Testing and Teaching:
Local Implementation of
New State Assessments

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ABSTRACT

Linking new state assessments to rigorous academic content standards and assuming that they can significantly alter classroom instruction represent major changes in their role as state policy tools. The assumption is not just that the new tests will hold schools accountable for students' mastery of basic skills, but that schools will also be responsible for a higher standard of student achievement and that teaching will be transformed in response to the state assessment.

Focusing on the implementation of new state assessments in Kentucky and North Carolina, this monograph examines the extent to which policymakers' expectations about the curricular effects of testing have proven valid in local schools and classrooms. The analysis is based on telephone and on-site interviews with 139 teachers and school administrators conducted in 1993 and 1994, with 60 of these respondents interviewed again in late 1994. In addition, assignments and daily logs were collected from 23 Kentucky and 23 North Carolina teachers to determine the consistency of their instruction with the curricular goals of the two state assessment.

Kentucky's assessment is part of a major systemic reform and involves high stakes for schools and educators, with major consequences attached to the test results. In contrast, the North Carolina assessment represents a less marked departure from traditional multiple-choice testing and has no tangible consequences attached to it. Nevertheless, teachers in the two state samples perceive the new assessments in much the same way and take them equally seriously. With few exceptions, their teaching reflects the assessment policy goals of their respective states to a similar degree.

Instruction by teachers in the study sample is reasonably consistent with the state assessment goals at the level of classroom activities, but not in terms of the conceptual understandings the assessments are measuring. Teachers have added new instructional strategies such as having students work in groups, but they are still using traditional approaches as well, and they have not fundamentally changed the depth and sophistication of the content they are teaching. For example, teachers in the Kentucky sample included the state learning goals that stress thinking critically, developing solutions to complex problems, and organizing information to understand concepts in only a few of their assignments.

It is not surprising that deeper changes have not yet occurred among teachers in the two state samples. Transforming instruction through assessment is not a self-implementing reform because the tests alone lack sufficient guidance for how teachers ought to change. Unless new assessments are also supported by a strong infrastructure of teacher retraining and adequate instructional materials, they are unlikely to be effective as levers of curricular reform. Although both states have provided these resources to some extent, their experience shows that instructional change through assessment policy is neither automatic nor fast-acting.

TESTING AND TEACHING:
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1. INTRODUCTION

For more than two decades, state officials have viewed student assessment as an effective instrument for promoting broad policy goals. Requiring that students in specific grades be tested on a standardized instrument is not only a relatively inexpensive policy strategy, but a growing body of evidence suggests that assessment is one of the most effective tools available to higher levels of government for changing local educational practices (Corbett & Wilson, 1991; Herman, Dreyfus, & Golan, 1990; Herman & Golan, n.d.; Madaus, 1988). The move by some states to implement new forms of assessment over the past five years continues this reliance on testing as a policy instrument.

However, these new assessments differ from their predecessors in three significant ways. First, unlike previous state tests that primarily measured students' mastery of basic skills independent of a specific curriculum, these new assessments are typically linked to a set of academic standards or to a curriculum that emphasizes higher order, critical thinking skills and more rigorous content. Second, although most new state assessments continue to rely on multiple-choice items, many also measure student achievement using other mechanisms such as writing samples, open-response items where students are required to explain how they arrived at an answer, performance events where students demonstrate mastery by doing something such as conduct a science experiment, and portfolios that include samples of students' work collected over a longer period such as an academic year. Finally, like older state assessments, these new tests are intended to function as mechanisms for holding individual schools and their staffs accountable for student performance. But they are also designed to influence

classroom instruction. State policymakers have assumed that the assessment system and the curricular values embodied in it will persuade teachers to teach differently.

Together these changes represent not only a significant departure from past assessments, but also a major transformation in the expectations that state officials hold for assessment as a policy instrument. The assumption is not just that the new tests will hold schools accountable for students' mastery of basic skills, but that schools will also be responsible for a higher standard of student achievement and that classroom instruction will change measurably in response to the state assessment. The new forms of instruction that policymakers expect are based on a particular view of how students learn. The assumption is that rote memorization of facts does not result in the kind of sustained, worthwhile knowledge that students need. Rather, students should learn in a way that will allow them to think critically, solve problems, and apply knowledge in unfamiliar situations. According to this view, teaching for understanding is most likely to occur if students have opportunities to construct their own learning through hands-on experiments and projects, interactions with other students, and the application of knowledge and skills to real-world problems. In this model, there is less lecture and teacher-directed instruction, and a greater emphasis on the teacher facilitating students' own active learning.

Although advocates argue that relying on curriculum standards and then testing students on those standards is an effective strategy for meaningful education reform, a number of assumptions must be operative for this strategy to work as intended. Some relate to political issues, such as whether widespread consensus can be reached on the standards that define what students are expected to know; others relate to technical concerns, such as the ability of these new forms of assessment to measure student performance reliably and validly.

One assumption relates specifically to the willingness and ability of teachers to change the content and mode of their instruction in response to new forms of assessment. Reformers and their policymaker allies assume that the assessment will serve as a motivator for teachers to teach differently and that the content standards being measured by the assessment will serve as a general guide to new approaches to instruction. However, they also assume that teachers will use their professional judgment in customizing the standards to their individual classrooms. At the same time, some of the content represented in the new standards, such as

in mathematics, differs significantly from what is traditionally covered in most courses. In addition, many of the state standards embody expectations about pedagogy, and the new forms of assessment assume that students will be taught in such a way that they will be prepared to write well, to explain their answers, and to work collaboratively with other students in arriving at solutions to practical problems. Yet schooling in the U.S. has traditionally been characterized by teacher-directed instruction that relies on only a few instructional strategies, such as teacher lecture, boardwork, and students working individually on assignments (e.g., Burstein et al., 1995; Gamoran & Nystrand, 1991; Oakes, 1985). Consequently, for new forms of assessment to alter the curriculum in the way policymakers expect, teachers must have sufficient incentives to change, but they must also be trained to teach in new and different ways.

Study Purpose and Methods

This monograph examines the extent to which policymakers' expectations about the curricular effects of new assessments have proven valid in local schools and classrooms. It focuses on the implementation of new state assessments in Kentucky and North Carolina and addresses two research questions:

- Are the design and implementation of new state assessments likely to promote these policies' curricular goals?

- To what extent is classroom teaching in response to the new assessments consistent with policymakers' expectations?

The research project on which this monograph is based was conceived as a way to examine the design and implementation of new assessments vertically from the state capital to individual schools and classrooms, across several different states, and over several years. Consequently, a variety of data were collected. An earlier monograph on the politics of state testing (McDonnell, 1997) was based on elite interviews, conducted in 1992 and 1994, with 51 state policymakers and interest group representatives in California, Kentucky, and North Carolina; articles published in a major newspaper in each of the three states between 1990 and 1996; and a review of relevant documentary data.

This monograph is based on three data sources:

- face-to-face interviews conducted with four teachers, the principal, and the counselor in each of six schools located in three districts in Kentucky.

The same number of school staff was also interviewed in North Carolina. In addition, nine district-level personnel (superintendent, school board member, director of testing, curriculum director) were interviewed in Kentucky and 14 in North Carolina. These 95 respondents were interviewed in October and December 1993 using a structured, open-ended protocol; interviews averaged about 45 minutes each. In addition, the 48 teachers and 12 principals were interviewed again in October and November 1994.[1]

- telephone interviews with an additional 14 principals and 8 counselors in both Kentucky and North Carolina. These 44 interviews, conducted between February and May 1994, were based on an abbreviated version of the protocol used in the face-to-face interviews.[2]

- assignments collected from 23 of the Kentucky teachers and 23 of the North Carolina teachers.[3] Participating teachers were asked to provide us with all their in-class and homework assignments, quizzes, exams, projects, and any other written work assigned to students over a two-week period during fall semester 1994. Teachers were also asked to complete a one-page log form each day during the two-week period.[4] In addition, they were asked to provide copies of all those assignments made over the entire fall semester that they thought were most like the state assessment.[5]

In selecting districts within Kentucky and North Carolina, our first priority was to represent the geographic diversity of the two states. Kentucky is divided

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[1] The interview protocols were tailored to specific classes of respondents, but all covered the same general topics. Copies of the 1993 and 1994 protocols used in interviewing teachers are included in Appendix A.

[2] Interview data were collected on a similar number and distribution of California teachers, principals, and district staff. However, because the California Learning Assessment System (CLAS) was terminated in 1994, no follow-up interviews or instructional artifact data were collected on this sample. Instead, during the 1995-95 school year, we conducted case study research on seven schools in California where parental opposition to CLAS was particularly intense in order to understand grass roots mobilization as part of the politics of testing. That research will be reported in a subsequent publication.

[3] Because of family illness, one teacher in the original Kentucky sample and one in the North Carolina sample were unable to provide the instructional artifact data.

[4] The log form asked teachers to list which topics they covered during a class period and what the intended outcomes of the class were. They were then asked to indicate on a checklist all the modes of instruction they used and the activities in which students engaged. For each activity, teachers were asked what proportion of the class period it consumed. There was also a *comments* section where teachers were asked to provide any information about the lesson that they felt was important (e.g., that class time was reduced by other school activities, that something particularly different or innovative occurred that day). A copy of the log form is included in Appendix A.

[5] Each teacher was paid an honorarium of $200 for participating in two interviews and for providing instructional artifacts over the course of a semester.

into three distinct regions: Appalachian eastern Kentucky; the central Pennyrile; and the triangle of Lexington, Louisville, and the Cincinnati suburbs, which includes most of the state's urban population, industrial production, and wealth. North Carolina has a similar geographic division: the western mountainous region; the eastern coastal counties; and the central Piedmont, which includes most of the state's urban population. In both states, we selected one local district from each region, and within each of these districts, two schools.

In selecting districts and schools within a region, we sought to reflect the racial diversity of the states and to ensure that our sample was balanced in its inclusion of tested grades. At the time of our data collection, Kentucky was testing students in the fourth, eighth, and twelfth grades, so the sample is evenly divided among elementary, middle, and high schools. In North Carolina, we were primarily interested in the instructional effects of the end-of-grade test which is administered to students in Grades 3 through 8, so our sample includes four elementary, two middle, and no high schools. We consulted with university faculty, staff of independent groups working on education reform, the state teachers' organization, and state department of education staff within each state to ensure that we had not selected schools that were atypical—either positively or negatively—in their quality or in how they adapted to externally-mandated change. Our telephone sample of schools was selected in the same way. Table 1.1 summarizes the characteristics of the six schools in each state that were the focus of our field interviews and collection of instructional artifact data.[6]

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[6] The schools in our Kentucky sample differ in one important way from many schools in the state; four of the six are significantly larger than the average school in the state. Kentucky schools tend to be small, with the average enrollment for elementary schools at 329, middle schools 544, and high schools 666. However, it turned out that the schools in our sample were similar to the state average in how well they performed on the KIRIS test between 1992 and 1994. For each of the grades and subjects listed below, we show the average percentage of students statewide scoring proficient or higher and the percentage for the schools in our sample.

		Statewide average	Sample average
Grade 4	Mathematics	11	15
	Reading	13	12
	Social Studies	12	12
Grade 8	Mathematics	19	22
	Reading	18	13
	Social Studies	16	12
Grade 12	Mathematics	19	19
	Reading	16	15
	Social Studies	18	17

Table 1.1

School Sample

		Level	Location	Enrollment	Percent minority	Percent free/ reduced price lunch
Kentucky						
School	1	Elementary	Rural	520	10	40
	2	Elementary	Rural	350	2	65
	3	Middle	Urban	950	26	67
	4	Middle & High	Rural	650	0	53
	5	High	Urban/Suburban	950	32	31
	6	High	Urban	850	10	40
North Carolina						
School	1	Elementary	Urban	450	40	42
	2	Elementary	Rural	450	7	18
	3	Elementary	Rural	460	66	59
	4	Elementary	Suburban	840	32	34
	5	Middle	Suburban	925	11	17
	6	Middle	Urban	700	32	18

Principals selected the participating teachers. However, we specified the grade levels and subjects from which they should be chosen. Consequently, in most schools, principals were typically choosing from among only two or three teachers at a specific grade or teaching a particular subject. Table 1.2 provides an overview of the teacher sample.[7]

The schools in our North Carolina sample performed much like the state average on the end-of-grade reading test, but significantly better than the state average on the mathematics and social studies tests. The percentage of students scoring at the proficient level or above statewide in 1993 in mathematics was 63%, reading 64%, and social studies 59%. The average scores for our sample were 72% in mathematics, 68% in reading, and 67% in social studies.

[7] In median years of teaching experience, our sample is quite typical of the teaching force as a whole. However, the proportion of men in the North Carolina sample is less than half of what it is in the larger teacher population; the proportion in the Kentucky sample mirrors the state's teaching force exactly.

Table 1.2

Teacher Sample

	Teachers
Kentucky	
Grade	
Elementary	6
Middle	5
High	12
Subject	
Language arts	8
Mathematics	7
Social Studies	8
Gender	
Female	18
Male	5
Median years of teaching experience ($SD = 9$)	16
North Carolina	
Grade	
Elementary	11
Middle	12
Subject	
Language arts	8
Mathematics	8
Social Studies	7
Gender	
Female	22
Male	1
Median years of teaching experience ($SD = 8.5$)	16.5

The use of instructional artifacts (teachers' assignments) as an indicator of the extent of policy implementation is a relatively new strategy for measuring classroom effects (see Burstein et al., 1995, for an extended discussion of the methodology). Clearly, detailed classroom observations are likely to provide the most in-depth information from which to make inferences about the impact of new assessments on the curriculum. However, the time and expense involved in classroom observations mean that they are usually conducted on small samples, with data collected over a limited time period.

Consequently, we turned to the analysis of instructional artifacts as an alternative. This strategy allowed us to compare teachers' reports about changes in their instruction with their actual assignments, and to collect data over an entire semester. The disadvantage is that the artifacts provide no information about how students receive and respond to the curriculum in the way that classroom observational data do. On the other hand, the use of instructional artifacts provides a more valid measure of whether teaching is consistent with the state assessment than simply relying on either teacher surveys or open-ended interviews. However, it does limit generalizability because the sample size is small and not representative of all the state's teachers. Still, we view the use of instructional artifact data as a significant improvement over past implementation studies that rely almost entirely on participants' self-reports with no independent validation.

The artifact data consist of an average of 15 ten-day assignments per teacher ($n = 670$),[8] 11 daily logs ($n = 503$), and nine assignments ($n = 399$) that teachers judged to be similar to the state assessment.[9]

Information was extracted from the instructional artifacts by six experienced teachers (two for each of the three subject areas) who were familiar with the tenets of recent curricular reforms and the move to standards-based education. They used a coding instrument that asked them to determine what proportion of each teacher's assignments contained a set of general characteristics that were common across subjects and the two states (e.g., required open-ended responses of several sentences, required students to explain their reasoning), and a set of

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[8] We asked teachers to provide us with all the assignments they made over two consecutive weeks. However, we also requested that if they were within several days of completing a unit or a topic at the end of the ten days, that they continue to complete the logs and provide assignments until they had finished the unit. Hence, the number of assignments and logs exceeds what would have been collected over only 10 days.

Elementary teachers who were teaching in self-contained classrooms were asked to provide assignments in only one subject area. The designation as to which subject was done by us in order to maintain an equal representation among mathematics, language arts, and social studies assignments.

[9] Our rationale for collecting both a sample of assignments made over a consecutive time period of our choosing and all those assignments that teachers judged to be most similar to the state assessment was to learn how teachers translated their understanding of the purpose and format of the state assessment into their own assignments and to see how consistent assignments they judged to be like the state test were with assignments associated with their ongoing teaching. In essence, we have collected "typical" assignments as well as those that teachers judged "best" in reflecting the state assessment.

characteristics specific to a particular subject (e.g., required students to apply mathematical concepts to real-world solutions or problems). The coders then assessed each teacher's assignments to determine how consistent they were with the instructional goals specific to his or her particular state (Kentucky's and North Carolina's instructional goals are listed in appendices B and C).

The artifacts from 20% of the teachers ($n = 9$) were coded independently by two coders to check for intercoder reliability. The rate of exact agreement between coders was 80% (out of 1551 separate judgments, the coders made the same judgment in 1239 instances).[10] Hence, we feel quite confident that our discussion of teachers' assignments and their consistency with state goals are based on reliable data.

The interview data were analyzed by systematically comparing teachers and principals in the two states on a small set of implementation-related variables. Interview responses were coded and counts made for key variables. The instructional artifact data were analyzed and compared across the two states using basic descriptive statistics. Although we report statistical tests of significance where appropriate, the results are only suggestive because of our small, purposive sample.

It is important to note that because we began our data collection in both states after implementation of the new assessments had already begun, we have no baseline data on instruction prior to the assessment. Therefore, we cannot really determine whether instruction has changed in response to KIRIS and the end-of-grade tests. Rather, we have teachers' self-reports about the changes they have made, and we have their instructional artifacts to ascertain how consistent teaching is with state goals, though some of that instruction may have preceded the state test. In fact, some teachers, particularly in social studies and language arts, reported that they had always required students to write essay responses and to work on long-term projects.

Additionally, we cannot make inferences from our sample about how all or most local schools and educators in Kentucky and North Carolina have responded to the new state assessments. Our sample is small and nonrandom. Nevertheless,

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[10] If we relax the criteria and consider those judgments where the coders differed by only one (e.g., in calculating the number of assignments reflecting a particular goal), the rate of agreement increases to 87%.

it can still provide useful policy information. At one level, the study represents traditional implementation research, where comparative case studies are used to understand the interaction among policy design, elements of the implementation process, and local context in shaping implementation outcomes. It is also a policy validation study in that we are trying to determine whether policymakers' assumptions about the kind of curricular changes that new state assessments ought to effect are actually valid in practice. We cannot determine the extent to which these assumptions are valid throughout Kentucky and North Carolina, but our research design does allow us to say whether policymakers' expectations are reasonable and the conditions under which policy goals are likely to be met, based on the cases for which we have detailed information.

2. TRANSLATING POLICY INTO PRACTICE

Policy Design of New State Assessments

We address our first research question from a policy implementation perspective, and look specifically at three main determinants of implementation outcomes:

- **policy design factors,** including the type of policy instruments used, the clarity of the policy intent, and the level and type of resource commitments;

- **organization of the implementation process,** including the time frame, the investment in capacity-building to prepare those charged with implementing the policy, and the strategies used to communicate between the state and local schools and to build local ownership;

- **local will and capacity,** particularly the extent of local support for the new policy and the capacity of local educators to implement the program.

We first provide a brief description of the Kentucky and North Carolina assessments as a basis for discussing differences and similarities in their policy designs.

Assessment Policy in Kentucky and North Carolina

The student assessment system in Kentucky, the Kentucky Instructional Results Information System (KIRIS), is one component of what is probably the most comprehensive state education reform in this century. In 1989, in response

to a lawsuit challenging the constitutionality of the state's school finance system, the Kentucky Supreme Court ruled not just that the finance system was unconstitutional, but that the entire state school system was unconstitutional. The court ordered the legislature to redesign Kentucky's education system in its entirety. The Kentucky Education Reform Act (KERA), signed into law in April 1990, pumped over $700 million in new funds into the system in its first two years of implementation. KERA made a number of sweeping changes that ranged from how the duties of local school boards are defined to how teachers are licensed and what is taught in classrooms. It required that elementary schools teach younger children in "ungraded primaries" that combine students from kindergarten through third grade in the same classrooms; it mandated that each school establish a site council to govern its curricular, personnel, and budgetary decisions; and it created a network of family-service and youth-service centers located at or near schools with large concentrations of poor students.

KIRIS stands at the heart of the KERA reforms. As part of the comprehensive overhaul of its educational system, Kentucky developed six learning goals. From those goals, 75 "valued outcomes" were defined, setting the standards for what Kentucky schools would be expected to teach and students to master. Originally, all students in Grades 4, 8, and 12 were tested in five subjects using an assessment system that consists of multiple-choice items, short-answer questions, performance tasks, and portfolios.[11] Student performance on these assessments is scored as "novice," "apprentice," "proficient," and "distinguished," based on a set of absolute standards for what students are expected to know. Baseline scores (derived from a combination of student assessment scores and other data, such as attendance and graduation rates) were calculated for each school, and schools are required to improve by a specified percentage or threshold score every two years. Those that exceed their threshold score are eligible for monetary awards; schools that fail to improve or decline by less than five percentage points are provided various forms of assistance; those that decline by

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[11] The format and content of the KIRIS assessment represented a marked departure from more traditional forms of testing. Students are required to write more; the initial stages of some tasks are performed in groups although students give individual answers; and students are given "real-world" problems to solve, such as siting a new Wal-Mart in their community or designing an experiment to determine which of two spot removers works better (both examples are from the fourth-grade test). Student portfolios in mathematics and writing contain five to seven examples of students' work and are selected to show the breadth of their understanding of core concepts and principles.

more than five percentage points will be put on probation. Under the latter condition, parents have the option of transferring their children out of the school, and school staff face the possibility of dismissal.

As a result of the technical and political problems that faced KIRIS, some changes have been made in the test and in its consequences (for a discussion of those problems and state responses to them, see McDonnell, 1997). State officials eliminated two of the state's six learning goals—dealing with individual self-sufficiency and responsible group membership—that were targets of the most intense criticism; they reduced the state's 75 "valued outcomes" to 57 "academic expectations" with an emphasis on goals that are academic and can be measured by the assessment. In addition, they delayed the imposition of sanctions on underperforming schools until 1996; and they shifted the high school assessment from the twelfth to the eleventh grade and moved the mathematics portfolio from the fourth to the fifth grade. In February 1995, the state awarded $26 million to the 480 of the state's approximately 1400 schools that had reached their improvement goals. Depending on the degree of improvement, awards to individual schools ranged from $1300 to $2600 per teacher.

North Carolina's assessment, first administered in 1993, represents a less significant departure from its previous testing program than for Kentucky. Students in Grades 3–8 are tested at the end of each year in reading, mathematics, and social studies using a combination of multiple-choice items and open-ended questions. In addition, students in Grades 4 and 6–8 are required to produce a writing sample.[12] The North Carolina assessment does not include any group exercises or performance tasks (e.g., working with scientific apparatus), nor does it require student portfolios. Exams are scored at four achievement levels—basic, inconsistent mastery, proficient, and superior.

North Carolina has attached few tangible consequences to test results. The state does appropriate about $250 per teacher, which local districts, and eventually individual schools, can either allocate as part of a differentiated pay plan or use for staff professional development. There has been some discussion

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[12] In addition to the end-of-grade tests for elementary and middle school students, North Carolina also administers end-of-course tests to high school students in about 14 different subjects. However, these tests still largely consist of multiple-choice items, and are only gradually being revised to include some open-ended items. The state does not intend to have most of these tests revised and operational until 1996-97. Consequently, in our study, we only focused on the implementation of the end-of-grade tests.

that test results might be used as one criterion in making decisions about the local use of those funds. But most respondents argued that because of the small amount of funding available and the likely opposition of the teachers' union, test results would not be used in rewarding particular schools or their staffs. Similarly, North Carolina has a "take-over" plan that allows the state to intervene directly in local school districts performing at substandard levels. However, state take-over is not a realistic threat for most districts: no more than 3 or 4% of the state's districts are likely to be affected, and those most likely to be are chronically poor, low-performing districts that are already well known.

Although the end-of-grade test continues to be administered in North Carolina, its future is uncertain. A Standards and Accountability Commission, initially established by the governor but now working under the auspices of the State Board of Education (SBE), is exploring alternative forms of assessment in connection with new student standards and a possible new exit examination for high school seniors. Although the Commission has yet to issue a final report, there is some indication that it will recommend less state-level testing for accountability purposes, coupled with a system that encourages classroom-centered, performance testing on an ongoing basis. At the same time, the SBE is emphasizing core academic skills, so the state's end-of-grade test will now only include reading, mathematics, and writing. Students are no longer tested in social studies and the planned addition of a science test has been canceled.

Policy Instruments

In assessment parlance, the major difference between Kentucky and North Carolina is that Kentucky has a high-stakes test, and North Carolina a low-stakes one. Kentucky has attached significant, tangible consequences to school-level test results, whereas North Carolina has few consequences attached to its test. Another way to think about these differences is in terms of policy instruments and the differences between a regulatory and a hortatory one.

Regulatory policy instruments or mandates derive their power from the rules they impose and from the tangible incentives, either positive or negative, available to motivate compliance with those rules. Although these instruments are among the most commonly used, policymakers also have another tool at their disposal that relies not on material rewards and sanctions but on deeply-held values and the ability to persuade (McDonnell, 1994; Schneider & Ingram, 1990; Stone,

1988). What have come to be known as hortatory policy instruments assume that targets will comply with policy goals consistent with their values, even though these policies generate no direct consequences in the way that mandates do. Yet hortatory policies are meant to be more than rhetorical strategies and to produce measurable effects. In her typology of policy instruments, Deborah Stone (1988) includes one that relies on persuasion. This instrument, analogous to the notion of a hortatory tool, is defined as a policy that changes "people's behavior by operating on their minds and their perceptions of the world, rather than through rewards and punishments or through clearly delineated permissions or prohibitions" (p. 209).

Kentucky's assessment relies primarily on a regulatory policy instrument. Policymakers assume that the promise of significant rewards and the threat of severe sanctions, including the potential loss of their jobs, will motivate educators to teach students more effectively. A major purpose of the system is to ensure accountablity. Because the reforms added significant new funding to local schools, policymakers believe it is imperative for the schools to demonstrate to the public that something valuable was purchased with their money. Although schools have 20 years to bring all students to the proficient level of achievement, the biennial threshold scores are a way to demonstrate that progress is being made in return for increased public investment in schooling.

However, the Kentucky system also includes hortatory elements. State policymakers realize that while they may be able to change teachers' and school administrators' behavior by attaching high stakes to the assessment system, other strategies are needed to persuade the citizens of Kentucky to buy into reforms that impose higher academic standards on their children, require increased public spending for education, and significantly restrict school employment as a source of local political patronage. Selling the notion that "all children can learn at high levels,"[13] or that, according to the former state commissioner of education, "KERA has the intention of giving every child the right to succeed in school" is difficult in Kentucky (Olson, 1993). The state has traditionally had one of the highest adult illiteracy rates in the nation, and the 1990 census showed that only Mississippi had a lower percentage of adults

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[13] Unless otherwise noted, the quotations in this section are excerpted from interviews with state-level respondents. The statement cited here comes from an interview with an associate state commissioner of education.

graduating from high school. Consequently, the state had to mount a major campaign to inform the public about the performance levels associated with KIRIS and to convince them to accept the higher standards.

