing believe that such an approach increases the quality of instruction received by students. By allowing teachers to develop expert knowledge in a given subject and by cutting down the number of daily lessons they must prepare (teachers instruct several different classes in the same subject), departmentalization should make it easier for teachers to offer high quality instruction. At the same time, however, by increasing each teacher's student load, departmentalization may contribute to the deterioration of teacher-student relations in the middle grades (McPartland, 1987). What does the research say about various options for staffing the middle grades?

Departmentalization in Middle and Junior High Schools

The research literature has examined the prevalence and consequences of departmentalization in the middle grades.

Departmentalization of sixth-grade instruction in middle schools. One indirect consequence of the middle school movement may be the increased use of departmentalization for sixth-grade instruction. That is, the practice of moving sixth graders out of elementary schools and into middle schools may have been accompanied by an increase in the use of subject matter specialists (e.g., former junior high teachers) for sixth-grade instruction. Staffing practices were examined in a recent Center for Research on Elementary and Middle Schools (CREMS) survey (Education in the Middle Grades: 1988 [EMG 88]). The EMG 88 sample is a representative national sample of 1753 schools containing seventh graders; 404 of the schools in the sample are 6-7 or 6-8 middle schools. Only 5% of these middle schools report using a self-contained classroom approach in sixth grade. Instead, the majority use a departmentalized approach--sixth graders are taught each of their academic subjects by a different teacher who is a specialist in that subject. One obvious result of departmentalization is that students have many different teachers during the average week. Two-thirds of the 6-7 or 6-8 schools in the EMG 88 sample report that the typical sixth grader has four or more different teachers for the major academic subjects during an average week.

Departmentalization of instruction in seventh and eighth grades. Seventh and eighth graders encounter departmentalization even more

frequently than do sixth-graders. The EMG 88 data indicate that seventh graders have four or more different teachers for their academic subjects in 91% of the nation's middle schools and in 97% of the junior high schools. Similarly, 95% of the nation's middle schools and 99% of the junior highs assign their eighth graders to four or more different teachers for academic subjects.

The consequences of departmentalization. Does departmentalization increase the quality of instruction and student achievement while decreasing the quality of teacher-student relations? The research evidence paints a complex but coherent picture.

The positive effects that specialized, subject matter experts can have on student achievement have been more persuasively documented for seventh-grade students than for sixth-grade students. Using data from the 1985-86 National Assessment of Educational Progress (NAEP), McPartland and Wu (1988) found that the seventh-grade students of specialized, subject matter experts displayed higher achievement in science and math than did the seventh-grade students of less specialized teachers. However, data on sixth graders from the Pennsylvania Educational Quality Assessment (EQA) demonstrates that a departmentalized structure is not always associated with higher student achievement (Becker, 1987; McPartland, 1987). Although McPartland found that sixth graders' subjective perceptions of the quality of instruction in science and social studies were higher when departmentalization was used (McPartland 1987, Table 4), there was a negative relation between the number of different teachers providing instruction to students and the

students' average tests scores in science and social studies (McPartland, 1987, Table 5, column 1). In fact, Becker's (1987) analyses of the same data suggest that, in the EQA sample, the achievement of most sixth-grade students in most subjects is greater when they have fewer teachers (less departmentalization). The detrimental effects of departmentalization on achievement are strongest for students from low and low-middle social backgrounds. The advantage of the self-contained classroom approach over the departmentalized approach is smaller in science, however, than in mathematics or reading (Becker, 1987, Table 1).*

The finding that departmentalization in the EQA sixth-grade sample reduced rather than enhanced student achievement suggests the possibility that the increases in instructional quality that accompany departmentalization at this grade level may often be outweighed by the negative effects of departmentalization on teacher-student relations and on other factors that influence student motivation and achievement. There is "strong evidence that sixth-grade teacher-student relations are more positive in schools that assign teachers to self-contained classrooms than in schools where departmentalized staffing is used" (McPartland, 1987, p. 7-8). Specifically, sixth graders in departmentalized settings are less likely than those in nondepartmentalized settings to strongly agree with statements such as,

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*One apparent consequence of departmentalization having a greater negative impact on math and reading achievement than on science achievement is that departmentalization increases the disparity between students' average performance in science and their performance in math or reading (McPartland, 1987, Table 5).

