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ABSTRACT

The enthusiasm for competency testing poses a contradiction, for it comes at a time when questions and criticisms are being increasingly raised about tests and their use. In three sections, this paper explores the competency testing movement: 1) main features and basic issues in the competency testing movements: 2) observations on the politics of competency testing; and 3) consideration of the concern over the quality of education as it is focused on testing. Main issues likely to arise as efforts are made to implement competency testing schemes are also discussed. Four issues are cited as especially important for how ideas for minimum competency testing work out in practice: testing and teaching, remediation, potential for discrimination, and test security and freedom of information. It is stated that the problems of testing programs seem more prominent than their prospective benefits: the problems are derived from the relationship between what tests measure and what is taught in schools. The suggested antidote to unintended outcomes of competency testing is to focus more attention on what should be taught in schools and how to teach it effectively, rather than on that which can be measured. (Author/GSK)

The Huron Institute

NATIONAL CONSORTIUM ON TESTING PROJECT

NATIONAL CONSORTIUM ON TESTING

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MAKING SENSE OF THE COMPETENCY TESTING MOVEMENT

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This is the second of a series of staff circulars which will be distributed as part of the Huron Institute's staff work for the National Consortium on Testing. Circulars will be distributed periodically over the next two years. This circular is intended to spur discussion on the topic of minimum competency testing and to raise important issues worthy of additional attention, not to resolve them. It is produced primarily as a resource document for member organizations of the National Consortium on Testing. Although the circular has been prepared as part of staff work for the Consortium, needless to say, it does not necessarily reflect views of individual Consortium members nor of the Consortium as a whole.

The competency testing movement is a peculiar phenomenon. There is much ambiguity about what it is exactly, and considerable confusion about what it should be. What seems in little doubt, however, is that a major movement with serious implications for American education is clearly upon us. According to the Education Commission of the States (ECS) which has taken on the role of chronicler of the competency testing movement, all 50 states have already taken some sort of action concerning competency testing. In around a dozen states, legislation mandating competency testing has already been passed. In another 20, state boards of education have adopted regulations requiring some form of competency testing; and in all of the rest, activity on such testing is underway--either in the form of study by state education agencies or by legislative hearings (Pipho, 1977, 1978a, 1978b). The ECS reports that "Minimal competence testing for high school graduation and grade-to-grade promotion continues to be one of the most explosive issues on the educational scene today" (Pipho, 1977, p. i).

The explosion of enthusiasm for competency testing poses a real contradiction, for it comes at a time when more and more questions and criticisms are being raised about tests and test use (for example see Houts, 1977). In this essay, we explore this anomalous movement. In the first section we describe the main features of the competency testing movement and some of the basic issues in competency testing. In the second, we offer some observations on the politics of competency testing. In the third, we consider why recent concern over the quality of education seems to have focused on testing, and in conclusion we suggest what we see as the main issues likely to arise as efforts are made to implement competency testing schemes.

What is Competency Testing?

The interest in competency tests stems from a perception that the testing of essential skills or competencies will help raise academic standards and increase educational achievement. The idea is that the certification of competencies will prevent schools from passing incompetent students through the grades simply on the basis of social promotion. Among the variety of competency testing schemes now being implemented, or discussed in various states, there are two main variants--competency testing as a means of controlling grade-to-grade promotion and competency testing as a basis for awarding high school diplomas. The issues are somewhat different in these two forms of competency testing, so we focus in this paper on the use of competency testing as a prerequisite for high school graduation. Nevertheless, many issues we raise are pertinent too to competency testing for grade promotion.

There is one other point to note at the outset. Recent interest in competency testing has focused almost exclusively on minimum competencies. A recent report on competency-based education in Oregon, for example, noted "the heart of a competency based education program is the identification of the minimum abilities each student must attain in order to function in society," (U.S. House of Representatives, Hearings p. 243). This easy equation of competencies with minimal abilities is curious. Thomas Green has argued that "goals that we express in policy for the system are always minimal standards because in the social practice of the system--as opposed to the theory of its management--they operate as measures of failure rather than as standards of success" (p. 3). This connection is arguable, but for the moment note only that in recent experience, Green's assertion seems supported. Competency

tests do, in fact, more frequently than not, seem to have become minimum competency tests.

On its surface the idea of minimum competency testing is immensely attractive. How can anyone possibly argue against competence? And in a time of widespread worries over deteriorating educational standards fueled by declining SAT scores*, systematic assessment of students' competence certainly seems to make sense. Students who are certified competent need not be suspicioned as products of a faltering educational system. And students who fail competency tests can, so the theory goes, receive remedial help in order to gain the competencies or skills needed before they leave school and enter the world of work.

If one assumes that minimum competency testing is a plausible means of bolstering educational standards, a host of implementation questions arise. Discussions at four regional conferences on minimum competency testing in the Fall of 1977, sponsored by ECS, NIE and the Carnegie Corporation of New York, focused on the following implementation issues:

- What competencies will you require? In what subjects, basic skills, and/or life skills?
- How will you measure them? With paper and pencil tests, according to school products and performances, or in simulated performance situations, or in actual performance situations?
- When will you measure them? During school (at what grade levels), or at the end of school?
- How many minimums will be established? A single standard for all or differentiated standards according to ability, family background, special interests, or career plans?

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*We should point out here that the SAT does not measure minimum competencies. The decline in SAT scores may be linked to falling standards in public perceptions, but the population of pupils sitting for the SAT are those that would probably have little difficulty passing a minimum competency test.

- How high will the minimums be set? Can they be set on the basis of informed judgment, on the basis of test performance by successful adults, or merely so as to yield an acceptable failure rate?

- Will minimums be set for schools, or for students?

- What will be done with those who do not pass the competency tests? Will they be given more chances to pass the tests, will standards be lowered, new remediation programs be developed, or will some students simply be labelled incompetent? (Brickell, 1978.)

In several important respects, however, these questions take far too much for granted. They assume the plausibility of minimum competency testing as a means for bolstering educational achievement, but they ignore the fact that adequate means may simply not exist to implement such schemes. Gene Glass (1977) has recently observed, "A common expression of wishful thinking is to base a grand scheme on a fandamental unresolved problem." The observation is relevant to minimum competency testing programs. In the remainder of this section we focus on three unresolved problems concerning minimum competency testing programs: the idea of competencies; the concept of minimal competencies; and the proposal for testing minimal competencies.