State policymakers also assume that the values embodied in the assessment system will persuade teachers to teach differently.

> As powerful as the rewards and sanctions are, the clarity of the standards to teachers are going to be more powerful. I think teachers definitely want their students ready. If their peers decided what all 4th graders should know and be able to do, that kind of clear feedback is going to be very powerful. (Former State Commissioner of Education, Thomas Boysen as cited in Rothman, 1992, p. 20)

> I see the assessment as accomplishing both accountability and curriculum change. Some people see the assessment as only being about accountablity. But if you have a test of this importance, it will drive the curriculum. (Legislator)

In persuading the public, parents, educators, and students to buy into KERA and the assessment system, policymakers have appealed to a variety of values. Foremost among them has been the need to equip the state's children to compete economically—"producing youngsters who can cope in a global society" (state teacher union leader). The influx of new industries into the state, such as a large Toyota plant that requires higher educational levels of its employees, has meant that policymakers can make a strong case for the connection between education and economic development. Another major theme underlying KERA has been greater equity among regions, and the need to integrate impoverished and isolated parts of eastern Kentucky with the rest of the state. Policymakers have also stressed that now with its reforms, instead of being at the bottom of national rankings, Kentucky has an opportunity to become a model for the rest of the nation. Economic development, regional equity and integration, and state pride have been the primary values that policymakers have emphasized. In addition, state officials have appealed to teachers' professional values by stressing that the academic expectations and the curricular approaches assumed in the new assessment are consistent with the recommendations of professional teaching organizations such as the National Council of Teachers of Mathematics (NCTM).

Although North Carolina's assessment system might in the future include some mild inducements, it relies primarily on hortatory instruments. Assessment results are presented in district "report cards" and eventually in school building

improvement reports. Policymakers assume that the test will provide information about the degree to which students are meeting state curriculum standards, and that people will act on the information in a variety of different ways:

> The assessment system will be used to let the people in North Carolina know how the schools are doing. It will also be used by planning committees at the local level in deciding what a school's goals should be and what each child needs to do better. (Legislative staffer)

> The most obvious use is that teachers, parents, and school administrators will be able to get a grasp of what students should and do know. The test scores can also be used by counselors. Such information will assist them in deciding how to help students. For example, some schools are concentrating on pooling their remedial money to focus efforts before kids fail their current courses, rather than afterwards.

> The state assessment should force people in the state to focus on teaching all kids. Schools are likely to get more support and understanding from the business community if they can say "this is what kids know" . . . . If the state goes to a public choice program the assessment information will cause parents to clamor for specific schools. (Education aide to a former governor)

At this point, probably the most potent leverage the assessment system has over the behavior of teachers is the widespread perception that local newspapers plan to report test scores not just by individual school, which has been done traditionally, but also by specific grade level and even by classroom.[14] Whether this perception is correct or not may be less important than the fact that teachers believe it and do not want to look "bad" in the eyes of their professional peers and their community.

Clarity of Policy Intent

Implementation problems can arise if policymakers do not clearly communicate a policy's intent—that is, what they expect it to accomplish. Lack of clarity may result if different policymakers support legislation for very different reasons and hold inconsistent views about its intended purpose; if they are

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[14] At a few of the schools in our study sample, teachers reported that they had been told by their principal and by others in the district that the names of individual teachers would be published in the newspaper along with the average test score of their students. No newspaper has done so thus far, but district administrators did confirm that they had told teachers that local papers were considering such action. In one urban district in our sample, the local newspaper did request in December 1993 all the raw test data disaggregated by school and grade, but the superintendent ordered that students' and teachers' names be stripped from the data before it was released.

uncertain about what a particular piece of legislation can accomplish; or if policy intent is not clearly conveyed during the implementation process by elected officials and the administrators responsible for putting legislation into practice. In the past, a variety of education policies, from Title I to state reform initiatives, have been hobbled by vague or conflicting policy intent.

In the case of the Kentucky and North Carolina assessments, the policy goals were reasonably clear. However, in both states, the full intent of the policy was not completely evident until well after the first administration of the test, and factors associated with each state's program worked against policy intent being clearly communicated to teachers.

In Kentucky, the KERA reforms were highly visible because they involved increased expenditures for education, represented a marked departure from past practice, and were a continual focus of media coverage. The judicial decision that served as the catalyst for KERA contained very specific language about what the educational outcomes should be for each child in the state, and these served as the basis for the state's academic expectations. Although the state policymakers responsible for fashioning KERA stressed different purposes for KIRIS, there was no disagreement that it was both an accountability tool and a mechanism for improving the quality of instruction.

KIRIS may have been more visible than most new state assessments, but like those in other states, it was constrained in ways that blurred messages to teachers about what was expected of them. The Kentucky legislation mandated that the State Department of Education (SDE) develop standards and then assess students on those standards, but not promulgate a statewide curriculum. Therefore, the SDE was initially wary of being too prescriptive about curricular content. It also had only a short time period before the first administration of the assessment—two years during which a number of other major reform programs also had to be implemented. In 1993, after the first administration of KIRIS, it published what SDE officials considered to be a resource document called *Transformations*. The document outlined the state learning goals and outcomes, and it provided numerous examples of instructional activities that might be used in teaching concepts related to those goals and outcomes. However, the emphasis was on pedagogy, rather than on the curricular content to be covered. Yet *Transformations* was the only official guide that teachers had for discerning how they needed to change their teaching in response to KIRIS. Without more

guidance about content, they reported having to infer what that they needed to teach from released test items. Still, there was an expectation on the part of state officials that the test should influence what teachers taught as well as how they taught.[15] Eventually, after growing demands from local educators, the SDE issued a second edition of *Transformations* in 1995 that included content guidelines and suggested course outlines for core high school courses. But this more specific guidance came only after the assessment had been administered for several years.

The end-of-grade tests in North Carolina are much less visible than KIRIS. Newspaper coverage has been sparse, except to report test scores, and policymakers' intentions were not as clearly communicated or as widely known as in Kentucky. However, North Carolina had one considerable advantage over Kentucky in that the new tests were designed to align with the state's *Standard Course of Study*. As the foreword to the teacher's handbook for each subject notes, North Carolina has had a *Standard Course of Study* since 1898. Although the elementary and middle school curricula in most subjects were substantially revised within the past five years, teachers are accustomed to teaching within the framework of a fairly detailed, competency-based curriculum. Still, the greater emphasis on student writing and an open-response format represented a departure from previous state assessments. Nevertheless, while North Carolina teachers may have received a less clear message about the purpose of the assessment, they did have substantial guidance about its content.

Resource Commitments

One of the traditional appeals of assessment as a policy instrument has been its low cost as compared with other education reforms. Nevertheless,

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[15] One high official in the SDE offered the following as an example of how KIRIS was meant to influence curricular content:

> Physical science content is not covered in the eighth-grade course of study; most schools emphasize life science at that level. That's why so few students scored *distinguished* in science. But about one-third of the eighth grade assessment in science deals with physical science. That message will get out and schools will emphasize physical science more.

A second study, focused specifically on KIRIS, was conducted in the spring of 1995. A state-representative sample of elementary and middle school principals and a sample of fourth- and eighth-grade teachers were surveyed by telephone. In addition, the teachers completed a lengthy written survey. The survey focused on attitudes about the accuracy and usefulness of the information generated by KIRIS, how it was changing instructional practices, the extent of test preparation, and how portfolios were being handled (Koretz et al., 1996).

assessments do entail costs. The most obvious are associated with test development, administration, and scoring. However, if assessments are tied to a specific set of curricular goals and are intended to change instruction, they also carry costs associated with training teachers to teach in new ways. Kentucky and North Carolina differed in their level of commitment to teacher professional development, but both states faced fiscal and time constraints that shaped the subsequent implementation of their assessments.

Assessments that include formats in addition to or in place of multiple-choice items cost more. Moving from multiple-choice tests that can be scored by machine to ones that include open-ended or constructed responses, requiring the judgment of a trained scorer, adds substantial costs. In North Carolina, because students in so many grades are tested, items requiring hand-scoring number five million. Estimating the total cost of alternative assessments is difficult because the state, local districts, and individual schools all bear those costs. In addition, some costs, such as the distribution and collection of tests, are less visible than the obvious ones for development, teacher training, scoring, and reporting. Picus (1996) estimated that the state share of KIRIS costs averaged about $46 per student tested for each annual test administration between 1991 and 1994, whereas the more traditional format of North Carolina's end-of-grade assessment cost about $7 per student tested for each year between 1992 and 1995.[16] These estimates contrast with $2 to $20 per student for commercially developed, multiple-choice tests.

In each state, fiscal and time constraints meant that the original assessment plans had to be scaled back, with the emphasis placed on the state accountability portion of the assessment at the expense of continuous, classroom-based assessment. In Kentucky, experts involved in the design of KERA assumed that it would include an assessment component that would be ongoing, embedded in the curriculum of each classroom, and administered by teachers. This element would be complementary to the assessment administered for accountability purposes, but it would be used more frequently and would be designed by teachers with assistance from the state. However, that assessment component has never

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[16] Although North Carolina's per student costs are lower than Kentucky's, the fact that there are more students in North Carolina and that it tests all students in Grades 3–8 (and all high school students at the end of required courses) mean that its total testing costs are significantly higher than Kentucky's. Picus (1996) estimated North Carolina's annual costs to have averaged about $9.2 million, while Kentucky's annual costs have averaged about $6.7 million.

been developed in Kentucky. The commissioner of education estimated that it would cost an extra $50 million over five years, in addition to the $30 million the state was spending on the accountability assessment. The state-level officials we interviewed were not in agreement about the likely effectiveness of the continuous assessment, but they acknowledged that the cost of continuous assessment was a major constraint, independent of how the assessment would be designed or the instructional benefits it might produce. Although $1 million was appropriated for research on continuous assessment, it has never been made operational on a broad scale. As one legislative staffer noted, "pragmatically, we just couldn't afford it."

Funding constraints also affected North Carolina's assessment. The Legislature appropriated about 30% less than the Department of Public Instruction (DPI) requested for the state assessment. One consequence was that the DPI slowed development of an item bank that local school systems could use in aligning their own assessments with the state test and the *Standard Course of Study,* and that teachers could use for classroom assessments. The common response to resource constraints in both North Carolina and Kentucky, then, was to concentrate on the on-demand, accountability assessment at the expense of more decentralized options that could also be tied to the state standards and could rely on alternative testing formats.

Professional development for teachers was another area where the effect of time and fiscal constraints was most obvious. One of the explicit goals of these assessments was to change teaching, and several decades of implementation research indicated that such change could not occur unless teachers were given sufficient training and time to adapt new approaches to their classroom routines (Fullan, 1991; McLaughlin, 1990). Yet the average teacher in both states received very little professional development in preparation for the new assessments. Kentucky made the greatest commitment, and by the standards of what states typically spend on such capacity-building, it was substantial. School districts were allowed to use up to nine days a year for professional development, and in addition, $400 was allocated per teacher for professional development, with 65% of that sum under the control of the local school site. The state and local districts also created a variety of professional development and technical assistance networks. Still, given the magnitude of changes expected under KERA, such as the transition

to an ungraded primary, even this significant resource commitment was inadequate to the task.

North Carolina did not allocate additional funding for professional development related to the new assessment. The state distributed a booklet to all teachers in the tested grades that explained the purpose of the assessment and that included examples of test items and their scoring rubrics. The state also provided some assistance to district officials through its regional technical assistance centers, and the DPI hoped that because a large number of teachers were involved in scoring the state assessment, they would convey their experience with the scoring rubrics to their colleagues. Despite these attempts to offset the shortfall in professional development, fiscal constraints have meant that the goal of changing assessment instruction through the state test has been considerably more difficult to implement. As one teacher union official noted:

> The tests are supposed to deal with thinking skills and call for judgment. But who's prepared the teachers when they have been bombarded for ten years with fixed content and six-step lesson plans?

The Implementation Process

The resource commitments made by elected officials and the time constraints they imposed shaped the implementation process undertaken by the SDE in each state, and by its regional service centers and professional development networks. Communication between the state and individual teachers about the new assessments occurred at two stages: prior to the assessment, in informing teachers about its purpose, content, and format; and after the assessment, in the types of test score reports returned to schools.

Teacher preparation for the assessment was clearly a higher priority in Kentucky, as reflected both in a more substantial financial commitment and by a more comprehensive communications strategy. The Kentucky Department of Education (KDE) relied on a variety of strategies to inform teachers about KIRIS. About 30 teachers with experience in performance assessment and the use of portfolios were seconded from local districts to the KDE and to eight regional centers to train district assessment coordinators and teachers who would then return to their own districts and schools to train their colleagues. Several programs on assessment were produced for Kentucky Educational Television, with the videos then made available to individual schools. Several editions of the

KDE's monthly newsletter were devoted to assessment; other documents were prepared on such topics as how the writing process might be linked to assessment. The state also initiated a KERA Professional Fellows program designed to include about 150 teachers statewide who received 20 days of training on the assessment and agreed to participate in the program over four years.

For most of the teachers in our sample, however, information about KIRIS came only indirectly from the state. Some did attend workshops at one of the regional service centers. For example, in one district, the department chairs attended four workshops over the course of a year, with two sessions lasting half a day and two extending over an entire day. But most teachers received information directly from the local district or from county cluster leaders, teachers trained in scoring portfolios, who then worked with colleagues in several schools in a district. Although most teachers were involved in at least one formal activity that provided information about KIRIS, about a quarter of the sample described a more haphazard process—information about the assessment "just filtered down," "people would talk about it," and it came "by word of mouth."

After the tests were administered, the state communicated three types of information. The first was the scores themselves that told schools how well they were performing and how much they would have to improve their students' performance to meet or exceed the school threshold. A second source of information were the released test items that schools studied to discern what content and instructional activities needed to be emphasized.[17] Finally, the scoring rubrics for the portfolios provided important clues about the state performance standards and about what should be stressed as students prepare their portfolios. In addition, over a two-year period, the state and its testing contractor re-scored all the portfolios that had been initially scored by teachers. When they found that teachers had rated a significant proportion of the portfolios too highly, greater attention was devoted to training them to score portfolios. The following year, state-level auditing showed the scores to be considerably less discrepant because teachers were rating portfolios more consistently with the state rubrics.

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[17] A telling example of the lessons that schools have learned from the released items was the response of one of the rural schools in our sample to the inclusion of art and music items on the fourth-grade test. Teachers complained that the test was biased against students who had never had the opportunity to visit an art museum or attend a concert. However, when we returned to the school a year later, reproductions of major artwork hung in the hallways, and children were listening to classical music as they worked.

Part of the implementation process is certainly about communicating the intent of a policy to the "street-level bureaucrats" ultimately responsible for putting it in place, and informing them about how the policy's goals might be translated into ongoing practice. But successful implementation also involves creating a sense of local ownership by convincing those in local schools that a top-down policy meets their needs, that their local interests are served by endorsing the policy, and that the policy can be adapted to local circumstances (McLaughlin, 1987).

The track record of the state is mixed on this dimension. That doing well on KIRIS was in the interest of each school was clearly communicated. Teachers and principals talked about not becoming a "school in crisis," and the threat of sanctions loomed much larger than the promise of potential rewards. Mutual adaptation was implied through the *Transformations* document: content and performance standards were specified and suggested activities described, but specific course content and the sequencing of that content was not detailed. However, given the time constraints, the state's approach was viewed by most at the local level as a lack of guidance, rather than a grant of flexibility. For the first years of KIRIS, the state did little to assist and inform teachers about curricular approaches consistent with KIRIS or about how a state reform strategy might be adapted to local circumstances.

For a majority of the teachers in our North Carolina sample, the "pink booklet" was the major source of information about the new assessment. This booklet, describing the purpose of the end-of-grade test and providing examples of test items, was widely distributed by the DPI. In addition, several schools in our sample had participated in the field tests for the new assessment, so teachers knew what to expect. Some teachers reported attending workshops at the regional service centers, and most received some kind of information or support from their districts. For example, one district has used local funds to support a curriculum coordinator at each school. This person is not only responsible for administering the test and informing teachers about it, but she typically functions as a resource teacher who goes into classrooms for several periods a week to work with students on writing and mathematics. Another district has several "helping teachers" who function in much the same way, holding workshops on new approaches to curriculum and assisting teachers in their classrooms, again usually in writing and mathematics instruction.

It should also be noted that the implementation process in North Carolina did not need to be as extensive as Kentucky's. The assessment was based on the existing *Standard Course of Study*; most of the test still consisted of multiple-choice items (although now aligned with the state curriculum); and it was not being implemented in the context of other substantial reforms.

North Carolina's release of test score data has been mixed as an information source. On the one hand, the state invested considerable resources in scoring and reporting software that allows each district to score its own multiple-choice items, so that scores are returned to schools within two or three days. In addition, a number of school systems are providing each school with a computer file of its scores in a format that allows principals, curriculum coordinators, and teachers to disaggregate the data by gender, ethnicity, and state competency goals, and to "re-roster" students' scores from their class in the previous grade and add them to the class in which they are currently enrolled. With such data manipulations, principals can both identify groups that need extra assistance and inform teachers about the strengths and weaknesses of their class, based on students' test scores the previous year.

Where the state has been considerably less helpful to schools is in the release of scores on the open-response items. Because of a series of logistical problems and the need to hand-score such a large number of items, schools did not receive those scores until six to eight months after the test administration. Consequently, schools received the least timely score information about that aspect of the test with which they were least familiar.

Local Context

Research has shown that two aspects of the local context are particularly important in shaping implementation outcomes: will and capacity (McLaughlin, 1987). Will refers to how supportive a local community is of a particular policy; whether it sees the policy addressing a local problem or need; and whether the policy is consistent with the community's values. Capacity refers to whether local institutions have the necessary organizational resources, expertise, and time to implement the policy. Both factors are necessary for successful implementation: Enthusiasm cannot overcome a lack of capacity, and high capacity is of little value if people lack the incentive to apply it.

It has become a truism in education policy to emphasize the potential for significant variation across local contexts. In the case of state assessment policy, local will and capacity are important determinants of implementation success. But it also appears that there is little variation across local contexts, particularly in capacity levels. The extent to which local districts and schools see the assessment as consistent with their priorities may vary, and some districts have greater prior experience with the curricular approaches underlying the assessments. Nevertheless, our data and studies by others suggest that both the newness of state assessments and their power as policy tools have had the effect of reducing local variation. Particularly in the case of Kentucky, the scope of KERA and KIRIS has swamped local priorities and created a substantial need for capacity-building in both high- and low-capacity schools. Even in North Carolina, with its more modest change in assessment policy, local variation in the ability of districts and schools to respond to the external mandate seems less than for other policies. In both states, policy design and implementation process variables have served to reduce local variation. However, they have not overcome the determining effect of teacher capacity in shaping implementation outcomes. In other words, the extent to which the state assessment can alter instruction does depend on local capacity, but the ways in which teachers have responded to the test is less variable across districts and schools than has been the case for past reforms that are not linked to an assessment system.

Local Will

No statewide data are available on the attitudes of North Carolina principals and teachers toward the end-of-grade tests. However, there are two such surveys for Kentucky.[18] These surveys provide a general sense of the level of support for KIRIS among those responsible for implementing it at the local level. In the 1994

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[18] One telephone poll, conducted during June and July 1994, surveyed a state-representative sample of the general public, public school parents, parents who were members of school-site councils, teachers, instructional supervisors and testing coordinators, and principals (Wilkerson, 1994). This survey focused on KERA generally, but included questions about support for KIRIS, judgments about how well it was working, and teachers' perceptions about the level of information and support they had been provided.

A second study, focused specifically on KIRIS, and was conducted in the spring of 1995. A state-representative sample of elementary and middle school principals and a sample of fourth- and eighth-grade teachers were surveyed by telephone. In addition, the teachers completed a lengthy written survey. The survey focused on attitudes about the accuracy and usefulness of the information generated by KIRIS, how it was changing instructional practices, the extent of test preparation, and how portfolios were being handled (Koretz et al., 1996).

survey, a majority of principals and teachers (59% of each category) expressed support for the KERA reforms. However, a majority (51% of the principals and 55% of the teachers) also reported that KIRIS was working poorly. No other element of KERA received such a high proportion of low ratings from either of the two groups. When asked the reasons why KIRIS was working poorly, most respondents attributed the problem to poor program design, rather than to poor implementation, insufficient time, or a lack of training and technical assistance. Both groups gave the highest marks to local school staffs for the accuracy of information provided and the quality of training. On both measures, teachers ranked the KDE fifth behind their district's central office, their professional association, and institutions of higher education in the area.

Several other findings from this survey are particularly telling with regard to KIRIS. Three fourths of the principals and two thirds of the teachers reported experiencing extreme or major stress as a result of the demands of KERA. When asked about their agreement with major tenets underlying KERA and KIRIS, over half the teacher respondents either were undecided or declined to give an opinion. The beliefs on which no opinions were expressed included "All children can learn at a relatively high level"; "We should set high standards of achievement for all children"; and "It is not enough to require that students show their knowledge of the facts—they must also demonstrate that they can apply what they know in real life situations" (68% of the teacher sample gave no opinion about that belief). Finally, over two thirds of the principals and three fourths of the teachers opposed rewarding and sanctioning schools and teachers based on how well students performed. Their opposition contrasted with the over 60% of the general public and parent samples who supported the idea (Wilkerson, 1994).

The survey that focused just on KIRIS and was administered some eight months later found some of the same attitudes. For example, only 27% of the principals and teachers surveyed expressed support for the use of rewards and sanctions. Like the earlier survey, this study found that support for other elements of KERA, such as site-based management and the ungraded primary program, was higher than for KIRIS. However, a majority of respondents said that they supported the KIRIS program. In this survey, the teachers were evenly divided in whether or not they agreed with the tenet that "all children can learn to a high level." However, an overwhelming majority (83%) agreed that regardless of

whether or not it is possible for all students to learn to that level, it is an appropriate message to send to Kentucky students.

Related to the instructional improvement goals embedded in KIRIS, Koretz and his colleagues (1996) found that most teachers and principals were positive about KIRIS' value as an agent of reform. More than half the sample reported that KIRIS had caused some teachers who are resistant to change to improve their instruction. The same proportion acknowledged that KIRIS more closely resembled their instruction than did traditional standardized tests. A majority of respondents also viewed the information produced by KIRIS as accurate and reasonable for drawing conclusions about educational effectiveness.

In in-depth interviews with our small sample of Kentucky and North Carolina teachers, we did not ask them directly whether they supported or opposed the state assessment. Rather we asked them what aspects of the assessment evoked the most positive and the most negative reactions on the part of teachers, and on the part of students. Their responses mirror the ambivalence about KIRIS expressed by the survey respondents. Teachers in our sample saw clear advantages to the new assessments, but they also raised serious questions about the test. Although not generalizable in the way that the survey responses are, the interview data provide context for the survey findings.

The Kentucky teachers identified more negative aspects of KIRIS for teachers than positive ones, whereas their assessment of its relative benefits was exactly the opposite for students. For students, the positive aspects out-numbered the negative by almost two to one. The positive benefit for teachers cited most often was that they were now beginning to see an improvement in students' writing. Another set of positive benefits was that KIRIS was forcing teachers to look at the curriculum, and it gave them a sense of the direction in which they needed to be heading. Other benefits stemmed from a perception that KIRIS measures students' achievement better and that as a test, it was more engaging for students. Several teachers mentioned that KIRIS showed that the people of Kentucky were putting an emphasis on education and that as a result, they were getting more attention as teachers.

Negative aspects of the assessment for teachers fell into five broad categories. The first was the amount of time students spent completing portfolios and teachers scoring them. The second was a concern about whether the test is

reliable and valid. A third concern was that the emphasis on writing and preparing portfolios was causing the teaching of subject matter content to be sacrificed. Fourth, teachers argued that it was unfair to hold them accountable when neither students nor their parents were being held accountable. Finally, a few teachers feared that the accountability pressure would result in teacher burnout.

In terms of the advantages and disadvantages of KIRIS for students, as many teachers saw the emphasis on writing as a positive aspect as saw it negatively. Those teachers who reported that students viewed the writing requirements positively noted that students felt pride in what they had written and that they particularly enjoyed writing about their personal experiences. On the negative side, teachers said that students hated to write, even though they knew it was good for them. One high school teacher aptly described this student ambivalence:

> The writing is positive in that [students] have written more and they seem to be learning more about it. Some say they don't like writing because they can't write. Even if they have the knowledge, they can't show they know the stuff. It's the devil and the angel all at once.

In the teachers' view, the other positive aspects of KIRIS for students lie in its nontraditional testing format. They reported that their students liked participating in the performance events, working in groups, preparing their portfolios, and doing hands-on activities. The negative aspects are that high school students do not want to waste time on a test that does not count, and time constraints on both the on-demand tests (too little time allowed) and the portfolios (too much time required, especially out-of-class) were a problem for some students. The time burden was especially acute for elementary students:

> I saw tears in the eyes of some of my students when they were faced with a page of small-type words. And these were the best performers. The passages are so long, and they're not used to reading so much in such a short time.

The North Carolina teachers in our sample were twice as likely to identify negative aspects of the end-of-grade tests for both teachers and students as they were positive features. The positive aspect of the test most often mentioned by teachers was that, in stressing critical thinking skills, the end-of-grade test represented a better preparation for students' future work than its predecessor. A third of the teachers mentioned this feature, while an equal number identified as a

negative feature the assessment's seeming subjectivity. A seventh-grade mathematics teacher represented both these positive and negative perceptions in his response:

> The positive for me is that we have been too long on computational skills in the past. In the real world, everything is not laid out. In the long run, it will be useful if students are able to apply knowledge. The new state assessment has also helped keep my own thinking on track.
>
> The negative is the scoring of the open-ended items because it involves teacher judgment. After a while, human error comes in. My wife was telling me about a group of teachers at a workshop and they couldn't agree on the scoring. Some items were scored high and some low, even though the same thing was said in each.