"I feel that my teachers understand me," "I feel that my teacher likes me," "My teachers think I have good ideas," "My teacher cares about my class," and so on.

Why does departmentalization inhibit the development of positive teacher-student relations? Some have speculated that teachers in departmentalized settings may be "more likely to adopt a 'subject matter orientation' that emphasizes knowledge expertise rather than a 'student orientation' that emphasizes concern for individual students" (McPartland, 1987, p. 9). Furthermore, even teachers who are student-oriented will find it more difficult to attend to the special needs of individual students in departmentalized settings, because each teacher is responsible for instructing a much larger number of students than are teachers in self-contained classrooms. A heavy load of students makes it less likely that teachers "will come to know their students well, to feel that they are trustworthy, and to grant them autonomy....[In addition,] teachers may feel that it is difficult to affect the achievement of a large number of students, especially since they see them for a relatively small proportion of the school day, making it difficult to sustain feelings of efficacy" (Eccles & Midgley, in press-a).

Departmentalization and its concomitants may be partly responsible for the consistent finding that teachers' attitude and beliefs are typically more negative in junior or middle schools than in elementary schools (Eccles, Midgley, & Adler, 1984; Eccles & Midgley, in press-b). For example, Midgley, Feldlaufer, and Eccles (in press-a) compared the beliefs of the teachers that students had for mathematics the year before

and year after the transition to junior high school. The junior high teachers rated students as less trustworthy than did the elementary teachers. Similarly, the junior high teachers believed that students needed to be controlled and disciplined more strictly than did the elementary school teachers. Finally, the junior high teachers felt significantly less efficacious than did the elementary school teachers. For example, they were less likely to endorse items such as "I am certain I am making a difference in the lives of my students" (Midgley, Feldlaufer, & Eccles, in press-b).

The classroom climate in the junior high school is affected by the increased negativity of teachers' beliefs and attitudes. Both students and classroom observers perceive junior high teachers to be less supportive, friendly, and fair than elementary school teachers. (Feldlaufer, Midgley, & Eccles, 1988). Similarly, when Fischer (1980) compared the school climates of departmentalized and (less typical) nondepartmentalized junior high schools and middle schools in California, he found that administrators, students, and teachers reported higher levels of morale, respect, and cohesiveness in nondepartmentalized schools than in departmentalized schools. Students and staff in nondepartmentalized schools also reported more opportunities for input, for active learning, for individualized performance expectations, for varied learning environments, for flexible curriculum, for continuous academic and social growth, and for school renewal than did their peers in departmentalized schools.

Summary. In their attempt to offer early adolescents high-quality instruction from subject matter experts, educators in middle schools and

junior high schools have relied heavily on departmentalized staffing. Unfortunately, the research literature indicates that a completely departmentalized approach is associated with poor teacher-student relations, heavy student loads, and the development of negative beliefs on the part of both teachers and students.

Interdisciplinary Teaming vs. Strict Departmentalization

Proponents of the middle school philosophy have long advocated the reorganization of departmentalized schools into schools using an interdisciplinary team organization. Alexander and George (1981) define an interdisciplinary team organization as "a way of organizing the faculty so that a group of teachers share (1) the responsibility for planning, teaching, and evaluating curriculum and instruction in more than one academic area; (2) the same group of students; (3) the same schedule; and (4) the same area of the building" (p. 115).

What are the major rationales for organizing the faculty into interdisciplinary teams rather than departments? First, an interdisciplinary team organization is hypothesized to increase the student orientation of the teachers. "Teachers talk about what they have in common, and when the teachers share the same students rather than the same academic discipline, the students are at the center of discussion and program planning" (Alexander & George, 1981, p. 133). Because they teach the same group of students, team members can share student information and develop common strategies for meeting individual student needs or for dealing with problems. Furthermore, they can prepare as a team for parent conferences and thus may be able to provide parents with

a more balanced and comprehensive evaluation of individual student progress.

