MAINE
EDUCATIONAL
ASSESSMENT

STATE SUMMARY AND INTERPRETATIONS

1987-88

MAINE DEPARTMENT OF EDUCATIONAL AND CULTURAL SERVICES

FOREWORD

Now, after three years of testing by the Maine Educational Assessment, we must take a harder look at results of the assessment and other information pertaining to the effectiveness of our educational programs. At both the state and local levels, consistent patterns of results across years provide a great deal of evidence to support decisions to improve curricula and instruction.

The local school and district MEA reports present a considerable amount of data for program evaluation. An important first step in interpreting local MEA results should be a search for answers to explain them. Four sources of information should be particularly useful for this — local teachers, curriculum guides, the *Guide to the Maine Educational Assessment, 1988-89*, and this *State Summary and Interpretations Report, 1987-88*. The MEA guide explains just what is covered by the MEA instruments in greater detail than in previous years. The summary and interpretations report presents the views and recommendations of the assessment advisory committees based upon their examination of each year's results. Since problems identified locally may well be problems identified statewide, the discussions in this report should be helpful to many.

Educators in Maine all share a common goal — improving the education of our students. Please feel free to call upon the Division of Educational Assessment or any other division within the Department of Educational and Cultural Services for assistance in achieving this go

Eve M. Bither

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Commissioner

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CONTENTS

Background and Introduction

The Maine Educational Assessment, established by the Educational Reform Act of 1984, completed its third year of testing Maine students in grades 4, 8, and 11 during 1987-88. Over the past three years, approximately 135,000 students have been evaluated in reading, writing, mathematics, science, social studies and the humanities as part of this program; the data provide information on individual student performance in reading, writing, and mathematics as well as school and district performance in all six subjects. In addition, results for the three years offer a measure of the change and/or stability in student performance over time.

The MEA tests have been developed specifically for Maine students based on the guidance of advisory committees composed of Maine educators in all subject areas. The tests, which are primarily multiple-choice, are administered during several testing sessions for each grade level: eighth graders take part in the assessment in November, fourth graders are tested in February, and eleventh graders are tested in April of each year. In addition to the multiple-choice questions, students also answer twenty open-ended, or short answer, questions in reading and mathematics and complete one writing sample. The open-ended questions and writing samples are hand-scored by Maine teachers and experienced scorers who have been trained in the standards uniquely developed for evaluating responses to each question or writing prompt.

Student, teacher, and principal questionnaires completed as part of the program provide background information on conditions, attitudes and practices that have been shown to influence learning. Responses to questionnaire items are valuable not only for the raw data they provide, but also for their revealing correlations with test scores.

Extensive information about subgroups of students who participate in the MEA testing program, and their performance by group in various subjects, is presented in Chapter 2. This report also provides an interpretive summary of performance and recommendations from the advisory committees in all subjects, based on three years of test results. Information about performance in specific years is available in the *State Summary and Interpretations Reports* for 1985-86 and 1986-87, and in local school and district reports for each grade level for those years. For a detailed description of the MEA design and test content, the reader is directed to the *Guide to the Maine Educational Assessment, 1988-89.*

The Division of Educational Assessment, part of the Department of Educational and Cultural Services, is responsible for the testing program. Advanced Systems in Measurement and Evaluation, Inc. of Dover, NH is the contractor for the assessment.

School Populations

It is the intent of the MEA, as directed by the legislation, to test many students who may have been excluded from previous testing programs. Exclusions from testing are minimal and well-documented; exceptional students requiring certain testing modifications are included in the program. (Please refer to the *Manual on Policies and Procedures for Students Requiring Assessment Modifications.)*

The numbers and percents of students completing the full test battery and included in the computation of school/district results reports for 1987-88 are:

	Total
Grade 4	14,527 / 94%
Grade 8	14,520 / 94%
Grade 11	15,020 / 97%

The remaining students either took portions of the test, were exempt from testing as special education students, or were absent during the testing period. The testing schedule allowed for the materials to be in the schools for two weeks to accommodate make-up testing.

There are significant achievement differences in the subjects between boys and girls at all levels; these are highlighted in Chapter 2. That chapter also contains additional information on other background factors related to student performance on the MEA tests.

Teacher Questionnaires

Responses to the teacher questionnaires show that Maine's teachers are generally experienced; over three quarters of them at all grade levels have taught for nine years or more, and over half at grade 11 have taught for 15 years or more. Beginning teachers (three years or less of teaching experience) comprise approximately ten percent of the teaching force. Twenty percent of the teachers at grade 4, 35 percent of the teachers at grade 8, and 48 percent of the teachers at grade 11 hold master's or other advanced degrees.

These statistics present both positive and negative consequences for education in the state. While experienced teachers can offer students the benefit of their expertise, new teachers are not being trained in sufficient numbers to replace those who will eventually retire or leave the classroom. One questionnaire item asked about the individual's anticipated primary job in five years; 15 percent of the grade 4 teachers, 25 percent of the grade 8 mathematics and science teachers, and 21 percent of the grade 11 mathematics teachers indicate they will be "outside education" or "retired" in five years. (At grades 8 and 11, that question was asked only of mathematics and/or science teachers.) In addition, secondary principals were asked about problems in securing qualified teachers for different subjects; almost 80 percent said they experienced "some" or "a great deal" of difficulty in filling mathematics and science positions.

Responses to other teacher questionnaire items and their relationship to student achievement are discussed in Chapter 2, and in the succeeding chapters covering each subject assessed in the MEA.

Principal Questionnaires

The principals of Maine's schools are, generally, males who have had extensive classroom experience. Sixty-six percent of the principals at grade 4, 79 percent at grade 8, and 95 percent at grade 11 are male; well over three quarters of the principals at all grade levels have more than ten years' teaching background.

All principals were asked about their role as "instructional leader"—a principal who observes teachers and works directly with them to improve curriculum and instruction. Over one quarter of all principals say they spend more than 30 percent of their time as an instructional leader; almost 40 percent at all grades indicate they spend approximately 20 percent of the work week—or one day per week—in that role.

Well over 80 percent of all Maine schools are located in "small town" or "rural" settings, with populations under 10,000, as reported by school principals. Community support for schools is characterized as "strong" by approximately half the principals at all grades, and as "moderate" by the great majority of the remainder.

As is the case with the student and teacher questionnaires, several items in the principal questionnaires show high correlations with student scores in the MEA. Those items are discussed in the succeeding chapters.

Results for Subpopulations of Maine Students

While later chapters of this report discuss the performance of Maine students within each subject area by focusing on statewide, item-level performance for the past three years, this chapter examines the relative performance of different subgroups of students on total tests and subtests. Some of the factors that are used as a basis for the groupings of students were used in the computation of Comparison Score Bands included in the local school/district results. A school's Comparison Score Band is a range of scores representing the middle fifty percent of schools serving similar populations of students as the school in question. Because the patterns of differences among groups based on some factors are similar across the subject areas, only reading scores are reported in some of the tables discussed below.

In this chapter, reference is occasionally made to school "scaled scores." In the first year of the MEA, 1985-86, the statewide average school score in each subject area was set at 250 with a standard deviation of 50. Because the tests in all subjects except writing were statistically linked across years, their statewide averages have changed somewhat, but not substantially. For a familiar point of reference, readers should think of classroom tests scored on a percent correct basis. Depending on subject and grade level, fifty scale points correspond to between 3 and 5 percentage points. Considering the large number of test questions and students involved in the testing, a difference of such magnitude would be significant.

Selected Background, Program, and Community Variables

Parental Education

At grades 8 and 11, students were asked the level of education attained by their parent with the most education. Year after year, this variable shows a strong correlation with performance and, therefore, is the primary contributor to the computation of Comparison Score Bands. The MEA reading scores for students in groups defined by parental education are shown below. The patterns of scores in the other five subject areas are very similar.

GRADE 8			GRADE 11		
PARENT EDUCATION	% Students	Reading Scaled Score	PARENT EDUCATION	% Students	Reading Scaled Score
Not a high school graduate	6%	110	Not a high school graduate	8%	100
High School graduate	25%	196	High School graduate	38%	187
Some college	21%	275	Some college	17%	286
College graduate	31%	353	College graduate	24%	355
I don't know.	16%	152	Advanced degree	11%	400

ECIA Chapter 1 and Gifted/Talented Programs

School staff members are asked to indicate on every grade 4 and grade 8 student's answer sheet whether the student is in a Chapter 1 program or in a program for the gifted or talented. The question about Gifted and Talented programs was also used at grade 11. The reading scores for these groups are shown below.

	GRADE 4		GRADE 8		GRADE 11	
	% Students	Reading Scaled Score	% Students	Reading Scaled Score	% Students	Reading Scaled Score
ECIA CHAPTER 1 PROGRAM?						
Yes	15%	100	8%	100	—	—
No	85%	267	92%	267	—	—
STATE-APPROVED GIFTED/TALENTED/ENRICH PROG?						
Yes	6%	400	4%	400	3%	400
No	94%	227	96%	237	97%	252

These results are what would be expected. The MEA should not be regarded as a means of evaluating the effectiveness of Chapter 1 and Gifted and Talented programs. Other testing programs are better suited for tracking the year-to-year progress of individual students participating in such programs. Since the assessment is really a survey of group performance at only three points in the educational careers of students and since low and high achievers are selected for those specific programs, MEA scores are more appropriately considered indicators of the effectiveness of the identification procedures for those programs. The Chapter 1 and gifted and talented students should always be at the extremes of the score continuum. Generally, as confirmed by MEA results, the identification procedures are working.

Free Lunch

Principals are asked the percentage of fourth and eighth grade students eligible for free or reduced-price lunch. This information is also used in the computation of Comparison Score Bands because of its association with performance. The school-level scores for reading only are reported below for schools grouped by free lunch information. Again, the results for other subject areas show the same pattern.

% Students Eligible for Free Lunch	GRADE 4		GRADE 8	
	% Schools	Reading Scaled Score	% Schools	Reading Scaled Score
Under 20%	27	260	26	270
21-30%	21	238	23	260
31-40%	19	236	17	231
41-50%	15	227	15	239
Over 50%	15	213	16	214

Community Occupations

Principals were asked to indicate the percentages of their grade 4, 8, and 11 students' families with the primary breadwinners in different occupational categories. This information was used in computing Comparison Score Bands at all three grades. Below are the average MEA reading scores for groups of schools based on percentage of breadwinners in white collar professions (executives, professionals, managers, semiprofessionals, technicians).

% White Collar Breadwinners	GRADE 4		GRADE 8		GRADE 11	
	% Schools	Reading Scaled Score	% Schools	Reading Scaled Score	% Schools	Reading Scaled Score
0-10	52	230	48	231	40	229
11-20	21	231	23	252	26	255
21-30	9	248	13	255	14	279
31-40	8	262	10	283	11	288
Over 40	7	276	5	300	9	330

Size and Type of Community

The state of Maine does not have the range of community types that other eastern states do. For example, the largest urban center, Portland, is not at all similar to Boston, Hartford, Trenton or other large cities in the northeast, in terms of many characteristics. In other words, the populations of students served by different Maine communities are not so variable. The relationship between size or type of community and MEA performance, therefore, is not particularly strong. The reading scores below suggest that areas with populations between 3,000 and 20,000 and/or suburban communities have a slight edge over other communities in terms of MEA performance.

Population of City or Town	GRADE 4		GRADE 8		GRADE 11	
	% Schools	Reading Scale Score	% Schools	Reading Scale Score	% Schools	Reading Scale Score
0-1000	26	231	27	238	11	231
1001-3000	33	238	33	248	24	239
3001-10,000	24	247	26	260	48	276
10,001-20,000	8	244	6	263	9	276
over 20,000	9	239	8	227	8	241
Type of Community						
urban	10	239	5	239	9	242
suburban	8	262	8	264	15	301
small town	32	241	41	249	39	261
rural	50	234	45	244	36	243

Gender-Related Differences in Performance

Over the three years the MEA has existed, clear and consistent patterns of sex-related differences in performance have been reported. By grade 11, girls outscore boys by significant margins in reading and writing, and boys have a decided edge in science, social studies, and math. (These results are consistent with the findings of other testing programs or studies.) Performance of the two sexes in the humanities was close, although girls seem to have a slight advantage. Generally, while differences are greater at grade 11, signs of differential performance between the sexes are seen even in the grade 4 results.

The tables provided later in this section show the differences in average percent correct between boys and girls in all reporting categories or subtests within each subject area. At this point, some discussion of the magnitudes of these differences would be appropriate. On a twenty-question classroom test, a difference between one girl's score and one boy's score of, for example, five percentage points in favor of the girl would seem unimportant. That would correspond to the girl correctly answering one question more than the boy. Furthermore, it would not be too unlikely for the ten girls in a class of twenty students to outscore the ten boys by an average of five percentage points on the same test. However, if on each one of the ten twenty-question tests administered during a marking period the girls outscored the boys by five percentage points, a teacher would suspect the girls in the class were stronger in the subject area than the boys. If that same result (girls outscoring the boys by five percentage points on each of ten twenty-question tests) occurred in every classroom in the state, there would be little doubt of the female edge in the subject. This latter situation is more equivalent to that in the MEA, where approximately 200 test questions are used in each subject area. Furthermore, there are approximately 8000 boys and 8000 girls at a grade level in Maine, making almost any difference in percent correct statistically significant. Actually, only a quarter of the test questions in two areas are taken by all 16,000 students in a grade. The remaining are taken by a true random sample of over 600 girls and 600 boys — still a very large sample for statistical purposes.

Another way of viewing an average difference of five percent would be to consider ways in which that difference could be achieved. For example, each girl could be paired with a boy, forming approximately 8000 girl-boy pairs. If, in every pair, the girl outscored the boy by five percentage points, then the five-point average difference would result. Now, of course, one could form many pairs in each of which the girl scored the same as the boy. If 4000 such pairs were formed (many more could certainly be formed), then in the remaining 4000 pairs, the girls would have to outscore the boys by ten percentage points on the average to achieve the five-point overall difference. Certainly, a ten-point difference in half of the population of students would be reason for concern.

Thus, one must look carefully at differences between large group means on large sets of test questions. These differences cannot be taken as lightly as differences between the scores of two individuals. One advantage of long tests is that they can be broken down further into subtests, the results of which add to our understanding of the overall group differences. The tables on sex-related differences in MEA performance illustrate this. The differences reported in the tables are mostly three-year averages. If some categories were not used in all three years of the MEA, then one- or two-year averages are reported.

Across the various reporting categories for reading and in writing, girls had a fairly consistent edge over boys. It is interesting, however, that the smallest female advantage was demonstrated in content passages — passages that were primarily informational and included, among other things, reading matter related to science and social studies. Boys outscored girls the most in these two content areas. Perhaps the boys did somewhat better here because of prior knowledge, better skills in content reading, or higher interest.

In mathematics, the smallest grade 11 difference, still favoring males, was in computation. Actually, grade 4 and 8 girls outscored the boys in this area, a finding consistent with other studies. The largest difference favoring males was in measurement, with geometry and applications next in line. A substantial difference in measurement occurred even in grade 4.

Science results clearly favored males at all levels. The smallest differences favoring males were in scientific inquiry and life science while the largest differences were in the physical and earth sciences. Course-taking differences could help to explain the larger differences at grade 11, but boys appeared to have a decided edge in the physical and earth sciences in the earlier grades as well. The male advantage was consistent across the different cognitive process levels.

Economics, history, and physical environment (geography) seem to be male strongholds within social studies. Differences were relatively small in political science, process skills, and sociology/anthropology with the small difference favoring females in the latter area.

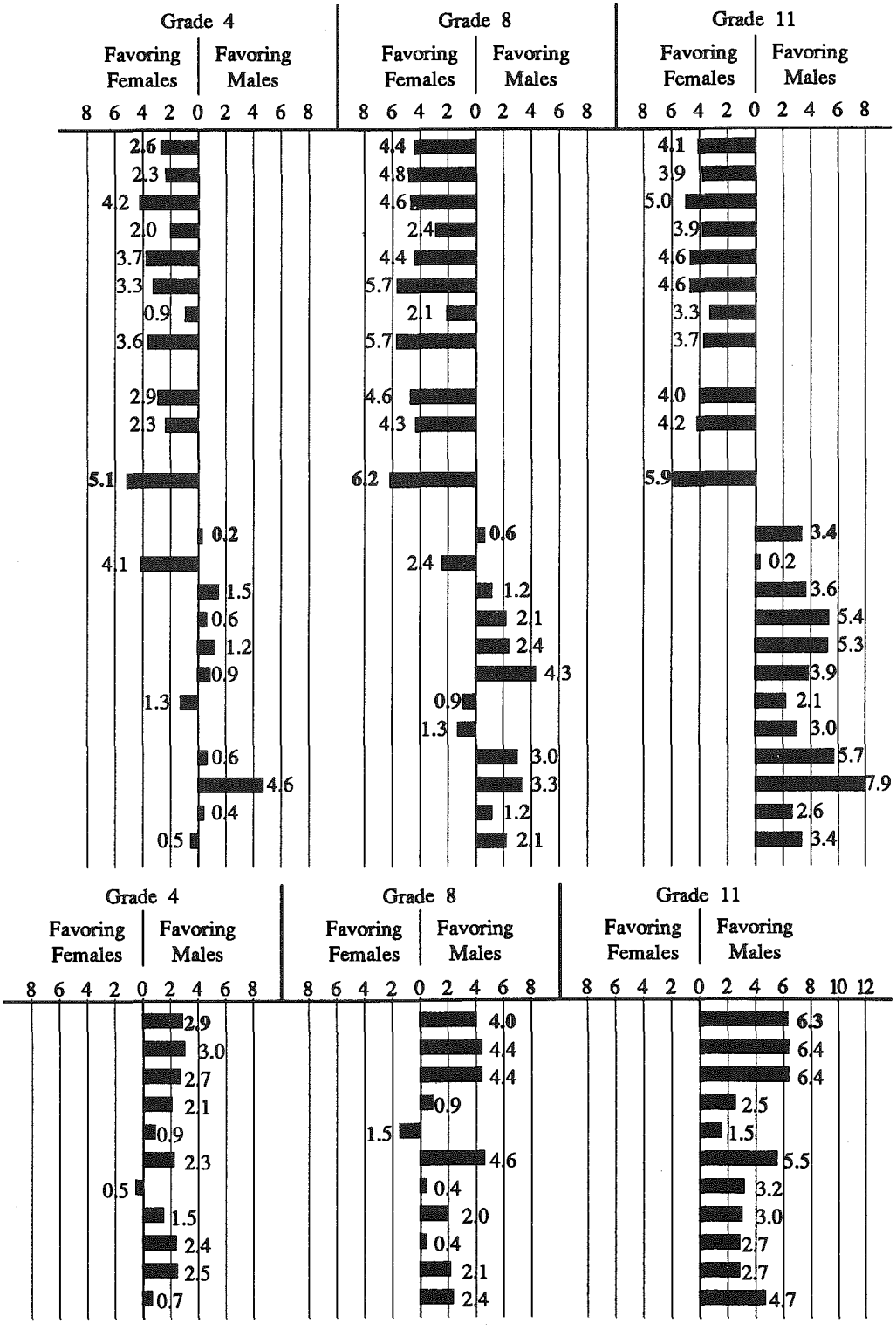
Results in the humanities tended to favor the girls, but the exceptions to this were consistent with findings in other subjects for the most part. Girls did not outscore boys in the visual arts (perhaps a spatial component involved here?) or in social/historical perspectives in the humanities (history already identified as an area in which males have the edge). The largest differences favoring females were in meaning and purpose (requiring interpretation much like reading) and in literature (closely associated with reading).

One other way of looking at sex-related differences in performance is at the school level. Regardless of the magnitude of statewide differences in average percents correct, there are schools in which the differences far exceed the statewide differences. It is possible in any particular year for a group of girls or boys in a school to be particularly strong relative to the other group. Atypical results such as this would, of course, be more likely in smaller schools. However, if MEA results for a particular school show such differences consistently for several years, then there is a cause to examine much more closely the possible reasons for one sex's continued stronger performance in that school.

Distributions of sex-related differences at the school level were examined using 1987-88 grade 8 MEA data. Only schools with at least ten boys and ten girls were used. Obviously, as mentioned above, there were schools deviating from the statewide differences in all subjects. The more dramatic findings, however, were in reading and writing. While the statewide difference favored girls by approximately six percentage points, in over a third of the schools girls outscored boys by eleven percentage points or more. In one school out of ten, the difference was fifteen percentage points or more. In fifteen percent of the schools, boys outscored girls in reading.