The other major positives for teachers were that the end-of-grade test allows them to do a better job of teaching and that by following the state curriculum, it tests students on skills they are actually learning. As in Kentucky, the positives for students related to the testing format and the kind of teaching that accompanied it: the emphasis on problem solving, and the use of manipulatives and calculators. The negatives for students were also similar to those mentioned in Kentucky. A third of the teachers reported that students were overwhelmed by the amount of writing required. Other problems for students were the length of the reading passages, the difficult vocabulary, questions that seemed confusing, and insufficient time to complete the test.

What emerges from our data and other surveys is that teachers feel quite ambivalent about the new state assessments. They see their value for students in that the tests have led them to engage in activities such as more writing that they would not have done otherwise, and the assessments measure student achievement more fully than previous tests. However, teachers remain skeptical about the reliability of the new tests, and they see them as a source of considerable stress. Consequently, support for the new state assessments is truly mixed. They have mobilized local will, but it has been a mobilization of skeptics.

One other measure of local will is whether or not educators see the assessment as consistent with district and school priorities. As evidence of the power of the assessment in overwhelming local priorities and hence in reducing local variation, the vast majority of respondents reported that the state

assessment fit very well with district priorities because the district was doing what the state had mandated:

> I would say that district priorities will become what the state priorities are. I don't know if it makes any difference if our priorities are any different. They'll have to be the same or we'll cease to exist. (Kentucky high school science teacher)

> I think the district has changed to fit the goals set forth in KERA and the assessment. The district had to make the change. (Kentucky fourth-grade teacher)

> Well, one follows the other, so it coincides—because the state really mandates what should and should not be done at the district level. (North Carolina seventh-grade language arts teacher)

> I think it would fit in just as well with the district, because their priorities are the state's priorities. (North Carolina fourth-grade teacher)

> Yes, because we're one in one—our goal is to do what the state Department of Public Instruction does. (North Carolina fourth-grade teacher)

Local Capacity

As with our efforts to gauge the degree of local will concentrated on the new assessments, a mixed picture emerges when we examine local capacity. All but two of the 48 teachers in our sample reported that they had received some type of formal introduction to KIRIS or the end-of-grade tests. Before the tests were first administered, teachers had at least a general sense that the purpose and format differed from past state tests, and that students would be expected to demonstrate their knowledge at a deeper level and in multiple ways. However, only half the teachers in each of the state samples received information that extended beyond the specifics of the test's administration and scoring to a discussion of its curricular implications. Furthermore, only six of the Kentucky teachers and two of the North Carolina teachers were participating in any kind of ongoing professional development network that allowed them to learn about and work on curricular implications on a sustained basis.

When asked if the SDE, district, and school had been able to provide them with all the support they needed for working on the assessment, two thirds of the teachers in our sample said that they had received everything they needed or requested. Several teachers in both states noted that the first year had been a problem, but that the level and type of support had greatly improved since then.

Again, we have no state representative data for North Carolina, but the Wilkerson (1994) poll data for Kentucky show a similar pattern to what we found. Teachers in that survey were asked, with regard to KERA generally, whether they had all the information they needed to do their job. Sixty-five percent reported that they did.

However, in eight focus groups that included a total of 73 teachers, conducted around the state by the Appalachia Educational Laboratory (1995), teachers reported that training opportunities for curriculum development and alignment are limited and the quality mixed. They also indicated that they were uncomfortable developing curriculum at the local level and aligning it with the state standards because they were accustomed to that being done by textbooks. In addition, the teachers in the focus groups reported needing much greater guidance about how to apply the state's academic expectations to specific grade levels. These sentiments are consistent with that expressed by the Kentucky teachers in our sample. They were given sufficient information about KIRIS, but half of them had not been given the opportunities that would help them take the next steps in changing their instruction:

> There really hasn't been enough instruction for teachers. The KDE thinks that it is teaching cluster leaders, but all they're doing is giving us examples. They don't show us how to integrate them into the curriculum or how to keep the appropriate pacing. (High school mathematics teacher)

The Kentucky teachers also indicated that they needed more concrete guidance and time to observe other teachers who had changed their instruction in the ways expected.

It is important to note, however, that among our sample of teachers there were no strong complaints about the level and type of support they had received. Both the Kentucky and the North Carolina teachers felt that their respective SDEs could have done more, but the overwhelming majority felt that their own principals and school districts had done as much as they could, both in providing information and in giving them the necessary instructional support.

Up to this point, we have examined local capacity as it pertains to teachers' ability to teach consistent with the assessment's curricular goals. But there is another dimension of local capacity related to assessment that is considerably more problematic. It deals with improving students' capacity to do well on the

test, and is known as "test preparation." On the one hand, these assessments are designed to encourage teachers to "teach to the test" in the sense of focusing their ongoing instruction on the skills and knowledge being tested. However, if students are narrowly prepared through the use of practice tests or other devices, the effect may be to distort gains in test scores without appreciably improving either instructional quality or student achievement in the long term.

Koretz et al. (1996) found that 82% of the principals in their sample reported encouraging teachers a great deal to use test preparation materials and 66% reported placing a great deal of emphasis on the teaching of test-taking skills. A smaller proportion of teachers reported placing a great deal of emphasis on these strategies (48% for test-taking skills and 36% for test preparation materials), but the overwhelming majority said that they placed at least a moderate emphasis on them.

These survey data confirm newspaper accounts about widespread test preparation that has ranged from a variety of motivational approaches to the teaching of specific test-taking skills. One of the biggest motivational problems was faced by high schools whose progress on the state accountability index largely depended on how well their twelfth graders performed on a test that many students "blew off" because there were no personal consequences for them. As a result, principals and teachers appealed to school spirit, persuaded popular students to convince others to take the test seriously, and offered a variety of rewards ranging from tee-shirts to free tardy passes and early lunches.[19] In addition, principals and teachers at all levels stressed test-taking skills relevant to KIRIS—for example, how to answer short-essay questions, how to work in groups

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[19] The extent to which a variety of test preparation strategies were used and even considered desirable by local educators was evidenced in the extensive press coverage throughout the state of exactly which approaches different schools were using. Cited below is just one example from scores of different ones published in the state's newspapers after the release of the 1993 test results. This excerpt refers to a high school in northeastern Kentucky where educators worried that they might become a "school in crisis":

> [The principal] said Blazer teachers inject more open-ended questions throughout their classes and took writing workshops. Student were given an intensive workshop on responding to every question.

Blazer seniors were asked to respond to school pride and offered incentives for their participation. "If they came to school every day, we gave them a free tardy pass and five days of early lunch," [the principal] said. "If they answered every question on the test—and I checked all the papers—they were allowed a 2% bonus on the grade in the class of their choice" (Collard & Wolfford, 1994, p. 6).

on problem-solving exercises, and including more writing in mathematics and science classes.

The schools in our Kentucky sample reflect the same emphasis on test preparation as those highlighted in newspaper accounts and documented in the statewide survey. Principals and teachers were very open in talking about what they were doing to improve test scores. This included providing material incentives for seniors (free days, hamburger barbecues); requiring that all teachers include at least one open-response item on all their tests; requiring that a portfolio piece be prepared in each class, including physical education; and ensuring that all written work follow a model that emphasized audience and purpose. The following examples provide a sense of the range of strategies schools have used to improve student capacity to do well on KIRIS:

> The first year we took the test—which would have been three years ago—we had a high benchmark. The next year, students didn't take the test seriously, and our scores dropped. Everyone said we wouldn't make our benchmark and would be in crisis. We were under a lot of pressure—the teachers more than the students—because every time you saw a state or district official, it was "What are you going to do to raise test scores?" Last year, we had marathon sessions—three weeks where we took the seniors out of class and reviewed with them in each of the four core areas, using questions from previous years—showing them the kind of answers that would get distinguished, proficient, etc. And we did real good last year. (High school mathematics teacher)

> I'm working a lot more with the criteria—having students analyze and apply them— more than last year. I'm almost embedding in the students an unconscious evaluative process to internalize those criteria so they focus on those skills and outcomes without really even thinking of them. One thing I've been doing the past six weeks that's different from last year is trying to get them to see the connection between the state curriculum criteria and my content criteria. So, for example, they have to know communication skills and content. It will take 12 weeks for them to apply both sets at the same time. I'm seeing the students become more analytical and more aware of what it takes to make a quality piece of work from both perspectives. (High school English teacher)

> The state test has gotten to be more of a priority, and we understand now what we need to do. We're doing open-ended questions every day in all grades . . . Everybody does journals and other writing activities every day. Students work on their portfolios every day. (Elementary school principal)

One of the things we do is that we have the kids write open-ended questions or respond to them. This will be on the [school's closed-circuit] TV. Teachers will collect these and give me the test. We call these kids "KERA Scholars," and we give them $5. So we have all these little gimmicks. We'll have about eight scrimmages [practice tests modeled after KIRIS] this year with one adult for every 15 kids—which includes me, the assistant principal, and the guidance counselor—to help go through the trials. (Middle school principal)

One of the major changes that occurred in the six Kentucky schools in our fieldwork sample between the first round of interviews in 1993 and the second round one year later was that whatever response the school made to KIRIS, it extended to both tested and untested grades and subjects. In the first year, most of the test preparation strategies had focused on the fourth- and eighth-grade teachers and to the extent much was happening in the high schools, on the English teachers. Over the next year, however, all the schools implemented practices that affected all teachers so that KIRIS' effects were more broadly felt. The argument was that the teachers in the tested grades should not have to carry all the burden for the school's accountability, and that teachers in the other grades could help in the long-term preparation of students. For example, one of the elementary schools in our sample that exceeded its threshold score and earned a financial reward implemented several strategies to involve teachers from all the grades. The second/third-grade teachers now share a joint planning period with the fourth-grade teachers once a week, and there is clear curricular coordination across the grades. In addition, the pieces for the eighth-grade portfolios are collected every year between fifth and seventh grade; that strategy allows the eighth-grade teacher to work on one long-term piece with the rest of the pieces being revisions of ones done by the students in earlier grades.

Besides the concern that some have expressed about test preparation strategies leading to invalid scores, there is a question of whether such strategies are even effective in raising test scores and whether they lead to long-term improvements in instruction. We can only speculate about the answers to those questions at this point. However, there is some reason to believe that in the short-term, test preparation strategies can increase students' ability to do well on the test. For example, when we asked a state testing official whether schools could use "quick fix" strategies to raise their test scores without fundamentally changing their teaching, he acknowledged that they could.

> For about two to six years, schools can get away with that strategy and then they'll hit a wall and be unable to move. Here's one example of a short-term strategy. Forty-one percent of eighth graders' open-ended responses show no evidence of understanding the problem. They were either scored -0- or left blank. To score a 1 you have to do more than repeat the question, but if students show any understanding of what's being asked, they get a 1.

It may also be the case that for some schools, test preparation strategies are the way that they start to change the instructional process. Teaching students to answer open-response items and to understand the scoring rubrics are first steps in getting them to think more analytically.

The North Carolina schools in our sample seemed to stress the motivational "hoopla" less than the Kentucky schools. Nevertheless, they also focused on a variety of test preparation strategies. For example, one elementary principal reported that the teachers in her school had been practicing all year long with sample test items. She went on to note:

> We've looked at the students who scored a two [inconsistent mastery] and then asked what will it take to move them to a three [consistent mastery—proficient]. We've also looked at each test item and how much weight each carries. We've also looked at teachers' strengths and weaknesses. We're trying to be multi-faceted in analyzing how to move the "two's." Basically, we're looking first at individual student strengths and weaknesses, than at test construction, and then at teacher and class strengths and weaknesses.

The district in which this school is located also brought in a consultant from Ohio to help teachers align the local curriculum with the *Standard Course of Study*. Each elementary school selected five teachers to attend a four-day workshop on alignment. The grade-level team at each school then developed a unit tied to the *Standard Course of Study* which could be used by other teachers in the district.

Like their counterparts in Kentucky, the North Carolina educators acknowledged the advantages and disadvantages of the test preparation strategies they had implemented:

> I hear from the teachers that they are doing overkill on test sophistication. They are having students practice writing so much that it's killing it . . . The end-of-grade test is turning writing into paint-by-numbers. It's stifling writing, but students' writing has improved incredibly—as measured by the state test . . . We're now playing the game. The writing now starts with a particular kind of sentence. The state test has

taken something creative and turned it into alphabet soup. The teachers are saying, "We don't like it, but now we have students who can express themselves in writing. We never had that before." (Elementary school principal)

We had as a school goal before the end-of-grade test, the infusion of critical thinking skills into the curriculum. There are now fewer multiple-choice questions on regular tests, and students are expected to defend their choices. They may not have the right answer, but they need to explain their choice. (Middle school principal)

Capacity-building in the schools that we studied in both states has focused on the short-term—informing teachers about the purpose and format of the assessment and instructing students in test preparation strategies. Whether this investment translates into the resources needed to make more lasting changes in instruction remains to be seen.

At this point, we cannot provide a definitive answer to our first research question about whether the design and implementation of KIRIS and the end-of-grade tests will promote the assessments' curricular goals. What we can conclude, however, is that despite significant differences in the policy design of each state's assessment, teachers in our sample have responded to it in essentially the same way. Kentucky's approach differs from North Carolina's in several fundamental ways: KIRIS is part of a large systemic reform; the assessment is high-stakes for schools and educators, with major consequences attached to its results; KIRIS represents a more marked departure from past practice and it is a more difficult test, as evidenced by its format and the considerably higher performance levels students must attain. Yet the implementation process for the two assessments has been organized in essentially the same way, with teachers receiving about the same capacity-building resources. Furthermore, teachers in both states perceive the new assessments as representing significant challenges and they are taking them equally seriously. Teachers in the two state samples also hold similar attitudes about the tests: They recognize their relatively greater benefits for students but question their accuracy as measurement tools, and they find them to be a source of stress for teachers. Our limited data and the short time frame that the assessments have been in place do not allow us to conclude unequivocally that hortatory approaches to student assessment policy can be as powerful as more regulatory ones. However, the North Carolina experience does strongly suggest that relying primarily on curricular values and the power of perceived public scrutiny can effectively motivate educators.

3. DOES TEACHING LOOK LIKE THE TEST?

Teachers' Understanding of Policymakers' Expectations

This section addresses our second research question: To what extent is classroom teaching in response to the new assessments consistent with policymakers' expectations? In examining that question, we first need to analyze teachers' understanding of what policymakers expect the new assessments to accomplish. Given that legislative intent was relatively clear in both states and most teachers received some systematic introduction to the tests, we might expect most to have a fairly good understanding of policymakers' expectations. Working against that assumption, however, is the low public visibility of the test in North Carolina and the fact that even in Kentucky where KIRIS is more visible, a small but significant proportion of teachers reported needing more information about KERA and the assessment.

When we first interviewed our sample of teachers in fall 1993, we asked them: What do you think state policymakers expected to accomplish with KIRIS/the end-of-grade tests? We then asked them whether the state assessment was likely to produce the kind of effects at their own school that policymakers intended. The answers given by teachers in the two states were quite similar. Despite policymakers' dual emphasis on accountability and instructional improvement, the overwhelming majority of teacher respondents discussed only one purpose, and most phrased it in terms of improving educational quality, giving students new kinds of skills, or raising test scores (and thus making the state look good). About 20% of the respondents specifically mentioned better preparation of students for the workforce as a goal, with that objective more pronounced among the North Carolina sample. Here are examples of those responses:

> I think that their first goal is to get the maximum potential from each child if they can—to take him wherever he is and go as far as he can. They want North Carolina's children to be functionally able to compete with any state or any country in the world. Obviously they [students] weren't doing that before, but we've continued to pass them anyway. (North Carolina fifth-grade teacher)

> I think the policymakers want to raise the intelligence of our students—and it's a good purpose. They want more emphasis on reasoning and thinking. Students should be able to perform, not just talk about something. We should graduate kids with skills. They're good purposes. (Kentucky middle school social studies teacher)

I hope they're looking for a student that when they [sic] leave, they're self-sufficient and able to function on their own, and also able to be a productive member of society who is able to function with others. To put it in my own words: We're looking for the individual who can be a leader when the time is right and a follower when the time is appropriate. (Kentucky fifth-grade teacher)

I think they're trying to improve the education of our children and help them to be prepared to be productive individuals, so when they go out to work, they'll have the skills they need to make a living. The reason we emphasize cooperative learning is to teach them to work together in groups and get along and share. (North Carolina fourth-grade teacher)

Just to make the state look good. They want to say their state is as smart as the others. They want to get kids thinking—they see kids have problems when they go to college. They want to get scores up—everything is the scores. They compare all the counties. They put the scores in the newspaper, and it's big stuff. People say, "Your county is dumber than ours." (North Carolina third-grade teacher)

Only 15% of the 48 teachers interviewed specifically mentioned accountability as a policy goal. For example:

They wanted to make teachers more accountable for what they are doing. We're beginning to feel that we're being held accountable for students' grades and scores. Every grading period we get slapped with the distribution of grades and the averages. There's talk about getting test scores that show how each teacher is doing. (North Carolina middle school English teacher)

They wanted greater accountability for education. They wanted to know why we had high school graduates who couldn't read. (Kentucky fourth-grade teacher)

Only three teachers in Kentucky mentioned changing instruction as a goal of KIRIS, and similarly, three in North Carolina noted that the purpose of the end-of-grade test was to align the state assessment with the *Standard Course of Study*:

I would guess that their intention is to see that our students are taught a curriculum that is what it should be—adequate. The testing program is a way to evaluate if we've done what they set out to do—which is to teach that curriculum. To me, common sense shows that this is the way to do it. In the past, we had curriculum guides, and we were encouraged to teach from them, then we gave an assessment that didn't really emphasize the important things in that curriculum. If we can make a good curriculum tool and assess it, that would be an improvement. It's kind of getting their act together. (North Carolina middle school science teacher)

From what I understand about the rationale behind the law itself and some of the theory that helped to structure the assessments, I really think they intended assessments to transform the classrooms. By mandating them statewide in such a comprehensive way, they recognized that in order for kids to perform well, the schools had to restructure and change, and in order to provide the assessment needs, they would meet society's needs better. (Kentucky high school English teacher)

Two teachers in the Kentucky sample mentioned equalizing resources and giving all students the opportunity to learn as a goal, and two mentioned policymakers' emphasis on "all children will achieve at high levels," but they did not believe that it could be accomplished:

I don't know if this is true or not, but I have been led to believe that policymakers expected all students to achieve at a high level. Some say the average should be 94%. Now this may be a misunderstanding on my part, but I can't see how everyone will achieve at a high rate. I use this on students sometimes; I guess you could say it is reverse psychology. But I tell them if everyone comes to the top, there won't be room for all of them. I'm a realist; it just wouldn't work. At the same time, we have to give people the opportunity to try. I don't like to see people down and out in our society, but that's the way it is. We've never been able to create a utopia yet, and we won't this time either. (Kentucky high school English teacher)

When asked if policymakers' expectations would be met in their school, over one third of the teacher sample in both states was unequivocal in saying yes, the assessment policy goals would be met in their schools. An additional group was hopeful that the goals would be met, but uncertain at the time of the first interview whether indeed it would happen. One third of the Kentucky teachers did not think the expectations embodied in KIRIS would be met, but even the majority of that group felt that either some benefits would result or that the goals would be met, but not for every student. Only three teachers in each of the two states were adamant in saying that the assessment goals would not be met. Interestingly, the reason that the three North Carolina teachers gave for the assessment not producing its expected effects is that they feared the state would discontinue the test and implement another one before giving the current assessment sufficient time to work as intended.

The picture that emerges from these responses is of a rather diffuse, shallow understanding of assessment policy goals and guarded optimism about attaining them. All the teachers in our sample identified at least one policy goal or value

that state policymakers have sought to promote with the assessments. But only a few teachers in each state either identified the dual goals of accountability and curricular change or discussed multiple values underlying the assessment. Still, a sizable number recognized that students were supposed to be taught new kinds of skills. In addition, with only a few exceptions, teachers were confident that over time at least some of the state policy goals would be met.

Teachers' recognition that they need to change their approach to instruction emerged more sharply when they were asked in the 1993 interviews whether the state assessment had already affected their own teaching or whether they expected changes in curricular content or instructional strategies at their school as a result of the state assessment. Again there were both similarities and differences in the responses of the two state samples. In both states, about 20% of the teachers reported in 1993 that they were having their students do more writing. The biggest change among the North Carolina teachers was that one third of them reported modifying their assessment techniques, including more open-ended items on their tests and expecting more in-depth answers from students. Other changes that were prominent among the North Carolina teachers were more discovery learning and hands-on activities (6 of the 24 teachers), and shifts in curriculum content to align it with the *Standard Course of Study* (5 teachers).[20] An equal number of Kentucky teachers reported a greater emphasis on discovery learning and four indicated that they had made changes in their curriculum content to align it better with the state learner goals. The most widespread change reported by the Kentucky teachers in 1993 was a greater emphasis on having students work in groups, an activity reported by only three of the North Carolina teachers. Similarly, fewer North Carolina teachers (3) reported no longer using textbooks or reducing their reliance on them than the Kentucky teachers (6).[21]

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[20] Teachers identified specific changes in content coverage such as placing greater emphasis on probability and statistics in middle school mathematics and spending more time on poetry in an eighth-grade literature class.

[21] Our 1993 interviews with principals presented a picture of fewer changes in instruction than that presented by the teachers. For example, of the 40 principals interviewed in the two states, only 5 reported that more writing was occurring in their schools as a result of the new state assessments. A similar number reported an increase in discovery learning and hands-on instructional activities. Only 3 principals reported that students were now doing more work in groups. However, one third of the North Carolina principals did report that the curriculum in their schools was now being aligned with the state's *Standard Course of Study*.

In 1994, we asked teachers whether there had been any other changes in their teaching over the past year. Most reported additional changes, and one aspect is particularly striking. In the second round of interviews, teachers talked about the changes in their teaching as more directly tied to the state assessment than they had the year before. For example:

I emphasize answering open-ended questions, and I guide them on their portfolios. While we can't help them specifically, we can guide them. I think I go over their tasks more carefully, because I know they'll be assessed. I'm sure there's a difference because of the assessment year—stressing the open-ended questions, and working on the portfolios, and looking for performance events—providing opportunities for them similar to the KERA assessment. We work with a lot of hands-on materials in math. (Kentucky elementary teacher)

I have discovered that in science and math both, having a child write what they [sic] understand, and why they do something and give a real-life example really lets me understand that they know what they're talking about. Some kids could do it in words and not write it down, so when they saw the same pattern, they couldn't do it. The portfolio pieces have shown me really clearly that they have a deeper understanding when they write it down. So I have them do more writing of explanation and details. That's probably the biggest change that I have made since last year. It's definitely having an impact. I really like what it's doing. (Kentucky high school science and language arts teacher)

I probably said I always taught the textbook from front to back. Now I move statistics forward. I no longer do that [i.e., teach the whole textbook]. My teaching in the sixth grade has changed drastically, from using the textbook every day to using manipulatives and using partners to be problem solvers. They have to come up with ideas of how to do things on their own. Like graphing. They started doing it without knowing what it is. This is an adjustment for me, but I like it. The end-of-grade has influenced my motivation to reorganize the sixth grade. They need to know there's more than one way to solve a problem. They've discovered rules and learned how to graph them. (North Carolina middle school mathematics teacher)

Definitely, the writing test affects what I do in the classroom. Almost all the activities until February are related to persuasive writing. We do projects like an advertising campaign, so it's not just sitting down and writing papers. Now that I have done these projects, I would probably still do them anyway without the test. (North Carolina middle school language arts teacher)

At one level, these reported changes may be quite superficial, reflecting shifts in classroom activities, but not a fundamental alteration in either teachers' or

students' understanding of substantive concepts or how one acquires useful knowledge. Nevertheless, the changes are consistent with movement toward the more constructivist approach to teaching assumed in KIRIS and, to some extent, in the North Carolina assessment.

Teachers' self-reports provide one measure of how consistent their teaching is with the state assessment. Their daily logs allow a more detailed picture, and their class assignments give us both a more nuanced sense of their teaching and independent validation of the teachers' own perceptions. We now turn to an analysis of the instructional artifact data.

Teaching Consistent With State Goals

Assignment Characteristics

Because both states have stressed similar objectives such as more student writing, we first compared assignments from Kentucky and North Carolina on a number of common dimensions. Figures 3.1 and 3.2 compare the assignments collected over two weeks from teachers in the two states.

Of the 11 assignment characteristics, only two showed statistically significant differences between the two states. The North Carolina teachers relied more heavily on a multiple-choice format, showing evidence of it in 37% of the assignments submitted, as compared with 22% of the Kentucky teachers' assignments.[22] This difference may be a function of the fact that the North Carolina assessment still relies heavily on multiple-choice questions, while KIRIS does not.[23] If teachers are "teaching to the test," we would expect their assignments to reflect the test itself. It is not surprising, then, to find that the Kentucky teachers required written responses of several paragraphs more often than did the North Carolina teachers, 13% as compared to 4%.[24] The remainder of the assignment characteristics do not show any significant differences between

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[22] $p < .05$.

[23] The KIRIS test originally included multiple-choice items, but they have not been counted in calculating total scores. State officials felt that to include such items in the scores would send the wrong message about the preferred kind of instruction. However, an expert panel reviewing the technical quality of KIRIS recommended that multiple-choice items be once again included to increase content validity and scoring reliability. State Department of Education officials have agreed, and multiple-choice items will again be included in KIRIS, beginning in 1997.

