

2001-2002



**REPORT ON
2001-2002 PROJECT ACHIEVE
ASSESSMENTS**

**Department of Evaluation and Research
Instructional Services Division
E&R Report No. 02.28
June 2002**

WAKE COUNTY PUBLIC SCHOOL SYSTEM

TABLE OF CONTENTS

	Page
Section One. Analysis of School Assessment Data.....	1
Background.....	1
Elementary Schools.....	2
Overall Performance.....	2
School-State Comparisons.....	2
Mastery of Curriculum Objectives.....	3
Middle Schools.....	5
Overall Performance.....	5
School-State Comparisons.....	5
Mastery of Curriculum Objectives.....	6
Section Two. Cost Effectiveness Analysis of Assessments.....	8
Equipment.....	8
Software.....	9
Printing.....	9
Item Writing.....	9
Summary.....	11

Tables 1-3: Low Performance Objectives

Tables 4-6: Assessment Costs and Effectiveness

Figures 1-36: Project Achieve Charts of Assessment Results

REPORT ON 2001-2002 PROJECT ACHIEVE ASSESSMENTS

Eight schools (six elementary and two middle schools) participated in Project Achieve during the 2001-2002 instructional year. The Curriculum and Instruction Department developed math and reading pacing guideline calendars and focus lessons used in the targeted schools, each set of lessons centered on one to four objectives from the North Carolina Standard Course of Study (NCSCS). Grades 3 through 8 classroom teachers in these schools presented the 15 to 20 minute daily lessons. The Evaluation and Research Department produced short four to 16 item assessment tools used to measure student mastery of the objectives tied to the lessons. Based on rapid turnaround on assessment results at the school level, teachers then regrouped students for either remedial or enrichment activities centered on needs.

The data from all schools' assessments were gathered at the end of the school year for analysis. This report provides information on the school assessment data and on the effectiveness of the costs involved with the assessment production during the 2001-2002 school year.

Section One. Analysis of School Assessment Data

BACKGROUND

This section of the report summarizes assessment data collected from schools participating in Project Achieve during the 2001-02 academic year. Six elementary schools (Cary, Creech Road, Hodge Road, Rand Road, Smith, and Vance) and two middle schools (East Garner and East Wake) participated in the project. Students in Grades 3 through 8 received daily 15-minute focus lessons in math and reading developed by the WCPSS Curriculum and Instruction Department. The lessons covered the curriculum objectives contained in the North Carolina Standard Course of Study for these subjects at these grade levels. On a weekly basis, student understanding of the curriculum material was measured using short multiple-choice assessments (and sometimes optional performance-based assessments) developed jointly by the Evaluation and Research and Curriculum and Instruction Departments within the school system.

From August 2001 through May 2002, targeted grade levels completed 21 to 23 reading assessments and 23 to 26 math assessments. A typical assessment in reading consisted of a reading passage followed by eight comprehension, metacognitive, and/or analysis types of questions. A typical math assessment consisted of about ten items requiring calculations and/or problem-solving skills. Individual schools participating in Project Achieve scanned student answer sheets following each assessment and produced reports of assessment results. Schools used the data to identify students requiring remedial or enrichment instruction and activities. Reports produced by each school gave assessment results per objective for each class and grade level as well as for individual students.

The Wake County Public School System (WCPSS) Evaluation and Research Department collected and analyzed assessment data from all of the eight participating schools. This section covers all assessments given throughout the year in the targeted schools and is divided into two parts: elementary schools and middle schools. In each part, data on assessment results are provided for each targeted grade level in each of the subject areas of reading and math.

The focus of the analysis is on “percent mastery,” or the percentage of question items correctly answered by students in each grade for each subject. First, information is presented on the overall performance of schools on the assessments (disaggregated by grade and subject). Second, school performance is compared to the state of North Carolina for a subset of assessment items that were field-tested by the Department of Public Instruction. Third, assessments are analyzed by curriculum objective, again showing the percentage of objectives mastered on average and by each school per grade level and subject.

ELEMENTARY SCHOOLS

Overall Performance

Grade 3

Students at the six elementary schools performed better on the math assessments than on the reading assessments. The average percent mastery on the math assessments for all of the schools was 69.2%, while the average for the reading assessments was 59.3%.

Math: The overall performance mastery of Grade 3 students on the math assessments ranged from 65.7% (Creech Road) to 73.5% (Vance) (*see Figure 1*).

