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ABSTRACT

In this paper an analytic framework is developed for the examination of state policies that are most likely to influence teachers' content decisions. This framework offers a way of assessing the potential strength of such policies in terms of their prescriptiveness, consistency, authority and power. The framework has been applied to policies relating to elementary school mathematics in seven states: California, Florida, Indiana, Michigan, New York, Ohio, and South Carolina. These states were systematically selected from the population of 50 states; structured interviews were used to obtain as complete documentation on each state as possible. The distinctive characteristics of each state are described, with particular attention to whether the states attempt to exert control directly over teachers or indirectly through responsibilities placed on districts. Then the characteristics of the various types of policy are compared, including policies on instructional objectives and syllabi; student testing; student placement; textbooks; time allocation; and teacher qualifications. In conclusion, the study argues that these similarities and differences among state policies are likely to have important consequences for understanding the decisions that teachers make and the opportunities for students to learn. (Author)

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STATE POLICY AND THE CONTROL OF CURRICULUM DECISIONS: ZONES OF TOLERANCE FOR TEACHERS IN ELEMENTARY SCHOOL MATHEMATICS

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Abstract

In this paper an analytic framework is developed for the examination of state policies that are most likely to influence teachers' content decisions. This framework offers a way of assessing the potential strength of such policies in terms of their prescriptiveness, consistency, authority and power. The framework has been applied to policies relating to elementary school mathematics in seven states: California, Florida, Indiana, Michigan, New York, Ohio, and South Carolina. These states were systematically selected from the population of fifty states; structured interviews were used to obtain as complete documentation on each state as possible. The distinctive characteristics of each state are described, with particular attention to whether the states attempt to exert control directly over teachers or indirectly through responsibilities placed on districts. Then the characteristics of the various types of policy are compared, including policies on instructional objectives and syllabi; student testing; student placement; textbooks; time allocation; and teacher qualifications. In conclusion, the study argues that these similarities and differences among state policies are likely to have important consequences for understanding the decisions that teachers make and the opportunities for students to learn.

STATE POLICY AND THE CONTROL OF CURRICULUM DECISIONS: ZONES OF TOLERANCE FOR TEACHERS IN ELEMENTARY SCHOOL MATHEMATICS[1]

John Schwille, Andrew Porter, Linda Alford, Robert Floden, Donald Freeman, Susan Irwin and William Schmidt[2]

How much do state policy makers have to say about what is taught in elementary school mathematics in the United States? What is left for teachers to decide and how much does this residual differ from state to state? These questions underlie this comparative study of state policies in California, Florida, Indiana, Michigan, New York, Ohio and South Carolina. The policies of interest are ones which are likely to influence teacher content decisions about (a) how much time to devote to mathematics, (b) what topics to teach, (c) who will be taught which topics, (d) when and how long each topic will be taught and (e) how well topics are to be learned. Teacher decisions in these five areas together determine much of each child's opportunity to learn mathematics in elementary school.

In discussing the relation between these teacher decisions and state policy, we refer to *zones of tolerance*. This term distinguishes between areas in which teachers are most free to exercise professional discretion and judgment and areas in which they are not so free (e.g., in discussing contraception with children). In Boyd's discussion of curriculum policymaking, the term *zone of tolerance* denotes the limits set by community values and norms.[3] In this study we are interested not in community values, but rather in zones of tolerance permitted by policy.[4] This paper is written from the perspective of what states ask districts and teachers to do; whether these policies are effectively carried out at the local level is a matter for another study.

Authority, Power and Other Sources of Policy Strength

To describe policy zones of tolerance, we must have a way of assessing the potential strength of policies, that is, the potential they have for affecting what districts and teachers do.[5] In this study of state policy, four sources of policy strength have been considered: prescriptiveness, consistency, authority and power.

Prescriptiveness has to do with how specific and extensive policy is in telling districts and teachers what to do. Policies are often not prescriptive; they may be quite general and ambiguous. Whatever specifics there are may be limited to one small aspect of teachers' content decisions while other aspects may either not be addressed or may be couched in general exhortations.

Consistency has to do with the links among policies by which they mutually reinforce one another. For example, do policies on textbooks and policies on testing call for teachers to make the same content decisions? Some policies may lack consistency in that they are isolates, having no links to other policies. Policies may also conflict, one with another.

Even the most prescriptive and consistent policies may remain weak policies. Still another way to give weight to a policy is to enhance its authority, this is, to make sure it has one or more of the following attributes: appeal to *law or rule*, consistency with *social norms* (e.g., the shared belief that certain topics ought to be taught to certain children at a certain age), agreement with relevant *expert opinion*, or support from *charismatic individuals*.

Likewise, the power of a policy can be increased through rewards and sanctions. The sources of power parallel the types of authority. For example, rewards and punishments may be accorded by significant others when a

person violates a social norm. The reward may simply be praise, the punishment criticism. Likewise, experts bestow rewards on the less knowledgeable in the form of help while contact with charismatic individuals is conceived of as rewarding in itself and therefore susceptible to manipulation as a form of power.

These definitions of power and authority are adapted from the Spady-Mitchell formulation,[6] which in turn is a revision of the classic Weberian analysis of authority. What is particularly important in these definitions is the crucial distinction that Spady and Mitchell make between submission to authority as opposed to submission to power. Authority is present when there is voluntary submission for reasons of intrinsic personal fulfillment whereas power can be detected in the manipulation of rewards and sanctions and the resulting self-protective calculations of the subordinate individuals involved.

When considering the potential authority of a policy, we therefore look to appeals which are likely to elicit voluntary compliance. One such appeal would be to the law. Most persons obey the law, not solely because of the penalties of disobedience, but also because the law is the law and therefore makes legitimate demands on the behavior of those subject to the law. Another appeal to authority is to invite acceptance of a policy by arguing that it embodies the best of expert knowledge. A third category of appeal consists in showing that a policy has the support of various constituencies whose shared beliefs are important to persons charged with carrying out the policy. This third type of appeal takes two forms. One emphasizes consistency with custom and continuity, with what has long been done. It can be called traditional

authority. The other somewhat weaker form is invoked in the case of policies calling for a change of practice and consists in documenting involvement and support for the change on the part of the groups who have the most at stake.

Background and Method

Although various studies of state curriculum policies have been done,[7] this series of case studies in the first to compare states on all the most relevant policies related to a single subject matter such as mathematics. Thus our study is concerned not just with the potential strength of a single policy, but with cumulative potential impact of all policies which make up the hypothetical policy zones of tolerance in each state. This study is but one in a series of empirical efforts to examine the determinants of teachers' content decisions in elementary school mathematics.[8]

The data collection for these state case studies took place in the Fall of 1981. Our purpose was not to give an up-to-date report on each of the states examined. Instead, we have provided a framework and illustrative analysis for comparing curriculum policies across states. The year 1981 was of particular interest since it marked the end of a period in which the federal government used categorical programs to promote state-level activity in education. Since the United States is now in a period of intense curriculum reform at the state level, it would be good to replicate this study in a few years. In this way it would be possible to document the changes that are now taking place in states as they respond to a changing federal role as well as to pressure for a more uniform and challenging curriculum.[9]

Selection of States and Collection of Documents

For our purpose of illustrating the importance of diversity among states, it was important to select states carefully and systematically. The seven

states here described were chosen in three stages. In the first stage, a literature review was used to construct a 50-state profile of specified policies, such as state assessment and textbook adoption.[10] This profile was supplemented with structured interviews of twenty-two experts in such areas as mathematics education, politics of education and educational testing. These experts were asked to nominate states with specified attributes, such as unusual activity in less well-known policy areas, including grade-to-grade promotions, ability grouping, and emphasis on special topics in mathematics. In the second stage we selected 20 states and within each state interviewed a state mathematics specialist (or other person primarily responsible for mathematics education).[11] The data gathered on these 20 states were used in the third stage to make a final selection.

California, Florida, and New York were selected for having a variety of seemingly strong policies. These three states were consistently nominated by our expert informants and have been frequent objects of attention in the earlier literature.[12] South Carolina was chosen because its apparently strong policies were generally of recent origin and still under development. Ohio and Indiana were selected because, on first acquaintance, they appeared to have relatively weak policies with much responsibility delegated to districts. Michigan was included as yet a third weak policy state and one in which we would gain a better understanding of the state context within which our other studies of teacher content decisions have been conducted.

For states selected, we assembled as complete a set of documents on their relevant policies as possbile.[13] To cover the areas in which state prescriptions might influence what teachers teach in elementary school mathematics, seven types of policy were investigated: statements of objectives, achievement testing, textbook adoption, allocation of instructional time, school

evaluation or accreditation, assurance or improvement of teacher qualifications, and promotion of specific topics. After listing types of documents we might obtain, we called responsible staff in each state department of education, starting with the person we had talked to earlier and asking for a particularly knowledgeable person in each area. On average, eight persons were called per state.

An important caveat to consider is that, in analyzing strength of policies, we are limited to the documents collected,[14] plus a number of more or less extensive telephone interviews in each state. The documents proved to be most useful in providing information about the nature of each policy, the formulation of policies, and attempts to communicate policies to districts and teachers. For inferences about the authority of policies, we have relied heavily on justifications for policy as stated in the documents. It is important to note that many of the documents were official, public statements and thus unlikely to give as much attention to criticism and skepticism about the policies as might be warranted. Also, although some documents describe the implementation of policies (e.g., plans for implementation, reports on inservice training conducted for teachers, reports on the evaluation of policies), we have not done a study of implementation.[15] Our analysis describes intended policies, not implemented ones.