[24] $p < .05$.
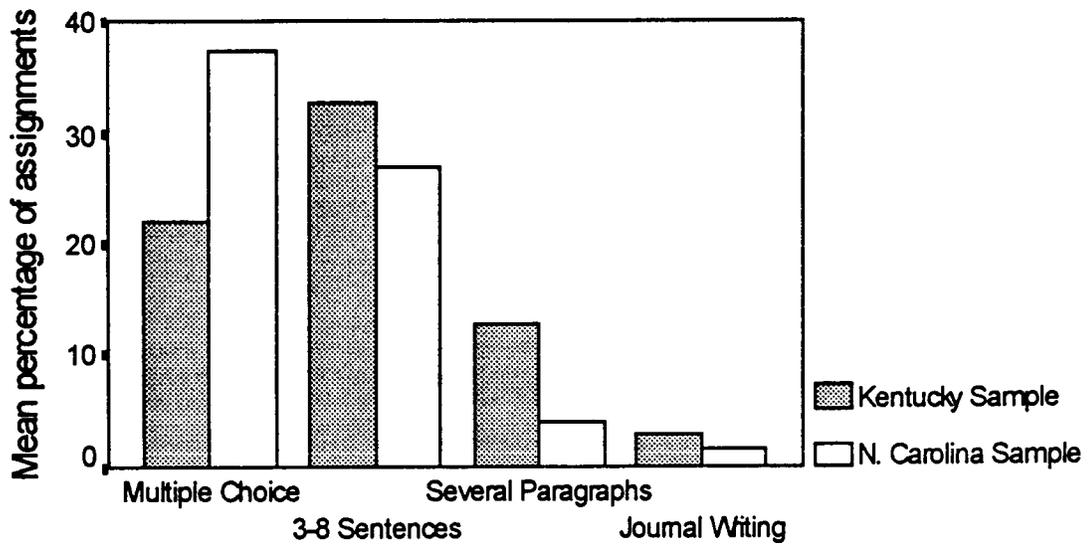
Figure 3.1. Comparison of Kentucky and North Carolina assignment formats.
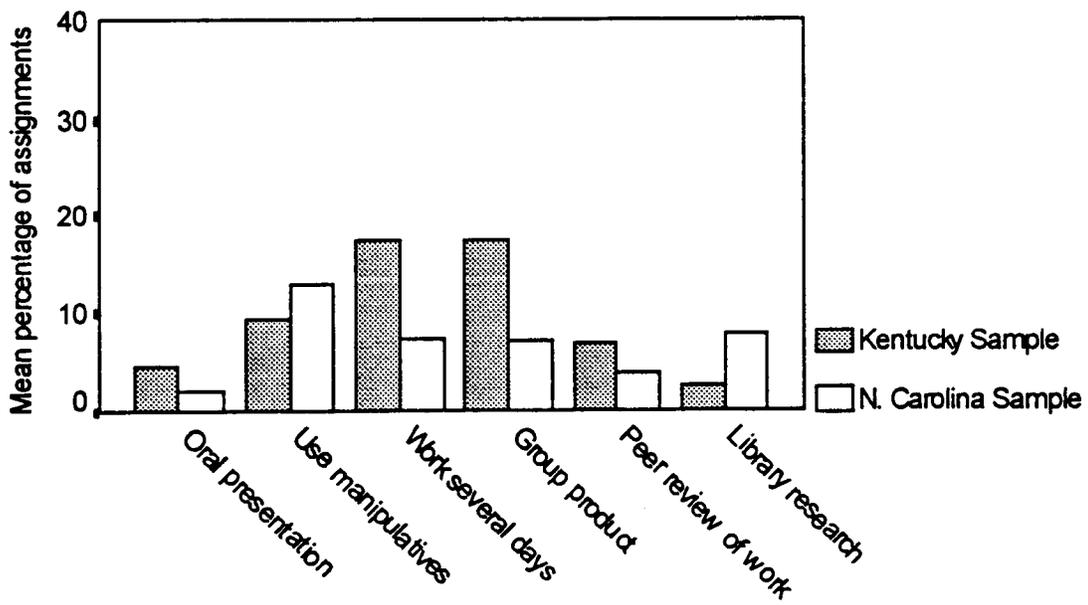
Figure 3.2. Comparison of assignment requirements.

teachers in the two states. Clearly, writing has a prominent role in teachers' assignments, but other activities such as group products, peer-reviewed work, and the use of manipulatives have a less significant place than might be expected, given their self-reports.[25]

Another change advocated by curriculum reformers, and particularly evident in Kentucky's assessment, is the integration of knowledge across subject areas.[26] We found that 73% of the teachers in the Kentucky sample had at least a few assignments that integrated content across two or more disciplines. Despite the high proportion of teachers using this approach, however, on average only 19% of the Kentucky assignments were interdisciplinary. In the North Carolina sample, half the teachers made such assignments, with about 20% of the assignments evidencing integrated content. The discrepancy between the proportion of teachers using an interdisciplinary approach and its relatively low incidence across all their assignments represents a common pattern. The teachers in our sample evidenced a number of instructional strategies consistent with state goals, but these newer approaches were not yet a major component of their instructional repertoires.

Instructional Strategies

On their daily logs, teachers were asked about the modes of instruction they used during a class period and about the activities in which students engaged during the same time. (A sample log form listing all the instructional strategies and student activities is included in Appendix A.) Since the logs were completed by teachers, they do not constitute an external source for validating their interview

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[25] There were some differences in assignment characteristics across the three subject areas, but not as many as might be expected. For example, a significantly higher proportion of the Kentucky language arts teachers' assignments required students to write several paragraphs (23%) than those of the mathematics teachers (3%). However, there were no significant differences in the extent to which the Kentucky mathematics teachers in our sample used manipulatives in their assignments, as compared with the other teachers in that state sample. Similarly, the Kentucky social studies teachers did not require library research any more than the teachers in other subject areas, as might have been expected. The North Carolina teachers, on the other hand, did evidence some differences across subject areas, with the mathematics teachers using manipulatives about twice as often in their assignments as the other teachers, and the social studies teachers incorporating library research into an average of 22% of their assignments, as compared with 3% for the language arts teachers and 1% for the mathematics teachers.

[26] KIRIS contains items that measure how well students apply content from several different academic and applied subjects (e.g., arts and humanities with reading, vocational studies with mathematics, science and social studies).

self-reports. However, the logs do serve as a check on the reliability of the interviews, since they provide greater detail about classroom activities, with the information collected closer in time to the actual events.

Because the Kentucky and North Carolina teachers in our study sample completed the same log forms, we were again able to make comparisons across the two states. Figures 3.3 and 3.4 present the log data. We have categorized instructional strategies and student activities into those that have been the traditional mainstays of most classrooms, and those that are now being advocated in the curriculum reform literature (for a discussion of these categories, see Burstein et al., 1995). Each strategy and activity has two scores, one indicating how much time was spent on it during any given period (duration) and one for the frequency over the time that log data were collected (frequency).[27]

In examining these classroom activities, we find that lecturing or whole-class instruction is still the most frequent teaching strategy, occurring from about half to most of the time and taking about one third of the average period. In addition, teachers are spending considerable time reviewing material already presented. However, despite the prominence of these more traditional activities, teachers are reporting that a number of other activities, requiring active student participation, are also occurring on a regular basis. Notable is the amount of time spent by students working in small groups. The overall picture is of a slight preference for more traditional strategies, but basically an equal reliance on traditional and reform-oriented instructional approaches. The emphasis given to different classroom approaches differs somewhat between the two state samples, but there are no statistically significant differences between the Kentucky and North Carolina teachers in our study in the frequency or duration of their instructional strategies.

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[27] The scores are based on a 1-5 scale, differing slightly in their meaning for the duration or amount of time in one class period and for frequency:

Score	Frequency	Duration/ Time in one class period
1	not at all	just a few minutes
2	a few days	about one third of the period
3	about half the time	about half the lesson or period
4	most of the time	most of the period
5	every day	entire lesson or period
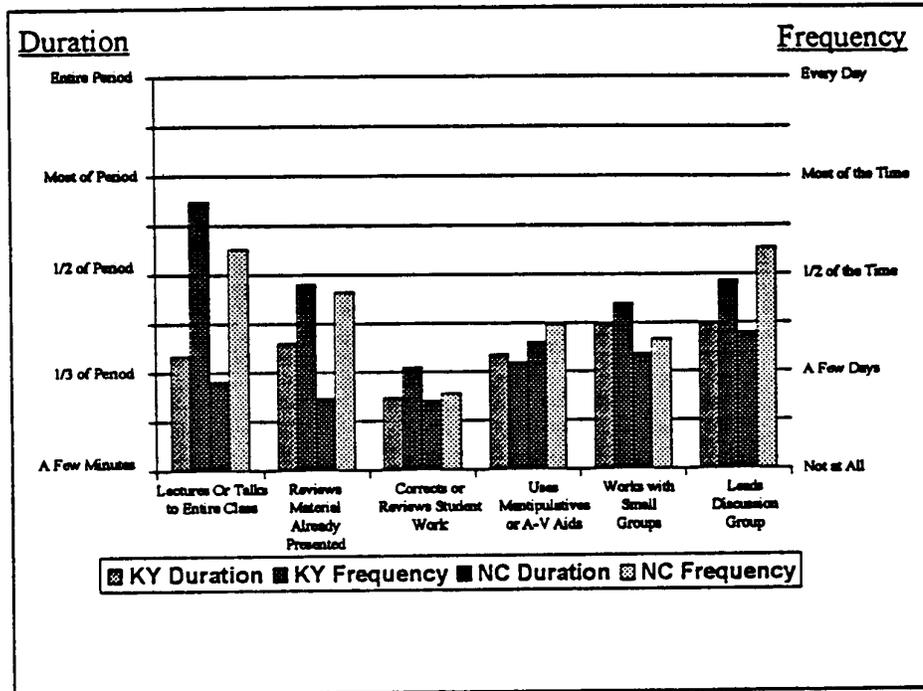
Figure 3.3. Comparison of Kentucky and North Carolina teachers' instructional strategies.
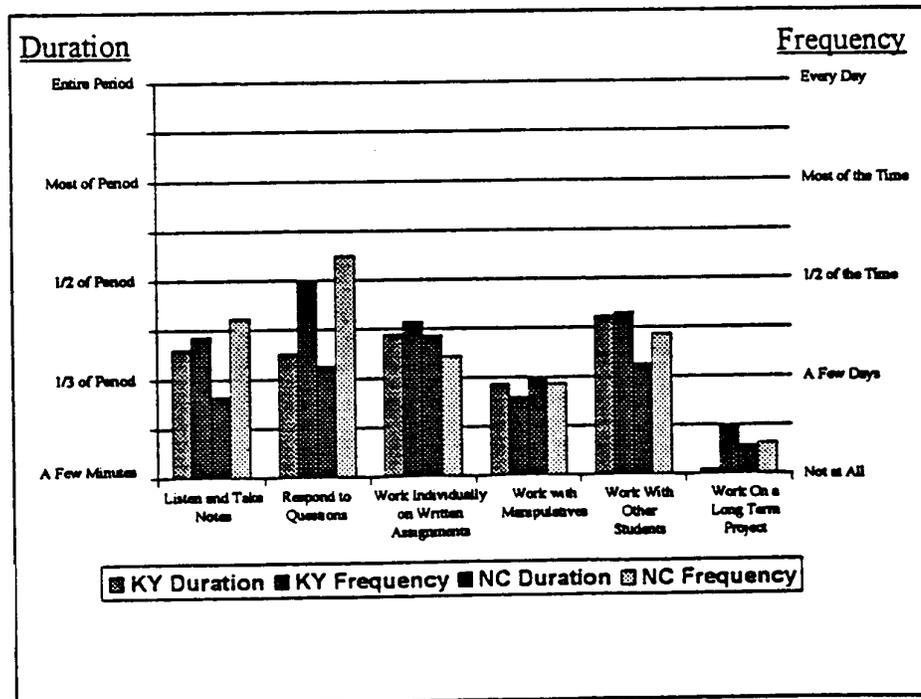
Figure 3.4. Comparison of Kentucky and North Carolina students' classroom activities.

Although it appears that teachers across both states are exhibiting a balance between reform approaches and more traditional ones, it could be argued that by taking a mean score, we are masking substantial variation between teachers, and that some teachers may use reform-type strategies exclusively and others may use only traditional approaches. Therefore, as a second, "teacher specific" test we created two summary scores for each teacher in the two state samples. Using the classification scheme developed by Burstein and his colleagues (1995) as a basis, we first categorized each instructional strategy as either traditional, reform, or neutral. We then created two additive indices, one measuring the frequency of use of traditional strategies and the second measuring use of reform strategies. Each teacher then received scores reflecting the extent to which he or she used the two sets of strategies. We then subtracted one score from the other to give a summary judgment about the balance (or lack thereof) between teachers' use of the two approaches.[28]

For example, if the average score across the reform variables for a particular teacher was 3 and his or her average score for the traditional variables was also 3, the difference would be 0 indicating that this teacher shows a balance between reform activities and traditional activities. If the reform score for a particular teacher was 5 (the highest) and the traditional score was 1 (the lowest), the difference would be +4 indicating that the teacher heavily favored reform-oriented strategies. In effect, we created a 9-point scale running from -4 (very traditional) to +4 (very reform-oriented). The results are displayed in Figure 3.5.

Because the vast majority of the teachers cluster toward zero, our initial conclusion about a balance between traditional and reform instructional strategies appears correct. There is a noticeable leaning towards the negative (traditional) end of the continuum, suggesting that those strategies still have an edge in teachers' instructional repertoires. On balance, however, we see a pattern identified in other studies of teachers' responses to and understanding of curricular reforms (e.g., Burstein et al., 1995; Cohen & Peterson, 1990). In accepting new instructional approaches, teachers tend not to reject more traditional ones. Rather, they combine the old and the new, adding those aspects of reforms that make sense to them, while still relying on traditional strategies with which they

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[28] The traditional and the reform scores were means because we did not have the same number of reform and traditional strategies. The summary score was rounded to get the scale back onto the 1-5 continuum.
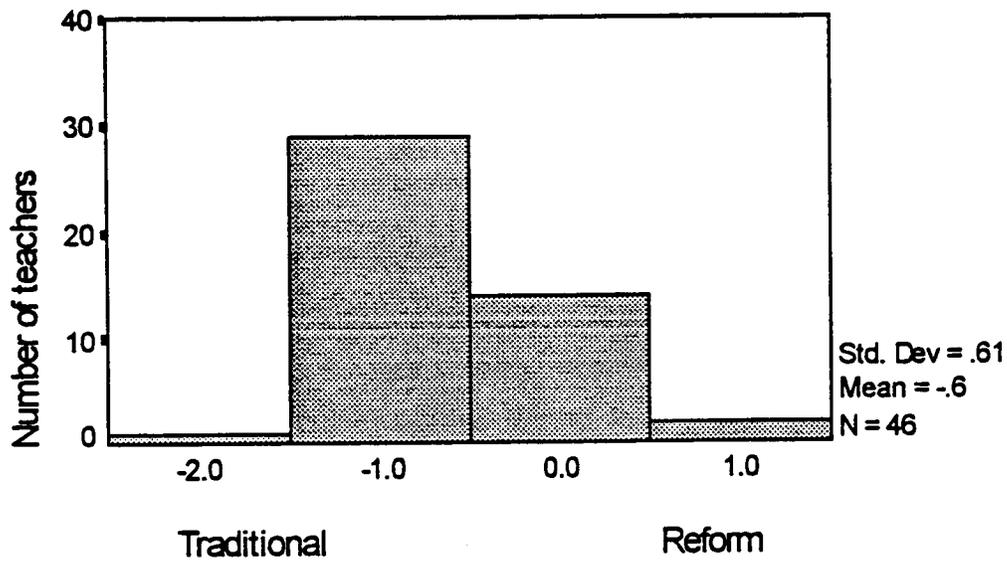
Figure 3.5. Balance between teachers' use of reform and traditional strategies.

are most comfortable and which they believe have been effective in the past. Consequently, classrooms can exhibit traditional and reform instructional approaches simultaneously.

Assignments Reflecting the State Assessment

One of the arguments in favor of new forms of assessment is that they measure higher order skills and are linked to specific curricular standards. Therefore, the expectation is that teachers will teach to these tests, while avoiding the curricular narrowing that occurred when teachers geared their instruction to basic skills tests. In fact, because the hope is that new assessments will change instruction, policymakers and reform advocates expect teachers to teach to the test. On the other hand, testing experts warn that "excessive reliance on direct test preparation runs the risk of inflating scores (and siphoning limited instructional time away from other activities)" (Koretz et al., 1996, p. 43).

We asked the teachers in both state samples to submit all assignments from the entire semester that they felt were most similar to the state assessment in purpose and format, including any that they took directly from the state released items. On average, only 43% of the assignments were, in fact, similar to the state assessment. The breakdown by state is more striking, with only 32% of the North Carolina "most similar" assignments judged by the coders to be similar to the

state assessment, as compared with 53% for the Kentucky sample. As we indicated in the methods section, we assumed that the "most similar" assignments would most closely mirror the purpose, content, and format of the state assessments and would, in effect, be the "best" examples of teaching consistent with state goals. These findings, however, seem to indicate that the teachers in both state samples lack complete information as to the objectives of their respective state assessments.[29]

Indeed, Figure 3.6 shows that there are no significant differences between the Kentucky teachers' everyday assignments and the ones that they thought were most closely aligned with the state assessment.[30] We had expected to find that the "most similar" assignments would incorporate more of the state goals than the everyday assignments, but this proved not to be the case.[31]

In evaluating the assignments that teachers judged as most similar to the state assessment, the coders considered whether they paralleled both the format and the purpose of the test. Thus they were judging whether an assignment resembled any of the different types of items on the state assessment and whether it measured student mastery of skills and knowledge covered on the assessment. Teachers' misjudgment about the similarity of their assignments with the assessment typically stemmed from their not recognizing the full complexity of the skills being measured on the state test. Two examples illustrate the problem. A fourth-grade social studies teacher in Kentucky submitted a "most similar" assignment that required students to locate certain geographical features

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[29] We were somewhat surprised to find that only 11% of the most similar assignments from the Kentucky teachers and 9% from the North Carolina were released items from previous state assessments. The small proportion is especially striking in the case of Kentucky because the state has released all performance event prompts and a significant number of open-response items. North Carolina, on the other hand, has not released as many items, but it does maintain an unofficial item bank from which teachers can select items for classroom assessments. Teachers did report in the 1994 interviews that their districts were now having them use the item bank several times a year in preparation for the end-of-grade test. However, the 9% only includes items that were actually on the end-of-grade test.

[30] The most similar assignments were not coded on the same 1-5 scale as the ten-day assignments. Instead, the coders reported the raw number of assignments that reflected each goal. We simply converted those raw numbers to a proportion by dividing them by the total number of assignments each teacher submitted. This gave us the percentage of assignments that reflected each goal, which we then converted to the scale.

[31] These Kentucky-specific goals are analyzed in greater depth in the next section. We cannot provide the same comparison for North Carolina because the specificity of the state competencies made it difficult to measure consistency in a valid way.
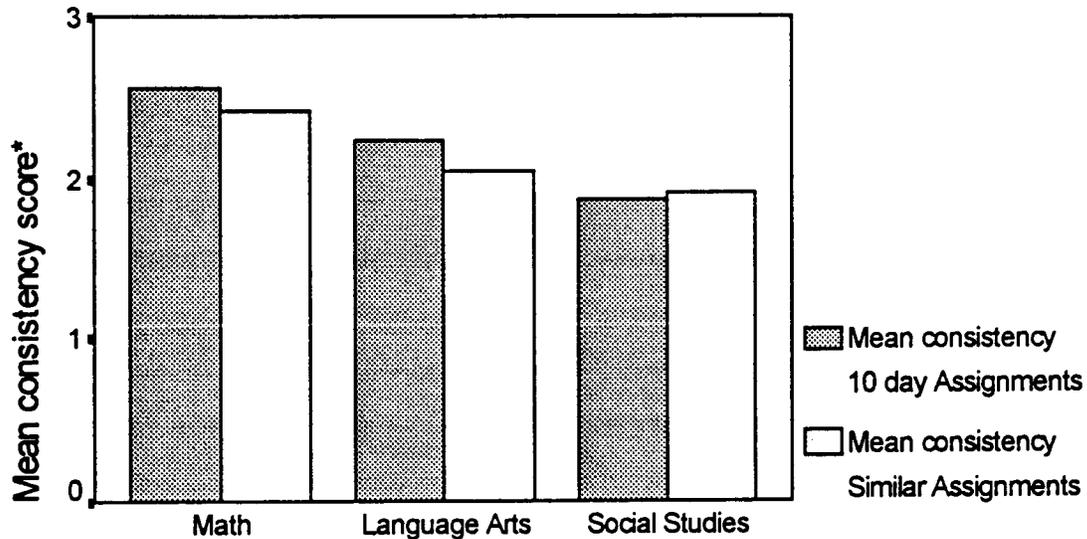
*These scores represent points on the scale that coders used in assessing the consistency of assignments with state goals:

1 = not reflected in any assignment
2 = reflected in a few assignments
3 = reflected in about half the assignments
4 = reflected in a substantial majority of assignments
5 = reflected in all or almost all assignments

Figure 3.6. Kentucky 10-day/most similar comparison on consistency with state learning goals.

within states assigned to them. Although the assignment incorporated geography, it did so in a very basic way without making the required connections associated with Goal 2.19—that is, understanding the relationship between people and geography and applying their knowledge in real-life situations. In the same way, a North Carolina seventh-grade mathematics teacher submitted assignments that required students to make basic mathematical computations, with no effort to gauge whether they understood underlying concepts, the solution process, or how they might apply the algorithms in unfamiliar situations.

We assumed that the variation among teachers in the extent to which their "most similar" assignments were consistent with the goals of the state test might be explained by the type of professional development they received in preparation for the new assessment. However, we found no significant correlation between the

most similar assignments and a teacher's level of preparation.[32] We did, however, identify some differences among subject areas. Combining the North Carolina and Kentucky samples, we see in Figure 3.7 that mathematics teachers appear more likely to judge correctly an assignment as similar to their respective state assessments than teachers in the other two subject areas, although mathematics is only significantly different from social studies at the .05 level. One possible reason for this difference might be that mathematics teachers have had more extensive experience with the kinds of goals embodied in the state assessments because the NCTM standards were issued in 1989 and have become the exemplar for curricular and assessment standards in a number of states, including Kentucky and North Carolina. The other subject areas issued their standards several years later, often without the wholesale state adoption that characterized the mathematics standards.
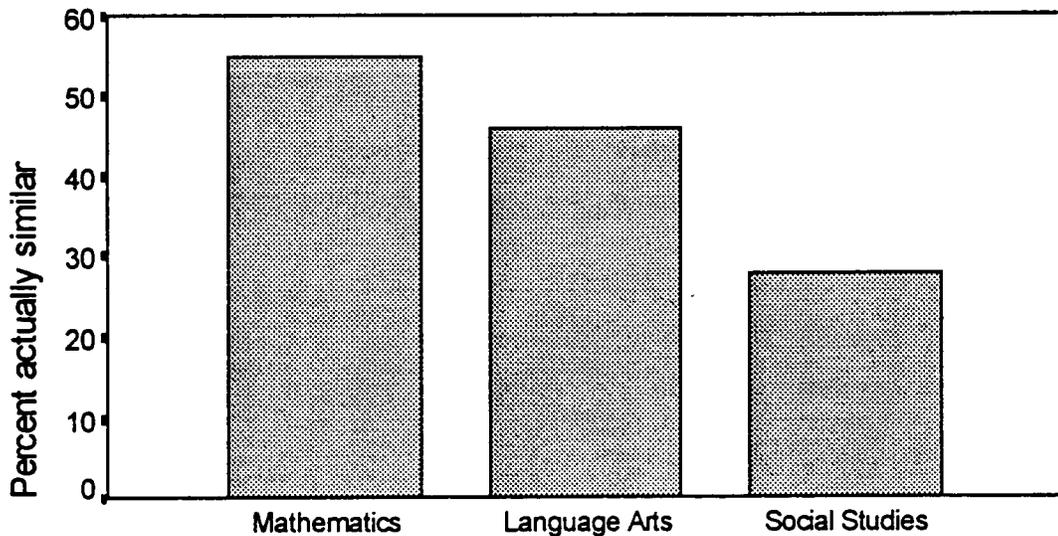
Figure 3.7. Percentage of Kentucky and North Carolina "most similar" assignments coded as similar to the state assessments, by subject area.

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[32] We used three variables, coded from the teacher interviews, to measure type of preparation: received an introduction to the new assessment, participated in in-service on curriculum related to the assessment, and participated in an ongoing professional development network such as a mathematics or writing project. We also used these together as an additive index with no change in the result.

We did not find any correlations between how well teachers judged their most similar assignments as comparable to the state assessment and grade level, years of teaching experience, or gender.

Up to this point, we have compared the sample of Kentucky and North Carolina instructional artifacts on similar criteria that, while compatible with each state's assessment, are quite general. A more precise test of the extent to which teaching is consistent with state policy goals is to compare teachers' assignments with the specific learning goals and academic expectations that Kentucky has outlined in its curriculum framework, *Transformations*, and with the competency goals included in North Carolina's *Standard Course of Study*. As the lists in appendices A and B indicate, the two states' goals are quite different. Not only are North Carolina's more precise, specified by grade level for two of the three subjects, but they also stress content knowledge more than skills. Kentucky's learning goals, on the other hand, are considerably more general and emphasize student mastery of a variety of critical thinking skills. We now turn to an analysis of how consistent the instructional artifacts are with the state-specific goals.

Consistency With Kentucky's and North Carolina's State-Specific Goals

As the list of Kentucky's learning goals and academic expectations indicates, the state has a set of goals specific to each subject, as well as two goals (5 and 6) that apply to all subjects. In order to maximize the number of assignments analyzed, we first consider all 23 Kentucky teachers' consistency with these general goals, by looking across their combined 213 regular class assignments. We then turn to the subject-specific goals. We note that in doing so, we are comparing across some 70 assignments in each subject, but they only represent the work of eight language arts, eight social studies, and seven mathematics teachers. Consequently, our findings about teachers' consistency with state-specific goals can only be suggestive.

Table 3.1 summarizes the extent to which six of the common Kentucky goals were reflected in teachers' regular assignments.

The mean for most of these state goals is about 2, indicating that the goal is reflected *in a few* assignments. There are a couple of exceptions, however; Goals 6.2 and 6.3 have noticeably higher means than do the others. This is not too surprising with respect to Goal 6.2; the substantive content as well as the broad phrasing suggest that it would be included more frequently in assignments.