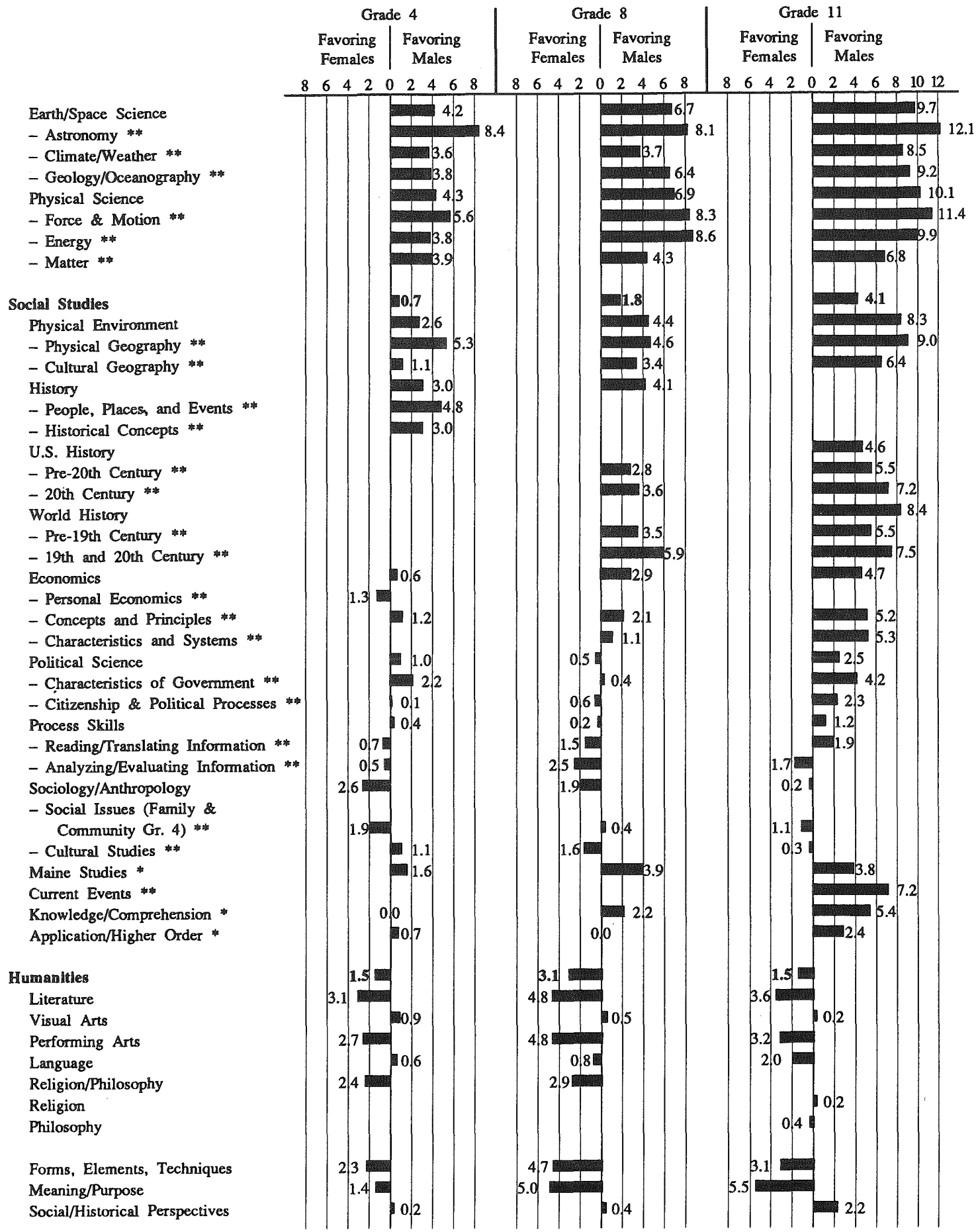
In most of the subjects assessed in the MEA, there was a fair number of schools that showed departures from the statewide results in sex differences in performance. However, in writing, only one percent of the schools showed a difference in writing favoring males.

Sex-Related Differences in Average Percent Correct#



* 2nd & 3rd year only ** 3rd year only

For writing samples, differences represented are differences in percent of total possible points instead of percent correct.



* 2nd & 3rd year only ** 3rd year only

⁰ For writing samples, differences represented are differences in percent of total possible points instead of percent correct.

Results for College-Bound and Non-College-Bound Eleventh Graders

The relationship between MEA performance and the likelihood that grade 11 students are "college-bound" was examined in several ways, all yielding similar results. In an effort to standardize the identification of students in college preparatory programs in all schools, school staffs indicated on each student's answer sheet whether the student, upon graduation, will have met the requirements recommended by the National Association of College Admission Counselors (NACAC) for admission to four-year colleges. The specific question asked was, "Upon graduation, will this student have completed ALL THREE of the following: (1) Chemistry or Physics, (2) Geometry or Algebra II, and (3) at least two years of the same foreign language?" In a table provided later in this section, the group of students for whom the answer was "yes" are referred to as "College Prep." Average MEA scores were computed for "College Prep" and "Not College Prep" students. Similarly, scores were computed for groups of students based on their previous backgrounds or plans regarding particular courses considered individually. The results, of course, were as expected and consistent with the findings for the college prep groups defined above. Finally, students were asked about their post-high-school plans (i.e., full-time job, trade or vocational school, 2-year college, 4-year college, or armed services). Results were computed separately for the five groups of eleventh graders based on responses to this question.

MEA SCORES (Percents Correct) FOR STUDENTS IN AND NOT IN COLLEGE-PREP (NACAC Recommended) PROGRAMS

	Males		Females	
	College Prep	Not College Prep	College Prep	Not College Prep
Percentage of Males/Females	38	62	43	57
Average Percent Correct				
Reading	83	61	85	66
Writing	75	60	76	65
Math	76	51	71	47
Science	73	56	66	49
Social Studies	78	60	72	56
Humanities	73	55	73	55

MEA SCORES (Percents Correct) FOR GROUPS OF STUDENTS WITH DIFFERENT POST-HIGH-SCHOOL PLANS

	Male					Female				
	Full Time Job	Trade/ Voc. School	2-Yr. College	4-Yr. College	Armed Svcs.	Full Time Job	Trade/ Voc. School	2-Yr. College	4-Yr. College	Armed Svcs.
Percentage of Males/Females	15	18	8	45	14	14	10	20	53	3
Average Percent Correct										
Reading	54	59	67	81	63	60	64	68	83	66
Writing	56	59	64	73	61	61	64	66	75	65
Math	44	51	55	73	52	43	45	49	67	46
Science	52	56	59	71	58	46	48	50	63	51
Social Studies	54	59	64	77	62	50	55	57	70	56
Humanities	48	53	59	72	58	51	54	57	70	56

The results depicted in the two tables above are relatively self-explanatory. Readers should direct their attention to the differences in scores between the various program and aspiration groups and also to the different numbers of males and females in the groups. Interestingly, more girls than boys will be satisfying the NACAC-recommended college admissions requirements, but that makes sense considering the larger numbers of boys planning on entering trade/vocational schools or the armed services.

Several points need to be made regarding the magnitude of differences between the scores of college-bound and non-college-bound students. Scaled scores for these two groups reported in the local school reports are near the opposite extremes of the range of scaled scores used in the MEA. This is indicative of substantial differences in the performance of the two groups. However, the non-college-bound group's scoring near the bottom of that range should not be taken to mean that group answered few questions correctly. The percents correct reported in the tables above show that these students, on the

average across the subject areas, answered almost sixty percent of the questions correctly. The college-bound group scored almost twenty percentage points higher on the average. Thus, while the average performance levels of the groups are indeed substantially different, the non-college-bound students did not perform at the lowest possible level. Furthermore, score distributions show that even though the average scores for this group are lower than those for the college-bound students, there is a broad range of scores represented in this group, distributed approximately normally around the group average. In other words, some non-college-bound students do very well on the MEA instruments.

The large difference in the results for the two groups should still be a concern for Maine educators since the test instruments are clearly not designed for the most able students. Very few questions requiring advanced high school course work are included in the assessment. Furthermore, test questions addressing basic skills and important consumer concepts and problems generally yield performance differences of the same magnitude as the overall differences. Score distributions further illustrate the "general-student orientation" of the tests. The non-college-bound distributions are centered near the middle of the range of possible scores and are close to normal. The college-bound distributions, because the tests were quite easy for the stronger students, show a ceiling effect with many of the college-bound students clustered near the top of the range of scores. Thus, the MEA tests were not difficult enough to discriminate as finely among the better students as they do for the non-college-bound students.

READING:

Interpretive Summary of Results

How is the reading portion of the MEA developed?

The Reading Advisory Committee, composed of Maine educators involved in language arts instruction at the school, district, state and university levels, guides the development of the assessment. In its effort to develop a reading test that reflects and encourages effective reading instruction, the advisory committee has initiated key departures from traditional reading assessment. A list of past and present members of the Reading Advisory Committee appears in the Appendix.

How do the MEA's reading objectives differ from traditional reading objectives?

Traditional reading objectives reflect a narrow view of reading that emphasizes specific skills and ignores the reader's active role in constructing meaning from a passage. The reading portion of the MEA is designed to assess student performance on two broad objectives: 1. The student comprehends what is read. 2. The student manages the reading experience. The MEA's broad reading objectives allow the flexibility to pose questions prompted naturally by passages rather than being bound to a rigid quota of specific skills. The MEA's attention to reading management recognizes the role of the reader's prior knowledge and repertoire of reading strategies in comprehension. These broad objectives are consistent with recent views of reading as a holistic and interactive process by which readers construct meaning both from the passage and from the various kinds of background knowledge they bring to the passage.

How do the reading passages in the MEA differ from those found in traditional reading tests?

The passages selected for the MEA reflect the committee's belief that a reading test should be based on real-life reading tasks students encounter in their classrooms and personal lives. MEA passages often include pictures and graphics, and many are much longer than those found in traditional reading tests. Each passage is introduced by a carefully worded purpose-setting statement, designed to activate relevant prior knowledge and provide a focus for reading. Every effort is made to choose quality passages which represent the range of reading experiences in the literary, content and practical areas.

What kinds of items are used to evaluate students on the MEA reading test?

Individual student scores are based on the student's response to forty multiple-choice and ten open-ended questions. The open-ended items require students to generate their own responses rather than select from a multiple-choice menu. The open-ended portion of the test is an ideal place to ask comprehension and management questions which encourage and allow for divergent thinking and prior knowledge, and those which require higher-order and critical thinking skills.

What have we learned about the ability of Maine students to comprehend what is read?

1. Three years of results have confirmed that students do well in responding to literal and many types of inferential questions based on simple text. More revealing, however, is the impact of student interest and prior knowledge on the ability to comprehend more challenging text. Students often exceed our expectations in comprehension when challenging text offers readers opportunities to link what they already know to information in the text.
2. The challenge of longer passages is not necessarily a barrier to comprehension. Especially when longer passages appeal to students' interest and experience, the substantive nature and inherent cohesiveness of longer text appear to enhance comprehension.
3. Fourth graders often do not perform well when asked to identify the theme of a passage; however, performance improves over grades as students apparently have more experience with text substantial enough to have a theme. Fourth graders are more successful in responding to theme questions based on longer, richer text.
4. Students perform well on questions asking them to infer the feelings, personality, or motivations of characters.
5. Students do not perform well on questions requiring them to analyze evidence in several parts of a passage and then synthesize that evidence to evaluate an answer.

   The following fourth grade item is based on a passage from the book, *The Turtle Street Trading Company*, which tells the story of Morgan, a boy who comes up with a great idea for a business. The item requires students to analyze and evaluate Morgan's thoughts throughout the passage concerning friends' reactions to his idea.

Percent of Students	Whose opinion does Morgan seem to value the most?
11	A. Sanford's
17	B. Mikey's
29	C. P.J.'s
42	* D. Fergy's

6. Student performance on open-ended comprehension items seems to be affected more by the nature of the question than by the demands of the open-ended format. Remarkably similar results are often observed when the same question is presented in both a multiple-choice and an open-ended format. Responses to open-ended questions are scored with respect for divergent thinking which can lead to several plausible answers. This opportunity for divergent thinking probably enhances the performance of some students on open-ended comprehension items.

What are the instructional implications of the trends we have observed in reading comprehension?

1. Teachers can enhance comprehension by activating prior knowledge and by making students more aware that what they already know can help them to understand what they read.
2. Students appear to benefit from opportunities to interact with longer, more substantial, and complete text. Results from the grade 8 teacher questionnaire seem to support the positive effect of experiences with complete texts on reading comprehension. The question, "Which of the following kinds of materials forms the basis for the majority of the instruction in your reading program?", yielded the following results. The numbers in parentheses are student scaled scores.

   22% middle school basals (238)
   27% literature anthologies (245)
   20% novels/nonfiction tradebooks (265)
   13% student-selected individualized reading (251)
   2% We have no formal reading instruction (218)

3. Students need more opportunities to stretch and refine their thinking skills by responding to challenging questions requiring the analysis, synthesis, and evaluation of evidence.
4. Students who have difficulty with analysis, synthesis, and evaluation may benefit from teacher modeling of the thinking processes used to arrive at answers to challenging questions. When the teacher models mental processes by thinking aloud, the invisible reasoning used by good readers becomes visible. If students are conscious of the reasoning involved, they may be able to access and apply similar reasoning when it is demanded by future reading situations.
5. To help students to accept responsibility for their own reasoning, the teacher's mental modeling should be balanced with opportunities for students to discuss, model, and gradually apply their own reasoning skills to reading situations.
6. Students may also benefit from opportunities to explore and monitor their own thinking and ideas about their reading through response journals and reading logs.

What have we learned about Maine students' awareness of and ability to apply reading strategies?

1. Student performance in selecting reading strategies appropriate for different reading tasks is mixed. While students employ strategies appropriate for practical text such as recipes and manuals, they do not readily adjust their reading approach to appreciate description or the dialogue in fiction.

   In the item below, eighth graders were asked to select the best way to appreciate an E.B.White essay rich in description. Nearly a third of the students clearly chose a strategy more appropriate for a testing situation rather than a strategy amenable to appreciating E.B. White's description.

Percent of Students	To appreciate an essay such as "Coon Tree," the reader should
47	* A. read to enjoy the descriptive language.
7	B. skim the essay rapidly to identify the main ideas.
9	C. read the essay quickly several times to better understand it.
33	D. read and summarize at the end of each paragraph.

2. Student performance is not strong in selecting appropriate strategies to solve comprehension problems. For example, when asked to search longer text for specific information, students demonstrate a tendency to choose obvious answers rather than sustaining their inquiry and confirming their answers.

   An eleventh grade item required students to search a long passage for clues to help them select an organization which would most likely oppose a particular action concerning beached whales. Rather than searching, 43 percent selected an option referring to an organization which is never mentioned in the article, but which seems correct based on the question. The follow-up item below asked students to evaluate the strategy they used to select an organization. The results may provide some insight into students' tendency to choose obvious answers without confirming them.

Percent of Students	The best strategy to use in answering the question above is to
50	* A. scan the article for the names of the organizations.
8	B. carefully reread the entire article.
34	C. use clues in the organizations' names to make your choice.
8	D. rely on the knowledge you had before you read the article.

3. Students perform well on questions assessing their understanding of overall purposes in passages.

4. Students perform reasonably well on questions assessing their understanding of authors' purposes in structuring passages in particular ways, such as the purpose of introductory, transitional, and concluding paragraphs.

5. Students demonstrate some difficulty with questions evaluating their understanding of authors' more subtle choices concerning content, style and tone. Student performance steadily increases between grades 4 and 11. Eleventh graders perform quite well on questions concerning style and tone; however, failure to recognize sarcastic humor seems to persist into the high school level.

   When eighth graders were asked to characterize the tone of an entertaining story with an ironic twist, only 45 percent recognized the lighthearted mood of the story. Thirty-five percent of the students selected the "serious" option.

6. Students perform reasonably well on questions asking them to identify the purpose of graphic aids such as pictures, maps and graphs used in conjunction with reading passages. Students also demonstrate an understanding of the purposes of study aids such as questions at the end of textbook chapters. Fourth graders appear to be less familiar with the purposes of study aids in expository text. This unfamiliarity is understandable considering their relatively short exposure to textbooks.

7. Student performance on items asking about the purpose of text cues such as boldface type, quotation marks and italics is mixed. Students across grades demonstrate a good understanding of the use of boldface for emphasis and organization. Students do not appear to be as familiar with the range of uses for italics and quotation marks.

8. Student performance on open-ended strategy items is generally poorer than performance on similar strategy questions presented in a multiple-choice format. Students can sometimes recognize or apply appropriate strategies, but they apparently lack the language to discuss them.

   Comparing results on a multiple-choice and an open-ended item evaluating eighth graders' ability to determine the point of view in a novel reveals this trend. When a multiple-choice format was used to ask students, "Who is telling this story?," 73 percent of the students responded correctly. When an open-ended format was used to ask, "Please explain the thinking strategy you used to figure out who is telling this story," only 58 percent of the students were able to articulate their thinking strategy.

What are the instructional implications of the trends in student performance on items assessing their awareness and understanding of reading strategies?

1. Students need to be aware that effective readers use a variety of reading strategies, depending on the purpose for reading and the nature of the text. Strategies that may need more emphasis include visualizing characters and descriptions, skimming and scanning, recognizing when they don't understand, and rereading for clarification or to confirm their answers.

2. Students' reading comprehension can benefit from teacher modeling and discussion of varying strategies in response to the different demands of texts across the curriculum. The teacher's mental modeling of reading strategies may move students closer to an understanding of the flexible thinking used by good readers in their approach to different reading tasks.

3. Students may also benefit from more opportunities to respond to open-ended questions which ask them to think about their thinking processes and problem-solving strategies.

4. Students' reading comprehension may benefit if they are asked to become writers. Their role as writers may make them more sensitive to authors' purposes, choices, and techniques.

What have we learned about Maine students' reference skills?

1. Students perform reasonably well on items assessing their understanding of distinctions among genres. Fourth graders appear to be less familiar with the characteristics of nonfiction; however, students demonstrate a steady increase in their understanding of genre characteristics across the grades.

   When fourth graders were asked to identify the probable source of a nonfiction article about the Loch Ness monster, only 44 percent chose the correct option, "a science magazine." Twenty-six percent of the fourth graders chose "a book of fairy tales," 19 percent chose "a history book," and 11 percent chose "a biography."

2. Students across grades perform well on questions asking where they would look to find specific types of information when the appropriate sources are those most commonly used, such as the encyclopedia and the card catalog. Eighth and eleventh grade performance often fails to demonstrate the expected growth in students' knowledge of sources for current information such as *The Reader's Guide to Periodical Literature.*

3. Students do not perform well on cross-referencing questions which require scanning columns of dense print such as those found in indexes or manuals.

What are the instructional implications of the trends observed in student performance on items assessing reference skills?

1. Early elementary students would appear to benefit from more exposure to a wide range of nonfiction and discussions of the characteristics that distinguish nonfiction from fiction.

2. Across the grades, students' ability to pursue information may benefit from exposure to the wealth of resources that exist beyond the card catalog and the encyclopedia. They would also appear to benefit from more experience in evaluating and understanding which resources best serve specific purposes.

3. Students may benefit from teachers of varying subjects modeling demanding cross-referencing skills across the curriculum.

What have we learned about the relationship between teachers' professional development and the reading performance of their students?

Three years of teacher questionnaire results have provided some insight into the kinds of teachers' professional development that correlate positively with the reading performance of their students:

- membership in professional language arts organizations;
- attending professional language arts conferences;
- visiting exemplary language arts classrooms to observe new methods of reading instruction;
- participating in language arts in-service activities provided by district teachers.

Conclusion: Students' reading performance appears to benefit from their teachers' involvement in professional organizations and from teachers' opportunities to share effective instructional techniques with their peers.

What have we learned about the relationship between the home and community environment and the reading performance of students?

Responses to questions on the student, teacher, and principal questionnaires show the following home and community factors correlate positively with students' reading performance:

- Students read at home for pleasure at least two or three times a week.
- Reading materials such as newspapers and magazines are available to students in the home.
- Students use the school or local library at least once a month.
- More than half of the parents in a school show an interest in their children's schoolwork by visiting the school at times beyond those scheduled for regular parent-teacher conferences.
- Community support for the school or school programs is strong.

Conclusion: Students' reading performance appears to be enhanced by supportive environments rich in opportunities for reading.

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WRITING:

Interpretive Summary of Results

Background: Three Years of Writing Assessment

Since the fall of 1985, all Maine students in grades 4, 8, and 11 have been asked to produce one or more writing samples in response to specific writing topics or "prompts." These pieces were then read and scored by Maine teachers, using the techniques of analytic scoring. All essays were read by two readers and scored in the following categories: **topic development, organization, details, sentences, wording, and mechanics.** If the two scores in any category differed by more than one point, a third reader, usually the table leader, read the paper and decided on the final score in that category. (Please refer to the Analytic Scoring Guide printed at the end of the 1986-87 report for a complete description of the categories.)

Both the writing prompts and the analytic scoring guide used to evaluate them were developed by the MEA Reading/ Writing Advisory Committee, a group composed of Maine educators from classrooms and universities across the state, as well as state department personnel. (See Appendix for a list of committee members.)

During the past three years, over 1,300 teachers and administrators have participated in writing scoring sessions at the Hinckley School, in Hinckley, Maine, with important consequences for student writing. Many remark about the benefits of meeting their colleagues from across the state and having the opportunity to share ideas and common problems. They comment that they enjoy reading a wide range of student writing, as it provides perspective on their own students' performance. Rather than seeing the scoring as a chore, many participants look forward to coming back to renew old ties and make new friends. Finally, most return to their schools excited about writing and with renewed enthusiasm for teaching.