How States Differed

In this section we discuss what is distinctive about each state in initiating policy zones of tolerance. Given limitations on space, the various types of policy and sources of strength are dealt with, not exhaustively, but selectively to show how the states differed in 1981 in the limits they attempted to place on teachers.

At the time the states were studied, New York and South Carolina had taken the most direct responsibility for establishing zones of tolerance. They were the most *direct control* states, that is, states whose policies embodied content prescriptions. Florida and California had also assumed a good deal of direct responsibility but at the same time explicitly delegated additional responsibility to the districts. In Ohio and Indiana nearly all the responsibility for establishing policy zones of tolerance was delegated to the districts: they were directed to have policies. They were therefore the most *indirect control* states. In Michigan, the state made little attempt to limit zones of tolerance or to demand that districts do so. District autonomy was thus greatest in Michigan.[16]

New York: A State of Tradition and Innovation

Policy for the University of the State of New York (a term used to designate all schools, colleges, universities, libraries and museums in the state, both public and private) is the responsibility of the 200-year-old Board of Regents and their Commissioner of Education. The Regents are the oldest state board in the country. They and the Commissioner they appoint have enjoyed broad legal responsibility and high prestige. Given this history, it is not surprising that New York is a state with relatively strong and centralized curriculum policies.[17] These policies speak directly to schools and teachers. To provide direction in mathematics, the state education department in 1981 had a 7-person bureau specializing in this subject. However, unlike all the other states studied except Michigan, New York had little to say to districts on how they should make their own policies.

More than any other state studied, New York used its formidable power and authority not simply to ensure the teaching of core topics, but also to bring about the teaching of new topics. In this sense the New York State policies

have constituted more of a constraint on the autonomy of teachers than policies in other states which ask teachers to teach what most teachers would teach anyway.

This tendency can be illustrated through New York State efforts to promote basic concepts in probability and statistics. This effort got under way in 1974 when 10 New York State districts were recruited for a state-sponsored and NSF-funded pilot project to teach probability.[18] At the end of the three-year project, one of the district project directors went to work on revision of the New York State syllabus for elementary school mathematics. The new syllabus was finally published in the spring of 1980 after having been reviewed by mathematics teachers, revised, field tested in more than 40 districts and again revised.[19] In short, the process was designed to give the new topics a measure of social authority through the well-documented involvement of school personnel in the development of the new syllabus. In the new syllabus, probability and statistics stood as one of the five major strands which told teachers what to teach at what grade level. To monitor achievement of topics in the syllabus, state-developed Pupil Evaluation Program (PEP) tests were given to all students in third and sixth grades.[20]

However, New York had no state textbook adoption to ensure that the topics prescribed by this syllabus were in fact covered in the instructional materials used by teachers and students. Nor was there any attempt to regulate the time allocated to these topics. Recommended time allocations did exist for the total time to be devoted to mathematics at each grade level,[21] but even these time recommendations were not stressed by the State Education Department.

Thus, it was left to tests and associated policies of required remediation to further delimit a policy zone of tolerance. The PEP tests were

only one component of the policies that have given testing its authority and power in New York State. The traditional Regents examinations and the more recent Regents Competency Tests (RCT) also have had a major role to play. The Regents Competency Testing program was instituted in 1978: This program mandated tests in reading, writing and mathematics which had to be passed by all students before they could graduate from high school.[22]

The RCT and the elementary school PEP tests had potentially powerful consequences in that students who fell below certain points on these exams had to be given special remediation. The school was required to notify the parents of such students in writing of the test results and the plan for remediation.[23] In the case of the PEP this cycle of testing and remediation, according to official documents, prepared students for the RCT.[24] In addition, funds for compensatory education programs were allocated to districts on the basis of the percent of students with low PEP scores in a designated baseline year.[25]

For high school students, Regents examinations (hereafter called the regular Regents) have been a part of state policy since the nineteenth century. While these college-oriented examinations may have had little effect on what has been taught in elementary school, they are nonetheless relevant in providing the state with its traditional authority to mandate tests and set graduation requirements in terms of those tests.

These tests have also provided a precedent for state tests with power. Students who pass a certain number of regular Regents examinations have received a diploma with a Regents endorsement. Such a diploma is regarded as having higher value than the local district diploma other students receive; failure rates have not been negligible even among the somewhat select group

for whom the tests were designed.[26] Teachers are thus likely to feel rewarded when a large number of their students pass these examinations and punished when they do not.

The administration of these tests has given them further legal authority and power. Test security has been strictly regulated by the state.[27] The test manual for the regular Regents and RCT warned that examination fruad (i.e., giving or receiving aid during an exam) was a misdemeanor and that state department personnel would make unannounced visits to schools to ensure examination security. Each student taking a regular Regents or RCT has been required to sign a declaration affirming that there has been no breach of security.[28]

Thus, in New York the state looms as a potent source of curriculum authority and power. The state's tradition of specifying topics to be taught and standards for achievement establish relatively well-defined zones of tolerance. Whether teachers stay within or stray from these zones is a question, however, for which this study provides no direct evidence.

South Carolina: Prescriptive of Content, Cautious About Standards

As of 1981 South Carolina had gone as far as any state in our study in telling teachers what to teach, but had done less than Florida or New York in setting standards that students must meet. Although the state had a number of policies which potentially affected elementary school mathematics (e.g., textbook adoption, school accreditation, teacher testing), the main source of prescriptions at the time of our study was the Basic Skills Assessment Program (BSAP). This program originated in a 1978 legislative act that directed the State Board of Education to establish statewide objectives and standards in reading, writing, and mathematics. This law was detailed, spelling out aspects of policy which in other states like New York would be dealt with in

regulations, not statutory law. Thus, the implicit appeal to legal authority was great. The BSAP specified who would be tested and who might be exempted; it demanded field-testing of tests and inservice training for test administrators; it called for criterion-referenced tests and told how these tests were to be reported. The act even established an independent special project with its own director and administrator to oversee implementation.[29]

BSAP testing was mandated for grades 1, 2, 3, 6, 8 and 11.[30] According to the law, the main purpose of the test was "diagnosis of student deficiencies" to "aid in determining instruction needed by the student in achieving the minimum state-wide standard established for each respective grade."[31] According to official interpretation, the Basic Skills Objectives "cannot be considered adequate for a complete program in language arts or mathematics."[32] Yet, unlike Florida, districts were not required to develop additional or complementary objectives.

One year after BSAP law was passed, every elementary school teacher in the state received a copy of the BSAP objectives. Two years later the same distribution was given to appropriate section of Teaching and Testing our Basic Skills, a state published manual with suggested teaching strategies and measurement advice for each objective.[33] Widespread dissemination was thus assured.

Appeal to social authority has also been an important aspect of BSAP as it has for similar policies in other states. Participation by South Carolina educators in the development of the objectives has been noted in every BSAP document used for school or public information.[34] Such documents have referred to "the views of approximately 18,000 public school teachers and hundreds of lay citizens" whose views were considered.[35]

Provisions to enforce standards of learning were not so much in evidence. All BSAP communications emphasized the nonpunitive nature of the program; its legal power was thus limited. South Carolina had no state policies on promotion or retention. In contrast to Florida and New York, the BSAP position on student placement was to caution against premature use of tests for graduation or promotion. One publication for parents stated flatly: "Test scores will not be used for holding back students."[36] Remediation was required, however, whenever tests revealed student deficiencies.[37]

Another source of prescription is the Defined Minimum Program (DMP), first implemented in 1975.[38] It provided a comprehensive school evaluation and accreditation program, but was not tied directly to the more recent BSAP prescriptions. Its most direct link with teacher content decisions was in its time requirements. Students in grades 1-3 were required to receive mathematics for a minimum of 225 minutes per week for 36 weeks, and 250 minutes per week in grades 4-6.[39] Compliance has been monitored through an annual school evaluation in which each staff member answers a questionnaire item which asks the number of minutes per week spent teaching each subject.[40]

In turn, to obtain accreditation, each district has had to apply annually, submitting school evaluation reports showing compliance with the state's DMP.[41] South Carolina schools have also regularly undergone two types of evaluation. One is a short visit to every school for several hours every other year by state department personnel. The other, initiated in 1981-82, consisted of more extensive on-site visits in which two state department staff members are responsible for two types of findings: deficiencies that the school must correct and recommendations that the school may or may not choose to implement. Thus, some provision for legal power exists.

In our judgment, textbook adoption has been a relatively unimportant policy as far as directly controlling teachers' content decisions. In South Carolina, as in most other textbook adoption states, the state has designated a number of textbooks (12 regular or remedial series in 1981) from which districts choose; the state did not require a single adoption for any given district, school or even classroom. However, there was still some press for uniformity and compliance with state content prescriptions. When the state reviewed mathematics textbooks in 1981, every publisher's representative reportedly correlated his or her series with the state's BSAP objectives, and the adoption committee's report commented on the thoroughness with which these objectives were addressed.[42]

To improve teacher qualifications, the state's main approach before 1982 was mandatory inservice. In addition to a basic mandate of five inservice days required for state aid, inservice has also been emphasized in the BSAP and the DMP.[43] However, these inservice policies were not prescriptive of content and there was no great involvement of the State Department of Education in *subject-matter-oriented* inservice. On July 1, 1982, a comprehensive new program for teacher training, certification, initial employment and evaluation was scheduled to go into effect,[44] but in 1981-82 neither this new program nor the pre-existing inservice policy had done much to narrow the zone of tolerance for South Carolina teachers.