Table 3.1

Consistency of Classroom Assignments with Kentucky's Critical Thinking Goals

	Goal 5.1 Students use critical thinking skills to solve a variety of problems in real-life situations (percent)	Goal 5.3 Students organize information to develop or change their understanding of a concept (percent)	Goal 5.5 Students use problem solving processes to develop solutions to complex problems (percent)	Goal 6.1 Students connect knowledge and experiences from different subject areas (percent)	Goal 6.2 Students use what they already know to acquire new knowledge and develop new skills (percent)	Goal 6.3 Students make connections between existing knowledge and new knowledge (percent)
Not reflected in any assignment	26	32	52	50	23	11
Reflected in a few assignments	48	55	43	40	41	26
Reflected in about half the assignments	22	14	5	5	27	47
Reflected in a substantial majority of assignments	4	0	0	5	9	11
Reflected in all or almost all assignments	0	0	0	0	0	5
Mean (*SD*)	2.04 (.82)	1.82 (.60)	1.52 (.60)	1.65 (.81)	2.23 (.92)	2.74 (.99)

However, Goal 6.3 has the highest mean of all with about 63% of the Kentucky teachers requiring students in half or more of their assignments to make connections between knowledge already acquired and new knowledge. The notable exception on the low end is Goal 5.5 with over half the teachers not reflecting it in any of their assignments.

One example from a fourth-grade teacher illustrates how a particularly innovative Kentucky teacher has incorporated some of these critical thinking skills into her assignments. The teacher used a social studies unit on Pilgrim stories as a base to incorporate a number of different activities. One assignment that exemplified the Goal 5 series was a worksheet to be completed by students after reading a Pilgrim story that placed the characters in a value dilemma; should they take food they knew was not their own, if they planned on paying for it later? The worksheet asked the students to divide what they had read and heard into four categories: facts, opinions, inferences, and assumptions. In addition, the students were asked what additional information they would like to have. The emphasis here is similar to Kentucky Learning Goals 5.3 and 5.4. The students were required both to organize information as a way to develop their understanding and to use decision-making processes to make informed decisions. That the students were asked to make distinctions between facts and values is of particular note. The students were also asked to make a list of possible options, as well as to predict the consequences of each. This type of activity clearly reflects Goal 5.1, which emphasizes analytical skills applied to real-life situations.

Learning Goals 5 and 6 require that teachers present material in new ways and help students to gain a deeper conceptual understanding of that material. Consequently, it is not surprising that these substantive goals tend to be reflected in teachers' assignments less often than activity-based goals such as having students write more or work in groups. Although skill and planning are necessary to have students work productively in groups, it is probably easier to do that than to teach students problem-solving skills that will allow them to solve complex problems while simultaneously acquiring academic content knowledge.[33]

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[33] Another study that examined changes in instruction at one high school in Kentucky reached a similar conclusion. It noted that teachers "do not seem to recognize that changing the format of instruction—for example, using small groups instead of individual seatwork—does not ensure more authentic instruction. Without addressing the substance of instruction as well as its format, KERA's aims cannot be realized" (Gamoran, 1995).

Keeping in mind that we are only talking about a few teachers and a smaller number of assignments when we compare by subject area, we now turn to Kentucky's subject-specific goals. As Figure 3.8 illustrates, a significantly higher proportion of mathematics teachers' assignments reflect the state mathematics goals than language arts and social studies teachers' assignments reflect state goals in those two areas.[34] On average, the state mathematics goals are found in just over half the mathematics teachers' assignments, whereas the social studies teachers incorporate the social studies expectations in only a few of their assignments, and the language arts assignments fall between the other two subjects in the proportion that reflect state goals. While we can only speculate on why the mathematics teachers' assignments are more consistent with state goals, we again suspect that it is due to the influence of the NCTM standards, which are clearly reflected in the state goals. More instructional materials are available reflecting these goals, thus giving mathematics teachers greater guidance than is currently available to those teaching the other two subjects.

To examine within-subject variation, we generated Figures 3.9–3.11 that represent the component subject-specific state goals. Looking first at mathematics, one is immediately struck by the emphasis on the first three goals.
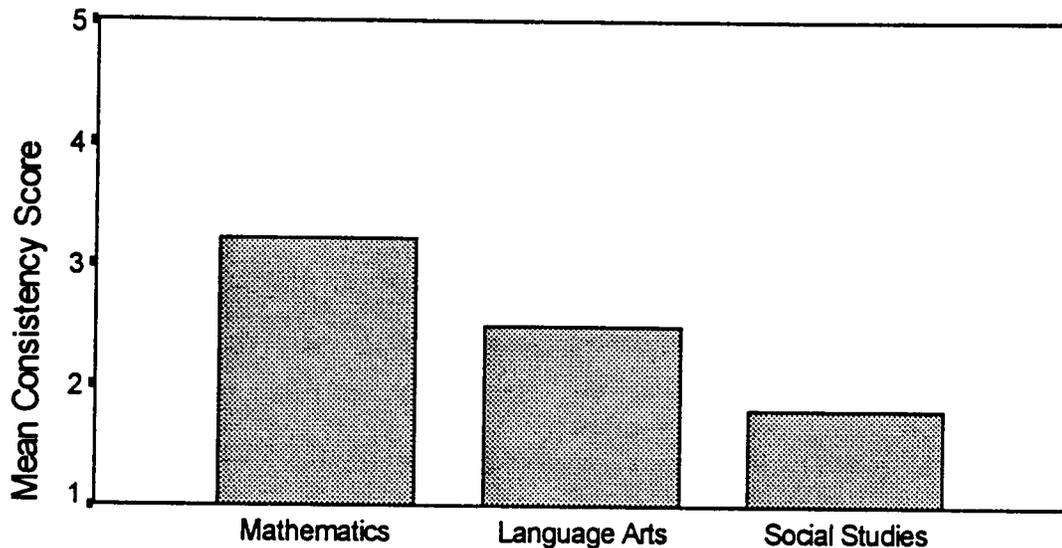
Figure 3.8. Consistency of classroom assignments with Kentucky's subject-specific academic expectations.

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[34] The figures were calculated by taking the mean score for each teacher on the variables representing the state learning goals in his or her respective subjects. An aggregated mean was then calculated for all the teachers in each subject area.
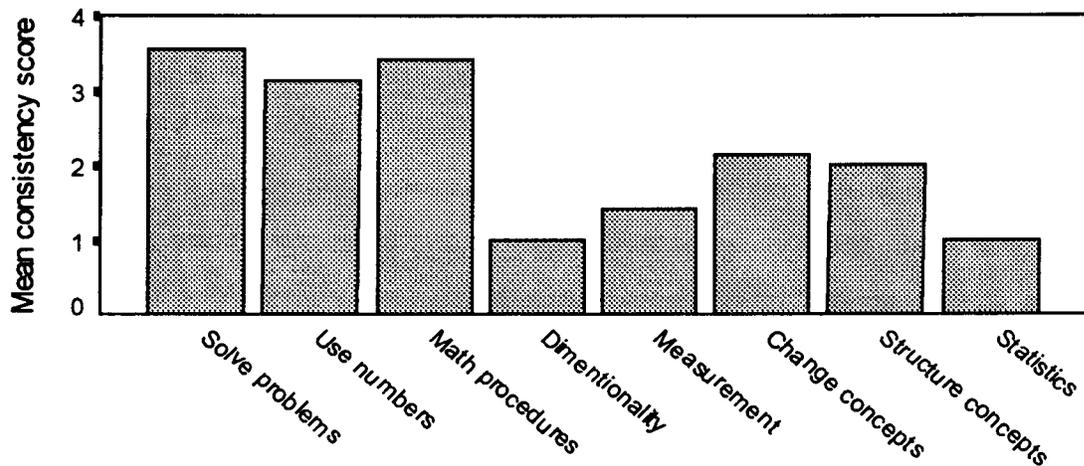
Figure 3.9. Consistency of mathematics assignments with Kentucky's subject-specific academic expectations (Goals 1.9 and 2.7–2.13).

Solving problems, using numbers appropriately, and understanding various mathematical procedures are found in a substantial majority of assignments, whereas an understanding of space and dimensionality and the use of statistics are typically found in only a few assignments. It would seem, then, that the more traditional mathematics goals are being emphasized. Nevertheless, mathematical change concepts and structure concepts are still found in about half the assignments.
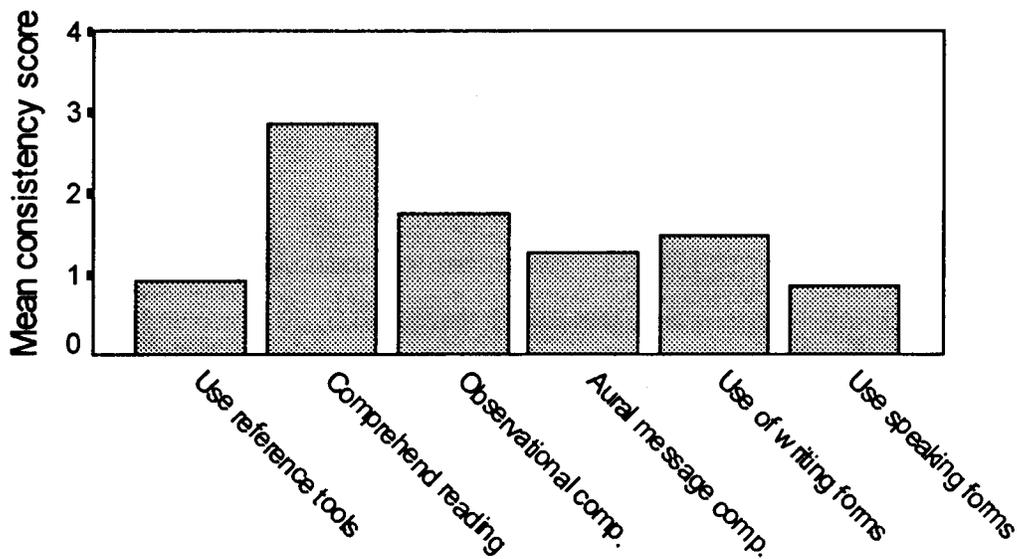
Figure 3.10. Consistency of language arts assignments with Kentucky's subject-specific academic expectations (Goals 1.1–1.4, 1.11, 1.12).

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Looking at language arts, we see a notable difference from mathematics both in terms of absolute levels, as well as variation. The only goal that differs substantially from the mean is reading comprehension, typically found in a substantial majority of assignments. Aside from this traditional goal, one is struck by the balance among the remaining goals (though at lower absolute levels than in mathematics).

As with the language arts goals, the social studies assignments evidence a fairly even distribution across the state expectations with a primary emphasis on geographical knowledge and historical perspective. Most interesting, however, are the low levels associated with understanding democratic principles, being able to describe various forms of government and analyze issues related to citizens' rights and responsibilities, interacting across cultural groups, and understanding economic principles. On average, these goals were found in virtually none of the social studies assignments.

Although the small numbers mean that our results are only suggestive, we do see a common pattern across the Kentucky teachers. Teachers' assignments and instructional strategies are more likely to reflect the classroom activities associated with curricular reform, such as more student writing and a greater emphasis on student-directed learning, than on the deeper conceptual understandings associated with helping students acquire critical thinking skills in
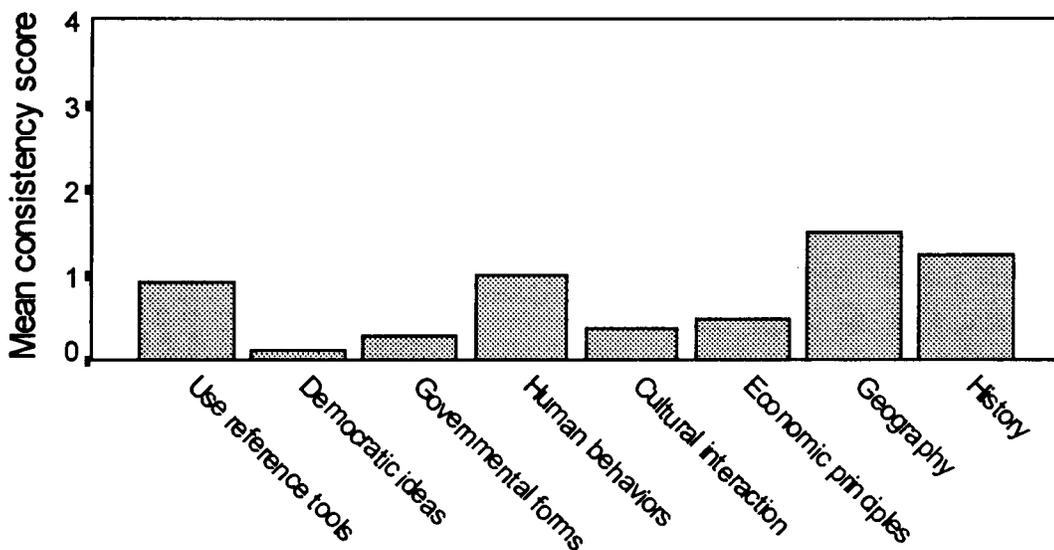
Figure 3.11. Consistency of social studies assignments with Kentucky's subject-specific academic expectations (Goals 1.1, 2.14–2.20).

the context of academic content knowledge. To the extent that state learning goals are reflected in the assignments of our teacher sample, traditional goals associated with learning mathematical procedures and improving students' reading comprehension are more prevalent than those that require the acquisition of sophisticated content knowledge (e.g., statistics, using appropriate forms in writing).

Somewhat ironically, the specificity of North Carolina's competency goals with their even more detailed objectives, or subgoals, meant that our methodology did not allow us to measure the consistency of assignments from that state as precisely as we did for the Kentucky sample.[35] Although coders analyzed the North Carolina assignments according to the detailed competency goals for each subject and grade, most of the goals were not reflected in any of the assignments. We assume that the "empty cells" are due to the relatively short time period over which we collected regular assignments. A specific objective such as *use a variety of models to illustrate acute, right, and obtuse angles* (North Carolina fourth-grade mathematics Goal 2.5) is likely to appear at one specific point in the curriculum and not to be interwoven at multiple times in the way that *understand space and dimensionality concepts and use them appropriately and accurately* (Kentucky mathematics Goal 2.9) is likely to be.

We tried to aggregate across the multitude of subject-specific goals in a variety of ways. However, no method produced a consistency score as straightforward as the one used for the Kentucky assignments. North Carolina assignments reflecting multiple subgoals were either overcounted, or if we sought to avoid overcounting by aggregating to the broadest level of competency goals, we masked considerable variation across assignments and teachers. Consequently, in assessing the consistency of the North Carolina assignments with the state's subject-specific competency goals, we can only report our findings qualitatively by indicating the relative importance that teachers gave to different goals. As with the subject-specific comparisons in Kentucky, we also caution that our analysis is based on only eight language arts, eight mathematics, and seven social studies teachers, with about 60 regular assignments analyzed for each subject area.

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[35] The difference in the specificity of North Carolina's competency goals as compared with Kentucky's learning goals is illustrated in mathematics where Kentucky has eight goals on which student performance is tested that apply to all grades, whereas North Carolina has many separate goals for each grade level—e.g., the goals for fourth-grade mathematics number 58.

The mathematics teachers in the North Carolina sample tended to stress patterns and relationships and problem solving in their assignments. In contrast, they placed little emphasis on understanding the collection, presentation, and interpretation of data or on measurement, even though the state has stressed "real-world" applications in its curriculum and assessments. The social studies teachers stressed geographic concepts and themes in their assignments significantly more than any other competency goal. Our interviews suggest that this relatively greater attention to geography may be due to the inclusion of map-related items on the end-of-grade tests. Several social studies teachers mentioned that not only do they now have to pay more attention to strengthening the map-reading skills of their students, but that the skill has to be taught holistically, with an emphasis on the practical applications of map-reading (i.e., knowing "how you get from here to there").

The language arts teachers in the North Carolina sample paid considerable attention to communication strategies in their assignments, but they placed little emphasis on helping students to learn how to assess the validity and quality of information. The emphasis on communication strategies is not surprising since they relate directly to two key foci of the end-of-grade test, student writing and reading comprehension. In fact, several language arts teachers in our sample were explicitly using various preparation strategies as part of their writing instruction. At the same time, improving students' writing would also seem to depend on their ability to assess the quality of information and ideas. We can only speculate on possible reasons for the difference in relative emphasis, but it does seem easier to teach elementary and middle school students to *outline and summarize new facts, information, and ideas* than to *distinguish between representations of fact and of opinion*. The challenge for most teachers at the time of our data collection was to encourage students who typically did not like to write to write more than a few words in response to writing prompts. Consequently, what seemed like rather straightforward writing strategies represented a major challenge for many students.

Our imprecise measures of consistency for the North Carolina goals make it difficult to determine whether the patterns we observed in the Kentucky sample hold for the North Carolina teachers. However, it appears that the competency goals receiving greater attention are more directly linked to the end-of-grade tests—for example, problem solving in mathematics that emphasizes the

understanding of problems through oral and written discussion; geography with its practical applications; and strategies aimed at clearer, more structured writing. What we cannot say is whether the specificity of the North Carolina goals, with the state's accompanying *Standard Course of Study*, has resulted in teaching that is more consistent with specific state expectations than the more generic approach to state goals used in Kentucky. However, we can make some generalizations across teachers in the two states on the common reform dimensions we analyzed. We turn to those comparisons now in the concluding section.

4. CONCLUSIONS

Most of the results reported in this monograph are based on a small purposive sample of schools and teachers. Consequently, our findings are only suggestive. At the same time, the study has several advantages over others that have examined new state assessments. First, it is explicitly comparative in focus, looking systematically across two states that chose very different approaches to assessment. Second, it has tried to validate teacher self-reports about changes in instruction with an examination of their actual classroom assignments. Finally, it is part of a larger research project that has analyzed the design and implementation of new state assessments using a framework that highlights the political and social values underlying these policies, and the links between different types of policy instruments and local instructional practices. Nevertheless, we offer three broad conclusions with the admonition that while these research implications may be instructive for other states and districts implementing new assessments, they come with the strong caveat that they are drawn from a rich, but limited data base.

First, we found few differences between the teachers in our Kentucky and North Carolina samples in how they responded to the new assessments. Both groups are taking the assessments equally seriously and with only a few differences, they are quite similar in the extent to which their teaching reflects the assessment policy goals of their respective states. Most people, including ourselves, would probably assume that the Kentucky teachers would behave differently from those in North Carolina. After all, KIRIS is part of one of the most ambitious education reforms ever undertaken by a state, and it carries high stakes for local schools.

Although we lack a definitive explanation for why the expected differences did not emerge, we offer three possible reasons. One is that our small samples are somehow atypical and unrepresentative of most teachers in the two states. However, we do know that with the exception of the gender distribution of the North Carolina sample, the teachers we studied closely resemble teachers in the rest of the state, and the schools in which they teach have performed at or slightly above the state averages on KIRIS and the end-of-grade tests. A similarly-designed study with a larger, more representative sample is, however, needed to determine whether this conclusion is broadly generalizable.

A second possible explanation stems from the limited changes in instruction that have occurred thus far. Teachers have added new classroom activities, but they are still using traditional strategies as well, and they have not yet fundamentally changed the depth and sophistication of the content they are teaching. It could well be the case that the two approaches to assessment policy may produce very different effects in the longer-term. Kentucky's stronger commitment to staff development may be critical in helping teachers take the next steps toward altering the substance of their instruction. Because Kentucky has been able to maintain what will be at least a six-year commitment to KIRIS without significant modifications in its approach or intent, teachers may have additional incentives to work toward the more difficult changes that policymakers expect. Not only are there more substantial consequences in Kentucky, but policymakers there, unlike those in North Carolina, have sent a strong signal that they are deeply committed to the reforms and intend to persist with them despite political and technical obstacles.

A third possible reason for the lack of differences between the Kentucky and North Carolina teachers may be that hortatory approaches are more powerful than has been assumed. Teachers care very much about how parents and the public judge them; they want to avoid adverse public scrutiny, whether it comes from test score reporting in the newspaper or from informal discussions among colleagues and parents. They also recognize that many of the curricular values underlying the new assessments are beneficial for their students, and they want to do right by them. The same values that underlie the North Carolina assessment also undergird KIRIS. Consequently, the question is whether the additional threat of serious sanctions or the promise of substantial rewards significantly increases teachers' incentives. We do not know the answer to that

question. But it may be that until the very considerable gap between teachers' current instructional capabilities and reformers' expectations is narrowed, additional incentives will make little difference because teachers lack capacity, not will.

The gap between what teachers are currently doing and what is expected of them brings us to a second conclusion already discussed in the previous section. The instruction by teachers in our study is reasonably consistent with the state assessment goals at the level of classroom activities, but not in terms of the conceptual understandings that the assessments are measuring. "Teaching to the test" is more than just test preparation, but it is also more than group work and the use of manipulatives to demonstrate mathematics problems. It is still an open question whether the hopes of curriculum reformers will be met in most classrooms. A number of studies have shown just how difficult it is for teachers to teach what they themselves do not yet know and have not been trained to do (e.g., Cohen & Peterson, 1990; Spillane et al., 1995). Consequently, it is not surprising that deeper changes have not yet occurred. Teachers are being asked to teach very different content in fundamentally different ways than they themselves were trained, often some two decades ago. Nevertheless, the difference between the mathematics teachers in our sample and those in the other two subject areas offers a glimmer of hope. Some five years after the NCTM standards were promulgated, their effect could be seen in individual classrooms.

The gap between changes in how instruction is delivered and more fundamental alterations of curricular substance demonstrates both the power and the weakness of what some have called "measurement-driven instruction." Testing consequences, whether tangible or not, provide a strong motivation for educators to change their behavior. But transforming the essence of instruction through assessment is not a self-implementing reform. The assessment itself does not carry within it sufficient guidance for teachers to change; all they really get from the assessment are whatever clues they can glean from the released test items. Using state assessments to alter instruction can only be effective if it is supported by a strong infrastructure of teacher retraining and adequate instructional materials. The role of instructional materials is crucial. One of the reasons that Kentucky may not yet have experienced the deeper changes in instruction that policymakers expected—despite a substantial investment in professional development—is the way in which the state sequenced the

assessment and the curriculum frameworks. The North Carolina teachers may have received fewer training opportunities, but the *Standard Course of Study* provided much clearer guidance about the content that would be tested than did *Transformations*.

Our third and final conclusion raises the question of whether assessment is an appropriate policy tool to promote curricular improvement if policymakers cannot commit to a long implementation period. There is no question that assessment is one of the most powerful tools state policymakers have at their disposal to effect change in local schools and classrooms. Nevertheless, it is neither automatic nor fast-acting. It requires a considerable investment of resources in capacity-building, and enduring effects are unlikely to appear in fewer than five to ten years. Consequently, policymakers need to stop thinking of assessment as a cheap reform that can be modified or replaced as political circumstances dictate and, instead, think of it as a potentially critical element in a long-term strategy for improving instructional quality.

REFERENCES

Appalachia Educational Laboratory, Planning Research and Evaluation Unit. (1995). *The needs of Kentucky teachers for designing curricula based on academic expectations.* Frankfort, KY: Kentucky Institute for Education Research.

Burstein, L., McDonnell, L. M., Van Winkle, J., Ormseth, R., Mirocha, J., & Guiton, G. (1995). *Validating national curriculum indicators.* Santa Monica, CA: RAND.

Cohen, D. K., & Peterson, P. L. (1990). Special issue of *Educational Evaluation and Policy Analysis, 12*, 233-353.

Collard, G., & Wolfford, G. (1994, September 9). Area schools' scores please. *Ashland Daily Independent,* pp. 1, 6.

Corbett, H. D., & Wilson, B. L. (1991). *Testing, reform, and rebellion.* Norwood, NJ: Ablex Publishing.

Fullan, M. G. (1991). *The new meaning of educational change.* New York: Teachers College Press.

Gamoran, A., & Nystrand, M. (1991). Background and instructional effects on achievement in eighth-grade English and social studies. *Journal of Research on Adolescence, 1*, 277-300.

Gamoran, A. (1995). Goals 2000 in organizational context: Will it make a difference for states, districts and schools? In K. Bormun, P. Cooksen, A. Saddovnik, & J. Z. Spade (Eds.), *Implementing federal legislation: Sociological perspectives on policy.* Norwood, CT: Ablex.

Herman, J. L., Dreyfus, J., & Golan, S. (1990). *The effects of testing on teaching and learning* (CSE Tech. Rep. No. 327). Los Angeles: University of California, National Center for Research on Evaluation, Standards, and Student Testing.

Herman, J. L., & Golan, S. (no date). *Effects of standardized testing on teachers and learning—another look* (CSE Tech. Rep. No. 334). Los Angeles: University of California, National Center for Research on Evaluation, Standards, and Student Testing.

Kentucky Department of Education. (1992, August). Special issue on assessment, *Ed News, 32*(6).

Koretz, D. M., Barron, S., Mitchell, K. J., & Stecher, B. M. (1996). *Perceived effects of the Kentucky Instructional Results Information System* (KIRIS). Santa Monica, CA: RAND.

Madaus, G. F. (1988). The influence of testing on the curriculum. In L. N. Tanner (Ed.), *Critical issues in curriculum, 87th yearbook of the National Society for the Study of Education* (pp. 82-121). Chicago: The University of Chicago Press.

McDonnell, L. M. (1997). *The politics of state testing: Implementing new student assessments*. Los Angeles: University of California, National Center for Research on Evaluation, Standards, and Student Testing.

McDonnell, L. M. (1994). Assessment policy as persuasion and regulation. *American Journal of Education, 102*, 394-421.

McLaughlin, M. W. (1987). Learning from experience: Lessons from policy implementation. *Educational Evaluation and Policy Analysis, 9*, 171-178.

McLaughlin, M. W. (1990). The RAND Change Agent Study re-visited: Macro perspectives and micro realities. *Educational Researcher, 19*(9), 11-16.

Oakes, J. (1985). *Keeping track*. New Haven, CT: Yale University Press.

Olson, L. (1993, April 21). Off and running. *Education Week*.

Picus, L. O. (1996). *Estimating the costs of student assessment in North Carolina and Kentucky: A state-level analysis* (CSE Tech. Rep. No. 408). Los Angeles: University of California, National Center for Research on Evaluation, Standards, and Student Testing.

Rothman, R. (1992, September 23). Kentucky reformers await reaction to results of tough tests. *Education Week*, pp. 1, 20.

Schneider, A., & Ingram, H. (1990). Behavioral assumptions of policy tools. *Journal of Politics, 52*, 510-529.

Spillane, J. P., Thompson, C. L., Lubienski, C., Jita, L., & Reimann, C. B. (1995). *The local government policy system affecting mathematics and science education in Michigan: Lessons from nine school districts*. East Lansing: Michigan State University/MSSI Policy and Program Review Component.