Competencies. The symbolic function of this term seems substantial. Nevertheless, the meaning of the term competence is unclear. Sometimes it seems to be used in ways akin to the dictionary definition of "sufficient means for a modest livelihood": all students should have sufficient means for a modest livelihood by the time they leave high school. Often the term is used to denote broad abilities to get along well in late 20th century America: hence, we find allusions, as in the Oregon competency-based education program to the abilities each student must attain "in order to function in society." Elsewhere in the minimum competency testing literature we find

references to life skills, essential skills, or survival skills. Yet skills comprise only part of the aims of education. As MacDonald-Ross has observed:

> . . . [I]t is easy to find types of educational experiences which have nothing to do with skills -- learning for learning's sake for instance. The distinction between knowledge and skills is deeply embedded in our ordinary language for the excellent reason that it is meaningful and functionally necessary. To have a skill is to have the ability to execute useful tasks to publicly agreed standards of performance. (MacDonald-Ross, 1973, p. 29)

So the language of minimum competency testing suggests concern not with the broader goals of education, but more narrowly with the issue of skill aquisition.

Discussions of minimum competency testing often proceed as if competencies or skills might be identified easily. Efforts have been made to use informed experts, for example, or an "objective analysis" to determine those skills of adults required to "function" in society, or to "survive." Many of these efforts have resulted in detailed specifications of competencies and life skills.

But brief reflection suggests that the meaning of minimum functioning in society is very hard to pin down. People "function" differently in society, and many do it in ways offensive to others. Are we interested in the "essential skills" of the sales clerk, of the shoe manufacturer, the Southern dirt farmer, or the California academic? Would rehabilitated criminals be considered as "functioning" in society--or white collar prisoners? Even if we could reach agreement on what constitutes success and what constitutes minimum functioning in society, their determinants are simply not very well understood. We do know, for example, that success in school seems not to be a very good predictor of success in later life.

So perhaps skills taught for school tests of competency would be of little importance later on. It is clear, after all, that some "life skills"--for example, filling out tax forms or using the yellow pages--are not directly taught in many schools. It then would seem unfair--and perhaps even illegal--to deny someone a high school diploma on the basis of skills not taught in school. So a fundamental issue in the competency testing movement is whether to take seriously the idea of assessing competencies needed later in life or to focus instead on more traditional school skills on the belief or assumption that such skills have some relationship to success in life beyond school.

The latter approach seems to have been adopted by most states which now have or are planning minimum competency testing for high school graduation. According to a recent ECS summary, seventeen states have already taken action to impose some sort of competency testing connected to high school graduation and several others are considering such a move. As is shown in Table 1, such schemes give attention mainly to the "3 Rs" skills of reading, writing and arithmetic (though several states refer to mathematics or computations instead of arithmetic).* In only a handful of states do skill areas tested for high school graduation go beyond these three "basic skills"--although in some states students are required to demonstrate these skills in applied situations or in terms of functional literacy.

*We should note that the ECS summary of state activity on minimal competence testing does not correspond completely with an alternative summary also prepared in May 1978 (NASSP, 1978). Whether the discrepancies between these two summaries reflect the pace of action on competence testing or the competence of the chroniclers themselves is unclear. Nevertheless, the pattern shown in both summaries is the same--most competency testing tied to high school graduation focuses on reading, writing and math.

Table 1: Skill Areas Assessed in State High School Graduation Competency Requirements (current or planned)[1]

Skill Areas:	States with High School Graduation Requirements in Specific Areas:																
	AZ	CA	DE	FL	ID[2]	KY	MD	NV	NM	NY[3]	NC	OR[4]	TN	UT[5]	VT	VA	WY
Reading	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Writing	X	X	X	X	X	X		X	X	X		X		X	X	X	X
Math, arithmetic or computation	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X
Spelling or grammar					X						X		X				
Speaking														X		X	
Listening														X	X		
Democratic governance, history and/or civics and citizenship										X				X		X	X

Notes:

1. In addition to the states listed, Alabama is planning a basic skills test for high school graduation (requirements for such a test are currently under study); Colorado provides for optional use of a high school graduation test at the local levels; Maine is planning an assessment for high school graduation with the areas to be assessed currently under study; and in Rhode Island a competency test for the high school diploma is being considered. Also, at least two states (California and Connecticut) provide for early award of the high school diploma on the basis of test performance.
2. In Idaho, test requirements for high school graduation are for use at the option of local districts. Students passing the tests will receive a diploma with the state board of education seal embossed on it.
3. New York also requires assessment in the area of practical science, health, and drug education.
4. Oregon provides for local option in the assessment of personal development, social responsibility, and career development.
5. Utah also called for assessment in the areas of consumerism and problem solving.
6. Virginia also calls for assessment of students' ability to pursue higher education or to gain employment.

Sources: Chris Pipho, "State Activity Minimal Competence Testing," Denver, Colorado: Education Commission of the States, May 10, 1978; State of Florida Department of Education, "Functional Literacy Test 1977-78 Description," Tallahassee, Florida, n.d.

The tactic of focusing on school skills has, however, been criticized as fundamentally misleading:

> It's like the bait-and-switch advertising tactic, in which at the point of sale an inferior item or less attractive product is substituted for the more desirable item. The attractive product is an education that develops competencies needed for life.... The switched product in the bait-and-switch swindle is a score on a standardized paper-and-pencil competency examination. It is a poor substitute for the real thing: performance at life's tasks (Nathan and Jennings, 1978).

If minimum competency testing programs are instituted on the assumption that they assess skills necessary for later life, but in practice focus on such school skills as reading and math, an interesting legal issue also arises. A student whose diploma had been withheld on the basis of reading and math scores might well sue the local or state education agency on the grounds that reading and math scores have weak validity in predicting later life success--the criterion on which minimum competency programs are predicated. As things presently stand, there is little scientific basis for the idea that we know what the important competencies are; and the tests which presume to test these competencies cannot withstand serious scrutiny of their ability to predict "competency" in life skills, survival, functioning, or other such things.

Minimums. Getting people to agree on desirable areas of competence--for example in Oregon, competencies in six life roles with twenty required areas of study--may be considerably easier than establishing what the minimum cut-off point for a minimum competency might be. In a recent paper Gene Glass (1977) examined six different methods of determining criterion scores: 1) performance of others; 2) counting backwards from 100%; 3) boot-strapping on other criterion scores; 4) expert judgement of minimums; 5) decision theoretic approaches; and 6) "Operations

Research Methods." He found that alternative methods of setting criterion scores can result in markedly different proportions of populations reaching the criterion and concluded that as far as he knows, "Every attempt to derive a criterion score [for example to define minimum competency] is either blatantly arbitrary or derives from a set of arbitrary premises" (Glass, 1977, p. 42).