Florida: Mandatory Prescription at State and District Level

Florida in 1973 passed a law requiring school-based management.[45] This law responded to criticism of the increasingly centralized state and district control of public education. According to a later state committee, this 1973 legislation reflected 'the belief that decisions about public schools were

being made too far from those people responsible for teaching children--teachers--and too far from those affected by schools--students.[46]

Paradoxically, by 1981 Florida, of all the states in our study, had the narrowest policy zone of tolerance for teachers. The 1973 law had little effect. Instead, to resolve the tension between pressures for and against local autonomy, the state mandated *district* (not school) level involvement in various state curriculum policies. Each of an unprecedented string of accountability laws passed in the 1970s,[47] created, on the one hand, district committees to review state proposals and, on the other hand, required districts to develop their own policies that went beyond state minimums (e.g., district objectives, pupil progression plans, testing programs and graduation requirements). In the words of the 1976 Educational Accountability Act, each district school board had to "establish a comprehensive program for pupil progression...based upon local goals and objectives...which supplement the minimum performance standards approved by the State Board of Education." Likewise, districts were required to establish standards for high school graduation to 'include, but not be limited to, mastery of basic skills and satisfactory performance in functional literacy.'[48] Thus, Florida had zone of tolerance boundaries imposed not only directly by the state, but also indirectly through mandates for districts to develop their own policies. State standards were prescribed as the *lower* limit of accountability.

Nevertheless, the direct state requirements by themselves constituted a comprehensive, interwoven set of accountability mandates. Consistency was an important attribute of Florida policies. By law, to graduate from high school, Florida students had to pass two test hurdles: They had to demonstrate mastery of the eleventh grade state minimum performance standards, and to pass a second state test (first known as the functional literacy test

and later given the more innocuous title of State Student Assessment Test, Part II). The latter test covered 15 skills in mathematics (e.g., "determine equivalent amounts of up to $100, using coins and paper currency").[49] Although these requirements were challenged and delayed by the widely publicized and landmark litigation of Debra P. vs. Turlington,[50] a whole series of other interrelated accountability measures were put into effect. They included a comprehensive and hierarchically organized package of minimum performance standards for each grade, statewide assessment tests in grades 3, 5, 8 and 11, a required diagnostic-prescriptive approach to mathematics in grades K-3, compensatory education programs for students who did not satisfy the requirements for a regular high school diploma, teacher certification examinations, and approval of teacher preparation institutions tied to candidates' performance on the required certification examinations.[51] The state also endorsed and disseminated instructional guides, developed by various agencies, to provide teachers with specific enabling objectives for each skill described in the state minimum performance standards and also to give them suggestions for teaching each skill.[52]

The treatment of assessment scores is indicative of the potential power of Florida policies as compared with more cautious approaches in California and Michigan. Assessment scores have been publicly reported by subject and grade levels within schools. The State Commissioner of Education has openly encouraged competition among individual schools to improve test scores.[53] At the extreme, the result has been newspaper reports of the following sort:

> The lowest fifth-grade scores were at Lakelands' Lincoln Avenue Elementary, where 71 percent passed communications, and at Winter Haven's Snively Elementary, where the percentage passing math plummeted from 81 to 68 percent.[54]

These tests were not only backed by the appeal to the legal authority of legislation and the social power implicit in the encouragement of school level

competition; the state department could also argue that the content validity of the tests has been confirmed by representative groups of teachers, administrators, and parents in each of Florida's 67 districts. Contracts for test development further extended this appeal to expert authority and social support. For example, the contracted item writers had to have experience in both test construction and as an elementary or secondary teacher.[55]

Assessment scores have been closely linked to other policies, especially student placement policies. State policy called upon teachers to consider state standards in promotion from third, fifth, eighth and eleventh grades.[56] Another use of test scores was in initiating school audits. Legislation authorized the state department of education to conduct building level audits whenever the need for such audits was suggested by low scores on statewide assessment test.[57] However, although each school audit lasted about two weeks, the audit policy was not accompanied by strong enough sanctions to give it much power.

The stress on promotion, retention and, in grades 1-3, differentiated placement has been another distinctive feature of the Florida laws. The 1976 act specified that "particular emphasis...shall be placed upon the pupil's mastery of basic skills, especially reading, before he is promoted from the 3rd, 5th, 8th, and 11th grades."[58] In addition, according to 1979 legislation establishing the Primary Education Program, the district had to develop a written instructional plan to meet the individual needs of each student in grades K-3, identify a measure by which mastery would be determined for those students who failed the statewide third-grade test, retain at least one year in grade those students who did not show mastery, and maintain records to show, when audited, that these criteria were followed. By state policy, parents had no say in promotion from third grade.[59]

In contrast to the above policies, state textbook adoption in Florida was not linked to other accountability measures and put little restriction on teacher choice in mathematics. In 1981 the state offered a choice on nine different mathematics series, all from widely known, national publishers.[60]

The state's reluctance to give teachers a strong voice in curriculum decisions can be seen not only in a relatively narrow zone of tolerance, but also in the nature of appeals to social and expert authority in Florida. Although teachers were always represented on state and district committees, appeals focusing on the expert authority of teachers and their professional organizations have been infrequent. Teachers rarely, if ever, constituted the majority of members on the various implementation committees. In all the references to committees we examined, we found only one reference to the Florida Council of Teachers of Mathematics and one reference to professional organizations in general.[61] Another indication of this tilt can be found in a publication from the Department of Education titled "Elementary Mathematics: A Total View." It included as appendices two position papers, one on basic mathematical skills from an administrators' organization--the National Council of Supervisors of Mathematics (NCSM), and the other an "agenda for action" developed by the National Council of Teachers of Mathematics (NCTM). While the introduction to this document makes little mention of the NCTM agenda, it lists each of the NCSM skills and states that they should be "the central curriculum focus."[62]

California: Prescriptions Without Challenge to Local Authority

California has been described by Van Geel and Block as a very directive state in matters of curriculum policy.[63] Yet we found that at least in mathematics policy it has shown much deference to local authorities. For example, the thrust of the state syllabus (the 1975 California Mathematics Framework)[64]

was to maintain the core curriculum, not to promote innovation. Although the Framework did call for change in the areas of metrics and problem solving, in the main it reflected a disenchantment with the "new mathematics" reforms. The rationale for this Framework was stated in the foreword by then superintendent Wilson Riles. He declared that its "contents reflect the concerns of teachers rather than those of mathematicians."[65] The Framework was thus a rejection of the expert authority of mathematicians and an appeal to the mixed traditional and expert authority of the classroom teacher--a sharp contrast to Florida.

Similarly, the tests in the California Assessment Program (CAP) have been justified partly on the basis that they reflected what already was taught. The program in 1981 required mathematics testing in grades 1, 3, 6, and 12.[66] The aim has been program evaluation, not individual assessment; scores are not meaningful at the individual level. After review of the specifications for the sixth-grade test in 200 randomly selected districts, some topics were deleted "when a substantial number of districts responded that those skills should not be measured as a part of the California Assessment Program."[67] A document describing the third-grade instrument further stated that 'the test had to reflect what was being taught in California public schools, be based on California curriculum frameworks, and be comprehensive in scope.'[68]

In analyzing the power and authority of the CAP, it is important to make a distinction between simply asking districts to administer tests and report results, on the one hand, and asking the districts to teach the content of tests, on the other. In California various sources of authority and power--legal, expert, social and perhaps traditional-support the *administration* of tests. Yet if one asks whether district curricula should conform to the tests, the answer is less clear. The tests have been based in part on the state's curriculum framework, and districts are legally obligated to teach

content specified in the framework. However, schools have been specifically prohibited by law from teaching to the test. "No...superintendent...or any principal or teacher...shall carry on any program of specific preparation of the pupils...for the testing program as such or the particular test used therein."[69]

Still more important in avoiding constraints of a state policy zone of tolerance is the Proficiency Assessment Program (PAP). In this, the policy with the most teeth since it has to do with whether or not students graduate from high school, local districts have been mandated to develop their own standards. The key provisions of this indirect policy were that (a) districts must establish minimal standards and assessment procedures for reading comprehension, writing and computation; (b) there must be assessment at least once during grades 4-6, once in 7-9 and twice in 10-11; (c) students must pass the standards in each of the three areas; (d) instruction is to be provided until "the student has been given numerous opportunities to achieve mastery"; and (e) students are to be denied high school diplomas if they do not meet the proficiency standards.[70] The requirement for districts to set standards for computation was in some sense a restriction on content, but as with the CAP this constraint was very much in line with what was already being taught. Moreover, the state's role in the setting of standards and procedures PAP has been strictly limited to technical assistance. The State Department was precluded by law from "conducting monitoring or compliance reviews of local procedures" regarding proficiency assessment.[71]

In the California context of state policies deferring to local authority, textbook adoption does not appear quite as weak relative to other policies as it does in other states. To be sure, the state did give districts a wide range of textbook publishers from which to choose--eleven in 1981.[72] But, in

the criteria for textbook evaluation drawn up by the same committee which had drafted the Framework, content figured prominently and the state content emphases on problem-solving and metrics were given special attention.[73]

Thus, although California has had similar types of policy to New York--objectives, testing, required remediation and graduation requirements--the authority base for these policies seems very different. Whereas in New York, policies for the most part relied on the state's own authority and power, both legal and traditional, almost ignoring the district as an agent of policy formulation, in California the state was more deferential to teachers and districts.

Indiana and Ohio: Zones of Tolerance for Districts, Not Teachers

Indiana's content policies in 1981 hardly addressed the teacher at all. The state imposed requirements on school districts without directly telling teachers what to do. Our telephone interviews indicated that the state placed great emphasis on local autonomy. The Departmental of Public Instruction viewed itself as a facilitator, not a regulator.