Second, instruction may be more effective in an interdisciplinary team organization due to the increased integration and coordination across subjects and courses. Teachers can coordinate their test dates, major projects, homework assignments, and correlate their instruction when content areas overlap (Pickler, 1987). They can work together to plan and teach thematic units of an interdisciplinary nature. Teachers may even experience inceased intellectual stimulation resulting from "the interaction of people with different academic perspectives and points of view" (Alexander & George, 1981, p. 132), may learn new methods from their teammates, or use their teammates as sources of social support and understanding.

Third, an interdisciplinary team organization is hypothesized to result in a better school climate. For example, George (1975) concluded that teachers on interdisciplinary teams experience a higher morale and greater job satisfaction than do other teachers.

Interdisciplinary Teams and Student Achievement

At present, it is difficult to make definitive statements concerning the effectiveness of interdisciplinary team organizations on the enhancement of student achievement and promotion of positive student outcomes. Although substantial research has been conducted on teacher teaming, very little of this research has been in middle schools using interdisciplinary team organizations. Reviews of research on teacher teams can be found in Armstrong (1977), Cotton (1982), and Scholz

(1978). The studies included in these reviews indicate that team-teaching arrangements are neither generally superior nor generally inferior to more traditional teaching practices in enhancing student performance. However, with regard to students' attitudes toward school, self-esteem, and other affective outcomes, the research suggests that team teaching generally yields more favorable outcomes than traditional methods. Because these results are largely based on studies of disciplinary teaming, individually guided education teams, and across subject teams of elementary school teams, it is unclear whether these results will generalize to interdisciplinary teams of subject matter specialists in middle schools.

Perhaps one reason for the limited quantitative data on the effectiveness of interdisciplinary team organizations in middle schools is that, as late as 1978, most middle school students still spent "their day in a disciplinary, non-teamed organizational format, the same format dominant in junior high schools and high schools" (Brooks & Edwards, 1978, p. 12). For example, in their national survey of middle schools, Brooks and Edwards (1978) found that seventh graders, on the average, received instruction from teachers using an interdisciplinary team approach less than 12% of the time.

REVIEW OF VARIOUS STATES' APPROACHES

Many states are attempting to restructure education in the middle grades. For example, 20 states have formed or are forming special task forces or study groups to examine the status of education in the middle

grades and to make recommendations for improvement (Children's Defense Fund, 1988, p. 3).

State Activity Concerning Evaluation and Authority Structures

It appears that many states are just beginning to grapple with issues concerning evaluation and authority structures in the middle grades; few specific policies have been developed to assist restructuring in these areas. For example, consider New York, California, and Maryland.

The New York State Education Department's Resource Monograph on the Middle Grades exhorts middle schools to address early adolescents' need "for opportunities to take the initiative and to have a meaningful voice in making decisions that affect them" (Payton, in press, p. 35). Similarly, the New York State School Boards Association has made vague recommendations for changes in middle grades evaluation systems; for example, "reporting systems should be personalized within a supportive environment" (Payton, in press, Appendix C). It is unclear, however, what assistance (if any) is being given to schools in New York to help them elaborate and implement these recommendations.

The otherwise comprehensive California report, Caught in the Middle (1987), gives little consideration to authority and evaluation systems. Although it acknowledges the importance in active learning settings of "allowing students to operate independently through planning the use of their own time and by making decisions regarding pace, sequence, and content of projects" (p. 41), the report offers no specific recommendations concerning changes in classroom decisionmaking practices. Likewise, even though the report affirms that the basic

mission of the middle grades is to "create the conditions for academic success and educational commitment for every student" (p. 70), it does not consider how positive changes in evaluation and authority structures could help create these conditions.

The Maryland Task Force on the Middle Learning Years recommends that "all components of the middle grades program should emphasize the development of student positive self-concept" (What Matters in the Middle Grades, [in press] p. 19), without recommending specific changes in evaluation structures. The task force does explicitly discuss some of the problems with traditional grading practices, however (p. 84). Finally, the Maryland task force recommends that "middle grades programs should be designed to promote student positive attitudes toward learning" (p. 23), but does not consider how changes in authority structures might promote this goal.