Nevertheless, in 1977, the Educational Testing Service published a "Manual for Setting Standards on the Basic Skills Assessment Tests" (Zieky and Livingston, 1977). In review of the manual, Glass (1978) has charged that the "authors are guilty of every non sequitur, every solecism, and wrong thought," he had warned against in his earlier paper. If the value judgements underlying the setting of a cut score are clearly recognized, then statistical techniques can help reduce error in classification of students' passing or failing the cut-off. But what needs to be kept in mind is that elaborate statistical techniques cannot do away with the subjectivity of the criterion-setting process.

In practice the setting of minimum scores seems to be the result of competing forces--judgements of what minimums seem plausible to expect, and judgements about what proportions of failure seem politically tolerable. In New York, for example, discussions of proposed minimum competencies seem to have focused on fears that proposed tests were too easy and that they would pull the curriculum down. (New York Times, November 20, 1977, February 13, 1978). When the ninth grade equivalent achievement was proposed as an appropriate minimum level to be required for high school graduation, one official in the mayor's office (apparently without any understanding of grade equivalent

scores) responded, "What happened to the twelfth grade?"* In another case in Connecticut when seventh-grade equivalent reading level was proposed as a minimum condition for high school graduation, the school board was blasted with charges of misrepresentation: "We're paying for twelve years of schooling, but we're only getting seven years " (Nathan and Jennings, 1978).

Such responses, though uninformed, illustrate the other side of the minimum setting issue, and one that will likely become more and more important--namely the consequences of setting a minimum at a particular level. If, as the above criticisms suggest, a minimum level of twelfth grade-equivalent performance were required, around 50% of the twelfth graders could be expected to fail--simply because of the way grade-equivalent scores are calculated. This example is unrealistic but it does illustrate what seems to be a common experience. Standards established on a common-sense approach frequently result in a considerably higher than expected proportion of students failing to meet the standard. In Florida, for example, when the math portion of a statewide proficiency exam was administered to high school juniors in the Fall of 1977, 40-50% failed. Florida's Commissioner of Education had predicted that only one-quarter to one-third might fail (New York Times, December 7, 1977). The same pattern of failure rates higher than expected was experienced in the National Assessment of Educational Progress (Greenbaum, 1977). At present, there simply is no scientific foundation for deciding what

*The idea of minimum competency tests as a requirement for high school graduation was first approved by the New York State Board of Regents in March 1976. The initial plan was that tests in reading and mathematics would go into effect in 1977 and tests in civics, health and writing would begin in 1980. After criticisms of initially proposed tests as "ridiculously easy," a new set of tests was mandated by the Board to take effect in 1981. Recently the deputy mayor of New York expressed the view that competency standards could be further upgraded by keeping slow-learners back in the early grades and giving them special tutoring. (New York Times, November 20, 1977; May 25, 26, 1978; June 4, 1978).

"minimum" points should be, as such decisions are political ones that are simply clothed in the appearance of science.

Testing. Failure rates higher than expected on initial proficiency exams seem to add to the alarm over faltering education standards. The New York Times called the results of the Florida math proficiency exam "New evidence that Johnny, the celebrated nonreader, also cannot add, subtract, or divide" (December 7, 1977). In the same week, Time magazine ran an article on the Florida results under the headline "Florida Flunks," with the subtitle "A Scandal for Schools" (December 12, 1977).*

A closer look suggests, however, that the issue may be a good deal more complex. Follow-up news articles noted that some high school juniors considered by teachers to be among their best students had failed the proficiency exam. In explanation, one person pointed out that "There are algebra students who haven't worked with decimals for a long time. Some kids have never figured a sales tax. That coupled with reading things into questions, can make a student fail" (Washington Post, December 19, 1977).

In other words, the problem may in some cases be that minimum competency tests are not measuring what students have been taught--or at least not what they've been taught recently. If this is true, then the validity of the inferences made from the competency tests must seriously be called

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*There was a substantial difference in failure rates on the math and communication tests. Eight percent failed the latter while 36% failed the former. As a result, the state of Florida allocated $10 million for remedial instruction in arithmetic. The inference made from the test results was that achievement in math was poorer than in communication skills. However, Glass (1978) offered an alternative explanation for the differing failure rates--namely that the average item difficulty level was higher on the math than on the language exam. Items that appear to be equally easy on inspection turn out to be quite different in terms of actual difficulty.

into question. This issue is similar to that encountered in studies of school effectiveness. For example, the validity of Coleman et al's (1966) now famous inference that "schools bring little to bear on a child's achievement that is independent of his background and general social context" (p. 325), ultimately depends on the appropriateness of the measures they used to measure school effectiveness. A strong argument can be made that the tests they used were not measures of school achievement at all; instead the tests measured general verbal ability which in turn is a surrogate for home background. Coleman's tests were not sensitive to what actually was taught in the schools. This was particularly true at the secondary level (Madaus, Airasian, Kellaghan, in press).

Merle McClung (1977) has discussed this issue in terms of curriculum validity and instruction validity of testing. Curriculum validity means that valid minimum competency tests should measure topics actually covered in the school curriculum. This issue may be especially pertinent to life-skills tests because some such skills may not be taught in school. In addition, however, McClung suggests minimum competency tests have to be instructionally valid--that is, topics in the curriculum must actually have been taught to the students tested. In practice, of course, the determination of whether or not a competency test is instructionally valid might be highly problematic. For example, presuming that a student has been instructed in reading, would a test that required reading in a format not directly included in the school curriculum, say in classified ads (as in a life skills competency test), be instructionally valid? How about a test in which the format was the same as in school material, but which contained vocabulary not explicitly taught in school?

Other forms of measurement validity also will have to be considered. Do minimum competency tests have adequate construct and content validity in terms of the competencies they supposedly test? If a minimum competency testing scheme is aimed not just at schools skills, but at life skills, the issue of the predictive validity of the tests in terms of life skills will also be a relevant issue. Other measurement issues concern whether minimum competency tests are adequately reliable as a means for making decisions about individual students, and whether such tests are free of cultural and sexual bias.