Teachers, administrators, and state department personnel who have been involved in the scoring of Maine writing for the past three years have observed improvements in student writing at all three grade levels. Not only are the students writing longer pieces, but they are writing better ones. Papers read this year, in the third year of the program, are more imaginative, more fluent and fully developed, exemplify more diverse writing styles, and are better crafted and organized than they had been in the first year of the program. There are several possible reasons for this improvement: (1) schools are beginning to take the MEA more seriously, encouraging their students to put forth their best efforts; (2) more emphasis is being placed on writing in the curriculum; and (3) teachers are learning more about the teaching of writing.

Unfortunately, this improvement may not be readily apparent in the test scores. The problem is in trying to equate writing scores from year to year. In order to do this accurately, conditions need to remain the same from one year to the next, and this was not possible or desirable. The first year of the program, all students wrote two pieces that were scored in the six categories mentioned above, on a scale from 1 (low) to 4 (high). The following year, to provide more detailed information, the analytic scoring guide underwent major revisions within the six categories, and the students were rated on a scale from 1 to 6. The third year, the scoring procedures remained essentially the same as the previous year, but half the students wrote on one prompt and the other half wrote on another prompt. The various changes were deliberate and necessary, both from a practical standpoint and in terms of what current writing research was saying, but they make statistical equating impossible.

However, that doesn't mean we cannot draw any conclusions about how students write, how teachers teach writing, and how parents and the community perceive writing. Besides anecdotal reports from those involved in the testing and scoring of writing, we have collected data from student, teacher, and principal questionnaires from the past three years and can make some statements about what seems to be working and what needs improvement. We can also look at what fifteen years of research has been saying about the teaching of writing and the encouragement of student writers.

Student Writing Performance – 1987-88

During the third year of the MEA, students at all three grade levels produced one writing sample in response to a specific writing prompt. Two writing prompts were administered at each grade, with half the students responding to prompt #1 and half responding to prompt #2. Students were not allowed to choose between the two prompts. Rather, the odd-numbered test forms (1, 3, 5, etc.) contained prompt #1 and the even-numbered forms contained prompt #2. As in the first two years, students were given about 60 minutes to write their essays, with more time to finish if necessary. Students could structure their own time and choose whether to write a rough draft. Only the final draft was evaluated by the readers who scored the tests.

Grade 4:

Prompt #1 asked students to write about a special present that they would choose for someone, elaborating on their reasons for choosing this particular gift for that particular person. Students were generally more successful in describing their special present than in explaining about the recipient.

The second prompt asked students to write about a time when they experienced a strong emotion (happy, scared, excited or surprised). Many students wrote extensive narratives about family holidays or trips, getting lost, or being left alone. Although their stories were interesting, some students misread the prompt and tried to incorporate all four emotions into their papers or did not convey any emotion. Overall, the students performed about equally well on both prompts.

Grade 8:

Eighth graders who responded to prompt #1 were told that their grandmother had left them a trunk containing something they had always wanted. They were asked to write about what they found so that the reader would understand why it was special to them. It was amazing to discover how many grandmothers would leave fancy imported sports cars and millions of dollars to their grandchildren.

Prompt #2 asked students to write about a special place, describing what it looks like and why they like to go there. Many students echoed the prompt's suggestions and wrote about the beach, a park, their backyard, or their rooms. The students seemed comfortable taking risks by using a diversity of writing styles in response to the prompt. Some students used poetry to describe their special place, while others wrote fantasies about mythical kingdoms or dreamlands. In general, student scores were slightly higher on the second prompt, perhaps because the writing situation was more concrete and less hypothetical than the one for the first prompt.

Grade 11:

A similar difference in difficulty was noticed at the eleventh grade level, with prompt #1 posing a more cognitively demanding task. Students were asked to write about a future change and its effects on society and the individual. Popular topics included computers, nuclear war, AIDS, travel, and the environment. Some students described current technology rather than a future change, while others had difficulty describing how the change would affect society. To compensate for the difference in difficulty, students writing on prompt #1 were allowed a broader interpretation of the prompt when evaluated on topic development.

Prompt #2 asked students to recreate a situation in which they faced a difficult challenge. Winning races or games, passing the driver's test, and surviving breakups in relationships were all popular topics. Students seemed to be able to respond more fully to this prompt, generally writing longer, more developed pieces.

What trends were noticed over the past three years?

Student writing has remained remarkably stable over the past three years, as evidenced by state level reports. Students at grades 4 and 8 generally obtained their highest scores in mechanics and their lowest scores on topic development. This trend held true for all three years, regardless of prompt. The same trend was observed at grade 11 for the first two years of the program. However, students at grade 11 this year obtained their highest scores in mechanics and their lowest scores in details, rather than topic development, on both writing prompts.

Students at all grade levels for all three years of the test generally received higher scores in the last three categories (sentences, wording, mechanics) than they did in the first three categories (topic development, organization, details).

What can we conclude from these trends?

The most obvious conclusion is that students perform better on the more mechanical (and more easily taught) language conventions—sentences, wording, and mechanics—than they do on the more cognitively demanding content categories—topic development, organization, and details. This finding is not limited to Maine students—the same trend is reported wherever writing scores are broken down into content and conventions categories. The problem is not just one of writing, but of thinking. Students must be able to focus, organize, and develop their ideas in a clear, fluent manner, with a voice that is uniquely their own.

What are the instructional implications of these findings?

To answer this question, we need to examine data collected from the student, teacher, and principal questionnaires. The answers were correlated with student test scores so that we can compare strategies used by students who did well on the test as well as the practices followed by their teachers.

The following observations were taken from the student questionnaires at grades 4, 8, and 11. The practices mentioned are common components of the writing process.

1. Students who are able to choose their own topics at least half of the time generally perform better on the assessment.
2. Students who have the opportunity to write several drafts of a paper almost all of the time generally perform better on the test.

The student questionnaires for grade 4 differed from those at grades 8 and 11, so the data that follows was not collected at grade 4. Students at grades 8 and 11 performed better on the writing assessment under the following conditions:

1. prewriting activities were frequently conducted in their classes;
2. they usually completed an outline or listed their ideas before writing a draft;
3. they had frequent opportunities to share their writing with others;
4. they made both grammatical and meaning changes to their rough drafts.

The teacher and principal questionnaires were also informative. According to the principal questionnaires, the percentage of teachers who are using the "process model" approach to the teaching of writing has increased every year since 1985-86, at all three grade levels. The student writing scores are highest in schools where the largest percentage of teachers use the "process model."

The teacher questionnaires for all three grades reveal that students perform better in classes where teachers (1) ask them to write several drafts of their papers; (2) allow them to choose their own topics at least half the time; and (3) encourage them to talk to their classmates and their teachers about their papers while they are working on them. However, the practice of peer and teacher conferencing seemed to be more highly correlated with good writing scores at the elementary level than at the secondary.

The teacher questionnaires also showed a high positive correlation between student writing scores and professional development activities. Intermediate and secondary students performed better in classes where their teachers belonged to professional organizations. (There was no strong relationship at grade 4, where only about 15% of the fourth grade teachers are members of professional groups.)

Additionally, students at all levels performed better in classes where their teachers reported attending at least five or six professional conferences in the past five years and where teachers visited exemplary classrooms or attended multiple-session workshops. When teachers were asked who conducted their in-service workshops in language arts, the highest scores were obtained when the workshops were conducted by district teachers, rather than by outside agencies or professionals.

What do 15 years of research tell us about the teaching of writing?

Mary K. Healy, Co-director of the Bay Area Writing Project, lists the following concepts about developing writing ability which have been acknowledged by most researchers in the field:

1. Writing anything with genuine involvement and commitment is a result of engagement with an idea and a desire to make sense of it oneself and, usually, communicate it to an audience.
2. The ability to write develops gradually over time in individuals and is an outgrowth of their involvement in other forms of communication: speaking, reading, listening.
3. The interplay between reading and writing, between how others have searched for meaning to make sense of the world and how one proposes to do it oneself, is absolutely crucial to helping students develop the ability to write thoughtfully and originally.
4. Individuals develop highly idiosyncratic writing processes, i.e. some students need solitude to write, others can write in front of the blaring t.v. or when wearing stereo earphones. Some writers need ongoing interaction with a response partner ("How does this sound now? Is it better?") and others don't want to come near any kind of audience until they're thoroughly satisfied themselves. Teachers need to be sensitive to the composing styles of their students.

How can teachers improve their students' writing?

In her article "Notes from the Battlefield: Towards a Theory of Why People Write," noted Australian children's author and college professor Mem Fox examines the question "Why do I write?" While exploring her reasons, she discovered a number of insights that could benefit any teacher in any content area. She vowed to keep the following instructional goals in mind when teaching writing:

- help students to care about writing by making it real;
- give students opportunities for real responses from people they admire;
- create situations in which students always own the investment in their writing;
- be sensitive to the social nature of writing, and the vulnerability of writers;
- demonstrate and encourage writing for fun and enjoyment;
- respond *after* publication as well as before;
- help to develop powerful writing so that students can control their own lives.

Evelyn Freeman and Tobie Sanders (1987) explore some ways teachers can make the writing experience more real for students by forging a different type of bond between the home and the school. They use the Foxfire experience as an example of a program that links the community to the classroom. Twenty years ago Eliot Wigginton, of Rabun Gap, Georgia, initiated *Foxfire*, a student magazine which describes the folklore of this Appalachian region. High school students still run the magazine, the content of which is based on oral histories taken from community residents. Besides learning about their local heritage and culture, students also gain experience in conducting interviews and preparing oral interviews for written publication.

In the seventies, Shirley Brice Heath worked on a similar project with fifth graders in rural areas of the Piedmont Carolinas. Students who were reading on a second grade level learned about ways of growing foodstuffs by interviewing community members, reading back issues of the local newspapers, checking recipe books, and collecting life histories and artifacts. Their efforts culminated in a class book. Freeman and Sanders conclude that instructional strategies designed to help students write in ways comparable to the writing in their "real" world may enhance students' positive attitudes toward writing.

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MATHEMATICS:

Interpretive Summary of Results

The development of the mathematics portion of the Maine Educational Assessment and the interpretation of the mathematics results were conducted by a committee of in-state mathematics educators. The names of all individuals who have served on this committee over the past three years are listed in Appendix A of this document.

This report summarizes the evaluation of student performance over the past three years on test questions and the cumulative results of the student, teacher, and principal questionnaires. Unlike the summary reports issued for each of the past two years' administrations of the MEA, this report will focus on cumulative trends rather than on individual test questions or individual years. The reader is urged to refer to the 1985-1986 and the *1986-1987 Interpretive Summary of Results* for further detail about test questions. Copies of these reports can be obtained by contacting the Maine Department of Educational and Cultural Services at 289-5991.

Student performance on the mathematics portions of the MEA has remained consistent during the last three years of testing. The MEA should be used as one source of information for schools to consider in evaluating curricular programs. Other evaluation techniques must be employed in order to obtain a complete understanding of the relationship between student performance and school programs. Other techniques include attitudinal surveys for teachers, students, and administrators, interviews with students, and teacher observation of student performance. Performance testing should include evaluation of the methods and thought processes employed by a student when solving a problem or engaging in an activity as well as the final products or answers. The following recommendations are based on the interpretation of three years of data.

Recommendations

1. Students need a conceptual understanding of fractions, decimals, and percents, and the relationships among parts before learning the algorithms to compute with such numbers. Younger students should be learning to relate fractions such as 1/4, 1/2 and 3/4 to their decimal and percentage equivalents.
2. In today's society, knowledge of basic number facts is as important as ever. This knowledge, in conjunction with the development of skills in rounding, estimating, and assessing the reasonableness of an answer, must be an ongoing objective of all mathematics curricula.
3. With the availability of calculators today, few adults use paper and pencil to compute with multiple-digit numbers. It is recommended that a greater emphasis be placed on teaching both when to chose the most appropriate mode of computation (mental computation vs. paper and pencil vs. calculator/computer) and proficiency within all three modes.
4. Students need to spend more time with exercises that enhance their ability to define and understand. For example, students could be asked to write the answer in a complete sentence before solving a problem while leaving a blank in the sentence for the insertion of the numeric answer.
5. Problem solving should be the core of all mathematic curricula at all levels. Components of problem solving include working in small and large groups to solve problems, solving long-term problems, and generating new problems. Students should experience many and varied approaches to problem solving. Problem-solving strategies include, but are not limited to, writing an equation, trial and error, constructing a graph, table or chart, and drawing a picture.
6. Students need more exposure to activities that require separating meaningful from irrelevant data.
7. Schools should re-examine their approach to the delivery of mathematics curriculum to all students. Both college-bound and non-college-bound students are being shortchanged by the existing practice of segregating mathematics into separate programs of study. There are clearly concepts in the algebra/geometry sequence that are appropriate for all students and, conversely, traditional general math concepts such as statistics and business math are needed by all students as well. In addition, all students need experience in probability, logic, and problem solving.
8. Teachers should participate in professional development activities. Schools must make provisions to provide release time to teachers for professional development and provide ongoing in-service activities.

Student Performance on Cognitive Test Questions

Computation

1. Students at all three grade levels were proficient at computing with whole numbers and decimals. Continued growth is evident from grades 4 through 11. This is not surprising due to the fact that traditional mathematics instruction has focused on computational skills.
2. Relative to performance on whole number computation, performance at grades 8 and 11 on computations with fractions and percents was poor. The level of success was the same with simple fractions and mixed numerals, suggesting that the complexity of the numbers is not a significant factor.

Concepts

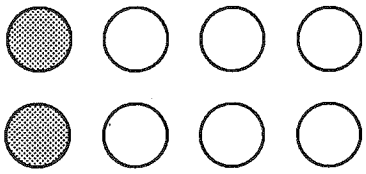
Since it is recognized that conceptual understanding is developed over time, the results of the test questions dealing with concepts will be discussed separately by grade level.

Grade 4

1. Grade 4 students were successful at rounding whole numbers, but lack conceptual understanding of place value. Fourth graders know what number is in the tens place but do not necessarily understand that a 4 in the tens place means 40.
2. While the MEA does not test computation with fractions at grade 4, items testing conceptual understanding of fractions indicate that many students do not understand the meaning of fractional representation.
3. Performance on decimal questions was significantly higher when a dollar sign was present, indicating that meaningful context leads to greater understanding.
4. While fourth graders were quite successful at recognizing regular shapes, performance was much lower on other geometry concepts such as area and perimeter. Performance was better on items that included a picture, suggesting that pictorial representations aid in the ability to understand.
5. Performance is good on simple measurement tasks such as reading representations of thermometers and gauges, with the exception of linear measurement. Results are comparable whether metric or English systems are employed. Conversions within a system (e.g., inches to feet, minutes to seconds) posed problems for students.

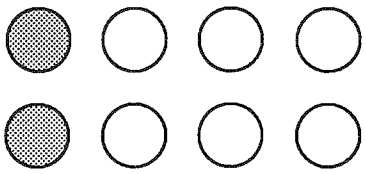
Grades 8 and 11

1. It appears that students learn to use skills in rounding and estimating after, rather than in conjunction with, learning computational algorithms and consequently do not apply these skills to computations and problem solving.
2. Students do not perceive decimals as fractions, nor do they understand the relationships among percentages, decimals and fractions. Forty-six percent of the grade 8 students did not know that one fourth is equal to .25. In addition, the two different test questions shown below illustrate the performance of grade 8 students when determining the decimal portion and the percent of a set that is shaded.



What decimal represents the part of the set of circles that is shaded?

Gr. 8		
21	A.	.2
24	* B.	.25
12	C.	2.6
40	D.	2.8



What percent of the circles are shaded?

Gr.8	Gr.11		
29	27	A.	1/4 %
7	7	B.	.25%
27	10	C.	2%
34	57	* D.	25%

While eighth and eleventh graders know the names of different decimal places, many do not understand place value to the right of the decimal point. Thirty-six percent of the eleventh graders and 64 percent of the eighth graders could not place 5 decimal fractions in order from least to greatest.

Percent of Students		Which of the following shows the numbers ordered from least to greatest?
Grade 8	Grade 11	
17	19	A. 0.005, 0.08, 0.3, 0.7, 0.37
23	4	B. 0.3, 0.005, 0.7, 0.08, 0.37
36	64	* C. 0.005, 0.08, 0.3, 0.37, 0.7
21	12	D. 0.005, 0.37, 0.08, 0.7, 0.3

3. Not only do students have difficulty dealing with sophisticated measurement and geometric principles, they also are unfamiliar with basic geometry and measurement terms and lack understanding of the basic properties of triangles.

4. Students at these grade levels lack understanding of probability. Many students believe that the probability of spinning a number on a spinner is related to the number of times that number appears rather than the area covered by that number. Students at grades 8 and 11 are lacking understanding of measures of central tendency. While most of the students at grades 8 and 11 are able to compute an average, many do not appear to understand the concept of average. Given a number line with three designated points, fewer than one half of the eighth graders and two thirds of the eleventh graders were able to select the place on the number line representing the approximate average of the three points.

Application

1. Students at all three grade levels were able to solve routine textbook-type word problems requiring minimal thought and quick computations. On questions requiring a greater understanding of what is asked by the problem, performance declined. The results on the question depicted below suggest that students need to spend more time with exercises that enhance their ability to understand.

Percent of Students		Scientists predicted that a meteor would land in a field 196 miles west of Arborville. The meteor actually landed in a field 254 miles east of Arborville. How many miles from the predicted landing site did the meteor actually land?
Grade 8	Grade 11	
55	49	A. 58
9	5	B. 142
8	5	C. 158
25	41	* D. 450

On the problem below, performance might have improved if students had paralleled the question with a similar question using easier numbers. This technique often improves understanding.

Percent of Students	Joe had to read pages 23 through 46 for his English class. How many pages did Joe have to read?
Grade 8	
2	A. 46
16	* B. 24
76	C. 23
2	D. 22

2. Questions asking students which strategy might be most effective to use in solving a particular problem suggest that students have little experience with alternative approaches to problem solving. Poor performance on non-routine problems may be due, in part, to students' lack of exposure to alternative strategies as well as their inability to understand what is asked by a problem.

3. Performance at all three grade levels is poor on questions containing extraneous information. A major part of real problem solving is determining which information is relevant.

Results of the Principal, Teacher, and Student Questionnaires

1. Varied teaching approaches such as working in small groups during mathematics class, using hands-on materials (e.g., compasses, protractors, geoboards, etc.), and opportunities for students to write their own problems are associated with the highest performance.
2. Results of the grade 4 teacher questionnaire indicate that large amounts of time devoted to the teaching of computational skills resulted in lower overall mathematics test scores. Unlike some standardized tests, a substantial portion of the MEA mathematics test is questions on problem-solving skills and non-routine applications. If large amounts of time are devoted to computational skills, it is probably at the expense of problem solving and critical thinking.
3. The highest performance was associated with students whose teachers participate in professional development activities. Nearly one half of the teachers at each of grades 4, 8 and 11 have not attended a mathematics conference in the past two years. Schools are not providing mathematics in-service regularly. Three fourths of the teachers at grade 4 and 8 report that little or no mathematics in-service has been provided by their schools in the past two years.

References for Teachers

1. The National Council of Teachers of Mathematics, 1906 Association Drive, Reston, Virginia 22091. NCTM publishes two magazines for mathematics teacher, *The Arithmetic Teacher*, for elementary and middle school teachers and *The Mathematics Teacher*, for teachers at the high school level.
2. The National Council of Teachers of Mathematics, 1906 Association Drive, Reston, Virginia 22091. Write for a free publication list. The list includes a description of the content and prices of outstanding sourcebooks such as *Agenda for Action, Activities for Junior High and Middle School Math.*
3. The National Council of Teachers of Mathematics, 1906 Association Drive, Reston, Virginia 22091. NCTM has developed a new standards document that outlines new ways to teach and assess mathematics.
4. *Problem Solving: A Basic Mathematics Goal.* Columbus, Ohio: Ohio Department of Education.
5. Kamii, Constance. *Children Reinvent Arithmetic.* Columbia University Press.
6. Charles, Randall and Frank Lester. *Teaching Problem Solving: What, Why, How.* Available through commercial publishers.
7. Copeland, Robert. *How Children Learn Mathematics.* Available through commercial publishers.

SCIENCE:

Interpretive Summary of Results

The development of the science portion of the Maine Educational Assessment and the interpretation of the science results were conducted by a committee of in-state science educators. All members of this committee over the past three years are listed in Appendix A of this document.

The MEA is one source of information for schools to consider in evaluating curricula and programs. Other evaluation techniques must be employed in order to obtain a complete understanding of the relationship between student performance and school programs. Other techniques include attitudinal surveys for teachers, students, and administrators, interviews with students, and teacher observation of student performance. Performance testing should include evaluation of the methods employed by a student when solving a problem or engaging in an activity as well as the final products or answers. Schools must also consider the availability of funds to implement and maintain science programs when evaluating a science curriculum.