Reading: The overall performance mastery of Grade 3 students on the reading assessments ranged from 53.0% (Smith) to 68.4% (Cary) (*see Figure 2*).

Grade 4

Grade 4 students performed slightly better on the math assessments than on the reading assessments. The average percent mastery on the math assessment for all of the schools was 66.0%, while the average for the reading assessment was 63.3%.

Math: The overall performance mastery of Grade 4 students on the math assessments ranged from 61.2% (Smith) to 69.8% (Vance) (*see Figure 3*).

Reading: The overall performance mastery of Grade 4 students on the reading assessments ranged from 58.1% (Smith) to 68.5% (Vance) (*see Figure 4*).

Grade 5

Students at the six elementary schools performed slightly better on the math assessments than on the reading assessments. The average percent mastery on the math assessments for all of the schools was 65.6%, while the average for the reading assessments was 64.9%.

Math: The overall performance mastery of Grade 5 students on the math assessments ranged from 62.7% (Creech Rd.) to 70.2% (Vance) (*see Figure 5*).

Reading: The overall performance mastery of Grade 5 students on the reading assessments ranged from 60.6% (Smith) to 70.1% (Vance) (*see Figure 6*).

School-State Comparisons

In addition to assessment items independently developed by WCPSS, the test item bank used to produce the math and reading assessments contained questions that had been field tested by the North Carolina Department of Public Instruction (NCDPI). For the math assessments,

NCDPI field-tested items accounted for a majority (73%) of the total items used in Project Achieve assessments to gauge student mastery of curriculum objectives. In contrast, eight percent of the items on the reading assessments had been field tested by NCDPI, so a comparison between school and state performance on these tests yields less insight.

Overall, the six elementary schools participating in Project Achieve performed better than the state average on the math field-tested items, scoring on average 9.9 percentage points higher. On the field-tested reading items, the schools scored on average 0.5 percentage points below than the state average. It should be noted that while field testing by NCDPI occurred at the end of a school year, Project Achieve testing took place throughout the school year, beginning as early as August for some of the objectives.

Math

Grade 3: The average percent mastery for Grade 3 students on the field-tested math items was 69.5%, almost eight (7.7) percentage points higher than the state average (61.8%). All of the schools outperformed the state average, with the difference ranging from 4.9 to 11.8 percentage points (*see Figure 7*).

Grade 4: For grade 4 students, the average score for the six schools was higher than the state average for the field-tested items, 65.2% compared to 54.1%. Grade 4 students at all of the schools outperformed the state average, with the difference ranging from 6.9 to 14.9 percentage points (*see Figure 8*).

Grade 5: The average percent mastery for Grade 5 students on the field-tested items was much higher than the state average, 63.7% versus 53.1%. Project Achieve schools out-performed the state average by a range of 8.9 to 14.3 percentage points (*see Figure 9*).

Reading

As mentioned earlier, the number of field-tested items on the Reading assessments was too few to draw any meaningful comparisons between Project Achieve schools and the state average. Overall, at each grade level, however, the average percent mastery was within 3.3 percentage points of the state average (*see Figures 10 through 12*).

Mastery of Curriculum Objectives

The math and reading assessments were designed to measure student mastery of curriculum objectives taught in the focus lessons. Each item on the assessments, therefore, was associated with a specific objective, which enabled an analysis of student mastery by curriculum objective.

Generally, each objective in math and reading was assessed with at least four items. Information on a number of objectives is unavailable due to provided optional assessments that were in a performance-based format (non-scanned) rather than a multiple-choice format (scanned). Additionally, some objectives were too broad-based to be assessed.

Math

Grade 3: The math assessments covered 39 different objectives (of which six objectives were optionally assessed by teachers). Figure 13 shows average percent mastery by objective for the six elementary schools. Performance on the individual objectives ranged from 50.9% to 89.9%.

Grade 3 students scored 75.0% or better on nine objectives. Variation among the schools in percent mastery on the same objectives averaged 13.6 percentage points, ranging from 4.9 difference in points (Objective 4.06) to 44.8 points (Objective 1.07).

Based on the assessment results, no objectives on average at any of the three grade levels showed less than 50.0% mastery. However, some individual schools did show mastery at below 50.0% mastery for one to three objectives and could warrant attention in such areas as instructional strategies for possible improvement.