The chief policy to embody this orientation has been the Comprehensive Assessment and Program Planning System (CAPPS, later renamed the Educational Improvement Program), initiated in 1978.[74] Persons interviewed insisted that the CAPPS should not be cast as an attempt to specify curriculum. Instead, it required school districts to evaluate and plan their own curriculum.

The CAPPS process has included the following steps: (a) a local advisory committee (including teachers, administrators, parents, and community members) is formed to work on a particular subject matter; (b) in each of these subject matters, the present program is analyzed by the professional staff and the goals and objectives are reviewed by the advisory committee; (c) the district, after establishing local objectives and standards, assesses the present

performance of students in grades 3, 6, 8 or 10 (or some comparable sequence) to identify gaps between program objectives and student performance; (d) teachers develop and implement appropriate strategies of instruction, with inservice if necessary; (e) pupil progress is again evaluated; (f) the district develops and implements a system for reporting to parents; and (g) the district reports to the state on its program planning and student progress.[75] In its charge to districts, this policy thus provided a basis for giving legal, expert and social authority to district policies.

While Indiana has been listed as one of the many states with minimal competency testing programs,[76] the state has not actually mandated a testing program. Instead, each school district has been required to develop a method of evaluation that could consist of any appropriate strategy, from teacher observations to norm-referenced tests. Available data on use of reading tests indicates that 97% of the districts used published criterion or norm-referenced tests in 1978-79.[77]

In spite of its emphasis on school district initiative and autonomy, Indiana has had a state curriculum guide (the Mathematics Guidelines, originally published in 1969 and revised in 1977).[78] These minimum competency guidelines, however, have not been viewed as prescriptive, but rather as a stimulus to development of local policies.[79] Indiana has also had state textbook adoptions, with up to seven books in each subject taught,[80] as well as recommended minimum time allocation (15% of the time in grades 1-6 for mathematics and science). But as in New York, no particular effort was made to disseminate this time recommendation, much less enforce it.[81] The state has been still less prescriptive in dealing with student placement. For students not meeting locally determined CAPPS standards, some locally defined effort

was to be made.[82] These efforts might include special classes, tutors, individualization, summer school--whatever the district decided was appropriate. No state made policy on promotion or retention.

In Ohio, the State Board of Education has statutory authority to "formulate and prescribe minimum standards to be applied in all (public and private) elementary and high schools...for the purpose of requiring a general education of high quality."[83] According to the Revised Code of Ohio these standards should provide for such matters as curriculum, certification of teachers, instructional materials, admission, promotion and graduation of students.[84] The State Board's response to this mandate was embodied in the Minimum Standards for Ohio Elementary Schools, 1970 revision. This document required each district to adopt a statement of philosophy and purposes for its elementary schools.[85]

School districts were not, however, told what topics to teach in elementary school mathematics (or other areas for that matter).[86] The closest thing to state mathematics objectives was a page and a half section in the interpretation part of the Minimum Standards document, and the items listed were, the document explicitly states, "intended to be suggestive rather than prescriptive."[87] State mandates for instructional time were similarly nonexistent. For example, a table of suggested time allocations suggested there *might* be 40 minutes of mathematics per day in grades 4-6. In 1981, Ohio also had no state assessment for mathematics or any other subject. One was started in the mid-1970s, but died for lack of appropriations.[88] The state did, however, require districts to use standardized tests, but without saying what tests shall be used, what subjects tested, how frequently or for what students.[89] Nor were there any guidelines or suggestions on setting standards of achievement.

The state has not had a textbook adoption policy and, in fact, the State Department staff has followed an unwritten policy of not recommending specific mathematics textbooks for local adoption.[90] Ohio's policies on student placement have been, for the most part, equally tolerant of local diversity. While districts were required to have a written promotion policy, the state provided no guidance on what that policy should be[91], though some did press for instruction sensitive to individual differences. For example, districts were required to provide for "continuous sequential progress directed toward diagnosing and meeting the needs of each pupil. This shall be done through organizational and grouping practices on all grade levels and by differentiated learning activities and materials."[92]

In short, the state has not prescribed what topics should be taught to what students, when and for how long, and to what standards of achievement. When the state did consider more prescriptive policies, such as grade-to-grade promotion standards and state minimum competencies, such policies were rejected. When the state developed a pair of minimal competency handbooks, school districts were given, not the minimal competencies themselves, but rather a step-by-step process for building a local competency program.[93] It was the task of the districts, not the state, to set zones of tolerance for teachers.

To encourage district compliance, Ohio had three types of school evaluation. The first called for the State Department of Education to conduct evaluations through site visits, reaching each school about every seven years.[94] The second type consisted of annual reports from principals to the State Department of Education.[95] The third program has been voluntary and consisted of self-appraisal.[96]

Though Ohio's policies were notably permissive, they avoided virtually all hint of direct control. The state's authority and power were put indirectly to the service of local district policies through school evaluation measures. Not only was legal authority inherent in the state's requirements, but also power in the threat of sanctions existed for districts not in compliance. When conducting evaluations, the state used a form which listed minimum standards for elementary schools along with boxes for checking compliance, qualified compliance or noncompliance. Violations were to be reported to the local school board and, in principle, could lead to loss of the school's charter from the state. The required annual reports likewise required principals to state what they were doing to study at least one phase of the school's program in depth each year and all phases over a five-year period--all within the framework provided by the minimum standards.

In 1981-82 the state appeared to be embarking on major new policy initiatives. These initiatives, however, promised to stay with the prevailing philosophy. One of the Ohio competency handbooks summarized this position as follows:

> Education functions best when the initiative, plans and management are kept close to the people. The state has a role to play in charting directions, but the management and day-to-day decisions work best when they are in the hands of a locally elected board of education and locally selected administrators.[97]

Michigan: A Surprisingly Wide Zone of Tolerance

The Michigan state assessment was one of the earlier and more publicized of state testing initiatives. On the basis of this program, Michigan gained an inaccurate reputation for strong state curriculum policies.[98] In 1981 the Michigan Educational Assessment Program was still the state's only major

policy to focus directly on content prescription.[99] Its history demonstrates that it was not, relative to other state testing programs studied, a very powerful policy.

When the State Department of Education started to develop objectives for mathematics in the early 1970s, its efforts were immediately criticized as too narrow by the executive committee of the Michigan Council of Teachers of Mathematics (MCTM).[100] The MCTM, invited by the state superintendent to do better, worked with classroom teachers, mathematics educators, and mathematicians to produce the first official version of the mathematics objectives in 1973.[101] These objectives were minimal. They were not a complete program nor were they obligatory. No language said that all districts must teach them, much less that all students must attain them.[102] Thus, whatever force the objectives possessed came from their use in the Michigan Education Assessment Program (MEAP) which had begun with norm-referenced tests, but which later switched to criterion-referenced tests based on the state objectives. In 1980-81 about 150 of the state's 600 K-9 objectives were being tested in the MEAP.

The strength of this combined objective and testing policy has been limited, certainly much more limited than in California, Florida, New York or South Carolina. The legislation creating the MEAP did not dictate that school districts should use the results of the testing program in any specific way. In fact, the 1980-81 assessment handbook sent to all districts stated explicitly that use of the state's recommendations "is the choice of the local staff."[103]

The state has given little power to the program. What little power the tests did have is, in the main, the consequence of the publicity that newspapers have given to comparison of scores among districts. The State

Department has offered only modest, positive incentives in the form of in-service and materials for teachers to help them teach the content covered on the tests.[104]

Lacking power, the State Department has appealed primarily to social, expert and legal authority. Brochures have typically grounded the assessment in the authoritative acts of the Michigan legislature. The MEAP handbook has also appealed to the fact that the tests were written by Michigan educators and field-tested on a statewide sample of students and that the tests were endorsed by and developed with the help of the Michigan Council of Teachers of Mathematics.[105]

Michigan has had no textbook policies affecting mathematics content with the exception of some metric requirements for which there has been virtually no enforcement.[106] The state has not formally specified time to be spent on mathematics or any other subject. The State has made no policies on student placement other than those which are the consequence of certain categorical programs, such as compensatory education. The state's stance on teacher qualifications has been, in the manner of most American states, to delegate responsibility to colleges and universities with approved teacher education programs. The state's certification requirements have been very general, doing nothing to limit the teachers' zone of tolerance in elementary school mathematics.[107] The state did not have a policy requiring school evaluation or accreditation although program criteria that could be applied in such an evaluation were under development at the time of our study.

In short, Michigan has created a wide zone of tolerance which places great trust in local school districts and the individual classroom teacher, a trust which is also communicated at the state level by the use of teacher organizations to establish expert authority. The state's philosophy has been

well expressed in the paragraph which stands at the beginning of a state-published Teacher Resource Guide for Metric Education:

> The individual classroom teacher is the real decision-maker for the curriculum. Decisions involving the selection of lessons, their sequencing and adaptation to individual learners, the materials available, the time allowance and the host of other factors must be considered by the teacher as daily instruction is planned. These guidelines do not specify a complete lesson series for all teachers everywhere.[108]

It is a surprise - even to us within the state - that Michigan, in putting so few mandatory curriculum requirements on districts and teachers, has left a zone of tolerance broader than that of Florida, New York, South Carolina, California, Indiana, and Ohio.[109]

How Policies Differed

Objectives, Syllabi, Curriculum Guides

State policies may either attempt to control teachers directly by telling them what to teach, to whom, etc., or these policies may exert indirect control by requiring districts to develop their own district-level policies. Some statement of the objectives of mathematics instruction (whether it is called a syllabus, curriculum guide, or whatever) is a necessary but not sufficient instrument of direct content control. States which specify the content of elementary school mathematics in some detail aspire to at least a minimum of direct control. States with no such objectives (e.g., Ohio) can exercise at most indirect control.