Stone, D. H. (1988). *Policy paradox and political reason*. New York: Harper Collins.

Wilkerson, T., & Associates, Ltd. (1994). *Statewide education reform survey*. Frankfort, KY: Kentucky Institute for Education Research.

Wolfe, C. (1992, September 18). Results show changes needed, Boysen says. *Messenger-Inquirer*, p. 6A.

APPENDIX A

DATA COLLECTION INSTRUMENTS

INTERVIEW TOPICS
ELEMENTARY TEACHERS

In our interview today, I would like to explore with you several topics related to (*new state assessment*) and its effect on instruction here at (*school*). First, however, I would like to ask you several questions about your own professional experience.

1.   a.   How long have you been teaching?

       b.   How long have you been teaching at (*school*)?

       c.   What grade are you currently teaching?

As I mentioned, we are particularly interested in finding out how (*new state assessment*) may have affected instructional practices at your school. I would like to begin by asking you about the logistics involved in administering (*state test*), and then move on to questions about its impact on the curriculum and on teachers' work.

[***Include this statement only if respondent does not teach at one of the grade-levels being tested***: I realize that some of these questions may not apply to you since you don't teach at one of the grade-levels at which students are tested. However, we are also interested in understanding how teachers in other grades may be affected by (*state assessment*). So I would like to ask you about your own experience and reactions. But if a question does not apply to you, just let me know.]

2.   a.   What kind of **information** did you and your colleagues receive prior to the first administration of the test?

            e.g.,   —   written materials, workshops, meetings with school testing coordinators

            Who provided the information?

       b.   Did that information discuss the curricular implications of (*state assessment*), or did it just focus on topics directly related to the test such as its administration and scoring?

       c.   In your view how adequate was the information you received?

       d.   Were you given the name of a contact person that you or other school staff could call if you had questions or encountered problems?

       e.   Did you and your colleagues encounter **any significant problems** in administering (*state assessment*)?

3.   a.   How much **time** does the (*state assessment*) require **of students** each year?

            PROBES: o   preparing for the test

                         o   taking the test

       b.   How much **time** does it require **of you**?

PROBES: o   preparing students for the test

o   administering the test

o   (*if applicable*): scoring the test

o   meeting to discuss test results

c.   Has the time that you have devoted to (*state assessment*) meant that there have been other activities related to your teaching that you have either been unable to do, or on which you have had to spend less time?

If yes: —   What are those activities?

4.   a.   What aspects of (*state assessment*) have evoked the most **positive** and the most **negative reactions** on the part of **students**?

b.   What aspects of the assessment have evoked the most **positive** and the most **negative reactions** on the part of **teachers**?

Have you noticed **any significant differences in the attitudes of teachers** working at the grade-level or with the subject matter being tested, as compared with those teaching at grade levels or subjects not being tested?

c.   Has the school, the district, and the state department of education been able to provide teachers here at (*school*) with all the **support** that **you have needed** or requested while working on (*state assessment*)?

If no: —   What kind of support has been unavailable to teachers?

5.   ***Ask Q5 only if school has already received test results from state***

a.   Does the state return test results promptly so that you can use them in planning for the next year?

b.   Did teachers here at (*school*) meet to discuss test results?

If yes: —   Please explain the purpose of these meetings.

c.   Is the information provided by the state about (*school's*) scores and how they should be interpreted understandable to you and your fellow teachers?

6.   ***Ask Q6 only of Kentucky schools***

a.   What do you expect will be the trend in your school's test scores and "accountability index" over the next two years?

b.   How have teachers in this school responded to the test results that were released several weeks ago?

c.   Does (*school*) have a strategy for raising the test scores?

d.   How do you motivate students to try and do their best on (*state test*) when there are so few personal consequences for them, but major consequences for the school?

7.   a.   Do you foresee **any major changes** in **curriculum content or instructional strategies** here at (*school*) as a result of (*state assessment*)?

b.   At this point, does (*state assessment*) affect your own teaching in any way?

        PROBES: o   curricular goals

                    o   choice of curriculum content

                    o   sequencing of topics or skills

                    o   instructional strategies, including the way you assess
                           students

                    o   grouping practices

c.   ***Ask Q7c only of those teaching at the grade-levels being tested***

        Are there any students in your class who are having serious problems doing well
        on (*state test*)?

        If yes: —   What is being done to assist these students?

        Finally, I would like to ask you several questions about how you perceive policymakers'
intentions with regard to (*state assessment*), and how you see the assessment relating to other
state and local policies.

8.   a.   What do you think state policymakers expected to accomplish with (*state
                assessment*)?

        b.   Is (*state assessment*) likely to produce the kind of **effects** here at (*school*) that
                state policymakers intended?

9.   a.   In your view, how well does (*state assessment*) relate to other state policies that
                deal with curriculum, school organization, and related student services?

        b.   How well does (*state assessment*) fit with district-level priorities?

        c.   Throughout this interview, we have been discussing (*state assessment*). When you
                think not just about the assessment, but about **all the various, outside
                policies** that impact on your school, whether from the state or the local district,
                which ones exert the **greatest influence on the curriculum** here at (*school*)—
                i.e., on what is taught and how it is taught?

INTERVIEW TOPICS
TEACHERS

Thank you for agreeing to help us again with our study of the implementation of new student assessments. What I would like to do today is to ask you a few questions that follow-up on the discussion we had about the *(state)* at this time last year. Then I will explain the kinds of materials that we would like to collect from you over the next several months.

1. First, as you look back over the past year, **has much changed** in terms of how you, your students, and your colleagues are responding to *(state assessment)*?

   PROBES: o   the **amount of time students spend** preparing for the test (including portfolio pieces in Kentucky)

   o   the **amount of time you spend** related to all aspects of the state assessment, including preparing students, scoring the test, meeting with other teachers or specialists, and implementing new curriculum related to the test

   o   student and teacher **attitudes** toward the assessment

   o   the effect of an additional year's scores on the school's response to the assessment

   o   what the school or individual groups of teachers are doing to **improve the school's scores**

2. a. Last year when we talked you mentioned that the assessment was influencing your teaching in the following ways: *(summarize respondent's answer to #7 on last year's interview guide)*. Have there been any other changes or would your answer be about the same now?

   PROBE: o   whether there have been **any changes related to** implementation of **the state standards and curriculum**

   b. As you think about your teaching since *(state assessment)* was first implemented, are there any strategies or activities that you use which are explicitly intended to prepare your students for the test and that differ from your regular instruction?

3. **Ask Q3 only of mathematics and writing teachers in Kentucky**

   a. What characteristics do you look for in a **portfolio task**?

   PROBES: o   importance of subject matter content

   o   importance of particular skills such as problem solving

   o   whether tasks should focus on content covered in class or contain new topics

   o   student interest

   b. What sources do you use in designing or selecting portfolio tasks?

PROBES: o   proportion of tasks made up by you vs. obtained from other sources

c.   Do the state's scoring criteria ever influence your choice of portfolio tasks?

d.   What are your guidelines for how many times you allow or encourage students to revise their portfolio pieces?

****

Now I would like to describe the kinds of materials that we would like you to provide us between now and the end of the semester.

- *First, make certain that the respondent is teaching the appropriate subject. Then have high school teachers (and middle school teachers where appropriate) select a particular course period and ask them to supply information for only that class. Make it clear to elementary teachers that we are only asking for information in one subject.*

- *Obtain textbook information (including the ISBN number) for all teachers who use texts.*

- *Review the summary guide to instructional materials collection with the respondent,*

  — *the ten consecutive days of data collection—logs, assignments, and pre-printed labels. When to start the process, and how to provide information about assignments from the primary textbook. Why the log forms may seem generic, but stressing that teachers should feel free to write any comments that will help us in understanding their class.*

  — *the collection of all assignments most like the state assessment and all portfolio prompts, to be labeled and sent to us at the end of the semester.*

- *Explain about the honoraria; stress our attempts to minimize burden; and urge daily completion of the logs.*

	NAME
	SCHOOL
	DATE
	COURSE/SUBJECT

1. List the content covered in today's class by briefly describing it or by providing examples.

> **TOPICS**

2. List the most important skills or knowledge that you wanted students to learn from today's class.

> **INTENDED OUTCOMES OF TODAY'S CLASS**

	Just a few minutes		About half the period or lesson		Entire period or lesson
3. What modes of instruction did you use? (for ALL THAT APPLY, circle the approximate amount of time spent on the activity during today's class.)					
Lecture or talk to entire class ………………………………… 1	2	3	4		5
Use manipulatives or audio-visual materials…………………… 1	2	3	4		5
Lead question and answer session……………………………… 1	2	3	4		5
Work with small groups ………………………………………… 1	2	3	4		5
Work with individual students………………………………… 1	2	3	4		5
Review material already presented…………………………… 1	2	3	4		5
Administer a test ……………………………………………… 1	2	3	4		5
Correct or review student work ……………………………… 1	2	3	4		5
Other (please specify) _____					

PLEASE TURN PAGE OVER

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**4. What activities did students engage in during this period?
(For <u>ALL THAT APPLY</u>, circle the approximate amount of time
spent on the activity during today's class.)**

	Just a few minutes		About half the period or lesson		Entire period or lesson
Listen and take notes 1	2	3	4		5
Work exercises at board 1	2	3	4		5
Work with manipulatives 1	2	3	4		5
Collect or analyze data 1	2	3	4		5
Use calculators 1	2	3	4		5
Respond to questions 1	2	3	4		5
Discuss topics from lesson 1	2	3	4		5
Work on computer 1	2	3	4		5
Work individually on worksheets 1	2	3	4		5
Work with other students 1	2	3	4		5
Work on an assignment from another subject (e.g., science, social .... 1 studies) that also involves math	2	3	4		5
Prepare written assignment (e.g., entry in math journal) 1	2	3	4		5
Make an oral presentation 1	2	3	4		5
Work on a long--term project 1	2	3	4		5
Work on next day's homework 1	2	3	4		5

Other (please specify) _____

If there is anything else that you think is important for us to know about today's class, please note it below.

Comments: _____

_____

_____

_____

_____

_____

APPENDIX B

KENTUCKY'S LEARNING GOALS AND ACADEMIC EXPECTATIONS*

The expectations for students are set forth as the six learning goals of KERA. These goals led to the development of the academic expectations that characterize student achievement of the goals. All Kentucky students are expected to achieve the goals and academic expectations.**

1. **Students are able to use basic communication and mathematics skills for purposes and situations they will encounter throughout their lives.**

1.1	Students use reference tools such as dictionaries, almanacs, encyclopedias, and computer reference programs and research tools such as interviews and surveys to find the information they need to meet specific demands, explore interests, or solve specific problems. *[coded for language arts and social studies]*
1.2	Students make sense of the variety of materials they read.
1.3	Students make sense of the various things they observe.
1.4	Students make sense of the various messages to which they listen. *[coded for language arts]*
1.5-1.9	Students use mathematical ideas and procedures to communicate, reason, and solve problems. *[coded for mathematics]*
1.10	Students organize information through development and use of classification rules and systems.
1.11	Students write using appropriate forms, conventions, and styles to communicate ideas and information to different audiences for different purposes.
1.12	Students speak using appropriate forms, conventions, and styles to communicate ideas and information to different audiences for different purposes. *[coded for language arts]*

*Source: Kentucky Department of Education, <u>Transformations: Kentucky's Curriculum Framework</u>, 1995.

**The academic expectations that were used as the basis for coding our sample of mathematics, language arts, and social studies teachers' assignments are indicated by the boxes. The double-line boxes represent academic expectations that were coded as common to all three subjects.

1.13   Students make sense of ideas and communicate ideas with the visual arts.
1.14   Students make sense of ideas and communicate ideas with music.
1.15   Students make sense of and communicate ideas with movement.
1.16   Students use computers and other kinds of technology to collect, organize, and communicate information and ideas.

2. **Students shall develop their abilities to apply core concepts and principles from mathematics, the sciences, the arts, the humanities, social studies, practical living studies, and vocational studies to what they will encounter throughout their lives.**

Science
2.1   Students understand scientific ways of thinking and working and use those methods to solve real-life problems.
2.2   Students identify, analyze, and use patterns such as cycles and trends to understand past and present events and predict possible future events.
2.3   Students identify and analyze systems and the ways their components work together or affect each other.
2.4   Students use the concept of scale and scientific models to explain the organization and functioning of living and nonliving things and predict other characteristics that might be observed.
2.5   Students understand that under certain conditions nature tends to remain the same or move toward a balance.
2.6   Students understand how living and nonliving things change over time and the factors that influence the changes.

Mathematics
2.7   Students understand number concepts and use numbers appropriately and accurately.
2.8   Students understand various mathematical procedures and use them appropriately and accurately.
2.9   Students understand space and dimensionality concepts and use them appropriately and accurately.
2.10   Students understand measurement concepts and use measurements appropriately and accurately.
2.11   Students understand mathematical change concepts and use them appropriately and accurately.
2.12   Students understand mathematical structure concepts including the properties and logic of various mathematical systems.
2.13   Students understand and appropriately use statistics and probability

Social Studies
2.14   Students understand the democratic principles of justice, equality, responsibility, and freedom and apply them to real-life situations.
2.15   Students can accurately describe various forms of government and analyze issues that relate to the rights and responsibilities of citizens in a democracy.
2.16   Students observe, analyze, and interpret human behaviors, social groupings, and institutions to better understand people and the relationships among individuals and among groups.
2.17   Students interact effectively and work cooperatively with the many ethnic and cultural groups of our nation and world.
2.18   Students understand economic principles and are able to make economic decisions that have consequences in daily living.
2.19   Students recognize and understand the relationship between people and geography and apply their knowledge in real-life situations.
2.20   Students understand, analyze, and interpret historical events, conditions, trends, and issues to develop historical perspective.
2.21   (Incorporated into 2.16)

Arts and Humanities

2.22   Students create works of art and make presentations to convey a point of view.
2.23   Students analyze their own and others' artistic products and performances using accepted standards.
2.24   Students have knowledge of major works of art, music, and literature and appreciate creativity and the contributions of the arts and humanities.
2.25   In the products they make and the performances they present, students show that they understand how time, place, and society influence the arts and humanities such as languages, literature, and history.
2.26   Through the arts and humanities, student recognize that although people are different, they share some common experiences and attitudes.
2.27   Students recognize and understand the similarities and differences among languages.
2.28   Students understand and communicate in a second language.

Practical Living

2.29   Students demonstrate skills that promote individual well-being and healthy family relationships.
2.30   Students evaluate consumer products and services and make effective consumer decisions.
2.31   Students demonstrate the knowledge and skills they need to remain physically healthy and to accept responsibility for their own physical well-being.
2.32   Students demonstrate strategies for becoming and remaining mentally and emotionally healthy.
2.33   Students demonstrate the skills to evaluate and use services and resources available in their community.
2.34   Students perform physical movement skills effectively in a variety of settings.
2.35   Students demonstrate knowledge and skills that promote physical activity and involvement in physical activity throughout lives.

Vocational Studies

2.36   Students use strategies for choosing and preparing for a career.
2.37   Students demonstrate skills and work habits that lead to success in future schooling and work.
2.38   Students demonstrate skills such as interviewing, writing resumes, and completing applications that are needed to be accepted into college or other postsecondary training or to get a job.

3.   **Students shall develop their abilities to become self-sufficient individuals.***

4.   **Students shall develop their abilities to become responsible members of a family, work group, or community, including demonstrating effectiveness in community service.***

5.   **Students shall develop their abilities to think and solve problems in school situations and in a variety of situations they will encounter in life.**

5.1   Students use critical thinking skills such as analyzing, prioritizing, categorizing, evaluating, and comparing to solve a variety of problems in real-life situations.
5.2   Students use creative thinking skills to develop or invent novel, constructive ideas or products.

5.3	Students organize information to develop or change their understanding of a concept.
5.4	Students use a decision-making process to make informed decisions among options.
5.5	Students use problem-solving processes to develop solutions to relatively complex problems.

6.   **Students shall develop their abilities to connect and integrate experiences and new knowledge from all subject matter fields with what they have previously learned and build on past learning experiences to acquire new information through various media sources.**

6.1	Students connect knowledge and experiences from different subject areas.
6.2	Students use what they already know to acquire new knowledge, develop new skills, or interpret new experiences.
6.3	Students expand their understanding of existing knowledge by making connections with new knowledge, skills, and experiences.

*Goals 3 and 4 are included in Kentucky stature as learning goals, but they are not included in the state's academic assessment program.

APPENDIX C

NORTH CAROLINA'S COMPETENCY GOALS

Language Arts

COMPETENCY GOAL 1: The learner will use strategies and processes that enhance control of communication skills development.

Reading-Writing-Speaking-Listening-Viewing

Objective 1.1- The learner will apply PREPARATION strategies to comprehend or convey experiences and information.

Focus:
- Apply knowledge of cueing systems (semantic, syntactic, and graphophonic) as appropriate to the nature and purpose of the activity.
- Set personal goals for the task.
- Define and analyze assigned task.
- Anticipate content and organization.
- Relate prior knowledge and personal experiences to topic.
- Generate key words or concepts likely to be used in task.
- Formulate questions to be answered.
- Consider status and intent of source and creator.

Objective 1.2 - The learner will apply ENGAGEMENT strategies to comprehend or convey experiences and information.

Focus:
- Apply knowledge of cueing systems (semantic, syntactic, and graphophonic) as appropriate to the nature and purpose of the activity.
- Give complete attention to the task.
- Skim, scan, and note ideas.
- Search for sense or a "lead."
- Predict outcomes.
- Use personal experience while redefining and composing meaning.
- Review and assess as purpose is defined, clarified, or changed.
- Discuss and make notes.
- Verbalize to "hear" message.
- Use organization conventions as clues to meaning.
- Apply strategies to clarify meaning.

Objective 1.3 - The learner will apply RESPONSE strategies to comprehend or convey experiences and information.

Focus:
- Apply knowledge of cueing systems (semantic, syntactic, and graphophonic) as appropriate to the nature and purpose of the activity.
- Reflect upon the experiences and information.
- Discuss, outline, or summarize new facts, information, or ideas.

- Note agreement or disagreement with ideas presented in the selection or activity.
- Interpret the meaning of, or draw conclusions from, the selection or activity.
- React to language, form, and literary devices.
- Ask and respond to probing questions to clarify earlier responses.
- Identify sources of confusion, problems, differences in interpretation, or new questions that may indicate a need for further study or investigation.
- Assess own performance relative to the purpose.

COMPETENCY GOAL 2: The learner will use language for the acquisition, interpretation, and application of information.

Reading-Writing-Speaking-Listening-Viewing

Objective 2.1- The learner will identify, collect, or select information and ideas.

Focus:
- Identify key words and discover their meanings and relationships through a variety of strategies.
- Identify ways words and concepts are developed.
- Identify the story structure or organizational patterns of the text, speech, or visual.
- Recognize details and concepts related to prior predictions and questions.
- Observe and mentally note or record important information.

Objective 2.2 - The learner will analyze, synthesize, and organize information and discover related ideas, concepts, or generalizations.

Focus:
- Select, reject, and reconcile information and ideas.
- Condense, combine, and order information.
- Create an organizational framework for retaining information.
- Form generalizations based on new information.
- Compare information and ideas.
- Analyze the literary and design elements of information and ideas.
- Classify information and ideas on the basis of attributes.

Objective 2.3 - The learner will apply, extend, and expand on information and concepts.

Focus:
- Use information to clarify or refine understanding of historical or contemporary issues or events.
- Solve problems, make decisions and inferences, or draw conclusions based on interpretation of information.
- Follow or produce directions to create a product or develop an idea based on interpretation of information.

COMPETENCY GOAL 3: The learner will use language for critical analysis and evaluation.

Reading-Writing-Speaking-Listening-Viewing

Objective 3.1- The learner will assess the validity and accuracy of information and ideas.

Focus:
- Distinguish between vague and precise language.
- Distinguish between representations of fact and of opinion.
- Make judgments about the verifiability of information.
- Identify faulty reasoning.
- Evaluate the reliability of a source.
- Evaluate the appropriateness of persuasive techniques.

Objective 3.2 - The learner will determine the value of information and ideas.

Focus:
- Assess scope, comprehensiveness, and significance of information and ideas.
- Determine practicality and usefulness of information or ideas in light of purposes.
- Recognize bias, emotional factors, propaganda, and semantic slanting.

Objective 3.3 - The learner will develop criteria and evaluate the quality, relevance, and importance of the information and ideas.

Focus:
- Analyze the effects of word choice, sentence structure, and organization.
- Make judgments about the clarity, power, and authenticity of information and ideas.
- Evaluate the effectiveness of the development of plot, theme, setting, and characterization.
- Determine how purpose, point of view, tone, and style affect judgment of the product, information, and ideas.
- Evaluate the use of language patterns and literary devices such as figurative language, dialogue, and symbolism.
- Analyze the use of text aids such as headings, captions, titles, and illustrative material.
- Compare the effectiveness of a selection in relation to others.
- Determine the merit of a selection in terms of its timeliness and timelessness.

COMPETENCY GOAL 4: The learner will use language for aesthetic and personal response.

Reading-Writing-Speaking-Listening-Viewing

Objective 4.1- The learner will respond to personal situations and events in selections and to personal situations and events.

Focus:
- Express emotional reactions and personal opinions and relate personal values to a selection or experience.

- Relate story structure, plot, setting, theme, characters to own experiences, feelings, and behaviors.
- Consider the varied, connotative, or symbolic meanings of words and visuals.
- Consider the ways language and visuals bring characters to life, enhance plot development, or evoke a response.
- Consider the effects of rhythm, rhyme, repetition, sensory imagery, and figurative language.
- Consider the use of idioms, dialect, and colloquialism.

Objective 4.2 - The learner will respond to the personal, social, cultural, and historical significance **of selections or personal experiences.**

Focus:
- Recognize a selection or experience as a reflection of its social, cultural, and historical context.
- Associate personal values and beliefs with the content of a selection.
- Consider a selection or experience in the light of situations, conflicts, and themes common to human experience.

Objective 4.3 - The learner will respond critically and creatively to selections or personal experiences.

Focus:
- Participate effectively in creative interpretations of a selection or experience.
- Make relevant, logical, coherent contributions to a discussion.
- Create a product that effectively demonstrates a personal response to a selection or experience.

Mathematics

Grade 3:

COMPETENCY GOAL 1: **The learner will identify and use numbers to 1000 and beyond.**

1.1   Group objects/ model 3 digit numbers; relate models to standard and expanded notations.
1.2   Compare and order numbers less than 1000.
1.3   Read, write, and use whole numbers appropriately in a variety of ways.
1.4   Estimate; approximate multiples of 10 or 100.
1.5   Model odd and even numbers; generalize ways to determine odd or even.
1.6   Model fractions and mixed numbers; describe relationships of parts to whole.
1.7   Relate fractions and mixed numbers to models and pictures for both regions and sets.
1.8   Compare fraction models; describe comparisons and explain different names for the same fractional parts.

COMPETENCY GOAL 2: **The learner will demonstrate and understanding and use of geometry.**

2.1   Classify plane and solid figures; describe rules for grouping.
2.2   Construct with cubes a solid to match a given model or picture.
2.3   Describe a 3 dimensional object from different perspectives.
2.4   Identify and model symmetry with concrete materials, drawings, and computer graphics.
2.5   Investigate congruence with concrete materials, drawings, and computer graphics.
2.6   Observe and describe geometry in the environment.

COMPETENCY GOAL 3: **The learner will demonstrate an understanding of classification, pattern, and seriation.**

3.1   Organize objects or ideas into groups; describe attributes of groups and rules for sorting.
3.2   Describe (demonstrate) patterns in skip counting and multiplication; continue sequences beyond memorized/ modeled numbers.
3.3   Extend/create geometric and numerical sequences; describe patterns.
3.4   Observe/analyze patterns; describe pattern properties and give examples of similar patterns in varied forms.
3.5   Use patterns to make predictions and solve problems.
3.6   Use understanding of seriation in real life situations.
3.7   Explore number patterns with calculators.

COMPETENCY GOAL 4: **The learner will understand and use standard units of metric and customary measure.**

4.1   Estimate length and height; measure with appropriate tools using inches, feet, yards, centimeters and meters.
4.2   Estimate weight in ounces, pounds, grams and kilograms; measure and describe results.
4.3   Estimate capacity; measure with appropriate units (teaspoons, tablespoons, cups, pints, quarts, liters).
4.4   Tell/write time to nearest minute with digital and traditional clocks.
4.5   Use calendar and appropriate vocabulary to describe time and to solve problems.
4.6.   Read Celsius and Fahrenheit thermometers; relate temperatures to everyday situations.
4.7   Model/compare units within the same measurement system.
4.8   Evaluate sets of coins; create equivalent amounts with different coins.

4.9   Estimate costs of items; identify coins/bills for purchase; make change less than $5.00.
4.10   Read/ write given amounts of money in decimal from up to $5.00.
4.11   Explore concept of area by covering figures with concrete materials; describe results of experiments.
4.12   Explore concept of perimeter with non-standard and standard units; explain results.
4.13   Estimate results; solve non-routine and real life problems using measurement concepts and procedures.

COMPETENCY GOAL 5: **The learner will use mathematical reasoning and solve problems.**

5.1   Identify and describe problems in given situations.
5.2   Develop stories to illustrate problem situations and number sentences.
5.3   Solve routine and non-routine problems using a variety of strategies, such as use models and "act out", use drawings, diagrams, and organized lists, use spatial visualization, logical thinking, estimation, guess and check and patterns.
5.4   Explore different methods of solving problems, including using manipulatives, pencil and paper, mental computation, calculators, and computers.
5.5   Describe processes used in finding solutions; suggest alternate strategies/methods.
5.6   Discuss reasonableness of solutions and completeness of answers.

COMPETENCY GOAL 6: **The learner will demonstrate an understanding of data collection, display, and interpretation.**

6.1   Gather and organize data from surveys and classroom experiments, including data collected over a period of time.
6.2   Display data on charts and graphs; summarize and explain information.
6.3   Interpret/make pictographs and bar graphs where each symbol/block represents multiple units.
6.4   Use charts and graphs as sources of information; identify main idea, draw conclusions, and make predictions.
6.5   Locate a designated position using ordered pairs named by letters and numbers.
6.6   Locate points on a coordinate grid; name with ordered pairs.
6.7   Use a time line to display a sequence of events.