Grade 4: The math assessments for Grade 4 covered 39 different objectives. The average percent mastery for all the schools on the individual objectives ranged from 49.8% to 87.7%. Grade 4 students scored 75.0% or better on seven objectives. Variation among the schools in percent mastery on the same objectives averaged 13.6 percentage points, ranging from 6.6 difference in points (Objective 1.10) to 34.1 points (Objective 2.02) (*see Figure 14*).

Based on the assessment results, one objective (2.02) may warrant further investigation as it appears to have been the most difficult for the students (less than 50.0% mastery) (*see Table 1*).

Grade 5: The math assessments for Grade 5 covered 42 different objectives. The average performance of the schools on these objectives ranged from 40.1% to 84.6%. Grade 5 students at the schools scored 75.0% or better on six objectives and below 50.0% on five objectives. Variation among the schools in percent mastery on the same objectives averaged 14.8 percentage points, ranging from 4.9 difference in points (Objective 4.01) to 74.0 points (Objective 1.09) (*see Figure 15*).

Based on the assessment results, the following five objectives may warrant further investigation as they appear to have been the most difficult for the students (less than 50.0% mastery): 1.04, 2.07, 2.09, 3.02, and 4.03 (*see Table 1*).

Reading

Grade 3: The reading assessments covered 41 curriculum objectives (of which two objectives were optionally assessed by teachers). Grade 3 students at the six schools demonstrated the highest mastery (at or above 75.0% mastery) on Objectives 2.07 and 2.087. Variation among the schools in percent mastery on the same objectives averaged 17.1 percentage points, ranging from 6.8 difference in points (Objective 2.081) to 31.6 points (Objective 2.088) (*see Figure 16*).

The following six objectives may warrant further investigation as they appear to have posed the greatest difficulty for students (less than 50.0% mastery): 2.021, 2.022, 2.089, 3.05, 3.09, and 4.026 (*see Table 2*).

Grade 4: On assessment items covering 43 objectives (of which six objectives were optionally assessed by teachers), the schools averaged at or above 75.0% percent mastery on seven objectives: 1.01, 1.02, 1.03 & 1.05 combined, 2.054, 3.012, and 3.014. Variation among the schools in percent mastery on the same objectives averaged 12.5 percentage points, ranging from 0.3 difference in points (Objective 2.01) to 21.1 points (Objectives 2.071 & 2.072 combined) (*see Figure 17*).

Student mastery of the following three objectives was below 50.0%: 2.01, 2.022, and 2.075 (*see Table 2*).

Grade 5: Assessment items covered 44 different objectives (of which two objectives were optionally assessed by teachers). Average percent mastery for all of the schools was at or above 75.0% for the following eight objectives: 1.01, 2.022, & 2.102 combined, 2.06, 2.08, 2.09, 2.022 (combined with Obj. 2.102), 2.106, and 3.012. Variation among the schools in percent

mastery on the same objectives averaged 18.3 percentage points, ranging from 4.8 difference in points (Objective 4.024) to 62.6 points (Objective 2.052) (*see Figure 18*).

Average percent mastery of the following five objectives was below 50.0%: 2.104, 2.11, 3.014, 3.071, and 3.074 (*see Table 2*).*

MIDDLE SCHOOLS

East Garner Middle School and East Wake Middle School participated in Project Achieve during the 2001-02 school year.

Overall Performance

Grade 6

Students at the two middle schools demonstrated similar levels of mastery on the math and reading assessments. The average percent mastery on the math assessments for both schools was 58.4%, while the average for the reading assessments was 59.5%.

Math: Overall, students at East Garner did slightly better on the math assessments than students at East Wake (61.1% average mastery compared to 55.8%) (*see Figure 19*).

Reading: Students at East Wake did slightly better overall on the reading assessments than students at East Garner (60.9% versus 58.0) (*see Figure 20*).

Grade 7

The two middle schools performed almost identically on the math and reading assessments. The average percent mastery on the math assessments for the two schools was 63.4%, while the average for the reading assessments was 63.9%.

Math: On average, students at East Garner and East Wake demonstrated exactly the same level of mastery on the math assessments (63.4%) (*see Figure 21*).

Reading: East Garner achieved a slightly higher level of mastery on the reading assessments than East Wake (63.5% versus 61.7%) (*see Figure 22*).

Grade 8

Students at the two middle schools performed slightly better on the reading assessments than the math assessments. The average percent mastery on the reading assessments was 62.6%, while the average was 60.7% for the math assessments.