The following recommendations are the result of evaluation of student performance over the past three years on test questions and the cumulative results of the student, teacher, and principal questionnaires. Supporting evidence for these recommendations is described in this report; further documentation can be found in the 1985-1986 and 1986-1987 *Interpretive Summary of Results*. Copies of these documents can be obtained by contacting the Maine Department of Educational and Cultural Services at 289-5991.

Recommendations

1. Schools must make provisions for the necessary encouragement, training, time and materials to enable teachers to develop and implement an effective science program. In revising or developing and implementing new curricula, especially at the elementary level, it is important to establish long-term plans that balance the amount of time spent on the programs for each of the content areas. Perhaps the most appropriate time for curriculum work to occur is during the summer vacation. An extended school year might prove very beneficial if the time were spent on program development and evaluation before the opening of school.
2. Schools must address the issue of college-bound versus non-college-bound performance in science. Curricula must consider the needs of all students. For further information regarding the differences in performance for college- and non-college-bound students, refer to chapter 2 of this report.
3. School curriculum reform efforts must strive to ensure that male and female students have the same encouragement and opportunity to learn science. Although the gender gap in performance may be a societal issue, teachers can do something about it. Issues such as teacher attitudes, time spent on science instruction, expectations, scheduling, and enrollment of males and females in secondary courses must be thoroughly explored. For additional information on the gender gap, refer to chapter 2 of this report.
4. Schools must carefully examine the scope and sequence of their K through 12 curricula to assure:
   a. non-duplication of the concepts covered and the existence of higher order objectives in the life sciences;
   b. that all students are exposed to earth and space science and that the content learned after grade 4 builds on what students have already learned;
   c. the existence of a K through 12 physical science program and physical science courses offered for all students at the secondary level.
5. Students need to be involved in collecting and using large data sets over a period of time. Data collection can be as simple as recording aspects of weather, such as temperature, on a regular basis. Activities requiring extensive data manipulation, reduction, and interpretation must follow data collection. Such activities include graphing data, summarizing data, making predictions about the nature of data not yet collected, and drawing conclusions from the data.
6. Students should be given problems to solve and asked to design and complete their own experiments. For example, students could be shown a pendulum and asked to predict what kinds of variables might effect the time it takes the pendulum to complete one swing. Following the discussion, students could be given the materials they feel are necessary and asked to test their hypotheses. Along with learning about pendula, students may discover the importance of testing only one variable at a time and improve their measurement skills. Such activities develop and enhance critical thinking and problem-solving skills. Laboratory activities that require students to follow the steps in an experiment to arrive at an inevitable conclusion do not meet these criteria.

7. Teachers must be encouraged to participate in professional development activities. Schools must make provisions for release time to teachers for professional development and provide ongoing in-service activities for all those who teach science.

Student Performance on Cognitive Test Questions

Student performance on the science portion of the MEA has not varied greatly during the last three years of testing. The areas of concern targeted in this report have shown themselves consistently in every administration of the MEA.

Performance was better on knowledge-level questions than on application or higher order questions. Of particular concern was the inability of students to generalize, synthesize and organize. Also of great concern was student understanding of basic principles in the areas of earth and space science and physical science. Teacher and principal responses to the questionnaire items suggest that, despite awareness of the problem, not enough has been done to alleviate it.

Scientific Inquiry

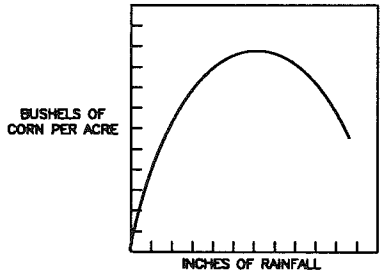
1. Although students understand the concept of control in experimental design, it appears that students have limited experience with designing their own experiments. Given a hypothesis involving the variables affecting the swing of a pendulum, fewer than one half of the eleventh graders were able to select the set of materials needed to test the hypothesis. Further, many students do not understand the use of models in data collection or concepts of sampling.

Percent of Students Grade 11	Engineers are trying to learn which type of bridge can withstand the most weight. Which of the following would be the best way to find out?
42	A. Collect data on all existing bridges and study those bridges that collapse or need frequent repair
7	B. Build different styles of bridges and collect information about traffic and frequency of repairs.
50	* C. Build models of bridges and test the amounts of weight the different models can withstand.

2. Although most students could successfully read instruments, they do not always recognize the proper uses for different instruments, nor do they know the appropriate units for describing quantities. For example, fewer than one half of the students at grades 8 and 11 know that cm^2 is a measure of area. There is very little growth on this question between grades 8 and 11.

3. Students need more experience with data-reduction aspects of measurement. More than one fourth of the students at grades 4, 8, and 11 fail to recognize that when something is measured repeatedly, the results will not be exactly the same. Students at grades 8 and 11 are able to read, extrapolate and interpolate information from graphs, tables and charts; however, they are unable to draw conclusions from experimental data.

Which one of the following is the best conclusion you can make from this graph?



Percent of Students Grade 8	Grade 11	
33	27	A. The more rain there is, the better the corn will grow.
55	68	* B. Corn needs rain to grow, but too much rain is harmful.
10	3	C. Different kinds of corn need different amounts of rain to grow best.
3	2	D. Corn can grow well even if there is no rain.

Life Science

1. Generally, students at all three grade levels have a sound knowledge of facts associated with the life sciences but lack understanding of larger concepts such as ecology. For example, fewer than one third of the eighth graders and only about one half of the eleventh graders realize the ecological balance of a lake could be upset if new organisms were introduced and became a part of the existing food web.

2. In some areas of life science, students are not only missing the larger concepts, but are also missing the facts on which to build understanding of the larger concepts. Major weaknesses were found on items testing heredity and characteristics of plants.

   a. Incorrect responses to one question suggest that many students at all three grade levels believe that flies come from inanimate objects rather than from other flies. When asked to predict the relative size of a full grown horse whose parents were both larger than other horses, fewer than one half of the eighth graders and one fourth of the fourth graders indicated that the horse would probably be larger than most other horses.

   b. Students demonstrated very little understanding of the process of photosynthesis. For example, only one half of the students at grades 8 and 11 know that plants need water, light, chlorophyll and carbon dioxide in order to perform photosynthesis.

Earth and Space Science

1. Performance on earth and space questions demonstrate very little change in performance between grades 4 and 11.
2. Performance was low on items dealing with relative distances in space and the relative motions of bodies.

Percent of Students		The sun rises in the east and sets in the west because the
Grade 8	Grade 11	
41	52	* A. earth rotates.
50	41	B. earth revolves around the sun.
4	6	C. sun revolves around the earth.
2	2	D. sun rotates.

3. In meteorology, many eighth and eleventh grade students fail to understand such common concepts as relative humidity and principles of weather prediction – concepts encountered every day in the newspaper or television weather reports.
4. Geology questions dealing with changes in the earth's surface attributed to volcanic and earthquake activities and erosion generally resulted in satisfactory performance at grade 4. Again, there was little growth across the grades. Understanding of the more gradual changes that take place in the earth's surface, however, appears to be lacking. For example, fewer than one half of the grade 8 students understand that fossils of ocean life in the rocks of a mountain indicate that the rocks were probably once at the bottom of an ocean and later were formed into a mountain.

Physical Science

1. Relative to the other science areas, performance in the area of physical science was weak at all three grade levels. Although student performance in this area follows national trends, efforts must be made to provide and improve instruction.
2. Performance on questions requiring knowledge of simple machines is poor. For example, only about one half of the students at grades 8 and 11 recognized that using a series of pulleys requires less force to lift an object than using a single pulley.
3. Although most students are familiar with the law of conservation of energy, results suggest that they are not able to apply the law. In a question asking why the electrical energy produced from burning coal is less than the stored energy in the coal, nearly one third of the students at grades 8 and 11 indicated that some of the energy is destroyed by the burning.
4. Students lack understanding of atomic structure and theory at grades 8 and 11. For example, almost one half of the eighth graders and one fourth of the eleventh graders are unable to label diagrams as solid, liquid, or gas based on the relative distance between the particles.
5. Generally, students have difficulty applying the law of conservation of matter. Student response to questions about dissolving a substance and changing the state of a substance suggest that many believe that matter can be created or destroyed. While some students at grade 4 may not be developmentally ready to apply this law, by grade 8, students should have had laboratory experiences enabling them to understand and apply the law. An example of a laboratory activity that could be used for these purposes is described in the 1986-1987 *Interpretive Summary of Results.*

Results of the Teacher, Principal, and Student Questionnaires

1. Grade 4 student performance is best where teachers have content training in science and science-related fields. Yet more than one half of all fourth grade teachers have taken one or no courses in science or science education.
2. Students whose teachers regularly participate in activities for professional development perform better than students whose teachers rarely participate in such activities. As a result of a recommendation made in the 1986-1987 *Interpretive Summary of Results*, the Maine Department of Educational and Cultural Services is soliciting names of science contact persons from every elementary school in the state. Information about activities for professional development will be sent to these individuals.
3. Current in-service activities do not appear to affect student performance. Effective in-service programs must include ongoing activities that focus on targeted aspects of the science curriculum rather than on isolated teaching activities where no context is provided. Current practices of offering one-day programs without further discussion of the material presented appear to be ineffective.
4. It appears that an eclectic approach to science instruction is most effective. Activities such as writing about science experiences, hands-on laboratory activities, computer use, and demonstrations are most effective when used in moderation. Quality activities combine the physical manipulation of data collection with discussion, summarizing, and generalizing. The most effective curriculum is one that incorporates quality activities and integrates the material into other disciplines.
5. Students in non-college-bound high school programs perform poorly on the science test. The vast majority of the science items used in the MEA address general science concepts rather than material taught exclusively in college preparatory classes. Currently, in Maine, a very large percentage of the student population does not receive any instruction in the physical sciences. In an age where science, technology and society are so closely linked, it is disturbing that over 60 percent of our youth are receiving a science education that may be inadequate.

References for Teachers

1. *Science and Children*. National Science Teachers Association, 1742 Connecticut Ave. NW, Washington, D.C. 20009

   "The" magazine for elementary and middle school teachers, *Science and Children* is a monthly treasure house of articles and activities. For the junior/senior high school level, NSTA publishes *The Science Teacher*.

2. Project Learning Tree. c/o Maine Forest Service, State House Station #22, Augusta, ME 04333

   Project Learning Tree uses the natural environment to help teach math, science, social studies and language arts in grades K though 12.

3. Maine Audubon Society. Gilsland Farm, 118 U.S. Route One, Falmouth, ME 04105. Contact: Carey Hotaling at 781-2330

   The Maine Audubon Society has a grant to provide teacher training in the use of the publication, *Science and Natural History: A Maine Studies Sourcebook*. This is a collection of four volumes - Physical Science, Earth Science, Life Science, and Ecological Science with a K through 12 interdisciplinary focus.

SOCIAL STUDIES:

Interpretive Summary of Results

Highlights of Results

The Social Studies section of the Maine Educational Assessment covers a broad range of topics within the areas of physical environment, history, political science, economics, sociology and anthropology, and process skills. At the intermediate and secondary grades, Maine studies was included as an additional school level reporting category. All of the findings below are based on the Social Studies Advisory Committee's perception of student performance on individual test items relative to expectations.

Elementary Level Results

The committee found that, in general, the fourth graders performed at a satisfactory or better level in all areas. Particular strengths were found in the areas of physical and cultural geography, economic concepts, and the analyzing and evaluating section of the process skills category. The area of historical concepts seemed to be one of relative weakness.

In the category of physical geography, the students exhibited a solid knowledge of continents, oceans and regions of North America. Additionally, in cultural geography, students were strong in their knowledge of people's use of the environment. The item below illustrates their understanding of such concepts.

Percent of Students	It was MOST important for the early settlers to build towns near
6	A. a mountain.
18	B. a forest.
4	C. a desert.
70	* D. a river.

Performance was satisfactory on items dealing with people, places and events in history. However, these items primarily covered specific knowledge. On broader historical concepts, performance was disappointing. For example, only half of the students correctly identified the reason for celebrating Thanksgiving. Large numbers of students incorrectly associated Thanksgiving with the discovery of America.

Knowledge of basic political science concepts was strong at this grade level, particularly in relation to the importance of laws, to the role of the court system, and to an elementary sense of the concept of democracy. The committee was particularly impressed by the number of students who correctly identified churches as institutions which are not owned or run by the government.

Elementary level performance was exceptional on economic items dealing with terms and concepts such as taxes, profit, investment, and consumer activities. Furthermore, these students are capable of recognizing simple applications of the law of supply and demand as the item below demonstrates.

Percent of Students	When more toys are made than are sold, the price of toys tends to
63	* A. go down.
26	B. go up.
5	C. stay the same.
6	D. change depending on where you live.

Student performance was satisfactory in the areas of family, community, and cultural studies when one considers that this is the basic core of social studies in grades K through 4.

Performance on items measuring fourth graders' skill in reading and translating information (e.g., graph, chart and map skills) was satisfactory. Their performance in analyzing and evaluating information (e.g., drawing conclusions, making inferences, selecting best source) exceeded expectations. For example, when presented with a lengthy paragraph, most students were able to recognize an assumption made by one of the speakers and then use higher order thinking skills to arrive at a conclusion.

Embedded throughout the test were questions dealing with information about the state of Maine; students had little difficulty with them.

Intermediate Level Results

The committee recognizes the wide diversity in developmental, social, emotional, physical and cognitive levels at which students in this particular age group are functioning. Furthermore, the vast range of areas covered by the social studies domain is probably more difficult to define at the intermediate level than at either the elementary or secondary levels since many schools and districts vary widely in their scope and sequence at this level. Therefore, in interpreting the results, the committee attempted to remain especially cautious in making assumptions about expectations for student performance.

Several trends were detected throughout the intermediate test results. First of all, performance was consistently better on items across the disciplines that dealt with knowledge which has personal relevance for eighth graders. For example, most students recognized behavior associated with peer pressure. Additionally, students were able to demonstrate their knowledge of geography and history associated with the western hemisphere, but there seemed to be little awareness of the eastern hemisphere, especially southeast Asia.

The eighth graders recognized physical characteristics of Maine, but many students did not grasp the impact of Maine's geography on its development and culture. Performance was lower on items requiring students to recognize characteristics of geographical regions (e.g., tundra), and on items dealing with use of land (e.g., irrigation systems). Students did well on items covering environmental issues.

Due to the timing of the intermediate test, which is prior to wide-range exposure to sophisticated U.S., Maine and/or world history courses, the committee felt the performance in that area was satisfactory. Specifically, performance was good on items dealing with issues and events prior to the Civil War while performance was weak on post-Civil War items. The exception to this was in modern U.S. history, in which performance was stronger.

Students did well on items dealing with ancient peoples and, again, performance was strong on items covering modern world events. Overall, however, knowledge of world history was not a strength for eighth graders.

Performance in both political science and economics was weak. Not only did students show little knowledge of various political and economic systems, but most did not recognize basic elements of our own systems. Many students could not identify terms or concepts typically used and associated with these disciplines.

While there are probably not many formal courses offered in the areas of sociology and anthropology at the intermediate grades, many social studies courses integrate concepts which fall under this domain. The committee was generally satisfied with performance in this area (especially on items dealing with matters of personal relevance) with the exception of some surprisingly weaker areas, illustrated by the uninspiring performance on items such as the one shown below.

Percent of Students	
	A twelve-year old boy in Brazil. An eighty-year old man in Denmark. A twenty-year old woman in the U.S. What can we assume about all three of these people?
60	* A. All three have the same basic needs.
9	B. All three speak the same language.
12	C. All three are members of the same ethnic group.
16	D. All three belong to political parties.

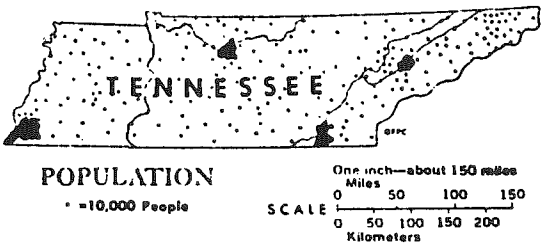
Strengths in the process skills areas included reading and translating information from a variety of graphics such as maps, charts, and tables. Areas of weakness were found in the analysis and evaluation of graphic information and in the use and application of reference skills. The major problem areas for students were: using a pie graph, drawing conclusions from information, following a flow chart, identifying primary and secondary sources and distinguishing fact from opinion.

Secondary Level Results

Overall, the committee was pleased with student performance at the eleventh grade. The areas of sociology and anthropology, economics and process skills were of particular strength. Performance in U.S. history, world history, and political science was disappointing, while physical environment results were mixed.

Student performance on social issues and cultural studies items was excellent. Students consistently did well on questions covering a broad range of concepts. For example, the eleventh graders demonstrated a good understanding of concepts relating to population growth, unemployment and cultural diversity. Of particular note was the amount of growth in performance between the intermediate and the secondary tests. The secondary students showed a 38 percent growth over intermediate students on an item requiring them to identify stereotypes. On another item dealing with problems most associated with urban areas, the growth was 28 percent.

In the area of process skills, performance was equally strong. Students demonstrated an outstanding ability to read and interpret maps, charts, and graphs, as shown below.



Percent of Students	Which of the following statements is a conclusion that can be drawn from the information given in the map above?
3	A. Tennessee is south of Kentucky.
83	* B. Tennessee's largest settlements of people are found along waterways.
9	C. Much of Tennessee's land was difficult to settle.
5	D. There is little industry in Tennessee due to lack of resources.

In the economics section of the test, students did well on items addressing economic concepts and principles. Eighty-two percent of the students understood the advantage of mass production; they also performed well on items dealing with tariffs, taxation, and competition. However, students had difficulty distinguishing among the characteristics of capitalist, socialist, and communist systems. While there was a 22 percent growth over intermediate results on the same item, only 42 percent of the secondary level students could correctly identify the basic principles of capitalism.

In general, students performed better on items covering the 20th century in both world and U.S. history. For example, students performed well on items dealing with civil rights, the Watergate scandal, U.S. and Soviet relations and the conflict in Vietnam. Current events items on the Irangate scandal and Star Wars drew correct responses from more than 80 percent of the students.

Students' knowledge of pre-20th century world and U.S. history is an area of concern. The poor results on the pre-20th century world history items support the committee's perception that there is little instruction in this area. For example, students had great difficulty recognizing significant differences between Greek and Roman societies and in distinguishing between the contributions of both to democracy. In light of the amount of time spent on instruction in pre-20th century U.S. history, performance was both disappointing and perplexing. Secondary level results on items dealing with the Revolutionary War, the Declaration of Independence, Maine statehood, Jacksonian Democracy and Manifest Destiny were significantly lower than expectations. Furthermore, only 32 percent of the students could identify Popham as the first settlement in Maine.

Performance on political science items was mixed. The students demonstrated competence on items dealing with Federalism, referendums, and the Bill of Rights. However, on items dealing with town meetings, monarchy, and the purpose of the Constitution, results were extremely disappointing. On one particular item requiring students to identify the definition of checks and balances, 75 percent responded correctly. Unfortunately, only 34 percent were able to identify an application of that principle regarding the Bork nomination to the Supreme Court. Examples of this nature indicate that a lack of depth of understanding exists within the disciplines. A final note is the discouraging lack of growth of secondary students over their elementary peers in identifying important elected state officials.

In the physical environment section, performance was moderate. Students did well on items related to climate, terrain, and land forms. Performance on current environmental issues was very good. For example, 85 percent of students could correctly answer questions dealing with anti-pollution laws and acid rain. Interestingly, in the area of place geography, while 83 percent identified countries of the Middle East, fewer than half of the students could identify the Canadian provinces bordering Maine and only 39 percent could identify major agricultural areas within the state.

Observations and Committee Comments

As a survey, the MEA Social Studies test allows for equal weight to be given to each social studies domain covered. The test items cover a wide breadth of topics and are intended to measure students' knowledge after several years of instruction. In general, the pattern of student performance on the MEA is consistent with the committee's perceptions of typical emphases in social studies curricula. After three years of data collection, the committee has concluded that the identified strengths and weaknesses discussed here are indeed reflective of the state of the social studies curriculum in Maine.

The committee realizes that it could make recommendations about specific areas of social studies that require attention and ways of accomplishing various program changes; however, because the domain of social studies is so broad, hard decisions about which parts to cover and how to cover them are necessary. Therefore, the committee chooses to suggest topics for discussion at the local level of curriculum planning while leaving the decisions about placement of emphasis and instructional methodologies to the local school systems.

The committee is aware of the natural tendency to present social studies information in isolation, often without unifying principles and themes or as discrete disciplines, while following the general chronological presentation used in most textbooks. We believe that this results in only short term factual recall and the failure of students to make connections between ideas and across time and contexts.

The greatest need seen by the committee is for the integration of subject matter. An alternative to merely teaching social studies facts is desirable. There are different ways of organizing subject matter — chronologically, thematically, etc. Local systems should make informed choices as to the methods of instruction they advocate while keeping in mind that what is most important is to help students make connections among the social studies ideas they encounter. For example, historical concepts from early U.S. history can be tied to current political practices. Economic concepts can be related to ideas in sociology. Geography is easily tied to all other areas of social studies. If a thematic approach is used, ideas from many sections of a history textbook could be pulled together in the teaching of a particular theme, thus making the text serve as a reference source rather than a curriculum outline.