State Efforts to Alter Staffing Arrangements

Judging from the reports issued by the numerous task forces and groups concerned with middle grades education, many of the states view interdisciplinary teacher teaming as a promising practice. For example, the California task force report recommends that schools consider devoting a daily multiperiod block of time to a "humanities core" taught by an interdisciplinary team of teachers (Caught in the Middle, 1987, p. 106). Similarly, the Maryland task force concludes that "An interdisciplinary team, i.e., one in which a group of teachers is assigned the same group of students and shares common planning time, can be most effective in helping bridge the gap between content and

development and between the self-contained classroom of the elementary school and the departmentalization of the high school" (What Matters in the Middle Grades [in press], p. 63). Likewise, the New York State School Boards Association recommends that "alternative organizational techniques, including interdisciplinary team teaching, should be explored to facilitate easier transitions in the middle grades, and encourage personalized observation and communication among teachers" (Payton, in press, Appendix C).

IMPLICATIONS FOR POLICY

One of the most important roles that a state department of education can play is as galvanizer of public support for a "new vision" concerning middle grades education. State departments must (a) define the new vision clearly; (b) share the new vision persuasively; (c) provide resources, incentives, and technical support to schools as they implement the vision; and (d) evaluate the effects of the vision, once implemented, on middle grades education.

Define the Vision

Defining the new vision involves adopting policies specific to the middle grades. These written policies should provide guidelines for the development of middle grades education programs by local school boards and should spell out the rationale behind each guideline.

What should the new vision embodied in these guidelines say about evaluation and authority structures and about staffing practices? The new vision must clearly state that use of a single system for evaluating

students' academic performance that relies only on traditional grading practices is unacceptable because of the accessibility problem: academically talented students find it too easy to earn high grades, while educationally disadvantaged students have little chance of earning an A or B no matter how hard they try (Slavin, 1988). As a result, neither the talented nor the disadvantaged are motivated to exert their best efforts under traditional grading. Dual evaluation systems are needed; systems that reward students for doing better than they have in the past, and for high levels of achievement.

Policymakers may encounter some initial opposition from local school boards or parents concerning this recommendation. Some may perceive the use of improvement-based grading as a lowering of standards. It is not. It is a reform that seeks to expose all students to evaluations of their performance that challenge them to perform better, regardless of their current level of mastery.

The new vision should also exhort educators of middle graders to work toward increasing the fit between students' actual decisionmaking opportunities and the opportunities that students feel are justified. Such a move will reduce student misbehavior in the classroom and increase student motivation and achievement (Mac Iver, Klingel, & Reuman, 1986; Epstein, 1983, 1984).

Finally, state decisionmakers should encourage local school boards to explore alternatives to strict departmentalization in the middle grades (such as the creation of interdisciplinary team organizations). To make such alternatives feasible, many states will need to revise or

clarify their certification policies, because current regulations often assume that teachers will teach in nondepartmentalized or departmentalized settings rather than in semidepartmentalized ones. The typical school will find it difficult or impossible to implement an interdisciplinary curriculum (e.g., a humanities core curriculum covering reading, writing, literature, history, and geography taught by a team of teachers during a daily multiperiod block of uninterrupted instructional time) unless requirements related to K-8 and 7-12 credentials are revised to allow school districts to assign either elementary or secondary teachers to interdisciplinary configurations (Caught in the Middle, pp. 106-111, 124).

Share the Vision

Each state engaged in middle grades reform will need to use a variety of forums for sharing its vision for restructuring. The options include: (a) to conduct regional hearings that allow representatives of the state department of education to meet directly with those who will be affected by their recommendations, (b) to hold statewide conferences on middle grades restructuring, (c) to designate certain schools as implementation/pilot sites where the new vision will be first demonstrated, and (d) to establish some mechanism (e.g., a clearinghouse or a network) by which schools can share ideas and examples of successful innovations (see What Matters in the Middle Grades [in press], p. 112).

Provide Support to Implement the Vision

High-quality inservice education is critical in helping schools to establish effective evaluation and authority structures or to implement

interdisciplinary teacher teaming. Because teacher and administrator training courses do not provide much (if any) practical instruction in using individually-referenced grading, responsive authority structures, or interdisciplinary teaming, state-sponsored staff development on these topics may be needed. Furthermore, a state's institutions of higher education and its department of education must work together to revise teacher/administrator preparation to ensure that these programs begin offering more specific middle grades training in the practices and structures that meet the needs of early adolescents.