Math: The two schools demonstrated similar levels of mastery on the math assessments. The overall average for East Garner was 60.7%, with 60.8% for East Wake (*see Figure 23*).

Reading: Students at East Garner performed slightly better on the reading assessments than students at East Wake (70.3% average compared to 62.2%) (*see Figure 24*).

School-State Comparisons

The math and reading assessments for the middle schools also contained items that had been field-tested by the North Carolina Department of Public Instruction. For the math assessment, field-tested items accounted for a majority of the total number of items (about 74%

of the items on average for all grade levels), whereas for reading, they comprised only 10% of all items.

All grade levels at the two middle schools demonstrated a higher level of mastery on the math field-tested items than the state average (14 percentage points higher on average). For the reading assessments, the comparisons are not valid considering the small number of field-tested items on the assessments.

Math

Grade 6: The average percent mastery for Grade 6 students on the field-tested math items was 60.2%, 11.5 percentage points higher than the state average (48.7%). Both schools outperformed the state average (East Garner by 13.7 percentage points, and East Wake by 9.3 percentage points) (*see Figure 25*).

Grade 7: The average percent mastery for Grade 7 students on the field-tested math items was 65.8%, 15.2 percentage points higher than the state average (50.6%). Both schools outperformed the state average (East Garner by 15.9 percentage points, and East Wake by 14.4 percentage points) (*see Figure 26*).

Grade 8: The average for both schools (61.3%) surpassed the state average (45.0%) by 16.4 percentage points (East Garner by 16.2 percentage points, and East Wake by 16.6 percentage points) (*see Figure 27*).

Reading

The average percent mastery for the two middle schools ranged from 56.5% to 69.0% for the three grade levels. Grades 6 and 7 closely matched the state average for the field-tested items (differing less than 1 percentage point), but the average for Grade 8 was 4.2 percentage points below the state average (*see Figures 28 through 30*).

Mastery of Curriculum Objectives

As with the three elementary grade levels, the three middle school grade level assessments in math and reading assessments were designed to measure student mastery of curriculum objectives taught in the focus lessons. Each item on the assessments, therefore, was associated with a specific objective, which enabled an analysis of student mastery by curriculum objective.

Each objective in math and reading was assessed with at least four items.

Math

Grade 6: The math assessments covered 41 objectives. Students at East Garner demonstrated a higher level of mastery on 29 of these, sometimes by large margins. Overall, the schools performed at or above 75.0% mastery on Objectives 1.01, 2.04, 3.05, and 4.01/4.02 (combined) (*see Figure 31*).

The following objectives may warrant further investigation as they appear to have been the most difficult for students (less than 50.0% mastery at both schools): 2.02, 2.07/2.08/2.09 (combined), 2.12, 3.01, 4.04/4.05 (combined), and 4.09 (*see Table 3*).

Grade 7: The math assessments covered 33 objectives. Average percent mastery at the two schools was at or above 75.0% for the following objectives: 1.01, 3.05, 4.01/4.02 (combined), and 4.10 (*see Figure 32*).

Average percent mastery was below 50.0% at both schools for the following 3 objectives: 1.02, 2.10, and 4.08 (*see Table 3*).

Grade 8: Thirty-five objectives were covered by the math assessments. The two schools performed at or above 75.0% mastery at both schools on the following objectives: 1.05, 1.07, and 2.02 (*see Figure 33*).

The following three objectives may warrant further investigation as they appear to have been the most difficult (less than 50.0% mastery at both schools): 1.08, 1.11, and 2.03 (*see Table 3*).

Reading

The middle school reading curriculum for the assessments covered only ten objectives. The average number of items for each objective was 19, ranging from 4 items for Objective 1.3 to an overall average of 44 items for Objective 2.2. Both schools demonstrated over 50.0% mastery on all objectives.

Grade 6: On average, students in both schools performed best on Objective 1.2 (averaging 69.3% mastery). Objective 1.3 appears to have been the most difficult for both schools. East Garner demonstrated a greater difficulty than East Wake with Objectives 1.0/1.1 (combined), 3.1, 3.2, and 3.3 with differences ranging from 3.5 to 5.3 percentage points from East Wake (*see Figure 34*).

Grade 7: Average percent mastery was highest on Objective 1.2 (76.8%). Objective 3.3 appears to have been the most difficult for both schools (52.7% average mastery) (*see Figure 35*).