These issues may seem abstruse but as soon as important consequences flow from any minimum competency testing programs, it is certain that some of these issues will form a basis for legal challenges to the results of minimum competency testing programs. Legal precedent has already been established for bringing suit on the basis of issues such as test validity (Lerner, 1977).

As well as raising different issues of validity, different forms of minimum competency testing are likely to have very different cost implications too. Airasian, Madaus, and Pedulla (1978), for example, have estimated that "the cost of administering a test has a recognized range of 15 cents per pupil to $13 per pupil, the former being a figure cited by Denver authorities as the cost of administering their competency

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*The predictive validity issue can be illustrated with an example of a minimum competency test most people have taken -- the written portion of the exam for a driver's license. Passing the licensing test certifies that the applicant has skills and knowledge thought to be necessary for the safe operation of a motor vehicle. However, performance on such tests is not necessarily related to future driving performance or to a person's being a "safe" or a "good" driver over the years.

tests and the latter a figure associated with a secure test for high school graduation administered by a contractor." If one includes test development costs, remediation costs (which one observer calls the great hidden cost of minimum competency testing), legal expenses and opportunity costs, the real costs of a minimum competency testing program would soar well beyond $15-$20 per pupil.

We cannot go into all of these issues here. But for the moment consider just the problems of test development and the manner of testing. For some life skills competencies, (for example filling out a tax form) it is possible to conceive of performance tests which would assess those skills. Note, however, that development of standardized procedures for administering, validating and actually administering and scoring such tests likely would be expensive endeavors--and these skills are relatively simple. For other important competencies that are more complex, the development of new tests and concepts of competence would require a serious and sustained effort. And there would be no great promise of success. In fact, the experience of would-be competence testers seems likely to repeat past experience of program evaluators seeking to develop new measures of student competencies. In many national evaluations evaluators started with the hope of mounting broad, truly comprehensive assessments. Yet after spending much time and a great deal of money, most of them ended up sorely disappointed. The evaluation contractor in one of the largest and most disappointing of such efforts warned:

> The temptation in undertaking an evaluation is to assume that procedures can be rapidly developed or that ways to deal with the problems of measurement...will emerge. There is, however, great danger in basing one's plans on the assumption that such developments will occur.... Evaluation planning, in short, should be limited to the state of the art as known or best estimated at the time the evaluation begins so that unrealistic expectations about new developments can be avoided (Emrick, Sorenson and Stearns, 1973, p. 323).

The problems of test development and its cost, seem to have led some states and localities simply to adopt commercially available tests of reading and math as their initial competence assessment devices. For its minimum competency test, for example, Florida simply used items from the Adult Performance Level Test and others from the Educational Testing Service. This practice inevitably raises the issues of curricular and instructional validity. Available tests can very easily come to define the competence rather than desired competencies guiding the selection of appropriate assessment instruments. The use of pre-existing tests also suggests important conflicts between test security and freedom of information--a point we shall come back to in a moment. For now let us focus on the manner in which such assessments generally seem to be carried out.

Despite widespread discussion of minimum competency testing, surprisingly little attention has been given to the nature of the tests themselves. In part this may be due to the fact that many such tests are secret--or as the test publishers put it, secure--and so not open to public scrutiny. Nevertheless, the few samples of minimum competency tests that are available suggest that despite their new name, most such tests are quite old in format: multiple choice, true-false, or short answer. (See, for example NASSP, 1976.) Instead of having students actually perform certain tasks in order to demonstrate their competencies as is the case, for example, with the performance part of the driver's license test, these instruments assess competencies indirectly via paper-and-pencil tasks that are presumed to correlate with the competencies of real interest. In assessing competence for high school graduation, for example, districts often do not require students to write anything. Instead, students are asked via a multiple choice format

test to identify mistakes in a writing sample (NASSP, 1976). The prime virtue of such indirect forms of assessment is that they are cheap to administer and to score. True-false and multiple choice tests, unlike essay exams can readily be scored by machines. Also, indirect forms of assessment have been justified in terms of their power to predict later achievement. French (1966), for example, reports that multiple choice tests of verbal aptitude can "predict English grades or ratings on writing ability better than a test which actually requires the students to write" (p. 587).

There are several counter-arguments to such claims. First, the correlation between standardized multiple choice tests of writing like the STEP writing test, despite French's claim, have very low correlation with direct measures of writing (Madaus and Rippey, 1966). Second, justifying machine-scorable test instruments in terms of their power to predict school achievement belies the whole rationale of minimum competency testing. The rationale behind the movement is that it will help promote competencies for life after school, not for life in schools. Third, even if one were to accept such arguments, minimum competency testing has moved so fast and tests have been developed so quickly, that it is quite unlikely that evidence of such predictive validity is available for most such tests. Fourth, and most serious is that heavy reliance on just one form of assessment can lead to what Banesh Hoffmann warned against in his Tyranny of Testing (1962) as testolatry. Specifically, indirect techniques of assessment may themselves become the focus of concern instead of the real competencies which they are presumed to measure. Cases of such displacement of educational effort and the consequent trivialization of the educational process are fairly well-known (evidence, for example, the proliferation of test coaching schools). What is not yet known is how frequently this consequence may follow from minimum competency testing schemes. Nevertheless, there are some indicators that do

not augur well. Consider, for example, how one district attempted to measure minimum competency in the "democratic process." In a true-false format test, students were asked to mark statements they would or would not expect to find in a democratic society. One such statement was "The President vetoes a bill passed by Congress" (NASSP, 1976, p. 42). What is a student to make of such a question? One could argue that in a democratic society with guaranteed freedom of expression we could expect to find any sort of statement whatever. Conversely, of course, one might also argue that in a perfectly democratic society, one would not expect to find a president, especially one that was not elected, vetoing laws passed by a representative congress. On its surface, a student's answer to this question tells us nothing at all about his or her learning regarding democratic processes. Indeed, the test may tell us far more about the test developer's understanding of the democratic process than it will ever reveal about those who take it. If such indirect means of assessment come to have real consequences, energies are likely to be directed at these indicators themselves rather than at the competencies they were supposed to measure. More than 65 years ago, E. G. Holmes warned against this sort of displacement:

> Whenever the outward standard of reality (examination results) has established itself at the expense of the inward, the ease with which worth (or what passes for such) can be measured is ever tending to become in itself the chief, if not sole, measure of worth. And in proportion as we tend to value the results of education for their measurableness, so we tend to undervalue and at last to ignore those results which are too intrinsically valuable to be measured (Holmes, 1911).