Recommendations

1. Curriculum planning and evaluation is required at the local level in order to create a comprehensive social studies K through 12 scope and sequence that minimizes repetition and gaps unless there is good reason for them.
2. Information about a variety of instructional approaches and methods should be made available to social studies teachers through in-service training in order to meet local systems' expectations for achieving a K through 12 curriculum.
3. Social Studies instruction should **not** be a game of trivial pursuit. While the MEA uses a primarily multiple-choice approach which is appropriate for the purposes of a statewide survey assessment, the committee feels strongly that, in the classroom, open-ended test formats are a better vehicle for ascertaining students' abilities to make connections among concepts. Both types of tests must address students' ability to use higher order thinking skills.
4. The MEA test is **not** oriented to the college-bound; it is designed to measure a broad range of proficiency across the total population of students. Similarly, it is also important that the needs of all students be considered in curriculum development at the local level.
5. The MEA gives equal weight to each of the content domains of social studies as defined by the reporting categories. However, it is not expected that schools should master all of these domains, but rather that they would emphasize areas they perceive as most important. Therefore, school personnel should use caution in making curriculum changes that would shift emphasis from one domain to another unless there is a conscious K through 12 curriculum decision to do so.
6. Local school personnel should examine within their systems possible reasons for sex differences related to social studies performance which favors males over females at the statewide level.
7. Relationships between student performance in social studies and their attitudes about the subject are highly correlated in the statewide MEA data. Individual systems should continue to work toward improving attitudes about the role and value of social studies.
8. The MEA data at the state, district and school level should be incorporated into local curriculum planning and development. Local systems are encouraged to use State Department personnel as a resource in interpreting their results.

HUMANITIES:

Interpretive Summary of Results

"Indeed, we put our sense of nationhood at risk by failing to familiarize our young people with the story of how the society in which they live came to be. Knowledge of the ideas that have molded us and the ideals that have mattered to us functions as a kind of civic glue. Our history and literature give us symbols to share; they help us all, no matter how diverse our backgrounds, feel part of a common undertaking."

Lynne Cheney, Chairman
National Endowment for the Humanities

Humanities: A Definition of Terms

Webster's dictionary defines the humanities as "the branch of learning concerned with human thought and relations as distinguished from the sciences; esp. literature, philosophy, history, etc."

Within the context of the Maine Educational Assessment, the humanities are composed of five subdomains: literature, visual arts, performing arts, language and religion/philosophy. It is the belief of the humanities committee that knowledge of the humanities provides a deep base of understanding for all concepts to be learned and that the study of humanities is an exercise in rich and critical reflection, constructive handling of ambiguity, and intellectual exploration of innovation. (Kieschnick, William F., April 1985.)

In addition, we see the humanities as a primary language of acculturation. "The question (for educators) is not how to get the cultural knowledge into the student, but how to get the student into the culture." (Ross, W. 1987. The Signals of Art to the Workplace. "Kultur and Culture.") The culture into which students would enter is the culture of the literate of our society. Our aim as educators is to facilitate their successful entree. To this end, we must expose them to and engage them in that body of information which is the background knowledge of the shared culture.

Why are Humanities Important?

The humanities provide access to understanding and appreciating one's culture. The humanities are a means of communication within that culture, both with one's contemporaries, and across generations. This communication chain also extends across cultures as well.

To study the humanities is to apprehend the very context in which one constructs meaning of all that one reads, hears, sees and encounters. Through humanities exploration we begin to understand the web of life experience. With an appreciation of the web we can truly fathom each strand.

"The humanities are animated by the urge to understand human beings in all their complexity and contradictions. . . . They connect us to our past, linking us to what other human beings have thought and felt and believed and suffered in the process of finding their own humanity." (Gardner) It is this universality of the human experience which renders the study of the humanities essential.

To ignore the humanities as nonessential to the core curriculum is to erase our "cultural heritage" (Gardner, David P. 1986. "The Humanities and the Reform Movement: What Can Be Done?") in the same way that "an unfriendly nation bent on our destruction might." Furthermore, to neglect the humanities denies students the opportunity to develop understandings and awareness which will form the basis of their appreciation of other cultures, religions, and peoples.

Inclusion of the humanities in the matrix portion of the MEA strongly declares that the state of Maine endorses the humanities as a critical component of its students' education. Deepening its commitment to the humanities, Maine has mandated a K-12 sequential arts program and a fine arts credit as a graduation requirement. The fine arts graduation requirement may include art, music, forensics or drama. This delineation of fine arts overlaps the humanities' subdomains as assessed by the MEA with the exception of forensics.

How are the Humanities Assessed in the MEA?

The Maine Educational Assessment is consistent with the imperative of the Getty Foundation which, in their report, *Beyond Creating: The Place for Art in America's Schools* states that the study of fine arts requires not only the production or expression of an art or musical form, but also the history, criticism and aesthetics of that form through the integration of content from all these disciplines (Getty report). In the formulation of the MEA humanities test the advisory committee reached a similar conclusion as to the expectations for humanities content and depth of coverage which Maine schools should set forth as guidelines for teachers. As a result, our coverage in the MEA of the humanities takes each subdomain and examines it from a historical, critical and aesthetic perspective.

The MEA humanities test is based on the objectives framework shown on the next page. It involves five areas of inquiry which are listed down the left side of the grid. These areas were chosen in the original Maine Assessment of Educational

Progress. They remain the critical areas of inquiry within the MEA. The committee continues to endorse their importance and relevance to the scope of humanities instruction. The three dimensions listed across the top of the grid address the integrative quality and multi-layered nature of humanities concepts.

Humanities Area	A. Forms, Elements and Techniques	B. Meaning and Purpose	C. Social/Historical Perspectives
1. Literature (concept: fable)	The story above is a (fable).	What is the moral or lesson of the fable above?	Fables have been used in many cultures to (teach and entertain).
2. Visual Arts (concept: painting)	What medium was used to create the art work above?	What is the main idea of the painting above?	Judging from its subject and style, the painting above is an example of (Renaissance art).
3. Performing Arts (concept: pantomime)	The art of mime involves (gestures and action).	What is the mime saying in the picture above?	The art of silence, performed by Marcel Marceau and Tony Montanaro is know as (pantomime).
4. Language (concept: American sign)	What form of communication is used primarily with hearing-impaired (deaf) people?	In American sign language, hand gestures mean (letters, words, or phrases).	Which of the following is an important impact of sign language?
5. Religion/Philosophy (concept: Islam)	Jesus is to Christianity as (Moham-med) is to Islam.	What is the purpose of the Koran in the Islamic religion?	What is the sacred city of the Islamic religion?

"Forms, elements and techniques" questions deal with the recognition of various forms of literature, methods of artistic expression, and characteristics of languages, religions, and philosophies. "Meaning and purpose" questions deal with the interpretation of literature, specific works of art, and philosophical concepts. Also included are questions about the purpose of various forms of literature, art and religious practices. "Social and historical perspectives" questions associate various aspects of the humanities with a time, a place, a person or a culture within a historical context.

Each row and each column in the matrix constitutes a reporting category for school-level results. Individual student scores are not reported for humanities. The humanities are assessed through matrix-sampled questions which are unique to each of twelve forms of the test. Each student responds to only a few humanities questions. School, district and statewide results are based on large numbers of students across the state responding to each humanities question.

How Do Maine Students Perform on the Humanities Test?

Generally, student performance over three years of the MEA has been very consistent. Major areas of strength and weakness have held constant since the 1985-86 test administration.

Literature. The questions in the literature category measure students' recognition of genre (folktale, myth, etc.), literary techniques (rhyme scheme, metaphor, simile), famous authors and their works. Questions ask students to interpret literary excerpts, short stories, poems, myths and legends.

Fourth graders consistently perform well on questions of rhyme scheme and rhythm of traditional rhyming poetry. Their understanding of poetic themes is strongest with poems which are humorous and easily accessible. With dense or free verse poetry, students tend to fix on literal meaning.

Fourth graders recognize literary genres readily. We have seen consistent success with social/historical perspectives items asking students to associate famous authors with their best-known book titles. However, their interpretation of myths, fables and traditional rhymes remains at the surface level.

Eighth grade students continue to show competence in grasping meaning, tone and theme of contemporary poetry. They demonstrate continued confusion in identifying or explaining literary techniques. Some growth in recognition of various types of poetry has been perceived.

Genre questions glean mixed response patterns from eighth graders. Questions asking them to associate authors and literary works evidence an area of weakness, however.

There exists a nearly imperceptible difference between the eighth and eleventh grade results on questions about literary techniques and devices. On the other hand, questions regarding theme and meanings of poetry showcase much growth between grade 8 and grade 11.

Eleventh grade students competently handle interpretive questions based on folktales and short passages with a humanities focus. However, eleventh graders' performance on social and historical perspectives questions is consistently mixed. Though the majority recognize Edgar Allan Poe's best-known works, only half of the eleventh graders can associate a series of famous quotes with their author, Shakespeare.

These results are close to the expectations of Maine educators involved in the formulation of objectives and the test items which measure these objectives. We had hoped to see more growth in the understanding of literary techniques between grades 8 and 11. We had also anticipated that students would have broader specific knowledge of authors and their works by grade 11.

Visual Arts. Questions in the visual arts category require students to recognize color family concepts, visual perspective issues, diverse artistic styles, and technical and thematic features of a depicted work of art. Students are asked to identify the purpose of various art forms and to associate works of art or architecture with a period in history, with an artist or perhaps with a historical art movement.

Visual arts questions on forms, elements and techniques are an area of strength for fourth grade students. They consistently manage with ease items regarding color families and familiar art forms – mobile, geometric shapes and artistic media. They are extremely competent with art interpretation.

Eighth and eleventh graders test well when responding to rudimentary visual arts questions regarding forms, elements and techniques. However, when presented with more specialized art terminology, e.g. symmetry or negative space, intermediate and secondary students' performance falls off dramatically.

Students at grades 8 and 11 are extremely successful in responding to questions about the meaning or theme of a depicted work of art. They have a clear understanding of the use of different artistic styles to represent the same subject.

At all grade levels, student performance is weak with social and historical perspectives questions about the visual arts. Their performance in this area is greatly limited by their lack of knowledge of periods in art history, famous artists and their works, and the characteristic art of a particular culture or period. The fourth graders exhibit some knowledge of famous American monuments such as the Statue of Liberty. However, there is poor overall performance at the upper grades on recognition of famous architectural structures, the location of such structures, or the significance of various architectural components. On a positive note, the older students can respond to questions regarding an architect's purpose as competently as they manage the interpretation of other works of art.

Generally, the advisory committee has been impressed with student performance on the visual arts items. In the past year we have developed some forms, elements and techniques questions which require specific knowledge of the language of art. Students at grades 8 and 11 are not well versed in this terminology. Fourth graders' ability to interpret artwork is highly commendable. We would like to see evidence of more background knowledge of the social and historical issues of art.

Performing Arts. The performing arts category includes questions about musical instruments, characteristics of musical forms, and the reading of musical symbols. It also covers characteristics of drama, dance and mime. Students may be asked to associate particular performing artists with their craft or with a period in history.

Fourth graders consistently perform well with the most fundamental concepts in general music. They are very successful with questions of musical notation, instruments and families, musical forms, and recognition of famous composers' names. They know specifics such as the title of our national anthem, and have a general understanding of the purpose of particular forms of music.

Eighth graders' strengths are recognition of and understanding of musical forms, notation, and instrument families. At the eighth grade level we see students very competently handling questions on theater and musical theater. Eighth graders also capably respond to questions of setting and characterization when given a brief excerpt from a play.

Eleventh grade students show strong understanding of many varied musical forms through questions of recognition, meaning and purpose, and cultural or historical derivation. Their knowledge of composers is good. Questions on theater and musical theater are also an area of proficiency for eleventh graders.

Language. In the language category, students are asked to associate words with the original language from which they were derived, identify words with similar origins, and recognize specialized forms of communication. They are asked about the predominant languages in the world, the impact of language on the interrelationship of cultures, and the relationship between language and social assimilation. Questions on special features of our language and how language can be manipulated or biased also appear here.

Fourth graders have the most success with language questions which involve the association of words with a specialized language, e.g., magician with "abracadabra" and "hocus pocus." Fourth graders easily manage questions on the meaning and purpose of various forms of communication, e.g., highway signs, trail signs, sign language. When questioning broaches the social and historical perspectives of language, fourth grade performance hovers around 50 percent correct. Fifty-seven percent recognize that certain Maine place names have come from our Native American ancestors. Yet only 44 percent recognize words in our everyday language which are derived from Native American languages. We consistently find that only 50 percent or less of our fourth graders know that Spanish is the most frequently spoken language in the U.S. besides English.

Eighth and eleventh graders demonstrate a strong awareness of word origins. They competently handle questions about various communication forms and their purpose. Questions regarding the social and historical issues of language garner mixed results. The students understand the concept of languages changing over time through the incorporation of new words and the gradual obsolescence of other words. They are less capable when asked to analyze text for language bias or advertiser's persuasion.

Generally, the area of language is a difficult one to assess. Student performance drops below expectation. After careful development of test items for this area we are always surprised by what students do and do not know.

Religion and Philosophy. Questions in the religion category test students' general awareness and knowledge of major religions and their historical impacts on society without sectarian bias. Although the promulgation of a specific religion is not the responsibility of the public schools, a basic knowledge of worldwide religions plays an important role in understanding the culture and history of many peoples. Critical, reflective thinking and analysis are fostered through the study of comparative religions and philosophy.

Fourth grade performance on religion and philosophy questions is mixed. Students have a general concept of basic religious roles and characteristics, e.g., they can classify a list of titles as belonging to people who perform religious duties. They do not possess a deeper understanding of the purpose of various elements of religious worship. They also lack any social or historical perspective on religions. For example, only 33 percent know that Labor Day is not a religious holiday. Forty-four percent of fourth graders understand that the idea of one god and ten commandments comes from the Jews. Philosophy questions at this level tended to be situational. These questions gained an average 50 percent correct response rate.

Students at the eighth grade seem to have a very limited knowledge of world religions. This can be seen in their poor performance on questions regarding the origin, characteristics and impacts of major religions.

Eighth graders are relatively unfamiliar with analysis, interpretation or extraction of a basic philosophical statement. When presented with mythology questions in this section, it appears that they are not generally familiar with mythology.

Eleventh grade performance is only marginally better than eighth grade performance in religion and philosophy. Here again students lack specific knowledge of the major religions of the world. It appears that they also lack the knowledge of geography and history which would deepen their understanding of the religion and philosophy concepts they possess.

When we consider that the bulk of the religion questions posed thus far have been answerable with general and surface level cultural knowledge, student results seem particularly poor.

Recommendations

The following recommendations have been generated by the MEA Humanities Advisory Committee. These individuals were selected as committee members for their experience, education, and content area background. They came highly recommended by their colleagues, and professional associations, and they represent many geographical regions of the state.

1. Teacher training and teacher recertification requirements in the relevant content areas (English, social studies, art, music, drama and foreign languages) should be examined carefully with an eye toward inclusion of a set of humanities objectives. These objectives may be established as broad state guidelines which would flow easily out of a statewide effort to create or adopt humanities curricula.
   a. The kinds of demands made on teachers in training or for recertification will be determined to a great degree by the establishment of school- and/or district-generated humanities curricula.
   b. The kinds of demands made on school administrators and school boards will be relative to their commitment to the integrity of the humanities. Such a commitment will necessitate the hiring of certified teachers to teach courses in art or music, for example. This will require creative budgeting to hire or obtain further training for teachers to effectively teach humanities related courses.
2. School faculties, K-12, should endeavor to develop a detailed curriculum guide for the humanities. A humanities curriculum guide can encompass and satisfy the requirement for a sequential K-12 fine arts program. A humanities course can also satisfy the requirement. What a humanities curriculum or a humanities course cannot do is replace art production and music performance courses. We firmly believe that students need the benefit of all of these experiences.

   This guide should be realistic in its demands on staff and resources, yet broad in its coverage of the many strands of the humanities. Breadth of coverage is difficult with budgetary constraints facing most school districts. Yet it is the belief of this committee that most schools possess the resources necessary to build a humanities program. This can be achieved by a focused effort and a finer tuning of the many components and expectations of teachers and their curricula. A school or district should draw upon the expertise of their teachers in history, literature, art, music, foreign languages. Additionally, a school or district could enlist the aid of "Visiting Artists," "Artists in the Schools," "Artists in Residence" and local community artists, architects, musicians, dancers, craftspeople, clergy, museum personnel, librarians, and media room personnel with their resources. These people are experts in their areas of concentration. If we do not ask them to help their colleagues sort out the humanities implications of their content areas, we waste valuable, available human resources.
3. Through the School Improvement Plan (S.I.P.), every school in Maine must submit a 5-year action plan updated on a yearly basis. This annual updating allows each school building to monitor and make adjustments to their educational goals. In turn, the school district monitors and adjusts its progress. It seems feasible and advisable that teachers and administrators committed to the humanities may effect change on a local level through this avenue. Additionally, a school whose scores on the humanities portion of the test are low would profit by including a set of humanities goals in their School Improvement Plan. The following are three key components of the humanities effort which could be incorporated into the S.I.P. imperative:

a. the creation and implementation of a humanities curriculum at the building or district level through the pooling of staff resources which could be phased in year by year;

b. the need to hire staff trained to teach humanities subjects or the allocation of funds to enable current staff to obtain more specialized training in an area of the humanities (e.g., the "Great Books" program);

c. the appropriation of funds - for the creation or improvement of materials and facilities.

4. An enthusiastic public relations effort can engender the community support needed to fund and foster a humanities program within a school district. For example, Maranacook Community School's (CSD 10) Friends of the Arts committee is a grass roots effort to improve arts programs for students. Teachers, parents and community members participate in fundraising activities from bake sales to collections at sports events.

5. Money is available for teachers, schools or school systems to improve instruction in any content area at any grade level through the office of Jean Konzel, Maine's consultant for Special Projects and Innovative Grants. This is an opportunity for experimentation, demonstration, development of curriculum guides, pamphlets, how-to booklets, etc. Very few humanities proposals are submitted to the Special Projects office. Other grants are also available through the Maine Humanities Council, such as the "Artist in Residence" grants, and the Maine Performing Arts Council.

6. Money is also available through the "2 Percent for Art" program whereby two percent of the building cost for new construction of school facilities can be used toward the purchase or commission of artwork for the school. This is a fine opportunity for a school to incorporate art into their students' daily experience and sends a strong message about a school's commitment to the arts.

7. At the state level, there are two courses of action the MEA Humanities Advisory Committee recommends.

a. First, it is important that content area specialists in the humanities be included in the school approval teams. Those individuals most intimately connected with the humanities are best qualified to evaluate a school's effectiveness in representing that discipline. These humanities specialists on the school approval team would be invaluable resources for the monitoring and supervision of recommendations regarding the humanities generated out of the approval process.

b. Second, those of us committed to the humanities must determine whether the current educational requirements are adequate to ensure a place of prominence for the humanities in our schools. The question we should ask is "What support do we need to encourage the arts and humanities in schools?" Is it money? Is it resources? Is it a more clearly-defined set of humanities objectives or curriculum? Is it a set of instructional strategies for teachers on how to integrate the humanities with ongoing instructional activities in other content areas? Is it a recommendation for a daily or weekly time allotment to be spent in humanities instruction?

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4. *Ibid.*

APPENDIX I

Advisory Committees to the Maine Educational Assessment

Current (*) and past members of the advisory committees to the Maine Educational Assessment are listed below. School and other affiliations given for past members are those that were current while they served on the committees. Their commitment of time, energy and resources has enhanced the quality of the MEA program and, consequently, the quality of education for Maine students.

MEA Reading and Writing Advisory Committee

Janet Allen ..... Univ. of Maine-Orono *
Frances Ambrose ..... SAD 75, Topsham *
Nancy Andrews ..... DECS *
Nancie Atwell ..... Middlebury College
Rae Bates ..... Katahdin High School *
Marie Benner ..... Waterville Public Library *
Beverly Bisbee ..... Academy Hill School, Wilton
John Brassil ..... Mt. Ararat High School *
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Sarah Chipman ..... Dexter Reg. High School
Ruth Davison ..... Boothbay Reg. Elementary School *
Gloria Ferland ..... Millinocket School Dept.
Al Fowler ..... Millinocket Middle School *
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Pamela Perkins ..... Bangor *
Art Perry ..... Mt. Blue High School *
Judith Pusey ..... Bangor
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Pam Rolfe ..... Limestone High School *
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Susan Stires ..... Boothbay Reg. Elementary *
Darlene Stoneton ..... Center Drive, Orrington *
Lona Tassey ..... Shaw Junior High, Gorham *
Diane Todd ..... Chelsea Elementary, Gardiner *
Doris Vladimiroff ..... Bowdoin College *
Polly Ward ..... DECS *
Susan Welsh ..... Pond Cove, Cape Elizabeth *
Mary Lee Wile ..... Mt. Ararat High School *
Margo Wood ..... Univ. of S. Maine-Gorham
Leta Young ..... Skowhegan School Dept. *

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Maria Kauffman ..... Gardiner Regional Jr. High School
Loring Kydd ..... EMVTI *
John Morang ..... Mt. Ararat School, Topsham *
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Neil Tame ..... Oxford Hills High School
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Alan Hall ..... Yarmouth High School
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Valerie Seaberg ..... DECS/Div. of Curriculum
Ted Sharp ..... Falmouth School Dept.
Maggie Villarreal ..... Limestone High School *
Kathy Ward..... Mt. Ararat School *

APPENDIX II: TEACHER QUESTIONNAIRE RESULTS

All of the questions included in the teacher questionnaires for grades 4, 8, and 11 are presented here. The order of the questions may be different from that followed in the original questionnaires. The text of the questions and answer options may be paraphrased or abbreviated from the original as well.