Grade 8: As was the case for Grades 6 and 7, students did the best on Objective 1.2 (averaging 76.5% mastery). Objective 3.1 was the most difficult for both schools (54.6% average mastery) (*see Figure 36*).*

* Note. Additional technical data is available in table and chart format that displays individual school results per objective. To obtain copies of these, contact Dr. Rosemary Reichstetter (919-850-1742) or Roger Regan (919-850-8878).

Section Two. Cost Effectiveness Analysis of Assessments

This section presents summarized data on costs associated specifically with the assessment portion of the project during the 2001-2002 school year. The costs are then categorized into equipment, software, printing, and item-writing in further discussion.

The total direct cost of Project Achieve assessments is estimated at \$114,183.27 excluding staff time expended by the Evaluation & Research and Curriculum & Instruction Departments in developing and producing the assessments. Approximately 2,700 hours were spent (at a cost of about \$65,700) throughout the school year by the Evaluation & Research Department staff and 179 hours (at a cost of about \$5,000) by the Curriculum & Instruction Department staff. Excluding Central Office staff time involved, equipment costs associated with the project accounted for approximately 41% of total costs, followed by software (23%), next by printing (21%), and then by item-writing (14%).

Table 4 displays the assessment costs involved with the project.

EQUIPMENT

Equipment costs were calculated as follows: (a) full purchase price for new equipment purchased exclusively for Project Achieve, (b) half the purchase price for existing equipment redesignated exclusively for Project Achieve use, and (c) a quarter of the purchase price for existing equipment non-exclusively used for Project Achieve.

Equipment costs totaled approximately \$46,650.

Computers:

One of the schools (East Garner) purchased a new computer (approximate cost: \$1500) to be used exclusively for Project Achieve. The other seven schools utilized an existing computer. However, five of the schools indicated that the computer was dedicated to Project Achieve. The Evaluation & Research Department used two existing computers, but not exclusively for Project Achieve.

The total cost of computers was approximately \$7,125.

Printers

Two schools purchased a new printer (approximate cost: \$1200) exclusively for Project Achieve. The other schools utilized an existing printer, with three of those six redesignating the use of those printers exclusively for Project Achieve. The Evaluation & Research Department used three existing computers, but not exclusively for Project Achieve.

The total cost of printers was approximately \$6,000.

Scanners (and Answer Sheets)

Central Office purchased a Scanning Systems Model 607A scanner (cost: \$3725) for six schools utilized exclusively for Project Achieve. Two schools used existing scanners exclusively

for Project Achieve. In addition, the Evaluation and Research Department purchased two scanners for the project.

Scanning Systems scanners were programmed through an arrangement with the TestMagic company to work with the TestMagic software. Scanning Systems multi-purpose answer sheets were purchased to record student answers for scanning. Eighteen cases (1000 sheets each) of answer sheets were purchased at a cost of \$64 per case.

The total cost of scanners and Scanning Systems answer sheets was \$34,677.

SOFTWARE

A software triad (TestMagic, ScanMagic, and ScoreMagic) was used for assessment development, scanning, and scoring purposes. This set of software includes a large bank of released items from the North Carolina Department of Instruction's End of Grade tests for the six targeted grade levels in math and reading. The TestMagic portion has the capability of selecting items from its bank and formatting them into assessment booklets. Students used the Scanning Systems answer sheets to record their answers. The assessments were produced centrally for printing and distribution to the schools. In order to scan student answer sheets, score the results and generate built-in reports, each of the eight schools was required to purchase all three products from the TestMagic company.

Seven licenses and sets of Form A manuals were purchased at a unit cost of \$3300.00. These were distributed to six of the schools and to the Evaluation & Research Department. Two schools already owned the software. Another license and set of manuals containing additional NCDPI Secure for Local Use items were purchased later for the Evaluation & Research Department at the same cost.

The cost associated with the TestMagic/ScanMagic/ScoreMagic software was \$26,400.00.

PRINTING

The school system outsourced the printing of assessment copies for the schools. After a brief period of delivering assessments to schools by WCPSS staff, a delivery fee was agreed upon with the printer company at a weekly rate of \$100. Costs associated with printing the assessments themselves were calculated for each grade level and subject, and summarized by quarter.

The total cost of printing and delivering the assessments for the year was \$24,131.27.