COMPETENCY GOAL 7: **The learner will compute with whole numbers.**

7.1   Describe and illustrate the connection between models used to demonstrate multiple-digit addition and subtraction and the algorithms.
7.2   Model subtraction with zeros; estimate results and demonstrate proficiency with 2-digit and 3-digit addition and subtraction.
7.3   Solve meaningful problems using addition and subtraction facts and algorithms; use a calculator in situations involving large numbers and many addends.
7.4   Compute total costs of items up to $5.00 and change from up to $5.00.
7.5   Demonstrate with a variety of concrete models multiplication and division, including properties of multiplication (identity, commutative, associative).
7.6   Memorize multiplication facts/tables: 2's, 5's, l's, 10's, 9's; explore and use other facts with concrete materials: 3's, 4's, 6's, 7's, 8's, 0's.
7.7   Model division with 1-digit divisor as sharing equally and as repeated subtraction; record results.
7.8   Use models to solve real life problems involving multiplication/division.

Grade 4:

COMPETENCY GOAL 1: **The learner will identify and use rational numbers.**

1.1　　Within meaningful contexts express numbers (up to 6 digits) in a　　variety of ways, including oral and written forms using standard and expanded notation.

1.2　　Use models to explain how the number system is based on 10 and identify the place value of each digit in a multi-digit numeral.

1.3　　Compare and order numbers less than one million.

1.4　　In real world situations, discuss when it is appropriate to round numbers; round numbers to an appropriate place.

1.5　　Use regions, sets, number lines and other concrete and pictorial models to represent fractions and mixed numbers; relate symbols to the models.

1.6　　Use models and pictures to compare fractions including equivalent fractions and mixed numbers; explain the comparison.

1.7　　Use models and pictures to demonstrate the value of decimal numerals with tenths and hundredths; show decimals as an extension of the base 10 system.

1.8　　Use models and pictures to compare decimals (wholes, tenths, hundredths) which relate to real world situations; record and read results.

1.9　　Use models and pictures to establish the relationship between whole numbers, decimals, and fractions; describe using appropriate language.

COMPETENCY GOAL 2: **The learner will demonstrate an understanding and use properties and relationships of geometry.**

2.1　　Use manipulatives, pictorial representations, and appropriate geometric vocabulary (e.g. sides, angles, and vertices) to identify properties of polygons and other two dimensional figures.

2.2　　Use manipulatives and appropriate geometric vocabulary (e.g. edges, faces, and vertices) to identify properties of polyhedra and other three dimensional figures.

2.3　　Explore turns, flips, and slides with figures.

2.4　　Make models of line segments and their midpoints, intersecting lines, parallel lines, and perpendicular lines, using materials such as geoboards, paper-folding, straws, and computer graphics.

2.5　　Use a variety of models to illustrate acute, right, and obtuse angles.

2.6　　Relate concrete models of lines and angles to pictorial representations and to examples in the environment.

COMPETENCY GOAL 3: The learner will demonstrate an understanding of patterns and relationships.

3.1　　Identify and describe mathematical patterns and relationships that occur in the real world.

3.2　　Demonstrate or describe patterns in geometry, data collection, and arithmetic operations.

3.3　　Identify patterns as they occur in mathematical sequences.

3.4　　Extend and make geometric patterns.

3.5　　Given a table of number pairs, find a pattern and extend the table.

3.6　　Use patterns to make predictions and solve problems; use calculators when appropriate.

3.7　　Use intuitive methods, inverse operations, and other mathematical relationships to find solutions to open sentences.

COMPETENCY GOAL 4: **The learner will understand and use standard units of metric and customary measure.**

4.1   Select an appropriate unit and measure length (inches, feet, yards, centimeters and meters).
4.2   Weigh objects using appropriate units and tools (ounces, pounds, grams, kilograms).
4.3   Measure capacity with appropriate units (milliliters, teaspoons, tablespoons, cups, pints).
4.4   Identify a model that approximates a given capacity unit (cup, quart, gallon, milliliter, and liter).
4.5   Estimate the number of units of capacity in a given container and check the estimate by actual measurement.
4.6   Compare units of length, capacity, and weight within the same system.
4.7   Explore elapsed time problems using clocks and calendars.
4.8   Use appropriate language and proper notation to express and compare money amounts.
4.9   Use models to develop the relationship between the total number of square units and the length and width of rectangles. Measure perimeter and determine area of rectangles using grids.
4.10   Find the approximate area of regular and irregular figures using grids.
4.11   Formulate and solve meaningful problems involving length, weight, time, capacity, and temperature; and verify reasonableness of answers.

COMPETENCY GOAL 5: **The student will solve problems and reason mathematically.**

5.1   Develop an organized approach to solving problems involving patterns, relations, computation, measurement, geometry, numeration, graphing, probability and statistics.
5.2   Communicate an understanding of a problem through oral and written discussion.
5.3   Determine if there is sufficient data to solve a problem.
5.4   In solving problems, select appropriate strategies such as act it out, make a model, draw a picture, make a chart or graph, look for patterns, make a simpler problem, use logic, work backwards, guess and check, break into parts.
5.5   Estimate solutions to problems and justify.
5.6   Solve problems by observation and/or computation, using calculators and computers when appropriate.
5.7   Verify and interpret results with respect to the original problem. Discuss alternate methods for solutions.
5.8   Formulate engaging problems including ones from every day situations.

COMPETENCY GOAL 6: **The learner will demonstrate an understanding and use of graphing, probability, and statistics.**

6.1   Collect, organize, and display data from surveys, research, and   classroom experiments, including data collected over a period of time. Include data from other disciplines such as science, physical education, and social studies.
6.2   Formulate questions and interpret information orally and in writing including main idea, from charts, tables, tallies and graphs (bar, line, stem and leaf, pictographs, circle).
6.3   As a group, display the same data in a variety of ways; discuss advantages and disadvantages of each form, including ease of creation and purpose of graph.
6.4   Explore range, median, and mode as ways of describing a set of data.
6.5   Name the ordered pair of a point on a grid; plot positions named by ordered pairs on a coordinate grid.
6.6   Use ordered pairs in a variety of engaging situations (e.g. map reading, treasure hunts, games, and designs).

6.7   Show all possible ways to sequence a given set of objects; list and explain all possible outcomes in a given situation.

COMPETENCY GOAL 7: **The learner will compute with rational numbers.**

7.1   Estimate results and solve meaningful problems involving addition and subtraction of multi-digit numbers, including those with two or three zeros. Use a calculator in situations involving large numbers (more than 4-digits) or more than 3 addends.
7.2   Use mental math skills to approximate answers and to solve problems, using strategies such as estimation and clustering.
7.3   Explain multiplication through the use of various models or by giving realistic examples.
7.4   Model and explain division in a variety of ways such as sharing equally, repeated subtraction, and rectangular arrays.
7.5   Memorize multiplication facts and relate to division facts.
7.6   Demonstrate with models special properties of multiplication: commutative, associative, and identity; and the relationship of multiplication and division.
7.7   Estimate results; then solve meaningful problems using the multiplication algorithm with 1-digit times 1- to 3-digits and two 2-digit numbers where one is a multiple of 10.
7.8   Solve division problems with single-digit divisors and no remaining.
7.9   Estimate results; then use calculators and computers to solve problems involving multiple-digit numbers.
7.10   Estimate and use models and pictures to add and subtract decimals, explaining the processes and recording results.

Grade 5:

COMPETENCY GOAL 1: **The learner will identify and use rational numbers.**

1.1   Apply place value skills through millions in real world situations including reading, writing, approximating, and comparing numbers in a variety of forms.
1.2   Demonstrate and explain the relationship among whole numbers, decimals, and fractions using various models and other representations, choosing the most appropriate form for the task.
1.3   Find multiples and factors of a number, explain the process.
1.4   Relate exponential notation to repeated multiplication.
1.5   Decide whether a given number less than 100 is prime or composite; explain.
1.6   In meaningful contexts, name equivalent fractions at the symbolic level. Explain the equivalence.
1.7   In realistic situations use symbols to compare decimals (wholes, tenths, hundredths, and thousandths); explain the comparison.
1.8   Read, write, and use decimals and fractions in various forms.
1.9   Tell whether a fraction is closer to 0, or 1; round a mixed fraction or decimal to the nearest whole number.
1.10   In meaningful contexts compare fractions, explaining the rationale and using common denominators when appropriate.

COMPETENCY GOAL 2: **The learner will demonstrate an understanding and use properties and relationships of geometry.**

2.1   Use concrete and pictorial representations, and appropriate vocabulary to compare and classify polygons and polyhedra.
2.2   Create models of polyhedra (cubes, cylinders, rectangles, prisms, pyramids) using a variety of materials.

2.3   Use designs, concrete models, and computer graphics to illustrate reflections, rotations, and translations of plane figures and record your observations.

2.4   Draw circles with a compass and identify radius, diameter, chord, center and circumference.

2.5   Explore the relationship between radius and diameter-, circumference and diameter.

2.6   Use a protractor to draw and measure acute, right, and obtuse angles.

2.7   Identify and label the vertex, rays, interior and exterior of an angle.

2.8   Use a variety of quadrilaterals and triangles to draw a conclusion about the angles' measures.

2.9   Use geometric concepts and spatial visualization to estimate results and solve problems.

2.10   Explore topics which relate geometry to other strands of mathematics.

COMPETENCY GOAL 3: **The learner will demonstrate an understanding of patterns and relationships.**

3.1   Identify and describe patterns as they occur in numeration, computation, geometry, graphs and other applications.

3.2   Investigate patterns that occur when changing numerators and denominators of fractions beginning with concrete models and extending to calculator investigations.

3.3   Use patterns to solve problems, make generalizations, and predict results.

3.4   Create a set of ordered pairs by using a given rule.

3.5   Given a group of ordered pairs, identify a rule to generate them or new pairs in the group, using calculators or computers where appropriate.

3.6   Model the concept of a variable using realistic situations.

COMPETENCY GOAL 4: **The learner will understand and use standard units of metric and customary measure.**

4.1   Use and make models to demonstrate formulas for areas and perimeters of squares and rectangles.

4.2   Use models to compare units of area within the same system.

4.3   Use models to explore and compare given units of volume (cubic inch, cubic foot, cubic yard, cubic centimeter, and cubic meters).

4.4   Describe and record the relationships between perimeter and area, and area and volume.

4.5   Identify and demonstrate specific relationships of units within the same measurement system.

4.6   Solve problems involving applications of length, weight, time, capacity, temperature, perimeter, and area Check reasonableness of answer.

COMPETENCY GOAL 5: **The student will solve problems and reason mathematically.**

5.1   Use an organized approach to solve multi-step problems involving numeration, geometry, measurement, patterns, relations, graphing, computation, probability and statistics.

5.2   Communicate an understanding of a problem using models, known facts, properties, and relationships.

5.3   Determine if there is sufficient information to solve a problem; identify missing and extraneous data.

5.4   Use appropriate strategies to solve problems such as restate problems, use models, patterns, classify, sketches, simpler problems, lists, number sentences, guess and check.

5.5   In problem solving situations, use calculators and computers as appropriate.

5.6   Verify and interpret the results with respect to the original problem. Identify several strategies for solving a problem.

5.7   Make generalizations and apply them to new problem situations.

COMPETENCY GOAL 6: **The learner will demonstrate an understanding and use of graphing, probability, and statistics.**

6.1   Explain the kinds of decisions that need to be made in constructing graphs.
6.2   Systematically collect, organize, appropriately display and interpret data both orally and in writing using information from many content areas.
6.3   Explore increasingly complex displays of data, including multiple sets of data on the same graph, computer applications, and Venn diagrams.
6.4   Use range, median and mode as ways of describing a set of data and explore the use of statistics in science, social studies, and the media
6.5   Explore proportions by reducing or enlarging drawings using grids.
6.6   Plot points that represent ordered pairs of data from many different sources such as economics, science experiments, and recreational activities.
6.7   Investigate probabilities by experimenting with devices that generate random outcomes (i.e. coins, number cubes, spinners), discussing probable outcomes.
6.8   Use a fraction to describe the probability of an event.
6.9   In a group compare experimental results with (theoretical) expected results for increasingly larger sample sizes.

COMPETENCY GOAL 7: **The learner will compute with rational numbers.**

7.1   Estimate products and multiply 2-digit numbers.
7.2   Explain the division process with 1 and 2 digit divisors.
7.3   Justify, estimate, and solve division problems with divisors that are less than 10 or multiples of 10.
7.4   Explain what happens when zeros are involved in computation.
7.5   Use models to add and subtract fractions with like denominators.
7.6   Estimate results; add and subtract fractions with like denominators in the context of problem solving situations.
7.7   Use models and pictures to find a fraction of a whole number, explain and record results.
7.8   Estimate results and compute sums and differences, with decimal numbers.
7.9   Use models and pictures-to multiply a whole number times a decimal number; record and explain results.
7.10   Estimate and compute products of decimal numbers with 2-digit factors.
7.11   Estimate products of multi-digit decimal numbers; find results with a calculator if exact answer is required.
7.12   Compare whole number remainders in division to decimal remainders when using a calculator.
7.13   Compute averages within a context; use calculator if appropriate.
7.14   Within the context of problem solving situations, add, subtract, and multiply decimal numbers.

Grade 6:

COMPETENCY GOAL 1: **The learner will demonstrate an understanding and use of rational numbers**

1.1   Use models to relate percent to fractions and decimals; record, add, and explain.
1.2   Use models and pictures to demonstrate ratios, proportions and percents; explain relationships.
1.3   Read, write, and use numbers in various forms, including fractions, decimals, percents, and exponential notations, choosing the appropriate form for a given task
1.4   Find the prime factorization of a number less than 100.

1.5 Use prime factorization to investigate common factors and common multiples using a calculator when appropriate.
1.6 Explore relationships among whole numbers, fractions, decimals, and percents using money, concrete models, or a calculator.
1.7 Explore other numeration systems, including ancient number systems and alternate bases.
1.8 Explore the meaning of integers in real-life situations.

COMPETENCY GOAL 2: **The learner will demonstrate an understanding and use properties and relationships of geometry.**

2.1 Build models of 3-dimensional figures (prisms, pyramids, cones, and other solids); describe and record their properties.
2.2 Classify and use angles (interior, exterior, complementary, supplementary) and pairs of lines including skew lines.
2.3 Construct congruent segments and congruent angles. Construct bisectors of line segments; using a straight edge and compass.
2.4 Identify and distinguish among similar, congruent, and symmetric figures; name corresponding parts.
2.5 Recognize the results of translations, reflections, and rotations using technology when appropriate.
2.6 Explore changes in shape through stretching, shrinking and twisting.
2.7 Recognize geometry in the environment (e.g. art, nature, architecture).

COMPETENCY GOAL 3: **The learner will demonstrate an understanding of patterns, relationships and pre-algebra.**

3.1 Represent number patterns in a variety of ways including the use of calculators and computers.
3.2 Use patterns to explore the rules for divisibility.
3.3 Use graphs and tables to represent relations of ordered pairs, using a calculator or a computer where appropriate; describe the relationships.
3.4 Identify and use patterning as a strategy to solve problems.
3.5 Use realistic examples or models to represent concepts and properties of variables, expressions, and equations. (Identity property of zero, Identity property of one.)
3.6 Use the order of operations to simplify numerical expressions, verifying the results with a calculator or computer.

COMPETENCY GOAL 4: **The learner will demonstrate an understanding and use of measurement.**

4.1 Convert measures of length, area, volume, capacity and weight expressed in a given unit to other units in the same measurement system.
4.2 Determine whether a given measurement is precise enough for the specific situation; determine when estimates are sufficient for the measurement situation.
4.3 Explore the relationship of areas of triangles and rectangles with the same base and height. Use models to demonstrate formulas for finding areas of triangles, parallelograms, and circles.
4.4 Explore the effect on area and perimeter when changing one or two of the dimensions of a rectangle.
4.5 Develop the concept of volume for rectangular solids as the product of area of base and height using models.
4.6 Estimate solutions and solve problems related to volumes of rectangular solids.

COMPETENCY GOAL 5: **The student will solve problems and reason mathematically.**

5.1   Use an organized approach to solve non-routine and increasingly complex problems involving numeration, geometry, pre-algebra, measurement, graphing, computation, probability and statistics.
5.2   Analyze problem situations and apply appropriate strategies for solving them.
5.3   Use inductive and deductive reasoning to solve problems.
5.4   Select an appropriate method for solving problems including estimation, observation, formulas, mental math, paper and pencil calculation, calculator and computers.
5.5   Make conjectures and arguments and identify various points of view.

COMPETENCY GOAL 6: **The learner will demonstrate an understanding and use of graphing, probability, and statistics.**

6.1   Create and evaluate graphic representations of data, including circle graphs.
6.2   Use measures of central tendency (mean, median, and mode) and range to describe meaningful data; compare two sets of unequal data
6.3   Display data using computer software and explore the use of spreadsheets.
6.4   Locate ordered pairs in meaningful situations using whole numbers, fractions, and decimals in the coordinate plane.
6.5   Estimate the likelihood of certain events from experiments or graphical data.
6.6   Interpret a statistical statement and discuss the extent to which the results of a sample can be generalized.
6.7   Find probabilities of simple events and discuss the implications.
6.8   Design an experiment to test a theoretical probability; record and explain results.

COMPETENCY GOAL 7: **The learner will compute with rational numbers.**

7.1   Use whole number operations to solve real world applications, demonstrating competence with and without calculators (multiplication and division up to 3 digits by 2 digits).
7.2   Select appropriate strategies solve a variety of application problems and justify the selection.
7.3   Divide decimal numbers, record results and explain procedure (1- and 2-digit divisors).
7.4   Within a context, estimate results and apply appropriate operations with decimals.
7.5   Use models and pictures to demonstrate multiplication and division of fractions and mixed numbers, recording and explaining results.
7.6   Within a meaningful context, use estimation and operations with fractions less than one.
7.7   In problem situations, use estimation and operations with fractions and mixed numbers.
7.8   In meaningful contexts develop the concept of adding and subtracting integers; record results.
7.9   Translate word problems into number sentences that use integers.
7.10   Estimate percents in real world situations and justify the estimate.
7.11   Use mental math to solve problems involving simple fractions, decimals, and percents.
7.12   Relate common fractions to frequently used percents; estimate and calculate using these percents (multiples of 10, 25, 33-1/3, 66-2/3, 75).
7.13   Use ratios and proportions to explore probability and other interesting problems, discussing reasonableness of results.

Grade 7:

COMPETENCY GOAL 1: **The learner will demonstrate an understanding and use of real numbers**

1.1   Use models to represent positive and negative rational numbers.
1.2   Compare and order rational numbers in meaningful contexts.
1.3   Express whole numbers in scientific notation; convert scientific notation to standard form.
1.4   Use exponential notation to express prime factorization of numbers less than 100.
1.5   Within meaningful contexts use estimation techniques with rational numbers; justify the strategy chosen.
1.6   Use geometric models to develop the meaning of the square and the positive square root of a number, estimate square root and find square roots on the calculator.
1.7   In meaningful context, relate concepts of ratio, proportion, and percent.

COMPETENCY GOAL 2: **The learner will demonstrate an understanding and use properties and relationships of geometry.**

2.1   Make constructions of perpendicular and parallel lines using straight edge and compass.
2.2   Use the properties and relationships of geometry to solve problems.
2.3   Use models to develop the concept of the Pythagorean Theorem.
2.4   Identify applications of geometry in the environment.
2.5   Given models of 3-dimensional figures, draw representations.
2.6   Given the end, side, and top views of 3-dimensional figures, build models.
2.7   Graph on a coordinate plane shapes and congruent figures.

COMPETENCY GOAL 3: **The learner will demonstrate an understanding of patterns, relationships and pre-algebra**

3.1   Describe, extend, analyze and create a wide variety of patterns to investigate relationships and solve problems.
3.2   Use concrete materials as models to develop the concept of operations with variables.
3.3   Use concrete, informal and formal methods to model and solve simple linear equations.
3.4   Investigate and evaluate algebraic expressions using mental calculations, pencil and paper and calculators where appropriate.
3.5   Given a simple equation, formulate a problem; solve and explain.

COMPETENCY GOAL 4: **The learner will demonstrate an understanding and use of measurement.**

4.1   Apply measurement concepts and skills as needed in problem solving situations.
4.2   In measurement situations make judgments about degree of precision needed and reasonableness of results.
4.3   Use models to develop the concept and formula for surface area for rectangular solids and cylinders.
4.4   Use models to develop the concept of volume for prisms/cylinders as the product of area of the base and height.
4.5   Use models to explore the relationship of the volume of a cone to a cylinder, and a pyramid to a prism, with the same base and height.
4.6   Estimate answers; solve problems related to volume.

COMPETENCY GOAL 5: **The learner will solve problems and reason mathematically.**

5.1   Use an organized approach and a variety of strategies to solve increasingly complex non-routine problems.
5.2   Use calculators and computers in problem solving situations as appropriate.
5.3   Discuss alternate strategies, evaluate outcomes, make conjectures and generalizations based on problem situations.
5.4   Use concrete or pictorial models involving spatial reasoning to solve problems.
5.5   Identify and solve problems that require proportional reasoning.
5.6   Solve problems involving interpretation of graphs, including inferences and conjectures.

COMPETENCY GOAL 6: **The learner will demonstrate an understanding and use of graphing, probability and statistics.**

6.1   Create, compare, and evaluate both orally and in writing different graphic representations of the same data.
6.2   Construct a box plot (box and whiskers) by ordering data, identifying the median, quartiles, and extremes.
6.3   Evaluate appropriate uses of different measures of central tendency.
6.4   Draw inferences and construct convincing arguments based on analysis of data.
6.5   Investigate and recognize misuses of statistical or numeric information.
6.6   Show all possible outcomes by making lists, tree diagrams, and frequency distribution tables.
6.7   Explain the relationship between experimental results and mathematical expectations.
6.8   Find the probability of simple events using experiments, random number generation, computer simulation, and theoretical methods.
6.9   Use permutations and combinations in applications.

COMPETENCY GOAL 7: **The learner will compute with real numbers.**

7.1   Select appropriate operations, strategies, and methods of solving a variety of application problems using positive rational numbers, and justify the selection.
7.2   Estimate and solve problems using ratios, proportions, and percent, selecting and using appropriate method, explaining the process used.
7.3   Apply concepts of ratio, proportion, and percent to real life situations such as consumer applications, science and social studies.
7.4   Use real world examples or models to represent multiplication and division of integers, record and explain procedures used.
7.5   Use operations with integers in relevant problem situations.

Grade 8:

COMPETENCY GOAL 1: **The learner will demonstrate an understanding and use of real numbers**

1.1   Explore the real number system by describing and using various forms of numbers in realistic situations.
1.2   Use appropriate estimation techniques in meaningful situations; justify the technique.
1.3   Use and explain definitions and laws of exponents to write expressions in equivalent forms.
1.4   Use scientific notation to express whole numbers and numbers less than one, using a calculator when appropriate.
1.5   Investigate irrational numbers and their representations on a calculator as they arise from problem situations.

1.6   Describe the properties of terminating, repeating, and non- repeating decimals and be able to convert fractions to decimals and decimals to fractions.
1.7   Explore the absolute value of a number using the number line.

COMPETENCY Goal 2: **The learner will demonstrate an understanding and use properties and relationships of geometry.**

2.1   Use the Pythagorean Theorem to find the missing side of a right triangle; use calculator when appropriate.
2.2   Solve problems related to similar figures using indirect measures to determine missing sides.
2.3   Draw 3-dimensional figures from different perspectives (top, side, front).
2.4   Graph on a coordinate plane similar figures, reflections, and translations.
2.5   Explore the triangle congruency relationships: ASA, SSS, SAS.
2.6   Explore the relationships of the angles formed by cutting parallel lines by a transversal.
2.7   Solve problems that relate geometric concepts to real world situations.

COMPETENCY GOAL 3: **The learner will demonstrate an understanding of patterns, relationships and pre-algebra**

3.1   Describe, extend, analyze and create a wide variety of geometric and numerical patterns, such as Pascal's triangle or the Fibonacci sequence.
3.2   Identify and define the commutative, associative and distributive properties; give examples and explain their meanings.
3.3   Analyze representations of data with tables, graphs, verbal rules and equations to explore the properties and relationships.
3.4   Using patterns and algebraic methods, solve problems, including those with integers.
3.5   Generate ordered pairs to graph a linear equation with and without a calculator.
3.6   Investigate non-linear equations and inequalities informally.
3.7   Make appropriate substitutions and solve for an unknown.

COMPETENCY GOAL 4: **The learner will demonstrate an understanding and use of measurement.**

4.1   Estimate the answer, then solve complex problems that include application of measurement; determine precision and check for reasonableness of results.
4.2   Determine the number of significant digits and the greatest possible error in measurement situations.
4.3   Select an appropriate unit and tool to find a measurement based upon the degree of accuracy required and the nature of the problem situation.
4.4   Use models and computer graphics to find the surface area of pyramids, prisms, cylinders, and cones.
4.5   Relate perimeter, area, surface area, volume of plane and solid figures.

COMPETENCY GOAL 5: **The student will solve problems and reason mathematically.**

5.1   Use an organized approach and a variety of strategies to solve increasingly complex non-routine problems.
5.2   Use calculators and computers in problem solving situations as appropriate.
5.3   Make and evaluate conjectures and arguments, using deductive and inductive reasoning.
5.4   Investigate open-ended problems, formulate questions, and extended problem solving projects.
5.5   Represent situations verbally, numerically, graphically, geometrically, or symbolically.
5.6   Use proportional reasoning to solve problems.

COMPETENCY GOAL 6: **The learner will demonstrate an understanding and use of probability and statistics.**

6.1   Collect data involving 2 variables and display on a scatter plot; interpret results.
6.2   Compute the mean, interpret it, explain its sensitivity to extremes, and explain its use in comparison with the median.
6.3   Apply knowledge of statistics in problem solving situations, selecting an appropriate format for presenting data.
6.4   Use mathematical probabilities and experimental results for making predictions and decisions.
6.5   Evaluate arguments based on data and investigate reasons why an inference made from a set of data can be invalid (biased vs. unbiased).
6.6   Find the probability of simple and compound events using experiments, computer simulations, random number generation, and theoretical methods.