	Gr.4	Gr.8	Gr.11
1. Are you			
A. male	15	52	62
B. female	85	48	38
2. How many years have you taught?			
A. 1 year	4	4	4
B. 2 to 3 years	4	6	6
C. 4 to 8 years	16	12	15
D. 9 to 15 years	43	34	26
E. more than 15 years	33	41	50
3. What is your highest degree or completed planned program?			
A. Bachelor's Degree	79	65	53
B. Master's Degree	19	32	41
C. Certificate of Advanced Graduate Study	1	2	5
D. Doctorate	0	1	2
4. In what general field did you earn your Bachelor's Degree?			
A. math or math-related field	2	NA	18
B. natural sciences	2	NA	15
C. social sciences	9	NA	23
D. English or foreign language	4	NA	27
E. education	80	NA	15
5. In what general field did you earn your highest advanced degree?			
A. math or math-related field	16	NA	10
B. natural sciences	2	NA	12
C. social sciences	2	NA	16
D. English or foreign language	2	NA	15
E. education	27	NA	45
6. What do you think your primary job will be in five years?			
A. teaching at present/different level	74	52	71
B. being a school administrator	4	12	5
C. educational work/not teacher or admin.	6	12	3
D. working outside of education	7	15	12
E. retired	8	9	9
7. At which point in your educational life did you decide to become a professional educator?			
A. in high school	NA	NA	33
B. between high school and college	NA	NA	8
C. during undergraduate years	NA	NA	34
D. while in graduate school	NA	NA	4
E. after holding a different occupation	NA	NA	20
8. In your own career development, which one of the following best describes the path you followed to become a member of the teaching profession?			
A. being in right place at right time	NA	NA	25
B. following advice of counselors/teachers	NA	NA	10
C. by being encouraged by parents	NA	NA	9
D. through considered planning/action	NA	NA	55
E. by following route selected by friends	NA	NA	1

	Gr.4	Gr.8	Gr.11
9. Which of the following best describes your career decision-making style?			
A. deciding with little information	NA	NA	11
B. deciding after gathering information	NA	NA	72
C. trusting that things will work out	NA	NA	11
D. trial and error	NA	NA	6
10. Do you use computer and teacher software in lesson preparation or class management?			
A. never	NA	NA	47
B. sometimes	NA	NA	26
C. often	NA	NA	27
11. How often are students permitted to complete assignments and/or projects with the aid of a computer?			
A. never	NA	NA	15
B. sometimes	NA	NA	45
C. often	NA	NA	39
12. How many minutes of instruction in these subjects do your fourth grade students receive per week?			
A. Reading – 45 min. or less	1	NA	NA
– 46-90 min.	3	NA	NA
– 91-120 min.	3	NA	NA
– 121-160 min.	26	NA	NA
– more than 160 min.	67	NA	NA
B. Mathematics – 45 min. or less	1	NA	NA
– 46-90 min.	2	NA	NA
– 91-120 min.	4	NA	NA
– 121-160 min.	30	NA	NA
– more than 160 min.	62	NA	NA
C. Writing – 45 min. or less	6	NA	NA
– 46-90 min.	18	NA	NA
– 91-120 min.	22	NA	NA
– 121-160 min.	22	NA	NA
– more than 160 min.	15	NA	NA
D. Social Studies – 45 min. or less	3	NA	NA
– 46-90 min.	27	NA	NA
– 91-120 min.	23	NA	NA
– 121-160 min.	31	NA	NA
– more than 160 min.	14	NA	NA
E. Science – 45 min. or less	3	NA	NA
– 46-90 min.	13	NA	NA
– 91-120 min.	42	NA	NA
– 121-160 min.	29	NA	NA
– more than 160 min.	10	NA	NA
13. Indicate how much you think each of the following is a cause of unequal achievement in various subjects by boys and girls.			
A. gender of teacher (role modeling)			
– not a cause	49	NA	NA
– contributes somewhat	46	NA	NA
– contributes significantly	4	NA	NA
B. methodology used in teaching the subject			
– not a cause	35	NA	NA
– contributes somewhat	51	NA	NA
– contributes significantly	12	NA	NA
C. influences in the home			
– not a cause	5	NA	NA
– contributes somewhat	41	NA	NA
– contributes significantly	53	NA	NA

	Gr.4	Gr.8	Gr.11
D. peer pressure			
– not a cause	36	NA	NA
– contributes somewhat	45	NA	NA
– contributes significantly	17	NA	NA

14. How often do you present to students the social, historical or cultural context of the material which you are covering in class?

A. always	NA	12	NA
B. frequently	NA	52	NA
C. occasionally	NA	33	NA
D. never or hardly ever	NA	3	NA

15. Please indicate what type(s) of training in writing instruction you have participated in within the past three years.

A. college courses	– Yes	NA	41	41
	– No	NA	54	58
B. multiple-session workshops	– Yes	NA	45	54
	– No	NA	50	47
C. one-day inservice workshop	– Yes	NA	67	73
	– No	NA	28	27
D. visiting exemplary classrooms	– Yes	NA	25	29
	– No	NA	71	70

16. Please indicate what type(s) of training in reading instruction you have participated in within the past three years.

A. college courses	– Yes	NA	42	34
	– No	NA	44	65
B. multiple-session workshops	– Yes	NA	43	37
	– No	NA	53	63
C. one-day inservice workshop	– Yes	NA	61	57
	– No	NA	34	42
D. visiting exemplary classrooms	– Yes	NA	25	24
	– No	NA	71	76

17. For each of the following, indicate whether, in the past five years, you have had formal training, informal training, neither, or both.

A. methods of teaching writing	– formal	12	NA	NA
	– informal	37	NA	NA
	– neither	6	NA	NA
	– both	44	NA	NA
B. methods of teaching reading	– formal	10	NA	NA
	– informal	44	NA	NA
	– neither	10	NA	NA
	– both	34	NA	NA
C. computer use in language arts	– formal	8	NA	NA
	– informal	22	NA	NA
	– neither	39	NA	NA
	– both	13	NA	NA

18. Who has conducted your district's language arts inservice workshops most frequently within the past three years?

A. district teachers	NA	26	29
B. district administrators	NA	7	5
C. state department consultants	NA	8	10
D. university or private consultants	NA	27	29
E. district hasn't provided lang. inservice	NA	17	25

19. Do you belong to the International Reading Association, the National Council of Teachers of English or a similar national, regional or state organization of language arts/English educators?

A. Yes	15	36	58
B. No	84	56	40

	Gr.4	Gr.8	Gr.11

20. How many conferences for professional language arts/English educators have you attended in the past five years?

A. none	47	30	21
B. 1 or 2	31	32	31
C. 3 or 4	14	18	30
D. 5 or 6	4	8	12
E. 7 or more	2	5	7

21. How often do you devote instructional time to discussing and demonstrating each of the following with your students?

A. strategies for taking notes while listening			
– almost daily	19	NA	NA
– at least once a week	12	NA	NA
– at least once a month	21	NA	NA
– less than once a month	46	NA	NA
B. using context to derive word meanings			
– almost daily	52	NA	NA
– at least once a week	43	NA	NA
– at least once a month	5	NA	NA
– less than once a month	1	NA	NA
C. ways to analyze/evaluate/criticize what is read			
– almost daily	34	NA	NA
– at least once a week	50	NA	NA
– at least once a month	10	NA	NA
– less than once a month	5	NA	NA
D. using reading skills in other content areas			
– almost daily	55	NA	NA
– at least once a week	36	NA	NA
– at least once a month	7	NA	NA
– less than once a month	2	NA	NA
E. formulating questions in order to read with purpose			
– almost daily	40	NA	NA
– at least once a week	29	NA	NA
– at least once a month	9	NA	NA
– less than once a month	5	NA	NA

22. How often do you provide students with time to read materials of their own choosing?

A. every day	76	NA	NA
B. two or three times a week	16	NA	NA
C. once a week	5	NA	NA
D. less than once a week	2	NA	NA
E. never	0	NA	NA

23. Which of the following kinds of materials forms the basis for the majority of the instruction in your reading program?

A. middle school basals	NA	22	NA
B. literature anthologies	NA	27	NA
C. novels/nonfiction tradebooks	NA	20	NA
D. student-selected individualized reading	NA	13	NA
E. We have no formal reading instruction	NA	2	NA

24. How often do you devote instructional time to discussion, demonstration, or modeling the following with your students?

A. formulating questions in order to read with a purpose			
– more than half the time	NA	53	50
– about half the time	NA	25	27
– less than half the time	NA	14	18
– never or hardly ever	NA	5	5
B. strategies for analyzing, evaluating & criticizing what is read			
– more than half the time	NA	46	59
– about half the time	NA	32	29
– less than half the time	NA	12	11
– never or hardly ever	NA	4	1

	Gr.4	Gr.8	Gr.11
C. using reading skills in other content areas			
– more than half the time	NA	43	21
– about half the time	NA	25	20
– less than half the time	NA	19	35
– never or hardly ever	NA	9	22
25. How often is each of the following sentences true for you?			
A. I let my students choose their own topics to write about.			
– almost every time	44	NA	NA
– more than half the time	22	NA	NA
– about half the time	18	NA	NA
– less than half the time	14	NA	NA
– never or hardly ever	2	NA	NA
B. I share what I have written with my students.			
– almost every time	10	NA	NA
– more than half the time	29	NA	NA
– about half the time	12	NA	NA
– less than half the time	22	NA	NA
– never or hardly ever	26	NA	NA
C. I write multiple drafts while working on a piece of writing.			
– almost every time	53	NA	NA
– more than half the time	13	NA	NA
– about half the time	24	NA	NA
– less than half the time	6	NA	NA
– never or hardly ever	3	NA	NA
26. When you require your students to write, how often do you ask them to do each of the following?			
A. make notes before they write			
– almost every time	39	NA	NA
– more than half the time	14	NA	NA
– about half the time	11	NA	NA
– less than half the time	10	NA	NA
– never or hardly ever	8	NA	NA
B. engage in prewriting activities			
– almost every time	NA	70	67
– more than half the time	NA	17	19
– about half the time	NA	6	8
– less than half the time	NA	4	4
– never or hardly ever	NA	3	2
C. choose their own topics to write about			
– almost every time	NA	26	22
– more than half the time	NA	29	26
– about half the time	NA	33	31
– less than half the time	NA	8	19
– never or hardly ever	NA	3	3
D. talk with you about contents while they are working on it			
– almost every time	30	44	40
– more than half the time	42	26	27
– about half the time	14	16	18
– less than half the time	11	11	12
– never or hardly ever	3	2	3
E. talk with classmates about paper while working on it			
– almost every time	31	42	32
– more than half the time	36	24	27
– about half the time	12	15	19
– less than half the time	14	12	15
– never or hardly ever	6	6	6
F. write the paper more than once before it is graded			
– almost every time	56	70	56
– more than half the time	15	15	22
– about half the time	23	8	12
– less than half the time	5	4	6
– never or hardly ever	1	2	3

	Gr.4	Gr.8	Gr.11
G. work on the paper again after it has been graded			
– almost every time	7	NA	NA
– more than half the time	11	NA	NA
– about half the time	19	NA	NA
– less than half the time	24	NA	NA
– never or hardly ever	31	NA	NA
27. Have you assigned each of the following types of writing to your students in the past two weeks?			
A. notes and/or summaries – Yes	NA	77	91
– No	NA	22	9
B. journal entries – Yes	NA	50	49
– No	NA	50	50
C. stories, poetry, plays – Yes	NA	83	68
– No	NA	17	32
D. book reports – Yes	NA	55	62
– No	NA	42	37
E. essays – Yes	NA	68	95
– No	NA	31	5
F. research reports – Yes	NA	28	64
– No	NA	71	35
28. How many courses have you taken in each of the following disciplines?			
A. mathematics – none	7	2	1
– one	11	8	3
– two	38	15	4
– three	22	14	4
– four or more	22	61	88
B. statistics – none	61	28	NA
– one	30	36	NA
– two	7	27	NA
– three	1	6	NA
– four or more	0	2	NA
C. computer science – none	30	29	17
– one	35	27	22
– two	28	25	23
– three	5	9	18
– four or more	3	10	20
D. mathematics teaching methods			
– none	NA	NA	22
– one	NA	NA	28
– two	NA	NA	26
– three	NA	NA	11
– four or more	NA	NA	13
29. In the past two years, have you attended a workshop, conference, or taken a class dealing with mathematics education?			
A. Yes	59	NA	NA
B. No	40	NA	NA
30. In the past two years, how much of the inservice time available in your school system has been dedicated to mathematics education?			
A. all or most of the time	1	2	NA
B. a fair amount of the time	38	19	NA
C. very little of the time	41	43	NA
D. none of the time	19	31	NA
31. In the past two years, have you met with teachers above or below your grade level to discuss mathematics education?			
A. Yes	54	73	NA
B. No	29	23	NA

	Gr.4	Gr.8	Gr.11
32. In the last 5 years, has your school done a mathematics curriculum revision other than adopting new textbooks?			
A. Yes	68	NA	NA
B. No	32	NA	NA
33. Do you belong to the National Council of Teachers of Mathematics or a similar national, regional, or state organization of mathematics educators?			
A. Yes	4	15	35
B. No	95	80	65
34. How many conferences for professional mathematics educators have you attended in the last two years?			
A. five or more	NA	4	3
B. three or four	NA	9	14
C. one or two	NA	30	39
D. none	NA	56	43
35. In the past 3 years, what percent of the mathematics teachers in your school have attended a national, state, or regional mathematics conference?			
A. less than 25%	NA	NA	42
B. 25-50%	NA	NA	29
C. 50-75%	NA	NA	14
D. more than 75%	NA	NA	15
36. What portion of your classes are mathematics classes?			
A. all of my classes	NA	38	NA
B. 3/4 of my classes	NA	12	NA
C. 1/2 of my classes	NA	12	NA
D. less than 1/2 of my classes	NA	36	NA
37. Do you consider yourself primarily a teacher of mathematics as opposed to some other subject area?			
A. Yes	NA	53	NA
B. No	NA	44	NA
38. What type of certification do you hold?			
A. K-8	NA	33	NA
B. 7-12	NA	29	NA
C. K-12	NA	19	NA
D. other	NA	15	NA
39. What percent of math class time is spent teaching and practicing computation?			
A. 25% or less	3	NA	NA
B. 25-50%	45	NA	NA
C. 50-75%	47	NA	NA
D. 75-100%	5	NA	NA
40. How often does each of these things happen this year in your typical math class?			
A. Students work in small groups in the classroom.			
– never	3	6	7
– a few times a year	15	23	30
– a few times a month	25	31	28
– a few times a week	38	17	22
– almost every day	18	21	13
B. Students work on projects or investigations.			
– never	11	NA	30
– a few times a year	38	NA	55
– a few times a month	44	NA	9
– a few times a week	6	NA	4
– almost every day	2	NA	2

	Gr.4	Gr.8	Gr.11
C. Students work at the chalkboard or use an overhead.			
– never	2	NA	NA
– a few times a year	5	NA	NA
– a few times a month	23	NA	NA
– a few times a week	34	NA	NA
– almost every day	36	NA	NA
D. Students use computers to learn or practice math skills.			
– never	22	27	NA
– a few times a year	34	32	NA
– a few times a month	21	22	NA
– a few times a week	15	14	NA
– almost every day	8	4	NA
E. Students use computers to learn or practice programming.			
– never	71	NA	NA
– a few times a year	13	NA	NA
– a few times a month	9	NA	NA
– a few times a week	5	NA	NA
– almost every day	2	NA	NA
F. Students use calculators in class.			
– never	43	22	NA
– a few times a year	40	28	NA
– a few times a month	11	20	NA
– a few times a week	4	19	NA
– almost every day	1	9	NA
G. The teacher discusses problem solving with the students.			
– never	NA	NA	0
– a few times a year	NA	NA	8
– a few times a month	NA	NA	23
– a few times a week	NA	NA	29
– almost every day	NA	NA	39
41. How are calculators used in your mathematics classes?			
A. used at all times	NA	22	60
B. used at all times except during tests	NA	4	17
C. used on homework only	NA	7	11
D. used to check their work only	NA	35	NA
E. not allowed use of calculator	NA	25	10
42. How would you rate your math program in terms of how well it serves the needs of your college-bound students?			
A. outstanding	NA	NA	46
B. good	NA	NA	41
C. adequate	NA	NA	10
D. inadequate	NA	NA	3
43. How would you rate your math program in terms of how well it serves the needs of students who are not college-bound?			
A. outstanding	NA	NA	11
B. good	NA	NA	48
C. adequate	NA	NA	32
D. inadequate	NA	NA	9
44. How many courses have you taken in each of the following disciplines?			
A. biology – none	28	6	16
– one	38	21	9
– two	24	16	13
– three	5	13	6
– four or more	5	44	56
B. chemistry – none	50	21	5
– one	38	24	8
– two	9	25	12
– three	1	14	10
– four or more	2	15	65

		Gr.4	Gr.8	Gr.11
C. physics	– none	60	28	9
	– one	33	35	14
	– two	6	23	35
	– three	0	9	13
	– four or more	0	6	29
D. earth/space sciences	– none	39	19	27
	– one	28	24	24
	– two	20	18	18
	– three	8	12	11
	– four or more	5	28	19
E. science methods	– none	25	NA	21
	– one	46	NA	36
	– two	21	NA	26
	– three	6	NA	5
	– four or more	2	NA	13

45. In the past two years, have you attended a workshop, conference, or taken a class dealing with science education?

	Gr.4	Gr.8	Gr.11
A. Yes	NA	69	34
B. No	NA	30	48

46. In the past two years, how much of the inservice time available in your school system has focused on science education?

	Gr.4	Gr.8	Gr.11
A. all or most of the time	2	1	NA
B. a fair amount of the time	16	19	NA
C. very little of the time	33	47	NA
D. none of the time	29	30	NA

47. In the last 5 years, has your school done a science curriculum revision other than adopting new textbooks?

	Gr.4	Gr.8	Gr.11
A. Yes	41	NA	NA
B. No	40	NA	NA

48. Are you a member of

		Gr.4	Gr.8	Gr.11
A. NSTA	– Yes	NA	22	NA
	– No	NA	77	NA
B. MSTA	– Yes	NA	30	NA
	– No	NA	69	NA
C. Other	– Yes	NA	19	NA
	– No	NA	80	NA

49. Are you a member of the National Science Teachers Association or a similar national or regional organization of science educators?