ITEM-WRITING

First quarter items were developed during the summer of 2001 by writers who devoted approximately two full-time weeks centrally to the task for a flat fee. For the remaining three quarters while school was in session for traditional schools, item-writers submitted assessment items on a weekly basis. E&R reviewed all items, modifying them when necessary to more closely match the way objectives were presented during focus lesson instructional time. E&R also created additional items when necessary to meet necessary assessment coverage of curriculum objectives. The time factor for production of lessons and assessments during Quarter One did not allow for much collaboration between departments.

Beginning with the second quarter, a procedure was established for E&R to submit draft assessments to C&I for review. After further copy-editing, the required formatting of the items were sent via email attachments to the TestMagic company for inclusion in its database. Upon adding the new WCPSS items to the TestMagic database, the company sent an update via email attachment to E&R for downloading into our locally installed TestMagic database. The assessments could then be set up as last sets for proofing/editing. The final printouts of the assessments were outsourced for copying and distribution to the schools. Each assessment procedure---from receipt of items from writers to school distribution---took approximately four weeks to complete.

The Evaluation and Research Department contracted with several teachers from Project Achieve schools and with a number of other teachers to write assessment items as supplements when items provided in TestMagic did not appropriately meet assessment needs based on focus lessons taught.

The item-writers worked on assessments in math for Grades 3, 4, 5, and 8; and reading assessments for Grades 3 through 8. Math assessments for Grades 6 and 7 were created by the Curriculum and Instruction Department (C&I).

The costs of contracted item-writers and their writing effectiveness were tracked for each assessment beginning with Quarter Two, and summarized quarterly.

Training

Prior to the start of Project Achieve, a special one-day training session for item-writers was held. The cost for this session was \$2,000.00.

Item-Writers

Quarter One items were developed with a flat \$1000 fee paid to the five writers. For the remaining three quarters, assessment item writers were paid on an hourly basis at \$20.00 per hour (\$8,850). The cost associated here was \$13,850.

The total contracted item writer cost including the training session was \$15,850.

Item-Writing Effectiveness

Effectiveness was determined by calculating the item usage value for each set of items submitted for a particular assessment. If an item was used without modification, the item usage value was 100%. If an item was used, but required modification, a value of 50% was assigned. If the item was not used, it was given a value of 0. There was great variability in the quality of assessment items submitted by item-writers. Item-usage value, which measures the extent to which items were used and/or modified by E&R in producing assessments, ranged from 0% to 100% each week and from 40% to 94% on average for the year.

In general, item-writers for math assessments performed better than those producing the reading assessments. The average effectiveness of math item-writers for the whole year was 77% (this figure does not include assessment items developed by E&R and C&I staff). In contrast, the average effectiveness of item-writers for reading was 61%. It is important to note, however, that there was more turnover among reading item-writers than those working on math assessments.

Table 5 shows the average effectiveness of contracted item-writers (based on the overall item-usage values) for Quarters 2, 3, and 4. Quarter 1 was not tracked.

Cost-Effectiveness of Item-Writers

Item-writers were paid on an hourly basis rather than a per-item basis. In view of differences in their item-usage values, the cost-effectiveness of item-writers varied considerably. The total cost of item-writers was \$13,850.00. However, this figure does not include costs incurred by staff in the E&R and C&I Departments in producing assessment items. The average quarterly cost for item-writing was \$3462.50. Quarterly costs for item-writing steadily declined over the course of the year, from \$5000 in Quarter 1 to \$2,580 in Quarter 4.

Table 6 shows costs associated with item-writing by grade level items and overall for the year. It does not include costs for Quarter 1 assessment items (\$5000.00) as data for this quarter were not collected. As shown in the table, the cost of item-writing for the reading assessments was significantly higher than for math. This reflects two differences: (a) items for Grades 5 and 6 math were developed by C&I and therefore not assigned a cost; and (b) there were a lot more new items submitted for the reading assessments than for the math assessments. For math, 253 new items were used, while 865 new items were used for reading.

Per Item Costs

When comparing the costs paid out to writers for all submitted items against items that were usable in part or in whole, costs for items used (modified or not modified) during Quarter Two averaged \$8.96 per item, during Quarter Three averaged \$8.64, and during Quarter Four averaged \$11.42. These costs exceeded expected costs during Quarter Two by \$2.20, during Quarter Three by \$3.11, and during Quarter Four by \$4.46. This is likely explained by the large number of items submitted that required modifications or were not usable. Even so, costs for writers were under expectations. The submittals were helpful overall and were an important component of the final product.