In sum, the problems inherent in specifying life-skills competencies, in setting minimums of those competencies which students ought to attain, and in indirectly testing the degree to which individuals possess those competencies seem truly formidable. For numerous competencies already

specified in several states, there simply are no good measuring instruments. And even in those domains where we do have measurement devices, their validity may simply not be sufficient to allow us to make assessments to withhold a high school diploma from a pupil. Indeed it seems clear that if the enthusiasm for minimum competency testing reflected our competency to create such tests, the movement would be more mole-hill than mountain. As a report of the recent National Academy of Education Committee on Testing and Basic Skills suggested:

> [A]ny setting of state-wide minimum competency standards for awarding the high school diploma--however understandable the public clamor which has produced the current movement and expectation--exceeds the present measurement arts of the teaching profession, and will create more social problems than it can conceivably solve (NAE, 1978, p. v).

History and Politics of Minimum Competency Testing.

But the enthusiasm is great, even if the scientific foundations are weak. If we are to explain the popularity of minimum competency testing, we have to look elsewhere to account for its popularity. Likely places to look are school politics and history.

One obvious source of enthusiasm for minimum competency testing is venerable--namely, the notion that schools need more scientific management. Minimum competency testing is simply the latest verse in this old refrain--one that goes back at least a century; in the 1840's, for example, the Boston Public Schools instituted a common exam that students had to pass in order to receive a high school diploma (Madaus and Airasian, 1977). In 1877 the New York legislature empowered the Regents to institute a system of exams "to furnish a suitable standard of graduation" (Spaulding, 1938). Around the turn of the century Josiaph Rice, E. L. Thorndike, and scores of others recommended more thorough measurement of school outcomes in order to modernize and improve education. One enthusiast of scientific

management for the schools at that time pronounced that "We may not hope to achieve progress except as...measuring sticks are available or may be derived' (Callahan, 1962, p. 101).

More recently such views on reforming American schools have been presented under a variety of new labels: systems analysis, planning, programming and budgeting systems, and cost-benefit analysis, to name just a few. The idea common to all of these ideas, though, is that more systematic management of education can improve the outcomes of schooling. The trouble with such ends-oriented proposals modeled after industrial practices is that they overlook the complexity of schooling and education. In industry, an ends-oriented approach to management is possible because of the clarity of the ends sought and close control over the means of production. Neither of these conditions is present in the complex social setting of the schools. Not surprisingly, then, none of the technological approaches to educational management have proven very successful. But, if it is difficult to account for the popularity of minimum competency testing in terms of past successes of such endeavors, the enthusiasm for these tests does seem to reflect the durability of the idea that science can improve schools' efficiency.

Another point worth noting is the windshift in prevailing political weather--from liberal to conservative thinking on education. Numerous observers have noted such a shift in sentiment, though they use different labels to identify change: some call it a shift from concern over equality to concern over excellence; elsewhere it has been called a shift in focus from educational equity to educational achievement. Even Harold Howe in his keynote address to the HEW Conference on achievement testing and the basic skills advised that "It seems probable that some

erosion in school services to the general population may have been the price of moving toward equality of educational opportunity for those who have so long been denied it" (Howe, 1978).

In large part the minimum competency testing movement seems to have grown out of such perceptions and the politics flowing from them. Doubtless the focus on minimum competencies also helps to make the movement more politically palatable. One suspects, for example, that there would be somewhat less enthusiasm for competence testing if all students' competencies were to be graded say, from 1 to 100, instead of only being marked pass-fail.*

The political perspective helps explain why there has been so little concern over the relatively narrow focus of initial competence assessment efforts on "basic skills." Enthusiasts of competency testing seem little worried about focusing initially on reading, writing, and math, because they often see a need for intensifying educational work on just those "basics" and for stopping social promotion. In part the minimum competence movement reflects the back-to-basics movement, one aspect of a backlash against what James Kilpatrick called the "funsie-wunsie open education" philosophy of the 1960's (Kilpatrick, 1977). This reaction against "new-fangled education," as Kilpatrick put it, harkens back with a sense nostalgia to "old-fashioned" education. What such attitudes often overlook, however is that "old-fashioned" education served a much smaller proportion of the population. In 1940, less than half of the adult population of the United States had ever even begun high school. By 1975, around 90% of the adult popu-

*Ellis Page in an address to the National Conference on Minimum Competence Testing in Toronto, March 29, 1978, actually proposed such a scheme. Specifically, he argued that a system of scaled certification--"the reporting of a brief profile of scores from well designed senior tests" would be a way of escaping the problems of setting and defending minimums while at the same time adding meaning to the high school diploma (Page, 1978).

lation had completed twelve or more years of schooling (Golladay, 1977, p. 212). So although nostalgia for times past--or a sense of loss as Cohen (1976) put it--may help explain the enthusiasm for competency testing, it also often seems to ignore the realities of present-day schooling.*

Why the focus on testing?

These explanations make sense, but they are not complete. The minimum competency testing movement does seem part of a broad national reemphasis on improving educational achievement in the 3Rs, yet why should the response take the form of calls for more testing, as opposed to just more school work? In the late 1950's a similar concern over educational quality led not to minimum competency tests but to more direct efforts to reform curricula. Why curriculum reform in the 1950's but minimum competency testing in the 1970's?

The focus on testing seems to stem in part from the fact that it is reform from afar. As Chris Pipho has noted, the competency testing movement may represent a call for educational reform--but it's not from educators. "The minimum competency testing movement is clearly being led, or pushed, by non-educators" (Pipho, 1978a). Since they tend to be non-educators, enthusiasts of competency testing seem to feel free to focus on the outcomes they desire and to pay little heed to the educational processes by which those ends might be reached. Yet more thoughtful specialists in educational measurement have long pointed out that such myopia may be misleading. As Samuel Messick wrote in 1975,

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*Interestingly, despite the widespread sense of diminishing educational standards, there is some evidence that in the last 30 years learning may not actually have diminished. A study comparing the reading achievement of Indiana school children in 1944 and 1976 found that today's students generally do as well or better than their counterparts in 1944 when the exact same test used in 1944 was readministered in 1976. (New York Times, April 14, 1978)

> To judge the value of an outcome or end, one should understand the nature of the processes or means that led to that end, as Dewey (1939) emphasized in his principle of the means-ends continuum: it's not just that means are appraised in terms of the ends they lead to, but ends are appraised in terms of the means that produce them.