To be truly effective, staff development efforts must go beyond a simple presentation of recommended practices. Unless teachers and administrators clearly understand the "nuts and bolts" of using these practices and perceive the cost of adopting them as fairly low (and the benefits as substantial), they will be unwilling to implement them.

For example, consider the sorts of staff development activities needed to support the creation of interdisciplinary team organizations in the middle schools throughout a state. To really convince teachers of the merits of interdisciplinary teaming, it will be necessary to allow them to visit schools with successful teams and to discuss their doubts and objections concerning teaming with veteran team members (Nolan & Roper, 1976). Furtner, given the importance of coordination in making interdisciplinary teams successful, inservice training should emphasize the importance of providing a common planning period for all members of the team and should provide the school's schedule maker (often the principal or a counselor) with specific training in how to restructure

the schedule to accommodate teaming. Finally, teachers should be provided with training in how to make the most of team meetings and how to minimize team problems (see Nolan & Roper, 1976; Alexander & George, 1981, Chapter 5).

In addition to the sponsorship of staff development activities and changes in teacher and administrator preparation programs, the state can support implementation by providing incentives to schools and teachers who implement recommended innovations. For example, teachers who decide to adopt interdisciplinary teaming should be given a modest amount of additional planning time each week. Such action will serve as recognition that teacher teaming requires more time than does traditional teaching. Teachers in interdisciplinary teams need both (a) to work on their own lessons, tests, and grades, and (b) to engage in team coordination (coordination of student discipline, joint planning of instruction/coordination of content, team evaluation of students, etc.).

But, incentives cost money (e.g., the only ways of providing team teachers with additional paid planning time without reducing the instructional time that each student receives are to provide funds for increased staffing or to ask teachers to increase their work week and remunerate them accordingly). A state's efforts to "share the vision" and to provide inservice education also cost money. Therefore, the state department of education may need to seek funding from the legislature, the U. S. Department of Education, and/or foundations to help pay for these activities and incentives.

Evaluate the Effects

Another essential activity at the state level is to evaluate the effects of the changes made during the restructuring process. Without systematically monitoring the changes brought about by the restructuring effort in a representative sample of the state's schools, it will be impossible to accurately gauge progress or to discover unintended negative consequences of the restructuring that must be addressed. It might also be wise for the state to help schools engage in self-assessment, for example, by developing a self-assessment instrument that schools can use "to assess needs and discrepancies" related to the state's recommendations concerning middle grades education (What Matters [in press], p. 112).

By defining a new vision concerning practices and structures in the middle grades, and by sharing, supporting, and evaluating this vision, a state can help its schools (a) motivate early adolescents to perform up to their capacity and (b) create conditions that ensure both the provision of high-quality subject matter instruction and the development of caring, responsive relations between students and teachers.

REFERENCES

Alexander, W. (1977). Report of the NMSA committee on future goals and directions. Middle School Journal, 8, 16.

Alexander, W., & George, P. (1981). The exemplary middle school. New York, NY: Wiley

Armstrong, D. (1977). Team teaching and academic achievement. Review of Educational Research, 47(1), 65-86.

Bandura, A. (1982). Self-efficacy mechanism in human agency. American Psychologist, 37, 122-147.

Beady, C., Slavin, R. (1981). Making success available to all students in desegregated schools: An experiment. Paper presented at the annual meeting of the American Educational Research Association, Los Angeles.

Beady, C., Slavin, R., & Fennessey, G. (1981). Alternative student evaluation structures and a focused schedule of instruction in an inner-city junior high school. Journal of Educational Psychology, 73(4), 518-523.

Becker, H. (1987). Addressing the needs of different groups of early adolescents: Effects of varying school and classroom organizational practices on students from different social backgrounds and abilities. (CREMS Report No. 16). Baltimore, Md: Johns Hopkins University, Center for Research on Elementary and Middle Schools.

Brooks, K., & Edwards, F. (1978). The middle school in transition: A research report on the status of the middle school movement. The CPD Memorandum, 1(1).

Caught in the middle: Educational reform for young adolescents in California public schools. (1987). (Report of the Superintendent's Middle Grade Task Force.) Sacramento, CA: California State Department of Education.

Children's Defense Fund (1988). Survey of state policies and programs for the middle grades. Washington, DC: Children's Defense Fund.