Yet even in states with objectives, policies differ markedly in their potential for inroads on teacher autonomy. Indiana objectives were purportedly not prescriptive. Michigan objectives have consisted of minimal competencies which were but partial guidelines and within which much district and teacher variation has been permitted--sometimes even encouraged. California objectives, though more comprehensive, have carefully stayed within what most

teachers would consider typical content. New York's objectives contained more innovative content. In only one area did all seven states try to go beyond what is typical--metric measurement--and this was largely in response to federal leadership.

Topics which go beyond typicality pose more threat to teacher autonomy than do core topics. Policies calling for typical content may simply ask teachers to do what most would have done anyway. In fact, the California Mathematics Framework was justified largely in this fashion.

Objectives by themselves have little strength and no state has relied on objectives alone. Without means for implementation or enforcement, objectives may have authority but little or no power. The authority of objectives tends to be primarily expert or traditional. Traditional authority is relied upon for typical content, as in California, whereas expert authority is emphasized more in the prescription of nontypical content. The process of translating expert into social authority can be seen in the NSF probability project and syllabus tryout procedures in New York.

In short, objectives delineate some of the boundaries of a zone of tolerance, but they do little to impose these boundaries on teachers. To strengthen the boundaries, links with other policies are required.

Student Testing Policies

Testing is the display case of state curriculum policy; the boundaries set by testing are generally the most visible aspects of the zone of tolerance. Testing is also nearly universal among states and districts. All the states in our sample have required some sort of student assessment in elementary school (although Ohio and Indiana had no statewide tests). Three of the states (California, Florida and South Carolina) had *more than one* such state-mandated program.

In spite of the near universality of testing, the seven states differed greatly in their test policies. First, the states had different ways of specifying the content to be tested. In the indirect control state of Ohio, the state merely mandated that districts use nationally published tests. In Florida, districts were actively involved in the development of statewide tests and were given further legal obligations for designing their own district tests. In South Carolina, the state required use of its own test and specified that a particular norm-referenced test be used as well. In California, although the state took responsibility for identifying the content of statewide tests, it also made a serious attempt to tailor the content to what districts were already doing. In New York, the state took the entire responsibility and based the tests solely on the state syllabus.

Second, states differed in what was said about teachers teaching the content of the test. Michigan, for example, did not clearly establish the responsibility of each district to teach the content covered by the MEAP. And in California teachers were prohibited from direct preparation for the test in the California Assessment Program. Third, states differed still further, as we have seen, in the links between testing and other policies, such as required remediation and school evaluation.

Finally, the states have also varied greatly in the potential strength of their testing policies. New York has been high in authority and power over the *process* of testing. This counterbalances the lack of traditional authority for the content to be tested, such as probability and statistics. In Michigan, by comparison, authority has been limited and power non-existent.

Student Placement Policies

Promotion, mandatory remediation, and graduation requirements are potentially policies of high power, that is, they entail big penalties for

students who do not make the grade and added pressure for teachers who are forced to deal with students who fail. The limited use of such policies is an acknowledgement of their great potential for control--a potential that can arouse considerable opposition. Thus, placement policies, even in the four most direct control states (California, Florida, New York and South Carolina) have been circumscribed in various ways.

In Michigan such placement policies have not been used. Likewise in South Carolina, an otherwise strong state, this type of policy has been avoided or at least put off. While New York has required remediation and high school graduation testing, in California high school graduation testing has been handled by the indirect and less threatening means of delegation to the districts.

Grade promotion is an example of a policy that lacks traditional authority at the state level.[110] Only in Florida has there been a state grade promotion policy, and even that policy was limited to third grade and circumscribed in various other ways (e.g., retention limited to one year without parental permission).

Textbook Policies

Textbook policies are potentially major sources of state influence on what teachers teach. If teachers were required to teach from certain textbooks and if the content of those textbooks were standardized at state level, then textbooks would no doubt have considerable influence. None of our seven states took such a hard line.

Of the seven states in our study, Florida, California, South Carolina, and Indiana have had state textbook adoption. New York, in spite of generally strong state policies, had no textbook adoption policy and hardly

acknowledged, as far as we could see, the existence of textbooks in its other policies. Michigan and Ohio had some requirements pertaining to textbooks, but these had virtually no content significance.

Adoption states have given districts a choice among commonly used textbooks and these textbooks, as our earlier research has shown,[111] differ substantially in the topics covered. Thus, in elementary school mathematics at the present time, the influence of state textbook adoptions appears to be slight. Moreover, textbooks have provided little guidance in other areas of content decision-making, such as allocation of time and grouping.

Nevertheless, we do not know how much more textbooks would vary if it were not for state textbook adoptions. We do not know, for example, how much state decisions about the importance of metric measurement have led to the present extensive use of metric measurement in elementary school mathematics textbooks. We could better understand the magnitude of state influence if there were some states which demanded a predominance of metric measurement in their textbooks and other states which called for mostly customary measurement.

Time Allocation Policies

Time allocation is a neglected area of policy in that, although the states of South Carolina, Indiana, Ohio, and New York have recommended or mandated time allocations for elementary school mathematics, no state in our study gave much attention to these policies. Although Florida and California both tended toward direct control policies, neither specified the amount of time to be devoted, grade-by-grade, to elementary school mathematics. This lack of emphasis is surprising given the emphasis on time in recent research on teaching. At the *topic* level, time allocations were *not* addressed in the

policies of any of the states studied. Yet states might very well have promoted, for example, metric measurement through mandated amounts of time on this topic.

Teacher Qualification Policies

Teacher testing policies were the subject of much publicity, even in 1981. But they had little effect on the zones of tolerance at that time. They were too new and generally applied only to prospective teachers. None of the states in our study dared challenge practicing teachers so directly as to test their knowledge of mathematics and mathematics teaching.

Other teacher qualification policies, such as inservice and certification, have been generally nonprescriptive with regard to mathematics content. In their lack of emphasis on developing mathematics competence among teachers, they may *by default* have had a great influence on what has been taught and, more importantly, not taught.

Conclusion

In this paper an analytic framework has been developed for the examination of state policy zones of tolerance. This framework consists of three classifications with which we began the study and two additional distinctions that have emerged as important in the course of our research. The three a priori classifications include (a) the different types of teacher content decisions (how much time, what topics, etc.), (b) the different types of curriculum or instructional policy (regarding objectives, tests, textbooks etc.), and (c) indicators of the potential strength of these policies. The two additional distinctions have to do with the difference between direct and indirect control and the extent to which policy challenges current practice.

Our analysis has illustrated the value of this formulation in several ways. First, the distinctions brought to this analysis help contrast what states have done with what might be done. From this perspective, variation among the states studied in what was actually done was slight. No state-guaranteed teachers complete autonomy in the making of content decisions. Each of the states studied took measures to restrict this autonomy in some way. At the other extreme, no state tried to dictate exactly what teachers should do about selecting topics, allocating time, sequencing content, grouping students and setting standards. Moreover, in the development of any one policy, the possibilities for strengthening that policy through greater prescriptiveness, consistency, authority and power have been far from exhausted.

Second, variation among states in content policy has been considerable, especially when compared with the uninformed, but still widespread is the notion that educational governance in the 50 states has been more or less uniform. In particular, the approach to policy formulation in states attempting direct control was qualitatively different from states attempting indirect control. Insofar as they have specified what to teach and to what standards, New York, South Carolina, Florida, and California were more like the centralized national school systems of Europe than they were to the American states which, above all, stressed district prerogatives in making these decisions.

Even among the four states that have sought some direct control, we find important differences. One is in the emphasis on different types of content decisions. South Carolina has emphasized control of topic selection while remaining wary of setting strong pupil progression standards that teachers and students would have to meet. Florida, by contrast, has been more willing to set such standards. Still another difference concerns the state's willingness to challenge prevalent practice. California has concentrated on finding out

what districts and teachers already tend to do and then has adopted policies to better realize these intentions. Examples of states that have been more willing to go against the status quo include New York in topic selection and Florida in standards setting.

Third, our formulation provides a basis for identifying similarities both between states and, within states, among different types of policy. Like Wirt, we find that "while there is nothing approaching uniformity among states in these data, neither is it the case that each state is different from the others."[12] Characteristics common to the indirect control states of Indiana and Ohio, for example, are more important than their differences. Moreover, in Ohio the state has shown exceptional consistency in pursuing this approach in all areas of policy, even to the extent of rejecting its first attempt at state assessment.

Finally, our formulation serves as a source of hypotheses about the effects of different policies. While this paper has not investigated the implementation or effects of policy, it has suggested many effects that the policies might have. Would teachers in a particular state change their content decisions if policies were instituted in areas not presently emphasized (e.g., time allocations)? Where do district curriculum policies have the most impact--in states seeking direct control or in those seeking indirect control? Is student achievement in some sense better under one style of control than under the other? What are the effects of policies which call for new content as opposed to those which attempt to make more effective what teachers normally intend to teach? Are state-promoted topics in probability and statistics, for example, more often taught in New York than California?

Answering these empirical questions is important since teacher content decisions determine much of student opportunities to learn, especially in subjects largely learned in school (e.g., mathematics). However, answering these questions is not sufficient to decide whether the potential for greater control is good or bad. To make conclusions about the worth and danger of greater control, one must have wise political judgment and well-grounded values in addition to knowledge of empirical research. What empirical research can do is to give the various parties to this debate a better better understanding of the policies that aim to influence what teachers do.