The influence of non-educators in the minimum competency testing movement is noteworthy, but not especially new. As Raymond Callahan noted in 1962 in Education and the Cult of Efficiency, the vulnerability of American education to external pressures has a fairly long history.

Another angle on the current phenomenon is the rising concern over costs of education. Public education is by far the largest and most expensive undertaking of state and local government, accounting for more than one-third of local and state direct expenditures. Local school districts, on the average, receive about fifty percent of their total revenues from local taxes, and most of that from local property taxes. Over the past decade, per-pupil expenditures have increased more than 50% even after adjusting for inflation. Public dissatisfaction with the continuing escalation of public schooling prices is reflected in the fact that nationwide both the number of school bond elections and the percent of elections where bond sales were approved have dropped markedly in recent years: from a 74% approval rate in 1964-65 to a 46% rate in 1974-75 (Golladay, 1977). In addition to its apparently increasing reluctance to pay directly for higher expenditures for education, the public seems increasingly prone to ask for proof of the return on current expenditures. And since test scores are the most readily available form of evidence on educational performance, such demands more often than not seem to get translated into calls for more testing.

Related to both non-educators' influence and costs, is a shift in patterns of school governance over the last several decades. While formal governance arrangements vest authority for education in local and state

education agencies, authority has gradually been accumulating in the hands of agencies and organizations which cut across local and state boundaries--teachers unions, the courts, testing agencies, and a range of other educational lobby groups. The hands of local education agencies are increasingly tied--by collective bargaining contracts, governmental regulations, and court orders.

Governance of education has in effect become far more complex since the 1950's and increasingly national--or at least supra-local--in character. So public concern over the direction of American education gets expressed in different ways in the 1970's than it did in the 1950's. Specifically, public concern over education seems increasingly to be expressed at state and national levels of government. Yet because of clear constraints on actions with respect to education at these levels--both legal and traditional--the form in which public sentiment gets expressed clearly differs. Both tradition and law preclude direct federal intervention in educational curricula. And in most states, determination of curricula is the clear prerogative of local education agencies. So the public sentiment on education must be expressed in other ways. And mandates for minimum competency testing at the state level seems to be an expression that fits well with the de facto allocation of responsibility for education across the three levels of government. State governments can mandate minimum competency testing without infringing--at least directly--on the local responsibility for curriculum. Federal agencies are kept at bay--at least ostensibly--because a national test would be too much of an intervention into state and local responsibilities for education. Still they can get in on the action by providing technical assistance to states and localities considering minimum competency testing, by sponsoring conferences and research and via other similarly indirect means.

Not only does the minimum competency testing movement at the state level seem to fit well with the current mix of government responsibilities for

education, but also it meshes well with private interests. Test companies, for example, may find a windfall business in helping states and localities develop minimum competency tests. And a multitude of experts and consulting firms seem to be finding a brisk business in proferring advice on the techniques and options of minimum competency testing.

In the end, of course, it is impossible to explain exactly why a movement like minimum competency testing finds public favor. There are many motives that might lead different persons to support competency testing schemes. The rapid rise of the minimum competency testing movement seems due in large part to the fact that so many people's diverse interests have converged on the idea. Conservatives may back them because of concerns over costs. Liberals favor them in order to promote more quality education for all children. What, of course, remains to be seen, despite the motley motivations and diverse intentions of its backers, is what impact the minimum competency testing movement will have on the lives and learning of children. Educational fads and movements doubtless have more impact on public discourse and media coverage of education than on classroom practice: Indeed, the appetites of education experts, consultants, and journalists seem to demand a new issue every three or four years. Yet since minimum competency testing has already attained the status of law in large portions of the country, this movement may have more impact on teachers and students than other recent accountability schemes.

What to Look for in Minimum Competency Testing

Forecasting the future of the minimum competency testing movement seems as uncertain an endeavor as reading tea leaves. In a meeting near Disney World in May 1978, Florida officials predicted that their state's minimum competency testing program was a harbinger: that such testing would be coming in other

states sooner than educators expect (Report on Education Research, May 17, 1978). In the same month, however, Gene Glass predicted in Phi Delta Kappan that Florida's minimum competency graduation assessment "will be suspended before the end of the year" (p. 603). Whatever happens next, the minimum competency testing movement seems, as Airasian, Madaus, and Pedulla (1978) have observed, to be heading us toward something like European practices of external certification of secondary school graduation. How far we go in this direction is hard to predict.

A recent Citizens' Introduction to Minimum Competency Programs by the American Friends Service Committee summed up the potential effects of a minimum competency testing program. Among possible benefits, it listed:

--Minimum competency programs will help those children who have the greatest educational needs.

--Minimum competency programs will motivate students and stop "social promotions."

--Minimum competency programs will define more precisely what skills must be taught and learned.

--Minimum competency programs will certify that students have specific minimum competencies.

(Southeastern Public Education Program, AFSC, 1978, pp. 5-6.)

Potential problems listed in the Citizens' Introduction were more numerous:

--Minimum competency programs will exclude more children from schools and further stigmatize and harm underachieving youth.

--Minimum competency programs will not assure that children will receive effective remediation.

--Minimum competency programs oversimplify the competency issue.

--Minimum competency programs will place the burden for "failure" on students.

--Minimum competency programs will cause educators to be held unfairly accountable.

--Minimum competency programs will encourage teachers to "teach the test."

--Minimum competency programs will cause the "minimum" to become the "maximum."

(Southeastern Public Education Program, AFSC, 1978, pp. 6-9.)

This summary of the potential benefits and costs of the minimum competency testing programs seems fair: the problems are more prominent than the benefits. Perhaps because of this, state action concerning minimum competency testing seems to have slowed somewhat in 1978.

> What is noticeable this year is that the legislatures are moving much more carefully. They are holding more hearings; they are reviewing bills in greater detail; they are giving more consideration to additional studies when needed; in general, they are asking more questions. At the state board level, several states are working through elaborate schedules of statewide hearings and involving all groups through advisory boards before adopting policy. Even after policy has been set, provisions are made for a period of review before it becomes final. (Pipho, 1978a, p. 585)

Though action on minimum competency testing seems to be slowing, interest remains high. The idea behind minimum competency testing still seems reasonable. Such tests, it is hoped, will help guarantee that students no longer pass through schools simply on the basis of social promotion. Competency testing schemes aim to help ensure that for their time in schools, students will be guaranteed some minimum amount of learning, either in terms of "school skills" or "life competencies." The idea seems a natural extension of other social policy and legislation; for example, to mandate minimum wages, to ensure environmental quality, and provide at least minimally adequate health care. Though the American public seems increasingly concerned lately with the costs of such social welfare guarantees, there is little indication that the public's enchantment with the idea of such social

guarantees is on the wane. And so it is with minimum competency testing. The idea still seems attractive--it is the connection between theory and practice which is worrisome. In this respect, four issues seem to us especially important for how ideas for minimum competency testing work out in practice.