Cotton, K. (1982, February). Effects of interdisciplinary team teaching. Portland, OR: Northwest Regional Educational Laboratory. (ERIC Document Reproduction Service No. ED 230 533).

Covington, M., & Beery, R. (1976). Self-worth and school learning. NY: Holt, Rinehart, and Winston.

deCharms, R. (1968). Personal causation. NY: Academic Press.

deCharms, R. (1976). Enhancing motivation. NY: Irvington Publishers.

deCharms, R. (1984). Motivation enhancement in educational settings. In R. Ames & C. Ames (Eds.), Research on motivation in education, Vol. 1: Student motivation (pp. 275-310). NY: Academic Press.

Deutsch, M. (1979). Educational and distributive justice: Some reflections on grading systems. American Psychologist, 34, 379-401.

Duvall, E. (1965). Family dilemmas with teenagers. Family Life Coordinator, 14, 35-38.

Dweck, C., & Reppucci, N. (1973). Learned helplessness and reinforcement responsibility in children. Journal of Personality and Social Psychology, 25, 109-116.

Eccles, J., & Midgley, C. (in press-a). Understanding motivation: A developmental approach to person-environment fit. Educational Researcher.

Eccles, J., & Midgley, C. (in press-b). Stage/environment fit: Developmentally appropriate classrooms for early adolescents. In R. E. Ames & C. Ames (Eds.), Research on motivation in education, Vol. 3. NY: Academic Press.

Eccles, J., Midgley, C., & Adler, T. (1984). Grade-related changes in the school environment: Effects on achievement motivation. In J. G. Nicholls (Ed.), The development of achievement motivation (pp. 283-331). Greenwich, C: JAI Press.

Eccles, J., & Wigfield, A. (1985). Teacher expectations and student motivation. In J. B. Dusek (Ed.), Teacher expectations (pp. 185-217). Hillsdale, NJ: Erlbaum.

Epstein, J. (1983). Longitudinal effects of person-family-school interactions on student outcomes. In A. Kerckhoff (Ed.), Research in sociology of education and socialization, Volume 4. Greenwich, CT: JAI Press.

Epstein J. (1984). A longitudinal study of school and family effects on student development. In S. A. Mednick & M. Harway (Eds.), Handbook of longitudinal research. NY: Praeger.

Epstein, J. (1987). TARGET: An examination of parallel school and family structures that promote student motivation and achievement. (Report No. 6). Baltimore, MD: Johns Hopkins University, Center for Research on Elementary and Middle Schools.

Feldlaufer, H., Midgley, C., & Eccles, J. (1988). Student, teacher, and observer perceptions of the classroom environment before and after the transition to junior high school. Journal of Early Adolescence, 8, 133-156.

Fischer, S. (1980). The school climate of departmentalized and non-departmentalized junior high and middle schools in selected California school districts. Unpublished doctoral dissertation, Northern Arizona University.

Geisinger, K. (1980). Who are giving all those A's? Journal of Teacher Education, 31(2), 11-15.

Geisinger, K., & Rabinowitz, W. (1980). Individual differences among college faculty in grading. Journal of Instructional Psychology, 1, 20-27.

George, P. (1975). Ten years of open space schools: A review of the research. Gainesville, FL: The Florida Educational Research and Development Council.

Havinghurst, R. (1951). Developmental tasks and education. New York, NY: Longmans.

Lee, P., Statuto, C., & Kedar-Voivodas, G. (1983). Elementary school children's perceptions of their actual and ideal school experience: A developmental study. Journal of Educational Psychology, 75, 838-847.

Lipsitz, J. (1977). Growing up forgotten: A review of research and programs concerning early adolescence. Lexington, MA: Heath.

Mac Iver, D. (1988). Classroom environments and the stratification of pupils' ability perceptions. Journal of Educational Psychology, 80(4), 495-505.

Mac Iver, D., & Reuman, D. (1989). Decisionmaking in the classroom and early adolescents' valuing of mathematics. Manuscript submitted for publication.

Mac Iver, D., Klingel, D., & Reuman, D. (1986). Students' decision-making congruence in mathematics classrooms: A person-environment fit analysis. In P. Lee (Chair), Decisionmaking fit at early adolescence: A developmental perspective. Symposium conducted at the annual meeting of the American Educational Research Association, San Francisco.