Footnotes

1. An earlier version of this paper was presented at the annual meetings of the American Educational Research Association in Montreal, April 1983. This paper is a synthesis of the following state case studies individually authored by members of the Content Determinants Group at the Institute for Research on Teaching, Michigan State University: California (Robert Floden), Florida (Donald Freeman), Indiana (Susan Irwin), Michigan (William Schmidt), New York (John Schwille), Ohio (Andrew Porter), and South Carolina (Linda Alford). We appreciate the criticisms and suggestions made by our colleague Diana Pullin and by members of the Institute for Research on Teaching advisory panel. Dennis Murakami was also most helpful in editing some of our legal citations.

2. John Schwille is a senior researcher with the Content Determinants Project and professor of teacher education at Michigan State University. Andrew Porter is the project's coordinator and professor in MSU's Department of Counseling, Educational Psychology and Special Education. Linda Alford is teacher collaborator with the project. Robert Floden and Donald Freeman are with the project and professors of teacher education at MSU. Susan Irwin is a research assistant with the project. William Schmidt is a senior researcher with the project and a professor of counseling, educational psychology and special education at MSU.

3. BOYD, W. The changing politics of curriculum policy-making for American schools. Review of Educational Research, 48 (1978), pp. 577-628.

4. For a review of the earlier use of the term *zone of tolerance*, see ROSARIO, J. and LOPEZ, L. Zones of tolerance: regulatory nuclei of school life. Paper presented at annual meeting of American Educational Research Association, New York City, March 1982. Douglas Mitchell (personal communication) suggests that use of this term puts too much emphasis on constraints imposed by the states and gives too little attention to ways in which the state role is simply to facilitate content decisions by teachers (e.g., through funding in-service whose content is controlled by teachers).

5. It is important to note that the paper is not concerned with whether this potential for control is good or bad, but simply with how much potential for control there was in certain states at a certain time.

6. SPADY, W. & MITCHELL, D. Authority and the management of classroom activities. In Duke, D.L. (ed.) Classroom Management: The Seventy-Eighth Yearbook of the National Society for the Study of Education (University of Chicago Press, Chicago, 1979).

7. See, for example, the unpublished case studies of curriculum law in Arizona, California, Florida, Massachusetts, and New York by VAN GEEL, T. and BLOCK, A. Authority to Control the School Curriculum: An Assessment of Rights in Conflict (final grant report to the National Institute of Education) (University of Rochester, Rochester, NY, 1975) ERIC ED 125 070; VAN GEEL, T. Authority to Control the School

Curriculum (Lexington Books, Lexington, Massachusetts, 1976; WEISS, I. Report of the 1977 National Survey of Science, Mathematics and Social Studies Education RTI/1266/06-01F (Research Triangle Institute, Research Triangle Park, 1978). See also numerous reports on state competency testing by Chris Pipho at the Education Commission of the States such as PIPHO, C. Analysis of State Minimum Competency Testing Programs (final report for grant number NIE-G-79-003 from the National Institute of Education) (Education Commission of the States, Denver, 1980). For a study of centralization of state policy in which curricula, testing, textbooks etc. were a subset of a wide range of educational policies examined, see WIRT, F. State policy culture and state decentralization, in Scribner, J. (ed.) Politics of Education: The Seventy-sixth Yearbook of the National Society for the Study of Education, Part II (University of Chicago Press, Chicago, 1977), pp. 164-187; and WIRT, F. What state laws say about local control, Phi Delta Kappan, 59 (April 1978), pp. 517-520.

8. For the rationale for choosing mathematics as well as for an overview of the early stages of this research, see SCHWILLE, J., PORTER, A., BELLI, G., FLODEN, R., FREEMAN, D., KNAPPEN, L., KUHS, T., AND SCHMIDT, W. Teachers as policy brokers in the content of elementary school mathematics. In Shulman, L. and Sykes, G. (eds.) Handbook of Teaching and Policy (Longman, New York, 1983).

9. On the changing state role, see e.g., the special section of Phi Delta Kappan 66 (1984), pp. 189-215.

10. This review drew on published and unpublished sources, including those referenced in note 7 above and the voluminous microfiche compendium of state educational legislation published by the National Institute of Education, State Legal Standards for the Provision of Public Education (revised edition) (National Institute of Education, Washington, DC, 1978).

11. The states were Arizona, California, Florida, Georgia, Illinois, Indiana, Louisiana, Michigan, Minnesota, Mississippi, New Jersey, New York, North Carolina, Ohio, Oregon, Pennsylvania, South Carolina, Texas, Virginia, and West Virginia. The structured interview dealt with the following types of policy: time allocation to mathematics, curriculum guides and objectives, student testing, teacher competency testing, textbook adoption, promotion of special topics in mathematics, and grade-to-grade promotion.

12. Murphy argues for research on those states that have hardly ever been studied: MURPHY, J. The State Role in Education: Past Research and Future Directions (program report no. 80-B12) (Institute for Research on Educational Finance and Governance, Stanford University, 1980), pp. 8-9. We considered this argument, but still chose California, Florida, and New York since we wanted to be able to compare our results with the results of other studies.

13. These documents included, for example, legislation, regulations, memoranda explaining policies to districts, reports on state testing, reports on textbook selection, evaluations of state policies, newspaper coverage and other types of print material too numerous to mention.

14. We have catalogued the following numbers of documents for each state: California, 84; Florida, 168; Indiana, 16; Michigan, 102; New York, 62; Ohio, 49; and South Carolina, 55. Space limitations preclude listing all these references in this article.

15. In a personal communication, Diana Pullin argues strongly that there is a vast difference between written documents of the sort we have studied and the implementation of these policies in the practice of local districts and teachers. See, also for example PULLIN, D. Minimum competency testing and the demand for accountability, Phi Delta Kappan, 63 (1981), pp. 20-27; MADAUS, G. NIE clarification hearing: the negative case, Phi Delta Kappan, 63 (1981), pp. 92-94.

16. In WIRT, School policy culture and state decentralization, a scale of 0 to 6 is defined for rating the degree of state control over various types of educational policy. The scale ranges from "permissive local automony" to "total state assumption." What we have called indirect control corresponds best to scale values 2-3 in Wirt while direct control corresponds to 4-5. Since curriculum and related types of policy comprised only a few of the 36 areas examined by Wirt, it is not surprising that our assessment of degree of centralization for elementary school mathematics in any given state differs from his overall assessment (e.g., Indiana is more centralized than California and New York in Wirt's analysis).

17. Cf. VAN GEEL and BLOCK, Authority to Control the School Curriculum. Van Geel and Block emphasize the restraint with which New York State has exercised its potential legal control over the curriculum. In contrast, our emphasis on the strength of New York policies stems from our assessment of the state's position relative to other states and our emphasis on policy analysis broadly conceived rather than a narrow focus on legal mandates as is found in VAN GEEL and BLOCK. For example, Van Geel and Block argue that state assessment tests in elementary schools have no direct effect on the curriculum because they test skills that districts are already legally obligated to offer (p. 49). We disagree with this contention.

18. These materials were originally developed by the School Mathematics Study Group (Stanford University), one of the best known federally funded curriculum projects from the 1960's.

19. New York State, State Education Department (herein cited as NYSED), Mathematics K-6: A Recommended Program for Elementary Schools (1980). By October 1981, 58 workshops had been completed to acquaint teachers and administrators with the new syllabus and four more were planned. Thirty-eight of these workshops were regional in scope. In addition, nine workshops had been completed and two planned which consisted of "activities that can be used by teachers in the elementary school classroom to implement the probability and statistics strand of the new, recommended K-6 syllabus." (quoted from unpublished report by the Bureau of Mathematics Education on its teacher inservice workshops in 1981).

20. NYSED, New York State Pupil Evaluation Program and Preliminary Competency Tests: School Administrator's Manual (1980); NYSED, Mathematics Tests for New York State Elementary Schools: Manual of Directions (1980).

21. NYSED, The Standard School Curriculum in New York State (4-page circular, 1978).

22. This program replaced the short-lived Basic Competency Test, which was discontinued because it was considered too easy. See, e.g., survey results in NYSED, Division of Educational Testing, A report to the Board of Regents on the Basic Competency Testing Program (unpublished report, May 1978). On the RCT, see NYSED, Regents Competency Testing Program: Information Bulletin (1980); and also the memorandum from Deputy Commissioner for Elementary, Secondary and Continuing Education to City, Village and District Superintendents, August 1978, Subject: Regents Competency Testing Program. The RCT was based on the following state syllabus: NYSED, General High School Mathematics (1978).

23. NYSED, Regulations of the Commissioner, 8 NYCRR Sections 100.1(f), 103.2(c). See also memorandum from the Deputy Commissioner for Elementary, Secondary and Continuing Education to Superintendent of Public and Nonpublic Schools...Subject: Remedial Programs for Students (April, 1979).

24. "Pupils who score below the designated statewide reference point on the sixth grade pupil evaluation program test shall be provided appropriate remedial instruction designed to enable them to...pass the Regent's competency test in mathematics." NYSED, Regulations of the Commissioner, 8 NYCRR Section 100.1(f). See also memorandum cited in Note 22.

25. N.Y. Education Law, Section 3602 (McKinney 1981).

26. In June 1981 failures ranged from 4% in comprehensive Hebrew to 24% in the third year high school mathematics. The median failure rate for 22 subjects was 18%. NYSED, Division of Educational Testing, Evaluating the effectiveness of education in New York State (unpublished report, October 1981).

27. The locked metal boxes containing exams must be stored, upon receipt, in a school safe or vault. Packages containing examinations must not be opened until the day of the examination. NYSED, Regents Examinations and Competency Tests: School Administrator's Manual (1981), pp. 9-10.