	Gr.4	Gr.8	Gr.11
A. Yes	NA	NA	51
B. No	NA	NA	49

50. How many conferences or workshops for science teachers have you attended in the past 2 years?

	Gr.4	Gr.8	Gr.11
A. none	NA	NA	18
B. one or two	NA	NA	47
C. three or four	NA	NA	24
D. five or six	NA	NA	8
E. seven or more	NA	NA	4

51. Have you received any formal training in laboratory safety in the past 2 years?

	Gr.4	Gr.8	Gr.11
A. Yes	NA	NA	37
B. No	NA	NA	62

52. What do you think your primary job will be in five years?

	Gr.4	Gr.8	Gr.11
A. teaching science at present/different level	NA	51	65
B. being a school administrator	NA	8	6
C. educational work/not teacher or admin.	NA	9	3
D. working outside of education	NA	18	16
E. retired	NA	7	9

53. In the past two years, have you met with teachers above or below your grade level to discuss science education?

	Gr.4	Gr.8	Gr.11
A. Yes	NA	83	NA
B. No	NA	16	NA

54. What portion of your classes are science classes?

	Gr.4	Gr.8	Gr.11
A. all of my classes	NA	39	NA
B. 3/4 of my classes	NA	18	NA
C. 1/2 of my classes	NA	13	NA
D. less than 1/2 of my classes	NA	29	NA

55. Do you consider yourself primarily a teacher of science as opposed to some other subject area?

	Gr.4	Gr.8	Gr.11
A. Yes	NA	63	NA
B. No	NA	36	NA

56. What type of certification do you hold?

	Gr.4	Gr.8	Gr.11
A. K-8	NA	37	NA
B. 7-12	NA	36	NA
C. K-12	NA	14	NA
D. other	NA	9	NA

57. What science courses do you teach?

	Gr.4	Gr.8	Gr.11
A. biology only	NA	NA	14
B. chemistry only	NA	NA	27
C. physics only	NA	NA	16
D. biology and chemistry	NA	NA	14
E. chemistry and physics	NA	NA	27

58. In your opinion, how much does each of the following affect science instruction and achievement in your school?

		Gr.4	Gr.8	Gr.11
A. belief that science isn't as important as other subjects				
	– serious problem	7	NA	NA
	– somewhat of a problem	52	NA	NA
	– not a significant problem	40	NA	NA
B. lack of student interest in science				
	– serious problem	2	NA	NA
	– somewhat of a problem	24	NA	NA
	– not a significant problem	73	NA	NA
C. lack of opportunity and/or support for inservice				
	– serious problem	17	NA	NA
	– somewhat of a problem	54	NA	NA
	– not a significant problem	28	NA	NA
D. lack of materials or equipment				
	– serious problem	42	18	NA
	– somewhat of a problem	37	44	NA
	– not a significant problem	21	37	NA
E. mismatch between student reading ability and materials				
	– serious problem	10	14	NA
	– somewhat of a problem	54	51	NA
	– not a significant problem	35	34	NA

59. Does your school have adequate indoor laboratory facilities and equipment for science instruction?

	Gr.4	Gr.8	Gr.11
A. Yes	NA	52	NA
B. No	NA	45	NA

60. How often does each of these things happen this year in your typical science class?

		Gr.4	Gr.8	Gr.11
A. Teacher talks while students listen and take notes.				
	– never	30	NA	NA
	– a few times a year	11	NA	NA

	Gr.4	Gr.8	Gr.11
– a few times a month	23	NA	NA
– a few times a week	27	NA	NA
– almost every day	8	NA	NA
B. Teacher and students discuss science topics.			
– never	1	NA	NA
– a few times a year	2	NA	NA
– a few times a month	10	NA	NA
– a few times a week	54	NA	NA
– almost every day	33	NA	NA
C. Teacher presents demonstration/investigation to students.			
– never	3	NA	NA
– a few times a year	27	NA	NA
– a few times a month	58	NA	NA
– a few times a week	11	NA	NA
– almost every day	1	NA	NA
D. Students do laboratory work in small groups.			
– never	14	NA	NA
– a few times a year	51	NA	NA
– a few times a month	28	NA	NA
– a few times a week	8	NA	NA
– almost every day	1	NA	NA
E. Students do laboratory work individually.			
– never	45	NA	NA
– a few times a year	35	NA	NA
– a few times a month	16	NA	NA
– a few times a week	3	NA	NA
– almost every day	0	NA	NA
F. Students use computers.			
– never	46	NA	NA
– a few times a year	31	NA	NA
– a few times a month	12	NA	NA
– a few times a week	7	NA	NA
– almost every day	4	NA	NA

61. By the end of this year, how many times will you have taken your class outside of the building for field studies or trips connected with the science curriculum?

A. more than 10 times	NA	NA	9
B. 6-10 times	NA	NA	7
C. 1-5 times	NA	NA	50
D. 0 times	NA	NA	34

62. Is computer use integrated into your science curriculum?

A. Yes	NA	NA	16
B. Somewhat	NA	NA	41
C. No	NA	NA	43

63. By graduation, will all students in your school have had the equivalent of a full year's instruction in earth and space science during grades 7-12?

A. Yes	NA	NA	51
B. No	NA	NA	48

64. By graduation, will all students in your school have had the equivalent of a full year's instruction in a physical science?

A. Yes	NA	NA	72
B. No	NA	NA	27

65. How would you rate your science program in terms of how well it serves the needs of your college-bound students?

A. outstanding	NA	NA	33
B. good	NA	NA	55
C. adequate	NA	NA	10
D. inadequate	NA	NA	2

	Gr.4	Gr.8	Gr.11
66. How would you rate your science program in terms of how well it serves the needs of students who are not college-bound?			
A. outstanding	NA	NA	6
B. good	NA	NA	40
C. adequate	NA	NA	43
D. inadequate	NA	NA	10
67. How many college courses have you taken in each of the following disciplines?			
A. history – none	NA	NA	1
– one	NA	NA	1
– two	NA	NA	3
– three	NA	NA	5
– four or more	NA	NA	90
B. political science – none	NA	NA	8
– one	NA	NA	14
– two	NA	NA	20
– three	NA	NA	16
– four or more	NA	NA	42
C. geography – none	NA	NA	38
– one	NA	NA	25
– two	NA	NA	15
– three	NA	NA	11
– four or more	NA	NA	11
D. economics – none	NA	NA	25
– one	NA	NA	29
– two	NA	NA	24
– three	NA	NA	10
– four or more	NA	NA	12
E. sociology – none	NA	NA	16
– one	NA	NA	33
– two	NA	NA	28
– three	NA	NA	7
– four or more	NA	NA	15
F. anthropology – none	NA	NA	51
– one	NA	NA	26
– two	NA	NA	15
– three	NA	NA	3
– four or more	NA	NA	5
G. philosophy – none	NA	NA	28
– one	NA	NA	35
– two	NA	NA	24
– three	NA	NA	6
– four or more	NA	NA	7
H. psychology – none	NA	NA	5
– one	NA	NA	20
– two	NA	NA	25
– three	NA	NA	23
– four or more	NA	NA	28

68. Do you belong to the National Council for the Social Studies or a similar national, regional, or state organization of social studies educators?

A. Yes	2	NA	28
B. No	94	NA	72

69. How many conferences for professional social studies educators have you attended in the last 2 years?

A. none	NA	NA	41
B. one or two	NA	NA	37
C. three or four	NA	NA	16
D. five or six	NA	NA	3
E. seven or more	NA	NA	2

		Gr.4	Gr.8	Gr.11
70. Is there a sequential K through 12 social studies curriculum in your district?				
A. Yes		70	63	NA
B. No		30	29	NA
71. Is there a particular social studies textbook series used to support the curriculum in your school/district?				
A. Yes		75	38	NA
B. No		25	54	NA
72. At what grade level is each of the following primarily covered as part of the scope and sequence of the social studies program currently being used in your school or district?				
A. Yourself/Your Family	– K	31	NA	NA
	– Grade 1	20	NA	NA
	– Grade 2	4	NA	NA
	– Grade 3	1	NA	NA
	– Grade 4	0	NA	NA
B. Communities/Neighborhoods	– K	1	NA	NA
	– Grade 1	21	NA	NA
	– Grade 2	20	NA	NA
	– Grade 3	22	NA	NA
	– Grade 4	1	NA	NA
C. America's Neighbors	– K	0	NA	NA
	– Grade 1	1	NA	NA
	– Grade 2	4	NA	NA
	– Grade 3	5	NA	NA
	– Grade 4	13	NA	NA
D. Maine Studies	– K	0	NA	NA
	– Grade 1	1	NA	NA
	– Grade 2	1	NA	NA
	– Grade 3	5	NA	NA
	– Grade 4	63	NA	NA
	– Grade 5	NA	2	NA
	– Grade 6	NA	3	NA
	– Grade 7	NA	33	NA
	– Grade 8	NA	52	NA
	– Grade 9	NA	3	NA
E. United States Geography	– K	0	NA	NA
	– Grade 1	0	NA	NA
	– Grade 2	0	NA	NA
	– Grade 3	4	NA	NA
	– Grade 4	54	NA	NA
	– Grade 5	NA	28	NA
	– Grade 6	NA	11	NA
	– Grade 7	NA	33	NA
	– Grade 8	NA	20	NA
	– Grade 9	NA	2	NA
F. U.S. History (pre-Civil War)	– K	0	NA	NA
	– Grade 1	0	NA	NA
	– Grade 2	0	NA	NA
	– Grade 3	2	NA	NA
	– Grade 4	20	NA	NA
	– Grade 5	NA	8	NA
	– Grade 6	NA	3	NA
	– Grade 7	NA	17	NA
	– Grade 8	NA	68	NA
	– Grade 9	NA	0	NA
G. U.S. History (post-Civil War)	– K	0	NA	NA
	– Grade 1	0	NA	NA
	– Grade 2	0	NA	NA
	– Grade 3	1	NA	NA
	– Grade 4	8	NA	NA
	– Grade 5	NA	2	NA
	– Grade 6	NA	4	NA
	– Grade 7	NA	3	NA
	– Grade 8	NA	55	NA
	– Grade 9	NA	5	NA
H. Ancient History	– Grade 5	NA	3	NA
	– Grade 6	NA	21	NA
	– Grade 7	NA	20	NA
	– Grade 8	NA	2	NA
	– Grade 9	NA	20	NA
I. Modern World History	– Grade 5	NA	2	NA
	– Grade 6	NA	13	NA
	– Grade 7	NA	15	NA
	– Grade 8	NA	4	NA
	– Grade 9	NA	18	NA
J. Civics/Government	– K	0	NA	NA
	– Grade 1	0	NA	NA
	– Grade 2	0	NA	NA
	– Grade 3	2	NA	NA
	– Grade 4	13	NA	NA
	– Grade 5	NA	1	NA
	– Grade 6	NA	2	NA
	– Grade 7	NA	4	NA
	– Grade 8	NA	28	NA
	– Grade 9	NA	29	NA
K. Economics	– K	0	NA	NA
	– Grade 1	0	NA	NA
	– Grade 2	0	NA	NA
	– Grade 3	1	NA	NA
	– Grade 4	6	NA	NA
	– Grade 9	NA	NA	2
	– Gr. 10	NA	NA	8
	– Gr. 11	NA	NA	13
	– Gr. 12	NA	NA	13
	– not off.	NA	NA	26
L. Area Studies	– Grade 5	NA	7	NA
	– Grade 6	NA	11	NA
	– Grade 7	NA	21	NA
	– Grade 8	NA	14	NA
	– Grade 9	NA	5	11
	– Gr. 10	NA	NA	18
	– Gr. 11	NA	NA	5
	– Gr. 12	NA	NA	8
	– not off.	NA	NA	57
M. World Geography	– K	0	NA	NA
	– Grade 1	0	NA	NA
	– Grade 2	0	NA	NA
	– Grade 3	2	NA	NA
	– Grade 4	30	NA	NA
	– Grade 5	NA	4	NA
	– Grade 6	NA	9	NA
	– Grade 7	NA	42	NA
	– Grade 8	NA	7	NA
	– Grade 9	NA	9	NA
N. World Cultures	– K	0	NA	NA
	– Grade 1	0	NA	NA
	– Grade 2	2	NA	NA
	– Grade 3	2	NA	NA
	– Grade 4	22	NA	NA
O. Geography	– Grade 9	NA	NA	53
	– Gr. 10	NA	NA	21
	– Gr. 11	NA	NA	1
	– Gr. 12	NA	NA	1
	– not off.	NA	NA	23

		Gr.4	Gr.8	Gr.11
P. World History	– Gr. 9	NA	NA	36
	– Gr. 10 ..	NA	NA	50
	– Gr. 11 ..	NA	NA	3
	– Gr. 12 ..	NA	NA	1
	– not off..	NA	NA	7
Q. U.S. History	– Gr. 9	NA	NA	1
	– Gr. 10 ..	NA	NA	6
	– Gr. 11 ..	NA	NA	88
	– Gr. 12 ..	NA	NA	1
	– not off..	NA	NA	0
R. Sociology	– Gr. 9	NA	NA	3
	– Gr. 10 ..	NA	NA	10
	– Gr. 11 ..	NA	NA	20
	– Gr. 12 ..	NA	NA	32
	– not off..	NA	NA	33
S. Psychology	– Gr. 9	NA	NA	2
	– Gr. 10 ..	NA	NA	11
	– Gr. 11 ..	NA	NA	22
	– Gr. 12 ..	NA	NA	37
	– not off..	NA	NA	23
T. American Government	– Gr. 9	NA	NA	24
	– Gr. 10 ..	NA	NA	9
	– Gr. 11 ..	NA	NA	13
	– Gr. 12 ..	NA	NA	44
	– not off..	NA	NA	9
U. Current Events	– Gr. 9	NA	NA	19
	– Gr. 10 ..	NA	NA	17
	– Gr. 11 ..	NA	NA	8
	– Gr. 12 ..	NA	NA	23
	– not off..	NA	NA	29

73. How often does each of these things happen in your social studies class or as part of your social studies course?

	Gr.4	Gr.8	Gr.11
A. Teacher presents information/students take notes.			
– never	NA	3	NA
– a few times a year	NA	12	NA
– at least once a month	NA	11	NA
– at least once a week	NA	41	NA
– just about daily	NA	26	NA
B. Teacher and students discuss current events.			
– never	1	0	NA
– a few times a year	8	3	NA
– at least once a month	19	12	NA
– at least once a week	53	51	NA
– just about daily	19	28	NA
C. Students take tests that require students to write.			
– never	NA	0	NA
– a few times a year	NA	6	NA
– at least once a month	NA	50	NA
– at least once a week	NA	35	NA
– just about daily	NA	2	NA
D. Students view filmstrips or videotapes in class.			
– never	NA	2	NA
– a few times a year	NA	16	NA
– at least once a month	NA	50	NA
– at least once a week	NA	24	NA
– just about daily	NA	1	NA
E. Students do individual, group or class projects.			
– never	1	2	NA
– a few times a year	33	35	NA
– at least once a month	48	41	NA
– at least once a week	14	11	NA
– just about daily	3	5	NA
F. Students read or answer questions from textbooks.			
– never	5	5	NA
– a few times a year	9	11	NA
– at least once a month	12	14	NA
– at least once a week	43	36	NA
– just about daily	30	27	NA
G. Students write reports or do individual research.			
– never	4	5	NA
– a few times a year	60	41	NA
– at least once a month	31	40	NA
– at least once a week	5	8	NA
– just about daily	0	1	NA

74. How often do you use the "process model" approach with your students when you give writing assignments as part of the social studies course?

	Gr.4	Gr.8	Gr.11
A. never	NA	27	NA
B. on selected assignments	NA	60	NA
C. on all assignments	NA	6	NA

75. Which of the following best describes the social studies program in your school?

	Gr.4	Gr.8	Gr.11
A. effective	28	NA	NA
B. adequate	62	NA	NA
C. ineffective	10	NA	NA

76. Which of the following best describes the social studies program in your district?

	Gr.4	Gr.8	Gr.11
A. effective	21	NA	NA
B. adequate	67	NA	NA
C. ineffective	9	NA	NA

77. How would you rate your social studies program in terms of how well it serves the needs of your college-bound students?

	Gr.4	Gr.8	Gr.11
A. outstanding	NA	NA	25
B. good	NA	NA	55
C. adequate	NA	NA	15
D. inadequate	NA	NA	5

78. How would you rate your social studies program in terms of how well it serves the needs of students who are not college-bound?

	Gr.4	Gr.8	Gr.11
A. outstanding	NA	NA	9
B. good	NA	NA	55
C. adequate	NA	NA	30
D. inadequate	NA	NA	6

79. Do you feel adequately prepared to teach health?

	Gr.4	Gr.8	Gr.11
A. Yes	NA	20	NA
B. somewhat	NA	28	NA
C. No	NA	51	NA

80. What of the following has been most helpful in preparing you to teach health education information?

	Gr.4	Gr.8	Gr.11
A. college preparatory program	NA	29	NA
B. graduate work	NA	5	NA
C. inservice training	NA	10	NA
D. workshops/conferences	NA	11	NA
E. personal reading	NA	44	NA

81. How important do you feel health education is for your students?

	Gr.4	Gr.8	Gr.11
A. very important	NA	54	NA
B. somewhat important	NA	13	NA
C. not very important	NA	1	NA

	Gr.4	Gr.8	Gr.11
82. Does your school district have a comprehensive health education curriculum?			
A. Yes	NA	46	NA
B. No	NA	30	NA
C. One is being developed	NA	24	NA
83. Is health education integrated into the total curriculum or taught as a separate subject in your school?			
A. integrated	NA	45	NA
B. separate subject	NA	53	NA
84. Which type of materials do you mainly utilize in health education class?			
A. health textbook	NA	4	NA
B. pre-packaged comprehensive curriculum	NA	3	NA
C. specific categorical curricula	NA	5	NA
D. free materials and booklets	NA	4	NA
E. I do not teach a health education class.	NA	84	NA
85. In your opinion, how much of a problem does each of the following factors cause in health education?			
A. lack of administrative support			
– serious problem	NA	14	NA
– somewhat of a problem	NA	21	NA
– not a serious problem	NA	63	NA
B. lack of materials			
– serious problem	NA	17	NA
– somewhat of a problem	NA	40	NA
– not a serious problem	NA	41	NA
C. lack of student interest			
– serious problem	NA	11	NA
– somewhat of a problem	NA	35	NA
– not a serious problem	NA	53	NA
D. lack of community support			
– serious problem	NA	13	NA
– somewhat of a problem	NA	35	NA
– not a serious problem	NA	51	NA
E. lack of comprehensive curriculum			
– serious problem	NA	22	NA
– somewhat of a problem	NA	35	NA
– not a serious problem	NA	41	NA
F. lack of time allotted for the teaching of health education			
– serious problem	NA	29	NA
– somewhat of a problem	NA	32	NA
– not a serious problem	NA	37	NA
G. lack of opportunity and/or support for inservice			
– serious problem	NA	14	NA
– somewhat of a problem	NA	41	NA
– not a serious problem	NA	43	NA
86. Does your school offer health promotion opportunities for staff?			
A. Yes	NA	36	NA
B. No	NA	63	NA
87. In the past five years, how many workshops have you attended that involved the incorporation of career education concepts into regular classroom instruction?			
A. none	42	NA	NA
B. one	13	NA	NA
C. two	8	NA	NA
D. three	6	NA	NA
E. four or more	32	NA	NA

	Gr.4	Gr.8	Gr.11
88. How often does your classroom instruction promote non-gender-biased decision making as it relates to career or work roles?			
A. daily	26	NA	NA
B. once or twice a week	24	NA	NA
C. once or tweice a month	19	NA	NA
D. a few times a year	30	NA	NA
E. never	2	NA	NA
89. Which one of the following clusters of objectives does your school emphasize most for fourth grade students?			
A. Recognize the role and responsibilities of each family member; identify within the home unit those items that are needed and those that are wanted; identify similarities and differences between home roles and school roles; be aware of the wage earner's job and how it affects the home	2	NA	NA
B. Be aware that school is a job that requires mastery of basic skills for success; become aware that jobs and communities are dependent on each other; recognize similarities and differences between producers and consumers; be aware of the work that people do in other cities of the world	30	NA	NA
C. Be aware of the importance of "self" as an individual and as a worthwhile member of groups; learn to use problem-solving skills in making decisions; be aware of individual strengths and weaknesses and their relationships to job choices	66	NA	NA
90. What is the one most essential set of skills and/or knowledge needed to assist you in helping students to choose their 9th grade curriculum?			
A. knowledge of curriculum offerings in the high school and graduation requirement	NA	24	NA
B. relationship of course selection to entrance requirements for 2- and 4-year colleges, vocational/technical institutes, apprenticeship programs, licensing requirements, occupational entrance requirements	NA	9	NA
C. individual student background including aptitudes, abilities, interests, and academic record	NA	66	NA
D. knowing effective strategies for involving parents in students' curriculum selection	NA	3	NA
91. Are you aware of the secondary vocational center or region serving your community?			
A. Yes	NA	92	NA
B. No	NA	8	NA
92. Are you aware of the impact of the Educational Reform Act on freshman students who elect to enter a vocational program as a high school junior?			
A. Yes	NA	51	NA
B. No	NA	49	NA
93. Which of the following best describes your role in promoting student aspirations?			
A. I include discussions of aspirations in my regular instructional program.	NA	NA	37
B. I suggest job, further education or career options to individual students/classes of students	NA	NA	35
C. I make sure that all students have given consideration to a goal relative to a job, job training, or further education program after graduation	NA	NA	10
D. I make sure that all students have made at least a tentative decision relative to a job, job training or vocational, college or university program following graduation.	NA	NA	5
E. none of the above	NA	NA	14

PRINCIPAL QUESTIONNAIRE RESULTS

All of the questions included in the principal questionnaires for grades 4, 8, and 11 are presented here. The order of the questions may be different from that followed in the original questionnaires. The text of the questions and answer options may be paraphrased or abbreviated from the original as well.