Summary

Overall, the analysis of the data collected from the year is a driving force in decision-making for the project.

Results were used from the data collected throughout the year at each Project Achieve school to assist leaders and teachers in remediation and enrichment instruction decisions as needed for each student. Through the use of the tables and charts derived from the data, schools can see overall results, their own school results by objective mastery, school to school comparisons, school to overall elementary or middle school level Project Achieve average, and school to state comparisons with NCDPI field tested items.

Results from centrally analyzed data from all schools at the end of the school year were used to help determine improvements needed for the 2002-2003 school year in focus lessons, assessment tools, and instructional strategies. A review of the tables and charts provided an effective and efficient way to view assessment items with low overall Project Achieve school results. Following the analysis, items were reviewed once again for bias, clarity, and content validity with changes made accordingly.

Results gathered from the data regarding costs involved were analyzed to determine improvements needed in equipment, software, printing, and item writing procedures. Scanning methods and software were revisited in discussions so that a more time- and cost-efficient procedure could be put into place for the coming year. Discussions revolving around printing included the decision to provide schools with quarterly assessment booklets for elementary reading as well as elementary and middle levels in math.

Item writing procedures were revised to accommodate the need to provide quarterly versus weekly assessments. Focus lesson writers worked directly with C&I at the middle school level as before, but included reviewing and writing reading assessment items for the upcoming year as had been done with math during the 2001-2002 school year. Writers for elementary level items met centrally during the summer to review and write items for the year as completed focus lessons and calendars were provided. Discussions and support with Central Office staff as well as with each other at the central location appeared to be useful and beneficial in the completion of this task.

Table 1.
2001-2002 Project Achieve
Elementary Low Performance Math Objectives

Math: Grade	Objective	Overall PA Objective Mastery	NC P-Value Avg per Obj.	ProjAch P-Value per Item	NC P-Value per Item	Test Date	Assessment #	Correct Answer	Test#	Item#
4	2.02	49.8	0.47	0.40	0.24	08/21/2001	01-A	C	005	104155
				0.37	0.31	08/21/2001	01-A	B	006	104160
				0.57	0.52	08/21/2001	01-A	C	007	103150
				0.80	0.80	08/21/2001	01-A	B	008	104585
5	1.04	49.3	0.40	0.70	0.65	11/05/2001	09-I	B	070	L5C03
				0.51	0.45	11/05/2001	09-I	D	071	10268A
				0.55	0.28	11/05/2001	09-I	A	072	104404
				0.40	0.22	11/05/2001	09-I	C	073	H5A65
				0.49	0.58	09/05/2001	03-C	D	022	102668
	2.07	40.1	0.39	0.35	0.25	09/05/2001	03-C	C	023	102670
				0.17	0.16	09/05/2001	03-C	C	027	102669
				0.66	0.58	04/15/2002	24-X	D	220	102688
	2.09	48.6	0.57	0.43	0.50	01/16/2002	16-P	B	129	L7A54
				0.53	0.62	01/16/2002	16-P	D	130	H5A40
				0.81	0.79	01/16/2002	16-P	D	131	50772
				0.40	0.38	01/16/2002	16-P	C	132	L5A36
				0.60	0.00	01/16/2002	16-P	C	133	MWC5023
				0.31	0.00	04/15/2002	24-X	A	221	WCM5086
	3.02	47.7	0.37	0.65	0.64	11/12/2001	10-J	D	074	102731
				0.73	0.40	11/12/2001	10-J	B	075	L4A21
				0.59	0.00	11/29/2001	12-L	B	093	T5A57
				0.19	0.17	11/29/2001	12-L	B	094	102694
				0.32	0.25	11/29/2001	12-L	A	095	102730
4.03	44.1	0.45	0.27	0.00	08/21/2001	01-A	C	002	T5A59	
			0.73	0.00	08/21/2001	01-A	C	003	T5A60	
			0.33	0.36	08/21/2001	01-A	A	005	102221	
			0.53	0.54	08/21/2001	01-A	C	006	102659	

◻ <0.50 p-value

Table 2.
2001-2002 Project Achieve
Elementary - Low Performance Reading Objectives