COMPETENCY GOAL 7: **The learner will compute with real numbers.**

7.1   Select appropriate operations, strategies, and methods of solving a variety of application problems using real numbers, justifying the selection.
7.2   In meaningful contexts, develop the laws of exponents; solve problems involving exponentiation.

Social Studies

Grade 3:

1. The learner will exhibit good citizenship in the classroom, school, and community.

1.1   Identify attributes of good citizenship.
1.2   Cite skills of good citizenship.
1.3   Distinguish between school & community citizenship.

2. The learner will infer that individuals, families, and communities are and have been alike and different.

2.1   Distinguish similarities and differences among children at different times in different places.
2.2   Analyze similarities and differences among families in different times and in different places.
2.3   Assess similarities and differences among communities in different times and in different places.

3. The learner will analyze the multiple roles that individuals perform in families, workplaces, and communities.

3.1   Distinguish among the economic, political, and social roles of children and adults.
3.2   Describe roles performed by children and adults in communities studied.
3.3   Clarify the roles of children and adults in communities that differ from one's own in time and place.

4. The learner will apply concepts of authority, responsibility, and justice in a democratic society

4.1   Cite the need for persons in positions of authority and judge the privileges and limitations of such positions.
4.2   Suggest responsible courses of action in given situations and assess the consequences of irresponsible behavior.
4.3   Suggest fair ways of distributing benefits and burdens.
4.4   Evaluate the procedures for dealing with problems and conclude which are more just.
4.5   Elaborate on selected aspects of the justice system.

5. The learner will evaluate relationships between people and their governments.

5.1   Distinguish between government and non-government bodies in the community.
5.2   Summarize the elective process in the community and distinguish between elected and appointed officials.
5.3   Analyze how individuals and families depend on government services and how governments depend on their citizens.
5.4   Give examples and cite the need for taxes.
5.5   Identify the political subdivisions in which one lives.
5.6   Summarize how governmental services and activities have changed over time.

6.   The learner will evaluate changes in different settings.

6.1   Identify and analyze the changes which have occurred in communities in different settings.
6.2   Assess the impact of change on the lives of people in the communities studied.
6.3   Predict logical future change in communities studied.

7.   The learner will analyze religious and other cultural traditions in a variety of communities.

7.1   Identify and explain the importance of selected persons, patriotic symbols, and public observances.
7.2   Distinguish between secular and religious symbols and explain why secular and religious holidays are celebrated as they are.
7.3   Identify a variety of examples of cultural traditions.

8.   The learner will apply basic geographic concepts and terminology.

8.1   Distinguish among various kinds of maps and globes and suggest their uses.
8.2   Use correct terminology to describe landforms and bodies of water.
8.3   Apply understandings about climate and topography to communities studied.

9.   The learner will apply geographic themes to communities.

9.1   Known absolute and/or relative locations of the local and other communities.
9.2   Understand the concept of place with the context of the local community.
9.3   Identify examples of human-environment interaction in the local and wider communities.
9.4   Apply concepts of movement that link the local and other communities.
9.5   Distinguish the local region from other regions of which it is a part.

10.   The learner will apply basic economic concepts to communities studied.

10.1   Draw relationships between unlimited wants and limited resources and cite examples from communities studied.
10.2   Apply understandings about specialization and division of labor to communities studied.
10.3   State differences and similarities among various means of economic exchange.
10.4   Describe the functions of banks in given communities.

11.   The learner will evaluate the uses of economic resources in different communities.

11.1   Distinguish economic resources of the local community from those of other communities studied.
11.2   Analyze the uses of economic resources in a variety of communities.
11.3   Recognize and explain reasons for economic interdependence in communities and regions.
11.4   Describe the changing uses of a community's economic resources and predict logical future changes.

Grade 4:

1.   The learner will analyze the characteristics of the people of North Carolina.

1.1   Identify locate, and describe ways of living of the major Native American groups in North Carolina, past and present.

1.2   Describe the origins and characteristics of major groups that settled in North Carolina and assess their influence on North Carolina customs.

1.3   Analyze similarities and differences among North Carolina's people, past and present.

2.   The learner will assess the influence of major religions, ethical beliefs, and aesthetic values on life in North Carolina.

2.1   Describe traditional art forms and aesthetic values in North Carolina.

2.2   Identify religious and ethical beliefs that have influenced life in North Carolina and assess the importance of this influence on North Carolina society.

2.3   Analyze the economic, social, and political situations which involve ethical and moral dilemmas.

3.   The learner will locate major physical features and suggest the influence of location on life in North Carolina.

3.1   Describe the absolute and relative location of the state and places within the state.

3.2   Locate in absolute and relative terms major landforms, bodies of water, and natural resources in North Carolina.

3.3   Suggest some influences that location has on life in North Carolina.

4.   The learner will assess the significance of physical and cultural characteristics of regions within North Carolina and the regions of which North Carolina is a part.

4.1   Explain how regions are defined, and identify regions within North Carolina and regions of which North Carolina is a part.

4.2   Describe the major physical and cultural characteristics of regions within North Carolina.

4.3   Compare the physical and cultural characteristics of regions with North Carolina.

4.4   Evaluate the importance of regional differences in North Carolina.

5.   The learner will evaluate ways the people of North Carolina, use, modify and adapt to the physical environment.

5.1   Explain how North Carolinians in the past used, modified, or adapted to the physical environment.

5.2   Describe how North Carolinians now use, modify, or adapt to their physical environment.

5.3   Analyze causes and consequences of the misuse of the physical environment and propose alternatives.

6.   The learner will evaluate the significance of the movement of people, ideas, and goods from place to place.

6.1   Trace the movement of people, goods, and ideas from one part of the state to another and between North Carolina and other places.

6.2   Compare ways in which people, goods, and ideas moved in the past in North Carolina with their movement today.

7.   The learner will judge how well economic, social, and political institutions help the people of North Carolina to meet their needs.

7.1   Explain how economic institutions in North Carolina help people meet their needs.

7.2   Make inferences about how well the economic, social and political needs of North Carolinians are met.

8.   The learner will examine ways North Carolinians govern themselves.

8.1   Identify the major government authorities at the local, state, and national level, and know how they are selected, and state their general areas of responsibility.
8.2   Demonstrate an understanding of the importance of responsible citizenship, and explain ways North Carolinians can participate as citizens.
8.3   Analyze ways North Carolinians deal with questions of justice.
8.4   Analyze relationships among local, state, and national governments.

9.   The learner will evaluate how North Carolinians use economic resources to satisfy their wants and needs.

9.1   Explain the relationship between unlimited wants and limited resources.
9.2   Analyze the choices and opportunity cost involved in an economic decision.
9.3   Categorize the state's resources as natural, human, or capital.
9.4   Assess the use being made of natural resources in North Carolina.

10.   The learner will analyze North Carolina's economic relationships.

10.1   Describe ways in which the economy of North Carolina is interdependent.
10.2   Analyze examples of interdependence in the North Carolina economy and in our economic relationships with other states and nations.
10.3   Evaluate the influence of discoveries, inventions, and technological innovation on economic interdependence.

11.   The learner will assess changes in ways of living over time and investigate why and how these changes occurred.

11.1   Identify and describe changes which have occurred in ways of living in North Carolina.
11.2   Distinguish among political, social, and economic changes.
11.3   Evaluate the effects of change on the lives of the people of North Carolina.

12.   The learner will trace developments in North Carolina history and describe their impact on the lives of people today.

12.1   Identify people, symbols, and events associated with North Carolina's heritage.
12.2   Assess the influence of an important event from North Carolina's past on life today.

Grade 5:

1.   The learner will analyze characteristics of peoples of the Western Hemisphere.

1.1   identify, locate, and describe major groups of people, past and present, in the United States, Canada, and Latin America.
1.2   Describe the similarities and differences among people of the United States, Canada, and Latin America.
1.3   Assess the role and status of individuals and groups in the United States, Canada, and Latin America, past and present.

2. **The learner will assess the influence of major religions, ethical beliefs, and aesthetic values on life in the United States, Canada, and Latin America.**

2.1 Describe evolving arts forms and aesthetic values and assess their influence on life in the United States, Canada, and Latin America.
2.2 Evaluate the influence of beliefs, individuals, and practices associated with major religions in the United States, Canada, and Latin America.
2.3 Analyze economic, social and political situations which involve ethical and moral dilemmas.

3. **The learner will locate major physical features and suggest the influence of location on life in the Western Hemisphere.**

3.1 Describe the absolute and relative location of major landforms, bodies of water, and natural resources in the United States, Canada, and Latin America.
3.2 Analyze the impact of the absolute and relative location of places on ways of living in the United States, Canada, and Latin America.

4. **The learner will assess the significance of the physical and cultural characteristics of regions within the Western Hemisphere.**

4.1 Define region and identify various regions within the Western Hemisphere.
4.2 Compare the physical and cultural characteristics of regions with the Western Hemisphere and within the United States, Canada, and Latin America.
4.3 Describe differences between developed and developing regions in the Western Hemisphere.

5. **The learner will evaluate ways the people of the Western Hemisphere use, modify, and adapt to the physical environment.**

5.1 Explain how people of the Western Hemisphere adapt and have adapted to their environment.
5.2 Describe how the people of the United States, Canada, and Latin America use and modify their physical environment.
5.3 Analyze the causes and consequences of the misuse of the physical environment and propose alternatives.

6. **The learner will evaluate the significance of the movement of people, goods and ideas from place to place.**

6.1 Analyze the movement of people, goods, and ideas within and among the countries of the United States, Canada, and Latin America and between the Western Hemisphere and other places.
6.2 Compare ways in which people, goods, and ideas moved in the past in the United States, Canada, and Latin America with their movement today.
6.3 Judge how changes in the movement of people, goods, and ideas have affected ways of living in the Western Hemisphere.

7. **The learner will judge the extent to which basic cultural institutions of the United States, Canada, and Latin America help people to meet their needs.**

7.1 Elaborate on the proposition that culture is a way of life shared by a group of people.
7.2 Cite examples of the people of the United States, Canada, and Latin America meeting their social ends through family life, education, religion, and other cultural activities

7.3   Assess political and economic institutions in the United States, Canada, and Latin America in terms of how well they enable people to meet their needs.

8.   The learner will examine ways the people of the United States, Canada, and Latin America govern themselves.

8.1   Identify the three levels of government in the United States, and describe their legislative, executive, and judicial functions.
8.2   Analyze how the societies of the United States, Canada, and Latin America deal with issues of justice.
8.3   Describe how government in the United States, Canada, and Latin America select leaders and establish laws.
8.4   Compare the forms of government in the United States, Canada, and Latin American nations and explain how and why they have changed over time.

9.   The learner will determine ways societies in the Western Hemisphere make decisions about the allocation and use of economic resources.

9.1   Categorize economic resources found in the United States, Canada, and Latin America as human, natural, or capital.
9.2   Compare ways resources are used in the United States, Canada, and Latin America.
9.3   Analyze the effects of the unequal distribution of natural resources.
9.4   Describe the characteristics of economies in the United States, Canada, and Latin America and how they have changed over time.

10.   The learner will analyze economic relationships in the Western Hemisphere.

10.1   Describe ways in which the economies of the United States, Canada, and Latin America are interdependent.
10.2   Assess causes and effects of increasing international economic interdependence.
10.3   Evaluate the influence of discoveries, inventions, and technological innovation on economic interdependence.

11.   The learner will assess changes in ways of living over time and investigate why and how these changes occurred.

11.1   Identify and describe changes which have occurred in ways of living in the United States, Canada, and Latin America.
11.2   Identify examples of cultural transmission and interaction within and among the regions of the Western Hemisphere.
11.3   Evaluate the effects of change on the lives of the people of the United States, Canada, and Latin America.

12.   The learner will trace developments in the history of the United States, Canada, and Latin America and assess their impact on the lives of people today.

12.1   Identify people, symbols, and events associated with the heritage of the United States, Canada, and Latin America.
12.2   Associate an event or phenomenon in the history of the United States, Canada, and Latin America with a current situation or practice.
12.3   Trace an economic, political, or social development through the history of the United States, Canada, and Latin America and judge its impact on society.

Grade 6:

1. The learner will investigate the characteristics of peoples of Europe.

1.1 Identify and describe major groups of people, past and present, in Europe including areas formerly in the Soviet Union
1.2 Describe the similarities and differences among the peoples of Europe including areas formerly in the Soviet Union.
1.3 Assess the role and status of individuals and groups in Europe and nations formerly in the Soviet Union, past and present.

2. The learner will assess the influence of major religions, ethical beliefs, and aesthetic values on life in Europe.

2.1 Describe and assess the influence of evolving arts forms and aesthetic values on life in Europe including areas formerly in the Soviet Union.
2.2 Evaluate the influence of beliefs, individuals, and practices associated with major religions in Europe and nations formerly in the Soviet Union.
2.3 Analyze economic, social and political situations which involve ethical and moral dilemmas.

3. The learner will locate major physical features and suggest the influence of location on life in Europe.

3.1 Describe the absolute and relative location of major landforms, bodies of water, and natural resources in Europe including areas formerly in the Soviet Union.
3.2 Analyze the impact of the absolute and relative location of places on ways of living in Europe and nations formerly in the Soviet Union.

4. The learner will assess the significance of the physical and cultural characteristics of regions within Europe.

4.1 Define region and identify various regions within Europe including areas formerly in the Soviet Union.
4.2 Compare the physical and cultural characteristics of regions within Europe including nations formerly in the Soviet Union.
4.3 Distinguish among regions using economic development as the criterion.

5. The learner will evaluate ways the people of Europe use, modify, and adapt to the physical environment.

5.1 Explain how people of Europe including areas formerly in the Soviet Union have adapted to their environment.
5.2 Describe how the people of Europe including areas formerly in the Soviet Union use and modify their physical environment.
5.3 Analyze the causes and consequences of the misuse of the physical environment and propose alternatives.

6. The learner will evaluate the significance of the movement of people, goods and ideas.

6.1 Analyze the movement of people, goods, and ideas within and among the countries of Europe including nations formerly in the Soviet Union and other places in the world.

6.2   Compare ways in which people, goods, and ideas moved in the past in Europe including areas formerly in the Soviet Union with their movement today.
6.3   Judge how changes in the movement of people, goods, and ideas have affected ways of living in Europe including areas formerly in the Soviet Union.

7.   The learner will judge the extent to which basic cultural institutions of Europe help people to meet their needs.

7.1   Elaborate on the proposition that culture is a way of life shared by a group of people.
7.2   Cite examples of the people of Europe including areas formerly in the Soviet Union meeting their social needs through family life, education, religion, and other cultural activities
7.3   Assess political and economic institutions in Europe including areas formerly in the Soviet Union in terms of how well they enable people to meet their needs.

8.   The learner will examine ways the people of Europe govern themselves.

8.1   Describe how different types governments in European countries including nations formerly in the Soviet Union carry out legislative, executive, and judicial functions.
8.2   Analyze how governments in Europe including areas formerly in the Soviet Union deal with issues of justice.
8.3   Describe how governments in Europe including areas formerly in the Soviet Union select leaders and establish laws.
8.4   Compare various forms of government in European nations including areas formerly in the Soviet Union and explain how and why they have changed over time.

9.   The learner will determine ways societies in Europe make decisions about the allocation and use of economic resources.

9.1   Identify economic resources found in Europe including areas formerly in the Soviet Union and explain relationships between the location of natural resources and economic activities.
9.2   Analyze ways resources are used in Europe including areas formerly in the Soviet Union.
9.3   Assess the effects of the unequal distribution of natural resources.
9.4   Describe the characteristics of economic decision-making in Europe including areas formerly in the Soviet Union and how they have changed over time.

10.   The learner will analyze economic relationships in Europe.

10.1   Describe ways in which the economies of Europe including areas formerly in the Soviet Union are interdependent.
10.2   Assess causes and effects of increasing international economic interdependence.
10.3   Evaluate the influence of inventions, discoveries, and innovation on economic interdependence.

11.   The learner will assess changes in ways of living over time and investigate how and why these changes occur.

11.1   Identify and describe changes which have occurred in ways of living in Europe including areas formerly in the Soviet Union.
11.2   Identify examples of cultural transmission and interaction within and among regions in Europe including areas formerly in the Soviet Union.
11.3   Evaluate the effects of change on the lives of people in Europe including areas formerly in the Soviet Union.

12. **The learner will trace developments in the history of Europe and assess their impact on the lives of people today.**

12.1 Identify people, symbols, and events associated with the heritage of European nations including those formerly in the Soviet Union.

12.2 Associate an event or phenomenon in the history of Europe including areas formerly in the Soviet Union with a current situation or practice.

12.3 Trace an economic, political, or social development through the history of Europe including areas formerly in the Soviet Union, judge its impact on society, and predict future changes.

Grade 7:

1. **The learner will investigate the characteristics of the people of Africa and Asia.**

1.1 Identify the origins, characteristics and influences of major groups of people, past and present, in Africa and Asia

1.2 Describe the similarities and differences among peoples of Africa and Asia.

1.3 Assess the role, status and social class of individuals and groups in Africa and Asia, past and present.

2. **The learner will assess the influence of major religions, ethical beliefs, and aesthetic values on life in Africa and Asia.**

2.1 Describe and assess the influence of evolving arts forms and aesthetic values on life in African and Asian societies.

2.2 Evaluate the influence of beliefs, religious practices, and individuals associated with major religions in Africa and Asia and .

2.3 Analyze economic, social and political situations Africa and Asia which involve ethical and moral dilemmas.

3. **The learner will locate major physical features and suggest the influence of location on life in Africa and Asia.**

3.1 Describe the absolute and relative location of major landforms, bodies of water, and natural resources within Africa and Asia .

3.2 Analyze the impact of the absolute and relative location of places within Africa and Asia and .

4. **The learner will assess the significance of the physical and cultural characteristics of geographic regions within Africa and Asia.**

4.1 Define region and identify various regions within Africa and Asia .

4.2 Compare the physical and cultural characteristics of regions within Africa and Asia.

4.3 Distinguish between developed and developing regions in Africa and Asia.

5. **The learner will evaluate ways people in Africa and Asia use, modify, and adapt to their physical environment.**

5.1 Explain how people of Africa and Asia have adapted to their environment.

5.2 Describe how the people of Africa and Asia use and modify their physical environment.

5.3   Analyze the causes and consequences of the misuse of the physical environment and propose alternatives.

6.   The learner will evaluate the significance of the movement of people, goods and ideas.

6.1   Analyze the movement of people, goods, and ideas within, between, and among nations of Africa and Asia and other world areas.
6.2   Compare ways in which people, goods, and ideas moved in the past in Africa and Asia with their movement today.
6.3   Judge how changes in the movement of people, ideas and goods have affected ways of living in Africa and Asia.

7.   The learner will evaluate the extent to which basic cultural institutions of Africa and Asia help people to meet their needs.

7.1   Elaborate on the proposition that culture is the way of life shared by a group of people.
7.2   Cite examples of the people of Africa and Asia meeting their social needs through family life, education, religion, and other cultural activities.
7.3   Assess political and economic institutions in Africa and Asia in terms of how well they enable people to meet their needs.

8.   The learner will analyze how societies in Africa and Asia govern themselves.

8.1   Describe how different types of governments in Africa and Asia carry out legislative, executive, and judicial functions.

8.2   Analyze how societies in Africa and Asia deal with issues of justice.
8.3   Describe how governments in Africa and Asia select leaders and establish laws.
8.4   Compare forms of government in Africa and Asia and explain how and why they have changed over time.

9.   The learner will determine how societies in Africa and Asia make decisions about the allocation and use of economic resources.

9.1   Identify economic resources found in Africa and Asia and explain the relationship between the location of natural resources and economic activities.
9.2   Compare ways economic resources are used in African and Asian countries.
9.3   Analyze the effects of the unequal distribution of natural resources.
9.4   Describe the characteristics of economies in Africa and Asia and how they have changed over time.

10.   The learner will analyze economic relationships in Africa and Asia.

10.1   Describe the effects of interdependence on economies in Africa and Asia.
10.2   Assess causes and effects of increasing international economic interdependence.
10.3   Evaluate the influence of inventions, discoveries, and innovations on economic interdependence.

11.   The learner will assess changes in ways of living over time and investigate how and assess the impact of these changes.

11.1   Describe and analyze changes which have occurred in ways of living in Africa and Asia.

11.2   Identify examples of cultural transmission and interaction within and among regions in Africa and Asia .

11.3   Judge the effect of change on the lives of people in Africa and Asia.

12.   The learner will trace developments in the history of African and Asian nations and judge their impact on the lives of people today.

12.1   Identify people, symbols, and events associated with the heritage of African and Asian nations societies.

12.2   Associate an event or phenomenon in the history of African and Asian societies with current situations or practices.

12.3   Trace an economic, political, or social development through the history of Africa or Asia, judge its impact, and predict future changes.

Grade 8:

1.   The learner will assess the influence of geography on the economic, social, and political development of North Carolina.

1.1   Determine the absolute and relative location of physical and cultural features.

1.2   Describe the physical and cultural aspects of North Carolina places.

1.3   Analyze ways North Carolinians have modified, used, and adapted to the physical environment.

1.4   Trace changes in the movement of people, ideas, and goods at different periods throughout North Carolina history.

1.5   Assess the importance of regional diversity on the development of economic, social, and political institutions in North Carolina.

2.   The learner will evaluate the effects of early contacts between various European nations and Native Americans.

2.1   Identify Native American cultures and evaluate their contributions to North Carolina culture.

2.2   Describe and explain differences between Native Americans and Europeans in their attitudes towards the use of natural resources.

2.3   Describe the influence of trading contacts on relations between Native Americans and Europeans in North America.

2.4   Describe and distinguish among early European explorations in North America.

3.   The learner will analyze important economic, social, religious, and political aspects of life in colonial North America.

3.1   Locate important European settlements in North America and delineate reasons for their settlement.

3.2   Judge the importance of physical geography in the European settlement of North America.

3.3   Analyze the influence of various groups on colonial life in America

3.4   Identify and assess the role of prominent colonial figures.

3.5   Assess the role of ethnic, racial, and religious minorities in colonial society.

4.   The learner will trace causes and evaluate effects of major events and personalities of the Revolutionary War Era.

4.1   Assess the degree of economic and political control exercised from London throughout the Colonial period.

4.2   Elaborate on the major reasons for the American Revolution.
4.3   Judge the role of prominent Revolutionary Era leaders.
4.4   compare the Halifax Resolves with the Declaration of Independence.
4.5   Identify the significance of Revolutionary battles fought in North Carolina and their effect on the outcome of the war in other colonies.

5.   The learner will assess the impact of major events, problems, and personalities of North Carolina and the new nation.

5.1   Assess the severity of problems faced by the new nation and its people after independence was won.
5.2   Analyze the strengths and weaknesses of North Carolina government under the Articles of Confederation.
5.3   Analyze the arguments of prominent North Carolinians for and against the ratification of the Constitutions of the United States.
5.4   Analyze the strengths and weaknesses of the government framed by the Constitutions of the United States, noting the extent to which liberties were granted to various groups.
5.5   Judge the causes and results of the War of 1812.

6.   The learner will assess the role of North Carolina in events of the Antebellum Era.

6.1   Describe the reform movements of the era and judge the extent of North Carolina's participation in them.
6.2   Judge the significance of an emerging two-party system in antebellum North Carolina.
6.3   Analyze the effects of the Constitutional Convention of 1835 on the economic, social, and political life of North Carolina.
6.4   Describe the history and status of minorities and women in the antebellum period.

7.   The learner will trace the causes and events and judge the effects of Civil War and Reconstruction on North Carolina.

7.1   Trace the development of sectionalism in North Carolina and the nation, and analyze the influence of slavery on this phenomenon.
7.2   Describe the efforts of individuals and groups in North Carolina to promote or prevent the dissolution of the Union.
7.3   Analyze the relationships between the governments of North Carolina and the Confederate States of America in terms of North Carolina's contributions to the war effort.
7.4   Describe the strategic strengths and weaknesses of Confederate, Union, and border states.
7.5   Identify and assess the impact of major Civil War campaigns and battles on life in North Carolina.
7.6   Analyze similarities and differences between Presidential and Congressional plans for reconstructing the Union and assess their impact on various groups in North Carolina.

8.   The learner will evaluate the effects of national economic, social, and political change on North Carolina and the South in the late Nineteenth Century.

8.1   Describe basic business organizations developed in the late nineteenth century and assess their impact on North Carolina.
8.2   Describe the national significance of industrialization and rapid population growth and contrast these phenomena to events in North Carolina and the South.

8.3   Evaluate the influence of nationally prominent industrial and business leaders on life in North Carolina and the nation.

8.4   Describe the political climate and the changing alignments of political parties and judge their effects on North Carolina and the nation.

8.5   Analyze the factors that promoted and sustained racial segregation in North Carolina and the South.

9.   The learner will judge the effects of progressivism, war and religious controversy on North Carolina.

9.1   Describe the growth of educational opportunity as it affected all citizens in the state and nation.

9.2   Analyze the role of the state in World War I within the context of the national war effort.

9.3   Trace pressures for and results of Constitutional amendments of the period for both the state and the nation.

9.4   Assess the extent to which North Carolina participated in the reforms of the Progressive Era.

9.5   Judge the effects of religious controversy and social change on North Carolina and the Nation.

10.   The learner will judge the extent to which North Carolina and the Nation shared in the problems of the Great Depression and World War II.

10.1   Link economic conditions in North Carolina to those national and international conditions that brought about the Great Depression.

10.2   Assess the impact of New Deal reforms on economic, social, and political life in North Carolina and the nation.

10.3   Analyze the reasons for the involvement of the United States in World War II and describe North Carolina's contribution to the war effort.

10.4   Explain the impact of the war on various segments of North Carolina society and on the political life of the state.

11.   The learner will judge the continuing significance of social, economic and political changes since 1945 and draw conclusions about their effects on contemporary life.

11.1   Describe the various ways that social change and racial and ethnic diversity affect individuals and groups living in North Carolina.

11.2   Evaluate the importance of technological innovations and advances on the quality of life in North Carolina and the nation.

11.3   Evaluate the major changes and events that have affected the roles of local, state, and national governments.

11.4   Trace major events in the Civil Rights Movement and determine how this movement has changed the lives of North Carolinians.

11.5   Analyze the role of religious pluralism in contemporary economic, social, and political life.