	Gr.4	Gr.8	Gr.11
1. Are you			
A. male	66	79	95
B. female	34	21	5
2. In what general field did you earn your Bachelor's Degree?			
A. math or math-related field	3	NA	NA
B. natural sciences	5	NA	NA
C. social sciences	17	NA	NA
D. English or foreign language	5	NA	NA
E. education	65	NA	NA
3. In what general field did you earn your highest advanced degree?			
A. math or math-related field	1	NA	NA
B. natural sciences	1	NA	NA
C. social sciences	2	NA	NA
D. English or foreign language	1	NA	NA
E. education	75	NA	NA
4. How many years of teaching experience have you had?			
A. 0-4	5	6	5
B. 5-9	24	20	17
C. 10-14	27	26	19
D. 15-19	19	20	24
E. 20 or more	26	28	36
5. Have you taught at each of the following grade levels?			
A. K-5 – Yes	82	NA	NA
– No	18	NA	NA
B. 6-8 – Yes	81	NA	NA
– No	18	NA	NA
C. 9-12 – Yes	31	NA	NA
– No	68	NA	NA
6. Have you taught each of the following subjects for at least one full year?			
A. English/language arts – Yes	88	68	35
– No	11	32	64
B. mathematics – Yes	90	71	46
– No	10	29	54
C. science – Yes	89	68	30
– No	10	32	69
D. social studies – Yes	88	74	57
– No	11	26	43
7. Which of the following is closest to the percentage of time you devote to functioning as an instructional leader in a typical week?			
A. 0%	3	1	1
B. 5%	13	11	8
C. 10%	22	25	28
D. 20%	35	37	36
E. 30% or more	26	26	28
8. Which of the following best describes the community in which your school is located?			
A. urban	10	5	9
B. suburban	8	8	15
C. small town	32	41	39
D. rural	50	45	36
9. What is the population of the city or town in which your school is located?			
A. 0 - 1,000	26	27	11
B. 1,001 - 3,000	33	33	24
C. 3,001 - 10,000	24	26	48
D. 10,001 - 20,000	8	6	9
E. over 20,000	9	8	8
10. Which of the following best describes your school's location?			
A. northern coastal	17	24	12
B. southern coastal	25	21	28
C. northern inland	16	16	21
D. central inland	25	28	28
E. southern inland	16	10	12
11. How strong is community support for your school/programs?			
A. strong	56	53	48
B. moderate	38	38	47
C. weak	6	8	5
12. What percentage of these occupations fit the primary breadwinners in the families of your students?			
A. white collar (executives, professionals, managers, etc.)			
– 0 - 10%	52	48	40
– 11 - 20%	21	23	26
– 21 - 30%	9	13	14
– 31 - 40%	8	10	11
– over 40%	7	5	9
B. blue collar (skilled & semi-skilled employees)			
– 0 - 10%	4	4	2
– 11 - 20%	7	5	7
– 21 - 30%	8	11	19
– 31 - 40%	21	24	25
– over 40%	57	55	46
C. unskilled employees/chronic unemployed			
– 0 - 10%	35	31	30
– 11 - 20%	21	26	17
– 21 - 30%	11	8	10
– 31 - 40%	9	14	15
– over 40%	22	20	25
13. Disregarding parent-teacher conferences, what proportion of the parents of students in your school have visited the school this year to discuss their children's schoolwork?			
A. fewer than a quarter	42	69	64
B. between a quarter and a half	29	18	25
C. approximately half	9	8	6
D. between a half and three quarters	6	4	3
E. more than three quarters	9	1	2
14. What percentage of your students are eligible for free or reduced lunch?			
A. under 20%	27	26	NA
B. 21-30%	21	23	NA
C. 31-40%	19	17	NA
D. 41-50%	15	15	NA
E. over 50%	15	16	NA

	Gr.4	Gr.8	Gr.11
15. What is the lowest grade in your school?			
A. K or pre-K	81	NA	NA
B. first	3	NA	NA
C. second	3	NA	NA
D. third	6	NA	NA
E. fourth	6	NA	NA
16. What is the highest grade in your school?			
A. fourth	12	NA	NA
B. fifth	24	NA	NA
C. sixth	33	NA	NA
D. seventh	1	NA	NA
E. eighth or higher	30	NA	NA
17. How are classes in your school typically grouped?			
A. heterogeneously	90	NA	NA
B. homogeneously	8	NA	NA
18. Which of the following best describes the majority of your fourth grade classes?			
A. self-contained	84	NA	NA
B. semi-departmentalized	15	NA	NA
C. totally departmentalized	0	NA	NA
19. Do any of your teachers exchange students for ability grouping in the following areas?			
A. reading/language arts – Yes	39	NA	NA
– No	59	NA	NA
B. mathematics – Yes	31	NA	NA
– No	66	NA	NA
20. Do any of your teachers team teach?			
A. Yes	19	NA	NA
B. No	81	NA	NA
21. Does your school have certified specialists in each of the following areas?			
A. physical education – Yes	90	NA	NA
– No	9	NA	NA
B. art – Yes	67	NA	NA
– No	32	NA	NA
C. music – Yes	89	NA	NA
– No	10	NA	NA
D. gifted/talented – Yes	49	NA	NA
– No	51	NA	NA
22. In which of the following subject areas do you believe the instructional program in your school is most effective?			
A. reading	62	NA	NA
B. writing	14	NA	NA
C. mathematics	17	NA	NA
D. science	4	NA	NA
E. social studies	1	NA	NA
23. In which of the following subject areas do you believe the instructional program in your school is least effective?			
A. reading	3	NA	NA
B. writing	16	NA	NA
C. mathematics	9	NA	NA
D. science	45	NA	NA
E. social studies	24	NA	NA

	Gr.4	Gr.8	Gr.11
24. How would you characterize the primary method of assisting Chapter 1 students in your school?			
A. We do not have any Chapter 1 students	4	13	NA
B. 1 to 1 pull-out	9	12	NA
C. small group pull-out	62	47	NA
D. 1 to 1 in regular classes	4	6	NA
E. small group in regular classes	19	18	NA
25. Which one of the following statements best describes the process of 9th grade course selection by students in your school?			
A. just student	NA	0	NA
B. student and parent	NA	1	NA
C. student and parent and staff	NA	31	NA
D. student and guidance counselor	NA	6	NA
E. student/parent/staff/guidance counselor	NA	60	NA
26. How much difficulty do you have in securing qualified teachers to fill positions in each of the following?			
A. foreign languages – very difficult	NA	NA	29
– some difficutly	NA	NA	44
– little difficulty	NA	NA	27
B. English/language arts – very difficult	NA	NA	7
– some difficutly	NA	NA	39
– little difficulty	NA	NA	53
C. mathematics – very difficult	NA	NA	35
– some difficutly	NA	NA	42
– little difficulty	NA	NA	21
D. science – very difficult	NA	NA	39
– some difficutly	NA	NA	40
– little difficulty	NA	NA	19
E. social studies – very difficult	NA	NA	6
– some difficutly	NA	NA	24
– little difficulty	NA	NA	68
27. In the past 5 years, has your school system provided inservice opportunities for teachers in each of the following areas?			
A. reading – Yes	81	NA	NA
– No	17	NA	NA
B. writing – Yes	91	NA	NA
– No	9	NA	NA
C. mathematics – Yes	70	NA	NA
– No	29	NA	NA
D. science – Yes	61	NA	NA
– No	38	NA	NA
E. social studies – Yes	39	NA	NA
– No	60	NA	NA
28. Who is primarily responsible for curriculum decision-making in your school in each of the following areas?			
A. reading/writing/language arts			
– teachers independently	4	NA	NA
– curriculum coordinator	10	NA	NA
– faculty/admin. as a group	85	NA	NA
– principal	1	NA	NA
B. mathematics			
– teachers independently	4	4	NA
– curriculum coordinator	11	6	NA
– faculty/admin. as a group	83	88	NA
– principal	1	1	NA
C. science			
– teachers independently	6	4	NA
– curriculum coordinator	7	6	NA
– faculty/admin. as a group	84	89	NA
– principal	1	0	NA

	Gr.4	Gr.8	Gr.11
D. social studies			
– teachers independently	8	4	NA
– curriculum coordinator	7	6	NA
– faculty/admin. as a group	84	88	NA
– principal	1	0	NA

29. How recently has your school or district reviewed its language arts curriculum?

	Gr.4	Gr.8	Gr.11
A. within the last year	NA	47	56
B. within the last three years	NA	27	29
C. within the last five years	NA	15	10
D. within the last ten years	NA	8	4
E. more than ten years ago	NA	3	2

30. What types of inservice programs in language arts instruction has your school or district offered within the last three years?

		Gr.4	Gr.8	Gr.11
A. one day workshops	– Yes	NA	80	69
	– No	NA	20	31
B. multi-session workshops	– Yes	NA	49	72
	– No	NA	50	27
C. visit exemplary classrooms	– Yes	NA	67	85
	– No	NA	31	14

31. Who has conducted your district's language arts inservice workshops most frequently within the last three years?

	Gr.4	Gr.8	Gr.11
A. district teachers	NA	29	NA
B. district administrators	NA	5	NA
C. state department consultants	NA	10	NA
D. university or private consultants	NA	36	NA
E. no inservice provided within 3 years	NA	15	NA

32. In what capacity does the reading consultant in your school primarily work?

	Gr.4	Gr.8	Gr.11
A. with teachers	NA	9	6
B. with students	NA	13	18
C. equally with teachers and students	NA	11	13
D. school has no reading consultant	NA	64	63

33. Who coordinates the writing program in your school?

	Gr.4	Gr.8	Gr.11
A. no coordinated writing program	46	36	NA
B. the principal	17	11	NA
C. the curriculum coordinator	11	NA	NA
D. the English/language arts dept. head	NA	24	NA
E. a reading specialist	9	7	NA
F. a teacher designated as coordinator	8	10	NA

34. What percentage of your writing teachers uses the "process model" approach?

	Gr.4	Gr.8	Gr.11
A. 0%	3	3	5
B. 1 - 25%	22	20	16
C. 26 - 50%	19	17	15
D. 51 - 75%	19	24	24
E. 76 - 100%	38	5	40

35. By the end of this school year, will any of the students in your school have participated in any of the following?

		Gr.4	Gr.8	Gr.11
A. Olympics of the Mind	– Yes	37	NA	NA
	– No	63	NA	NA
B. local young author conference	– Yes	40	NA	NA
	– No	59	NA	NA
C. regional young author conference	– Yes	34	NA	NA
	– No	65	NA	NA

36. By the end of the school year, will any of the students in your school have participated in a local or regional young author's conference?

	Gr.4	Gr.8	Gr.11
A. Yes	NA	51	NA
B. No	NA	46	NA

37. Is your school or anyone in your school a member of NCTM?

	Gr.4	Gr.8	Gr.11
A. Yes	20	NA	NA
B. No	76	NA	NA

38. In the last 2 years, how many conferences for professional mathematics educators have one or more of your mathematics teachers attended?

	Gr.4	Gr.8	Gr.11
A. five or more	NA	11	NA
B. three or four	NA	14	NA
C. one or two	NA	42	NA
D. none	NA	32	NA

39. In the past three years, what percent of the mathematics teachers in your school have attended a national, state or regional mathematics conference?

	Gr.4	Gr.8	Gr.11
A. less than 25%	NA	NA	29
B. 25 to 50%	NA	NA	30
C. 50 to 75%	NA	NA	21
D. more than 75%	NA	NA	21

40. How would you rate your mathematics program in terms of how well it serves the needs of your college-bound students?

	Gr.4	Gr.8	Gr.11
A. outstanding	NA	NA	41
B. good	NA	NA	34
C. adequate	NA	NA	14
D. inadequate	NA	NA	2

41. How would you rate your mathematics program in terms of how well it serves the needs of non-college-bound students?

	Gr.4	Gr.8	Gr.11
A. outstanding	NA	NA	11
B. good	NA	NA	46
C. adequate	NA	NA	36
D. inadequate	NA	NA	8

42. Does your school have a written science curriculum?

	Gr.4	Gr.8	Gr.11
A. Yes	72	NA	NA
B. No	27	NA	NA

43. Which factor most influences what science topics are taught in your school?

	Gr.4	Gr.8	Gr.11
A. textbooks	42	NA	NA
B. written science curriculum	39	NA	NA
C. teacher interests	19	NA	NA

44. Who is primarily responsible for making decisions about science courses in your school?

	Gr.4	Gr.8	Gr.11
A. teachers independently	NA	NA	8
B. department heads	NA	NA	3
C. teachers/department heads	NA	NA	71
D. principal	NA	NA	15

45. Is part of your school's budget allocated to the replacement of consumable science materials?

	Gr.4	Gr.8	Gr.11
A. Yes	87	92	NA
B. No	12	6	NA

		Gr.4	Gr.8	Gr.11
46. Does your school have each of the following?				
A. indoor lab. facilities/equipment	– Yes	NA	57	NA
	– No	NA	42	NA
B. a computer lab	– Yes	NA	55	NA
	– No	NA	44	NA
C. computer literacy course	– Yes	NA	63	NA
	– No	NA	36	NA
47. Is there a sequential K-12 social studies curriculum in your district?				
A. Yes		59	62	NA
B. No		40	36	NA
48. Is there a particular social studies textbook series used to support the curriculum in your district?				
A. Yes		68	48	NA
B. No		31	51	NA
49. Which one of the following clusters of objectives does your school emphasize most?				
A. Recognize the role and responsibilities of each family member; identify within the home unit those items that are needed and those that are wanted; identify similarities and differences between home roles and school roles; be aware of the wage earner's job and how it affects the home		3	NA	NA
B. Be aware that school is a job that requires mastery of basic skills for success; become aware that jobs and communities are dependent on each other; recognize similarities and differences between producers and consumers; be aware of the work that people do in other cities of the world		38	NA	NA
C. Be aware of the importance of "self" as an individual and as a worthwhile member of groups; learn to use problem-solving skills in making decisions; be aware of individual strengths and weaknesses and their relationships to job choices		56	NA	NA
50. Does your school have a humanities curriculum in place?				
A. now being planned		NA	9	19
B. had one for 1-5 years		NA	13	21
C. had one for more than 5 years		NA	6	16
D. do not have one		NA	70	45
51. The following programs are available to what percent of the student body?				
A. foreign languages	– 0 to 15%	NA	64	2
	– 16 to 30%	NA	5	5
	– 31 to 50%	NA	4	8
	– 51 to 75%	NA	6	12
	– 76 to 100%	NA	20	74
B. art	– 0 to 15%	NA	18	7
	– 16 to 30%	NA	5	6
	– 31 to 50%	NA	6	6
	– 51 to 75%	NA	8	4
	– 76 to 100%	NA	63	76
C. music	– 0 to 15%	NA	8	10
	– 16 to 30%	NA	5	3
	– 31 to 50%	NA	3	5
	– 51 to 75%	NA	7	3
	– 76 to 100%	NA	76	78
D. drama	– 0 to 15%	NA	50	18
	– 16 to 30%	NA	13	10
	– 31 to 50%	NA	10	4
	– 51 to 75%	NA	4	2
	– 76 to 100%	NA	22	67
E. dance	– 0 to 15%	NA	84	89
	– 16 to 30%	NA	4	5
	– 31 to 50%	NA	4	0
	– 51 to 75%	NA	0	0
	– 76 to 100%	NA	7	6
52. What percent of the student body participates in the following programs?				
A. foreign languages	– 0 to 15%	NA	67	7
	– 16 to 30%	NA	10	32
	– 31 to 50%	NA	8	39
	– 51 to 75%	NA	7	17
	– 76 to 100%	NA	8	5
B. art	– 0 to 15%	NA	19	16
	– 16 to 30%	NA	8	31
	– 31 to 50%	NA	10	25
	– 51 to 75%	NA	12	15
	– 76 to 100%	NA	50	13
C. music	– 0 to 15%	NA	12	31
	– 16 to 30%	NA	10	42
	– 31 to 50%	NA	10	22
	– 51 to 75%	NA	16	4
	– 76 to 100%	NA	51	2
D. drama	– 0 to 15%	NA	60	61
	– 16 to 30%	NA	26	33
	– 31 to 50%	NA	8	4
	– 51 to 75%	NA	3	1
	– 76 to 100%	NA	3	2
E. dance	– 0 to 15%	NA	89	95
	– 16 to 30%	NA	1	4
	– 31 to 50%	NA	3	0
	– 51 to 75%	NA	2	2
	– 76 to 100%	NA	4	0
53. Do you offer elective courses in health education?				
A. Yes		NA	26	14
B. No		NA	50	75
C. No, but considering them		NA	22	11
54. At what level do students meet the 1/2 credit requirement?				
A. ninth grade		NA	63	61
B. tenth grade		NA	14	30
C. eleventh grade		NA	4	5
D. twelfth grade		NA	0	2
55. In your opinion, how much of a problem does each of the following factors pose to health education?				
A. lack of materials/funding				
– serious problem		NA	8	5
– somewhat of a problem		NA	35	26
– not a serious problem		NA	55	67
B. lack of student interest in health				
– serious problem		NA	5	7
– somewhat of a problem		NA	30	46
– not a serious problem		NA	65	47
C. lack of community support				
– serious problem		NA	8	2
– somewhat of a problem		NA	24	28
– not a serious problem		NA	68	67
D. lack of a comprehensive curriculum				
– serious problem		NA	27	10
– somewhat of a problem		NA	35	31
– not a serious problem		NA	37	57

	Gr.4	Gr.8	Gr.11
E. time not allotted for the teaching of health education			
– serious problem	NA	19	NA
– somewhat of a problem	NA	31	NA
– not a serious problem	NA	50	NA
F. lack of opportunity and/or support for inservice			
– serious problem	NA	10	5
– somewhat of a problem	NA	38	39
– not a serious problem	NA	51	55
G. lack of adequate training for health education teacher(s)			
– serious problem	NA	18	8
– somewhat of a problem	NA	41	27
– not a serious problem	NA	40	64
H. teacher(s) responsible for subjects other than health			
– serious problem	NA	32	13
– somewhat of a problem	NA	40	35
– not a serious problem	NA	28	53

56. How important do you feel health ed. is for your students?

A. very important	NA	NA	84
B. somewhat important	NA	NA	15
C. not very important	NA	NA	1

57. Do you support the integration of career education concepts in the curriculum of regular fourth grade subjects?

A. Yes	89	NA	NA
B. No	10	NA	NA

58. Which statement below best describes the policy emphasis placed upon the teaching of career-related concepts by classroom teachers in your school?

A. teachers required to integrate career concepts into their instructional programs	5	NA	NA
B. teachers strongly encouraged to integrate career-related concepts into instructional programs	29	NA	NA
C. teachers made aware of importance of integrating career concepts into instructional programs	50	NA	NA
D. teachers not expected to integrate career-related concepts into instructional programs	16	NA	NA

59. Which one of the following best describes how career education information is delivered to students in your school?

A. teachers integrate career education in their instructional programs	NA	55	NA
B. student services staff assist students	NA	1	NA
C. guidance service personnel schedule career fairs and speakers from community	NA	10	NA
D. guidance service personnel provide programs of career information	NA	23	NA
E. none of the above.	NA	9	NA

60. Have eighth graders in your school visited the Vocational Center or Vocational Region serving them?

A. Yes	NA	18	NA
B. No	NA	81	NA

61. Has anyone from the Vocational Center or Vocational Region visited your school to talk with eighth graders about these programs?

A. Yes	NA	12	NA
B. No	NA	87	NA

62. Does your school schedule, in conjunction with the vocational center or region, permit students enrolled in

	Gr.4	Gr.8	Gr.11
A. vocational courses to enroll in college preparatory courses			
– Yes	NA	NA	85
– No	NA	NA	14
B. college prep. courses to enroll in vocational courses held at vocational centers or sponsored by vocational regions?			
– Yes	NA	NA	70
– No	NA	NA	29

63. Does your school provide calculators for study?

A. not allowed	NA	18	NA
B. provided for those needing one	NA	26	NA
C. provided for all students	NA	9	NA
D. students provide their own	NA	41	NA

64. Does your mathematics department have a policy on calculator use by students?

A. Yes	NA	32	NA
B. No	NA	68	NA

65. Does your science department have a policy on calculator use by students?

A. Yes	NA	16	25
B. No	NA	81	74

66. Do fourth grade students in your school have regularly scheduled times to work with a computer?

A. Yes	59	NA	NA
B. No	40	NA	NA

67. Does your school have a computer curriculum for fourth grade students?

A. Yes	29	NA	NA
B. No	70	NA	NA

68. How frequently are computers integrated into the social studies curriculum?

A. never	NA	43	NA
B. in some courses	NA	54	NA
C. in all courses	NA	2	NA

69. Are computers integrated into the following curriculums?

A. mathematics	– none of the courses	NA	NA	15
	– some of the courses	NA	NA	81
	– all of the courses	NA	NA	4
B. science	– none of the courses	NA	NA	24
	– some of the courses	NA	NA	73
	– all of the courses	NA	NA	3
C. language arts	– none of the courses	NA	NA	39
	– some of the courses	NA	NA	55
	– all of the courses	NA	NA	5
D. social studies	– none of the courses	NA	NA	67
	– some of the courses	NA	NA	31
	– all of the courses	NA	NA	2

70. Are students in your school taking advanced placement courses or other college level courses on a college campus or within your school?

A. Yes	NA	NA	62
B. No	NA	NA	36

71. Indicate how much you think each of the following is a cause of unequal achievement in various subjects by boys and girls.

A. gender of teacher (role modeling)			
– not a cause	41	NA	NA
– contributes somewhat	48	NA	NA
– contributes significantly	9	NA	NA

	Gr.4	Gr.8	Gr.11
B. methodology used in teaching the subject			
– not a cause	33	NA	NA
– contributes somewhat	42	NA	NA
– contributes significantly	22	NA	NA
C. influences at home			
– not a cause	4	NA	NA
– contributes somewhat	30	NA	NA
– contributes significantly	62	NA	NA
D. peer pressure			
– not a cause	20	NA	NA
– contributes somewhat	53	NA	NA
– contributes significantly	24	NA	NA

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