Mac Iver, D., Stipek, D, & Daniels, D. (Forthcoming, 1989). Explaining within-semester changes in student effort in junior and senior high courses. To be presented at the annual meeting of the American Educational Research Association, San Francisco.

Maryland State Department of Education. (in press). What matters in the middle grades: Recommendations for Maryland middle grades education. (Report of the Maryland Task Force on the Middle Learning Years.) Annapolis, MD: Author.

McPartland, J. (1987). Balancing high quality subject-matter instruction with positive teacher-student relations in the middle grades: effects of departmentalization, tracking, and block scheduling on learning environments. (CREMS Report No. 15). Baltimore, MD: Johns Hopkins University, Center for Research on Elementary and Middle Schools. (ERIC Document Reproduction Service No. ED 291 704)

McPartland, J., & Wu, S. (1988). Instructional practices in the middle grades: National variations and effects. (CREMS Report No. 25). Baltimore, MD: Johns Hopkins University, Center for Research on Elementary and Middle Schools.

Midgley, C., & Feldlaufer, H. (1987). Students' and teachers' decisionmaking fit before and after the transition to junior high school. Journal of Early Adolescence, 7, 225-241.

Midgley, C., Feldlaufer, H., & Eccles, J. (in press-a). The transition to junior high school: Beliefs of pre- and post-transition teachers. Journal of Youth and Adolescence.

Midgley, C., Feldlaufer, H., & Eccles, J. (in press-b). Change in teacher efficacy and student self- and task-related beliefs during the transition to junior high school. Journal of Educational Psychology.

Natriello, G. (1987). Evaluation processes in schools and classrooms. (CREMS Report No. 12). Baltimore, MD: Johns Hopkins University, Center for Research on Elementary and Middle School.

Nolan, R., & Roper, S. (1976). How to succeed in team teaching--by really trying. (Occasional Paper No. 13). Stanford: Stanford Center for Research and Development in Teaching. (ERIC Document Reproduction Service No. ED 127 305)

Payton, D. (in press). Resource monograph on the middle grades: The pupils, the programs, the instructional processes. Albany, NY: The New York State Education Department.

Pickler, G. (1987, February). The evolutionary development of interdisciplinary teams. Middle School Journal, pp.6-7.

Rank, O. (1945). Will therapy and Truth and reality. NY: Knopf.

Reuman, D., Mac Iver, D., Klingel, D., Midgley, C., Feldlaufer, H., & Hermalin, A. (1984, August). Decisionmaking in junior high school mathematics: Student-classroom discrepancy. Paper presented at the annual meeting of the American Psychological Association, Toronto. (ERIC Document Reproduction Service No. ED 250 197)

Rounds, T., & Osaki, S. (1982). The social organization of classrooms: An analysis of sixth and seventh grade activity structures (Report EPSSP-82-5). San Francisco: Far West Laboratory, 1982.

Scholz, R. (1978). What research has found out on the cooperation of teachers and the effect of team teaching. (ERIC Document Reproduction Service No. ED 173 154)

Slavin, R. (1978). Separating incentives, feedback, and evaluation: Toward a more effective classroom system. Educational Psychologist, 13, 97-100.

Slavin, R. (1980). Effects of individual learning expectations on student achievement. Journal of Educational Psychology, 72, 520-524.

Slavin, R. (1988). Educational Psychology (2nd Edition). Englewood Cliffs, NJ: Prentice Hall.

Sprinthall, N. (1985). Early adolescents and opportunities for growth in the 1980s: Ships passing in the night, again. Journal of Early Adolescence, 5, 533-547.

Stipek, D., & Mac Iver, D. (in press). Developmental change in children's assessment of academic competence, Child Development.

Strang, R. (1957). The adolescent views himself: A psychology of adolescence. NY: McGraw-Hill.

Terwilliger, J. S. (1977). Assigning grades--Philosophical issues and practical recommendations. Journal of Research and Development in Education, 10(3), 21-38.

Weiner, B. (1986). An attributional theory of motivation and emotion. NY: Springer Verlag.

Youniss, J. (1980). Parents and peers in social development: A Sullivan-Piaget perspective. Chicago: University of Chicago.