1) Testing and Teaching. More attention needs to be given to the relationship between minimum competency testing and what is taught in schools. In the rush to test for competencies, remarkably little attention has been given to how desired competencies or skills relate to present school curricula. Implicit in calls for competency testing are some real assumptions about the goals of education. If the educational goals embodied in competency testing schemes are not covered adequately in current curricula, the discrepancy needs consideration and resolution. Testing students on what they have not been taught seems unfair, and as we have suggested, denying them a high school diploma on that basis may well prove illegal. Moreover, if the fit between what is tested and what is taught is not good, testing will also surely affect the curriculum. Experience with programs using tests to certify successful completion of a given level of education shows that the tradition of past exams quickly influences what is taught and is not taught, how it is taught and how pupils study (Madaus and McNamara, 1970). If students are denied a high school diploma on the basis of minimum competency tests, they could quickly become a powerful influence on what is taught and learned in American schools.

2) Remediation. Most minimum competency testing programs quite sensibly have not waited until the twelfth grade to administer tests to students. Typically students have several chances to pass minimum competency tests, beginning relatively early in their high school careers. However, relatively

little attention has been given to the crucial issue of what sort of remedial help will be given to students who do not pass on the first time around. Florida, as mentioned above, seems prototypical of this problem; only after nearly forty percent of 11th graders taking the math proficiency test failed did that state's legislature allocate $10 million "to local school districts that file approved local student remediation plans" (Report on Education for the Disadvantaged, December 30, 1977).

Whether well thought-out remediation efforts are available on a broad scale--and our experience with compensatory education at the elementary level must give us pause here--will be crucial in determining whether minimum competency testing programs will really help improve student learning, or will become a new means for tracking students who most need help into second class educational programs and stigmatizing them as inferior citizens.

3) Potential for Discrimination. Since disadvantaged students, including ethnic minorities, handicapped children, and students who do not speak English as their first language, typically have not had educational opportunities equivalent to their middle-class peers, the potential in the minimum competency testing movement for adverse impact on these groups is great. This issue has already been raised in Florida; the NAACP has announced its intention to file a suit to enjoin further administration of Florida's proficiency exam on the grounds that it is culturally biased (Education Daily, March 29, 1978). An alternative explanation of differential test results of course is that such special groups have not received instruction equivalent to their more advantaged peers. But regardless of whether the tests themselves are biased, or whether minorities have received inferior instruction, the potential for unfair discrimination seems large. As a

recent Southern Regional Council report suggested, tracking based on competency test results, may become the new segregation.

4) Test Security and Freedom of Information. As Airasian, Madaus, and Pedulla (1978) have suggested, one problem that seems to have been little noted in discussions of minimum competency testing is the issue of test security. Apparently some minimum competency tests are modelled after the SAT, the Law School Admissions Tests, and other completely secure tests: In these cases, the same test or large portions of it are used year after year and never are made public. For tests such as the SAT and the LSAT, this approach makes some sense. In these cases, individuals voluntarily take the test and pay the examining body a fee to the services they provide.

The completely secure model of testing does not, however, seem appropriate for minimum competency testing. First of all, students will not take such tests voluntarily but instead will be required to do so. Second, such tests are being developed with public monies; it seems entirely possible that freedom of information laws may require that such tests be made public after they have been administered. If so, test security will vanish, and new tests will have to be developed. External testing programs tied to high school certification historically have followed this model rather than the totally secure approach of the SAT. Such a development would increase the costs of a minimum competency testing program, because test development would not be a one-shot affair (Airasian, Madaus, and Pedulla, 1978).

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In sum, the problems of minimum competency testing programs seem at present far more prominent than their prospective benefits. The major problems derive mainly from the relationship between what these tests

measure and what is actually taught in schools, and this relationship--or the lack of it--deserves considerably more attention than it has received so far. For if the relationship is weak the tests are unfair. And if it is strong, it may be because what is tested affects what is taught. Competency testing schemes may have real--though unintended--consequences, both for the individual students and for the substance of what gets taught in schools. The most sensible antidote to such unintended outcomes of minimum competency testing is to focus more attention on what should be taught in schools and how to teach it more effectively, and less on merely that which can be measured. For the maximum of what currently can be measured, especially via paper-and-pencil competency tests, should not define the minimum of what should be taught or learned.

REFERENCES

Airasian, P., Madaus, G., and Pedulla, J., Issues in Minimum Competence Testing and A Comparison of Implementation Models. Report to the Policy Subcommittee on the Massachusetts Advisory Committee on High School Graduation Requirements. Chestnut Hill, MA: Boston College, April 1978.

Brickell, H., Let's Talk About...Minimum Competency Testing. Denver, Colorado: Education Commission of the States, 1978.

Callahan, R., Education and the Cult of Efficiency. Chicago, Illinois: University of Chicago Press, 1962.

Cohen, D. K., "Loss as a Theme in Social Policy," Harvard Educational Review 46:4, November 1976, pp. 553-571.

Cohen, D. K., "Tendencies in Public School Governance," a paper prepared for a conference on Future Trends in Education Policy. Croton-on-Hudson, New York: Hudson Institute, September 1977.

Coleman, J. et al, Equality of Educational Opportunity. Washington, D. C.: U.S. GPO, 1966.

Education Daily, "Florida NAACP will sue State Education Officials Over Literacy Tests," March 29, 1978.

Emrick, J., Sorenson, P., and Stearns, M., Interim Evaluation of the National Follow Through Evaluation. Menlo Park, CA: Stanford Research Institute, February 1973.

French, J.W., "Schools of Thought in Judging Excellance in English Themes," in Anastasi, A. (ed.) Testing Problems in Perspective. Washington, D. C.: American Council on Education, 1966, pp. 587-596.

Glass, G., Standards and Criteria, Occasional Paper Series of the Evaluation Center. Kalamazoo, MI: Western Michigan, December 1977.

Glass, G., "Minimum Competence and Incompetence in Florida," Phi Delta Kappan, May 1978, pp. 602-605.