28. Ibid., p. 18. At the end of each examination period, each school is required to submit for review, passing, and failing papers in certain subjects according to a predetermined sampling scheme.

29. South Carolina, Department of Education (herein cited as SCDE), Basic Skills Assessment Program 1978 S.C. Acts 631 (amended 1981); see also SCDE, Report on the Implementation of the Basic Skills Assessment Program, 1978-80 (1980); SCDE, A Handbook for Understanding the Basic Skills Assessment Program (1980); SCDE, State Objectives in Reading,

Writing, and Mathematics, Grades K-12 (3rd printing, 1981); SCDE, Test Coordinator's Manual, Basic Skills Assessment Program (1981); SCDE, Basic Skills Assessment Programs, Preliminary Results of Spring, 1981, Testing: Grades 1, 2, 3, 6, and 8 (1981); HANEY, W., GARET, M., MURCHISON, R., and KIMMEL, C., Basic Skills Assessment in South Carolina: How Progressive an Approach to Minimum Competency Testing? (National Consortium on Testing staff circular no. 8) (Huron Institute, Cambridge, MA, 1981).

30. BSAP was not the only state testing program in South Carolina elementary schools. The nationally published Comprehensive Test of Basic Skills (CTBS) has been given in the spring to all students in grades 4, 7, and 10. The norm-referenced CTBS has not been replaced by the criterion-referenced Basic Skills Assessment Program for two reasons: First, the 1977 Educational Finance Act required statewide administration of a national achievement test, and second, according to a newspaper report, "educators find it useful to have some measure of

31. SCDE, 1978 S.C. Acts 631, Section 1 (c)(2), and Section 1 (d)(2) (amended 1981).

32. SCDE, A Handbook for Understanding the Basic Skills Assessment Program (1980), p. 16.

33. SCDE, Teaching and Testing Our Basic Skills Objectives: Mathematics, Grade 4, 5, 6 (1981); SCDE, Handbook (1980), p. 7, plus interview.

34. See, for example, SCDE, State Objectives, Reading, Writing and Mathematics, Grades K-12 (1981); SCDE, Basic Skills Assessment Program: Questions and Answers Prepared for South Carolina Citizens (brochure, n.d.); SCDE, Handbook (1980); SCDE, Basic Skills Assessment Program (brochure, 1981); NORTON, J. Switch in testing may lower scores of state students. The State, Columbia, SC, 20 May 1982.

35. SCDE, Basic Skills Assessment Program: Questions and Answers Prepared for South Carolina Citizens (brochure, n.d.). During the development of the objectives, the teachers in each school were asked as a unit to rate each of the 16 broad objectives at each grade level for (a) importance, (b) present coverage in the school curriculum, and (c) percentage of time that should be devoted to the objective. Instructional Objectives Exchange, Report on the School Review of the Preliminary State Objectives: Reading, Writing and Mathematics, Grades One-Twelve, South Carolina (report prepared for S.C. Department of Education) (Santa Monica, CA, 1979).

36. SCDE, Questions and Answers. Eventually this position on use of test scores may change. One motivation for the law was to collect baseline data on student achievement for a number of years so that the State Board could later decide what credentials should be given to students not meeting minimum standards. SCDE, Handbook (1980), p. 25.

37. SCDE, 1978 S.C. Acts 631, Section 2(e) (amended 1981).

38. SCDE, Defined Minimum Program for South Carolina School Districts (1980).

39. Ibid., p. 19.

40. SCDE, Office of Accreditation. BEDS Staff Questionnaire for Elementary and Middle Schools: Instruction Manual and Questionnaire, n.d.

41. Alternatively, a district can submit a proposed contract for approval of deviations.

42. Interview and unpublished report of state textbook evaluation and rating committee for mathematics, grades 1-8. For general information on this textbook adoption policy, see SCDE, Textbook Adoption Regulations (adopted 18 December 1964, amended 10 December 1976) and SCDE, Catalogue of Adopted Textbooks for Use in South Carolina Schools (1981-82).

43. SCDE, Defined Minimum Program, pp. 9-10, 22.

44. This law mandates a complex system of screening and testing from the freshman or sophomore year of college on through teachers on continuing contracts. Prospective teacher education students will have to pass a basic skills examination in reading, writing, and mathematics before being admitted to a teacher education program. For a general introduction, see J. F. STULAC II. Charleston Conference Proceedings: Issues and Implications of South Carolina's Act 187 on Teacher Education (S. C. Education Improvement Task Force, Columbia S. C., 1981).

45. Fla. Stats. Section 237.34 (1973).

46. Florida, Legislature. Improving education in Florida: a reassessment (Consultant's report prepared for the Select Joint Committee on Public Schools, February 1978), p. 5.

47. This includes the 1971 Educational Accountability Act and its 1974 revision as well as the 1976 Educational Accountability Act (Fla. Stats. Sections 229.55, 229.551, 229.565, 229.57, 232.245, 232.246, 232.247,; 232.248 and 236.0815) (1976)).

48. Fla. Stats. Sections 232.245, 232.246, 229.57 (1976).

49. For a complete list of Florida's functional literacy skills, see FISHER, T. Florida's approach to competency testing. Phi Delta Kappan 59 (1978), p. 600, for the initial list, and Florida, Department of Education (herein cited as FDE), Minimum Student Performance Standards for Florida Schools: Beginning Grades 3, 5, 8 and 11, Reading Writing, & Mathematics (1979) for the revised list.

50. See PULLIN, D. Debra P.v. Turlington: Judicial standards for assessing the validity of minimum competency tests. In Madaus, G. (ed.) The Courts, Validity, and Minimum Competency Testing (Kluwer-Nijhoff Publishing, Boston, 1983), pp. 3-20.

51. FDE, Minimum Performance Standards for Florida Schools: Beginning Grades 3, 5, 8 and 11; Reading, Writing and Mathematics (1979); FDE, Mathematics Item Specifications: State Student Assessment Test, Basic Skills (revised edition, 1980). FDE, Development of the Florida Statewide Assessment Program: A Chronology from 1971 (n.d.); FISHER, T. op. cit. On the K-3 diagnostic-prescriptive approach and third-grade promotion requirements, see Section 230.2312, Florida Statutes, and also memorandum from Director, Division of Public Schools to District Superintendents, 3 October 1979, Subject: Information on the Florida Primary Education Act; memorandum from Director, Division of Public Schools to District Superintendents, 30 January 1980, Subject: Questions on PREP posed at January 11 conference; VLAANDEREN, R. Trends in Competency-Based Teacher Certification (Education Commission of the States, Denver, 1980); FDE, Florida Teacher Certification Examination, Bulletin II: The General Education Subtests--Reading, Writing, Mathematics (1981). For a more critical perspective on Florida's accountability program, see the NEA sponsored study by R. W. TYLER et al. The Florida Accountability Program: An Evaluation of Its Educational Soundness and Implementation (National Education Association, Washington D.C., 1978).

52. See, for example, FDE, A Resource Book for Teaching 5th Grade Minimal Skills in Mathematics (developed jointly by Lee and Broward County School Districts and the FDE) (1981); MCCONNAUGHHAY, J. et al. Materials for Upgrading Basic Skills in Mathematics, books 1B and 2B (developed by Developmental Research School, Florida State University and distributed by Florida Department of Education) (1979).

53. "For the first time in years, schools are actually competing on an academic level." R. D. TURLINGTON, Good news from Florida: our minimum competency program is working. Phi Delta Kappan, 60 (1979), p. 650.

54. [Lakeland] Ledger, 16 January 1981.

55. FDE, Request for proposals for development of test items for the Florida Statewide Assessment Program (unpublished document, July 1981).

56. Fla. Stats. Section 232.245 (1976). See also Fla. Stats. Section 230.312 (1976).

57. Fla. Stats. Section 229.57 (1976).

58. Fla. Stats. Section 232.245 (1976).

59. In 1980-81, 6.7% of the children enrolled in grade 3 were retained and 3.1% were referred for exceptional student evaluation. FDE, Florida Primary Education Program (PREP): Annual Implementation Report, July 1, 1979--June 30, 1980, p.11.

60. Addison-Wesley; Harcourt, Brace, Jovanovich; Heath; Holt, Rinehart & Winston; Houghton Mifflin; MacMillan; Rand McNally; Scott, Foresman; and Silver-Burdett. FDE, Catalog of State-Adopted Instructional Materials, 1981-82. Florida's textbook adoption policy is spelled out in Sections

61. The reference to FCTM can be found in FDE, Minimum Student Performance Standards...Grades 3, 5, 8 and 11; Reading, Writing and Mathematics (1979). The reference to professional organizations in general is in FDE, Development of the Florida Statewide Assessment Program: A Chronology From 1971 (n.d.). Our impression in this regard is supported by a legislative consultant's report which notes that "professional organizations in Florida appear to be less effective in achieving legislative initiation than their counterparts in other states." Florida, Legislature. Improving Education in Florida: A Reassessment, p. 49.

62. FDE, Elementary Mathematics: A Total View (n.d.), p. 2.

63. VAN GEEL and BLOCK, Authority to Control the School Curriculum, pp. 86-89.

64. California, State Department of Education (herein cited as CSDE) Mathematics Framework for California Public Schools: Kindergarten Through Grade Twelve (1975). On objectives policy, see also CSDE, California Curriculum Frameworks: A Handbook for Production, Implementation, and Evaluation Activities (1977). For later changes, see two documents from the State Department of Education: A report to the Curriculum Development and Supplemental Materials Commission by the Mathematics Framework Planning Committee, 21 May 1979; and the Addendum to the California Mathematics Framework approved by the California State Board of Education, 4 September 1980.