Golladay, M., The Condition of Education 1977. Washington, D. C.: US GPO, 1977.

Green, T., "Minimal Educational Standards: A Systemic Perspective." Background paper prepared for ECS/NIE/Carnegie regional conferences on minimum competency testing, 197[illegible].

Greenbaum, W., with Garet, M. and Solomon, E., Measuring Educational Progress. New York: McGraw Hill, 1977.

Hawthorne, P., Educational Accountability in Four States [Connecticut, Florida, Colorado, and Michigan]. Denver, Colorado: Cooperative Accountability Project. December 1978.

Hoffman, B., The Tyranny of Testing. New York: Collier, 1962.

Holmes, E. G., What is and What Might Be: A Study of Education in General and Elementary in Particular. London: Constable & Co., 1911.

Houts, P. (ed.), The Myth of Measurability. New York: Hart, 1977.

Howe, H., "Tests and Schooling." Address to the National Conference on Achievement Testing and the Basic Skills, March 1, 1978.

Kelley, E. W., "The Politics of Proficiency." A paper submitted to NIE Basic Skills Group, 1977. (Prepared as a background paper for ECS/NIE/Carnegie regional Conferences on minimum competence testing.)

Kilpatrick, J. "Teaching by the Book Pays Off," Denver Post, June 28, 1977.

Lerner, Barbara. "Equal Protection and External Screening: Davis, DeFunis and Bakkee." ETS Invitational Conference on Measurement and the Law Proceedings, 1977. (in press)

MacDonald-Ross, M., "Behavioral Objectives--A Critical Review." Industrial Science II. 1973, pp. 1-52.

Madaus, G. and Airasian, P., "Issues in Evaluating Student Outcomes in Competency Based Graduation Requirements," Journal of Research and Development in Education. 10:3 (1977) pp. 79-91.

Madaus, G., Airasian, P. and Kellaghan, T., School Effectiveness: A Reassessment of the Evidence. New York: McGraw Hill, (in press).

Madaus, G. and McNamara, J., Public Examinations: A Study of the Irish Leaving Certificate. Dublin, Ireland: Educational Research Centres, 1970.

Madaus, G. and Rippey, R., "Zeroing in on the STEP Writing Test: What Does it Tell a Teacher?" Journal of Educational Measurement 3:1 (1966), pp. 19-25.

McClung, M., "Competency Testing: Potential for Discrimination," Clearinghouse Review, September 1977, pp. 439-448.

McClung, M., "Are Competency Testing Programs Fair? Legal?" Phi Delta Kappan, Feburary 1978, pp. 397-400.

McClung, M. and Pullin, D., "Competency Testing and Handicapped Students," Clearinghouse Review, 1978 (March), pp. 922-927.

Messick, S., "The Standard Problem: Meaning and Values in Measurement and Evaluation," American Psychologist, 30(1975), pp. 955-966.

Miller, B. (ed.), Minimum Competency Testing: A Report of Four Regional Conferences. St. Louis, Mo.: CEMREL, January 1978.

Mills, R. and Bryan, M., Testing...Grouping: The New Segregation in Southern Schools? Atlanta, Georgia: Southern Regional Council, 1976.

Nathan, J. and Jennings, W., "Educational Bait-and-Switch," Phi Delta Kappan, May 1978, pp. 621-624.

National Academy of Education Committee on Testing and Basic Skills. Improving Educational Achievement. A report to the Assistant Secretary of HEW for Education, Washington, D. C.: NAE, March 1, 1978.

NASSP, Competency Tests and Graduation Requirements. Reston, Virginia: National Association of Secondary School Principals, 1976.

NASSP, "Minimum Competency Testing...An Update," The Practitioner. ("Newsletter for the On-Line Administrator," published by the NASSP). Vol IV, No. 3 (June 1978).

New York Times, "Math a Big Problem for Florida Schools." December 7, 1977.

"Educator is Critical of Competency Tests." November 20, 1977.

"Regents Block Test as Too Easy." February 13, 1978.

"Reading Achievement of Children in Indiana Found as Good as in '44." April 14, 1978.

"Regents Toughening High School Esams." May 25, 1978.

"Regents Replacing Competency Tests." May 26, 1978.

"Ideas and Trends in Summary." June 6, 1978.

Operating an Objective-Referenced Testing Program: Florida's Approach to Large-Scale Assessment, Cooperative Accountability Project. Denver, Colorado: 1975.

Page, E. B., "Escaping the Minimum Competency Dilemma: Scaled Certification," CAPT, Clearinghouse for Applied Performance Testing Newsletter III:V (May 1978) pp. 6-12.

Pipho, C., Update VII: Minimal Competency Testing. Denver, Colorado: Education Commission of the States, November 15, 1977.

Pipho, C., "Minimum Competency Testing in 1978: A Look at State Standards," Phi Delta Kappan, May 1978, pp. 585-588. (1978a)

Pipho, C., "State Activity Minimal Competency Testing." Denver, Colorado: Education Commission of the States, May 19, 1978. (1978b)

Report on Education Research, Florida's Minimum Competency Testing: Is it Coming or Going? May 17, 1978.

Report on Education for the Disadvantaged. December 30, 1977.

Southeastern Public Education Program, AFSC, A Citizens' Introduction to Minimum Competence Programs for Students. Columbia, South Carolina: AFSC, February 1978.

Spady, W., "Competency Based Evaluation: A Bandwagon in Search of a Definition," Educational Researcher, 6:1, January 1977, p. 9-14.

Spaulding, F. T., High School and Life: The Regents Inquiry into the Character and Costs of Public Education in the State of New York. New York: McGraw Hill, 1938.

Time, "Florida Flunks." December 12, 1977.

Tractenberg, P., "The Legal Implications of Statewide Pupil Performance Standards," background paper prepared for ECS/NIE/Carnegie regional conferences on minimum competency testing, 1977.

U. S. House of Representatives, Hearings before the Subcommittee on Elementary, Secondary and Vocational Education; Committee on Education and Labor. Part I General Issues in Elementary and Secondary Education. Washington, D. C.: GPO, 1977.

Washington Post, "Good Pupils Fail Florida Test." December 19, 1977.

Wise, A., "A Critique of Minimum Competency Testing," paper prepared for the Educational Adequacy Program Basic Skills Group. NIE, September 1977.

Zieky, M. and Livingston, Manual for Setting Standards on the Basic Skills Assessment Tests. Princeton, New Jersey: Education Testing Service, 1977.