65. CSDE, Mathematics Framework, p. iii.

66. CSDE, California Assessment Program, Test Content Specifications for the Survey of Basic Skills: Mathematics, Grades Six and Twelve (1975); CSDE, California Assessment Program, Survey of Basic Skills, Grade 6: Examiner's Manual (1980); CSDE, California Assessment Program, Profiles of School District Performance 1980-81: A Guide to Interpretation (1981); CSDE, California Assessment Program, Student Achievement in California Schools, 1980-81 Annual Report (1981); CSDE, California Assessment Program: Handbook for Reporting and Using Test Results (1976); CSDE, Technical Report of the California Assessment Program (1977); see also CARLSON, D. Statewide assessment in California. Studies in Educational Evaluation, 5 (1979), pp. 55-75.

67. CSDE, California Assessment Program: Test Content Specifications for the Survey of Basic Skills--Mathematics, Grades Six and Twelve (1975), p. 1.

68. CSDE, California Assessment Program, Survey of Basic Skills: Grade 3 Rationale and Content (1980), p. iii.

69. Cal. Educ. Code Section 60610 (West 1978).

70. CSDE, Requirements of California Law for Proficiency Assessment (1981); CSDE, Proficiency assessment in California: a status report on implementation of the requirements of AB 3408/76 and AB 65/77 (1979); CSDE, Statewide summary of student performance on school district proficiency assessments (1981); CSDE, Proficiency Skill Development Kit

(1980); CSDE, Technical Assistance Guide for Proficiency Assessment (1977); CSDE, Communicating Proficiency Assessment Results to the Media: Some Practical Suggestions (Technical Assistance Paper I) (1980); HART, G.K. The California pupil proficiency law as viewed by its author, Phi Delta Kappan, 59 (1978), pp. 592-595; DONMOYER, R. Educational professionals and the passage of mandatory graduation competency legislation in California: a study of curriculum politics, Journal of Curriculum Studies, 14 (1982), pp. 79-88; see also various issues of Proficiency Today, a newsletter published by the Office of Program Evaluation and Research in the State Department of Education, beginning in October, 1979.

71. CSDE, Proficiency Assessment in California: 1980 Status Report on Implementation of California's Pupil Proficiency Law (1980), p. 5. In the case of the California High School Proficiency Examination (a state-authorized and Educational Testing Service (ETS) administered test allowing students to graduate early from high school), we have found no reason to expect any impact on elementary school mathematics since the test is administered individually only to those students who wish to take it, the content of the test is kept secure by ETS, and the passing score is based on the average performance of a norm group of second-semester twelfth graders. Our information here is based primarily on an unpublished form letter used by the Office of Program Evaluation and Research. See also Cal. Educ. Code Section 48412 (West 1978).

72. CSDE, Process for adopting instructional materials in California, approved by State Board of Education on January 10, 1975, amended October, 1979, with proposed amendments June, 1981; CSDE, California instructional materials adoption process (November 1981); CSDE, Catalog of Instructional Materials in Mathematics (1981).

73. California, State Board of Education, Curriculum Development and Supplementary Materials Commission. Guide for Evaluating Instructional Materials in Mathematics (1980).

74. Indiana, Department of Public Instruction (herein cited as IDPI), CAPPS: A Guide for Basic Skills Development: Indiana Comprehensive Assessment and Program Planning System (revised edition, 1979).

75. Ibid. See also GRAY, M., WILLIAMS, R., LANE, K., SMITH, V., and OLSHAVSKY, J. Curriculum Development in Indiana: Analysis of the C-1 Rule and CAPPS. Indiana Association for Supervision and Curriculum Development (Curriculum Research and Development Center, Indiana State University, Terre Haute, IN, 1981).

76. See, e.g., PIPHO, C. Analysis of State Minimum Competency Testing Programs, pp. 38-39 and passim.

77. Unpublished analysis furnished by IDPI.

78. IDPI, Mathematics Guidelines (1977).

79. Ibid., pp. iii-v.

80. IDPI, Policy and Procedures, Textbook Adoptions (1979).

81. Interview (including citation of handbook).

82. IDPI, CAPPS, pp. 15-16.

83. Ohio Rev. Code Ann. Section 3301.07 (Baldwin 1982).

84. Ibid.

85. Ohio, Department of Education (herein cited as ODE), Minimum Standards for Ohio Elementary Schools (1970).

86. Until recently the state department had only one mathematics specialist. This specialist accommodated himself to the emphasis on local initiative and control by producing a number of publications aimed at teachers and others, by providing technical assistance to school districts and by being active in national professional organizations. This activity resulted in a modest press on the part of the state for metric measurement, problem solving, and use of calculators in mathematics.

87. ODE, Minimum Standards, p. 51.

88. Report and Recommendation of the Superintendent of Public Instruction (to the Ohio State Board of Education), 10 September 1979.

89. ODE, Minimum Standards, pp. 10, 14, 92-93, 123.

90. Interview.

91. ODE, Minimum Standards, p. 7. According to a survey by the Department of Education (Profile of local minimum competency programs, 1980), only 13 (2%) of the districts in Ohio required passage of a test for grade-to-grade promotion.

92. ODE, Minimum Standards, p. 9.

93. ODE, Task Force on Minimum Competency. Competency Handbook (n.d.) [1978?].

94. ODE, Minimum Standards. According to interviews, approximately 600 elementary schools were evaluated by the state each year. We have no information on how many schools failed this evaluation.

95. Ibid.

96. To assist in this voluntary self-appraisal for mathematics, the State Department of Education published in 1980 a booklet titled A Self-Appraisal Checklist for Mathematics in Ohio's Elementary Schools. Again, the document closely resembles much of the material in the minimum standards document.

97. ODE, Competency Handbook, p. iv.

98. In 1975 the Michigan Department of Education published A Summary of Michigan Laws Related to the School Curriculum. It took only five short pages to summarize all the statutes directly related to the school curriculum.

99. Michigan, State Board of Education, Michigan Educational Assessment Program Handbook (n.d. [1981]); Michigan, State Board of Education, Minimal Performance Objectives for Mathematics (July 1980); Michigan, Department of Education (herein cited as MDE), MEAP Support Materials for Mathematics (n.d.); Michigan, State Board of Education, Mathematics Education Interpretive Report 1980-81; MDE, Preparing to administer and use MEAP--the building team approach (circular, n.d.); MDE, Questions and Answers about the Michigan Educational Assessment Program (1980); MDE, A Pamphlet for Parents on the Michigan Educational Assessement Program (1981): memorandum from P. Runkel, State Superintendent of Public Instruction to State Board of Education, 6 April 1981, Subject: Approval of Plans for the 1981-82 Michigan Educational Assessment Program (see also corresponding memo for previous year, dated 22 May 1980).

100. Michigan Council of Teachers of Mathematics, Mathematics in Michigan, 14 (no. 3, 1975), p. 12. For analysis of the political context in which MEAP was developed, see COHEN, D. and MURPHY, J. Accountability in education--the Michigan experience. Public Interest, 36 (1974), pp. 53-81.

101. The organization of mathematics teachers was also heavily involved in the revised edition of 600 objectives published in 1980. MDE, Response to the [MCTM] position statement on state assessment testing (May 1979).

102. While the document says in one place that "the implication is strong that all students in Michigan have the right to acquire the mathematical skills set here," it goes on to reveal the lack of obligation by exhorting districts and teachers as follows: "It is the hope of the Department that this document will assist local educators as they review their statements of student expectations." Michigan State Board of Education. Minimal Performance Objectives for Mathematics (1980), pp. iii, v.

103. Michigan, State Board of Education. MEAP Handbook, (n.d. [c. 1981]).

104. The effort increased once the Department was less preoccupied with the tasks of developing the tests. By 1980 the State Department staff was conducting six regional workshops a year on how to read assessment reports and how to use and report results (Memorandum from Superintendent of Public Instruction to State Board of Education, Subject: Information on Fall Regional Conferences--MEAP (9 October 1980)). The State Department has developed teacher resource guides for use in these workshops. These guides are made available to any teacher in the state who desires them, but are not as in South Carolina distributed to all teachers (Interview). In 1981 the Department entered into a further contract with the MCTM to develop a document to review the results of the assessment and to provide an interpretive report

identifying weak areas and recommending instructional remedies for those areas (Agreement for services between MCTM and MDE, February, 1981. A series of monographs to describe ways in which the MEAP can be used in helping individual students or for curriculum revision was under development in 1981.

105. Michigan, State Board of Education, MEAP Handbook (n.d. [1981]). It should be noted that MCTM vigorously opposed certain aspects of the MEAP. See, e.g., MCTM, Position statement on state assessment testing (April, 1979).

106. On metric requirements, see MDE, Teacher Resource Guide for Metric Education (n.d.).

107. DEAN, L. Michigan teacher certification requirements in perspective. Michigan School Board Journal (June, 1982), pp. 10-11.

108. MDE, Teacher Resource Guide for Metric Education (n.d.).

109. It should be kept in mind that to compare the actual impact of state and district policies requires empirical studies of teachers and their classroom instruction.

110. In 1977 Wirt reported that 35 states had no state provisions regarding standards for promotion. WIRT, F. School policy culture and state decentralization, p. 175.

111. FREEMAN, D., KUHS, T., PORTER, A., FLODEN, R., SCHMIDT, W., and SCHWILLE, J. Do textbooks and tests define a national curriculum in elementary school mathematics? Elementary School Journal, 83 (1983), pp. 501-514.

112. WIRT. School policy culture and state decentralization, p. 175.