Reading Grade	Objective	Overall ProjAch Objective Mastery	NC P-Value Avg per Obj.	ProjAch P-Value per Item	NC P-Value per Item	Test Date	Assessment #	Correct Answer	Test#	Item#	Passage #	Passage	
3	2.021	35.4	0.00	0.13	0.00	10/31/2001	06-F	D	031	R3WC023	13114	The Monkey and the Crocodile	
				0.57	0.00	10/31/2001	06-F	C	032	R3WC024	13114	The Monkey and the Crocodile	
				0.13	0.00	10/31/2001	06-F	B	033	R3WC025	13114	The Monkey and the Crocodile	
				0.61	0.00	10/31/2001	06-F	B	034	R3WC026	13114	The Monkey and the Crocodile	
	2.022	45.7	0.00	0.42	0.00	8/23/2001	01-A	D	001	R3WC001	13101	Moon Bear	
				0.47	0.00	8/23/2001	01-A	B	002	R3WC002	13101	Moon Bear	
				0.49	0.00	8/23/2001	01-A	C	003	R3WC003	13101	Moon Bear	
				0.51	0.00	8/23/2001	01-A	A	004	R3WC004	13101	Moon Bear	
	2.089	32.1	0.00	0.46	0.00	1/23/2002	13-M	B	084	R3WC080	31R1	The Wind	
				0.21	0.00	1/23/2002	13-M	C	085	R3WC081	31R1	The Wind	
				0.28	0.00	1/23/2002	13-M	D	086	R3WC082	31R1	The Wind	
				0.40	0.00	1/23/2002	13-M	A	087	R3WC083	31R1	The Wind	
	3.05	45.5	0.00	0.42	0.00	12/11/2001	10-J	B	059	R3WC051	13251	The Color Master	
				0.39	0.00	12/11/2001	10-J	D	060	R3WC052	13251	The Color Master	
				0.28	0.00	12/11/2001	10-J	A	061	R3WC053	13251	The Color Master	
				0.38	0.00	12/11/2001	10-J	C	062	R3WC054	13251	The Color Master	
				0.58	0.00	12/11/2001	10-J	C	063	R3WC055	XXXX	NA	
	3.09	47.4	0.00	0.81	0.00	12/11/2001	10-J	B	058	R3WC050	13251	The Color Master	
				0.39	0.00	2/19/2002	15-O	C	103	R3WC097	XXXX	NA	
				0.49	0.00	2/19/2002	15-O	C	104	R3WC098	XXXX	NA	
				0.66	0.00	2/19/2002	15-O	D	105	R3WC099	XXXX	NA	
	4.026	43.8	0.00	0.43	0.00	2/19/2002	15-O	A	106	R3WC100	XXXX	NA	
				0.40	0.00	3/21/2002	18-R	B	126	R3WC122	QR3W01	What Will Happen to the Butterflies?	
				0.53	0.00	3/21/2002	18-R	D	127	R3WC123	QR3W01	What Will Happen to the Butterflies?	
0.19				0.00	3/21/2002	18-R	C	128	R3WC124	QR3W01	What Will Happen to the Butterflies?		
4	2.01	42.2	0.09	0.73	0.00	3/21/2002	18-R	B	129	R3WC125	QR3W01	What Will Happen to the Butterflies?	
				0.55	0.00	9/21/2001	04-D	D	017	R4WC015	14515	Millions & Millions	
				0.47	0.00	9/21/2001	04-D	A	018	R4WC016	14515	Millions & Millions	
				0.31	0.00	9/21/2001	04-D	C	019	R4WC017	14515	Millions & Millions	
				0.37	0.35	9/21/2001	04-D	D	020	R103029	14515	Millions & Millions	
	2.022	48.9	0.00	0.36	0.00	8/23/2001	01-A	B	001	R4WC001	XXXX	NA	
				0.45	0.00	8/23/2001	01-A	D	002	R4WC004	XXXX	NA	
				0.48	0.00	8/23/2001	01-A	C	003	R4WC003	XXXX	NA	
				0.79	0.00	8/23/2001	01-A	A	004	R4WC002	XXXX	NA	
	2.075	48.5	0.00	0.15	0.00	1/23/2002	14-N	B	072	R4WC067	14401	At the Dr'sOffice; Who's Afraid of the Dentist?	
				0.66	0.00	1/23/2002	14-N	D	073	R4WC068	14401	At the Dr'sOffice; Who's Afraid of the Dentist?	
				0.64	0.00	1/23/2002	14-N	A	080	R4WC075	XXXX	NA	
	5	2.104	49.9	0.00	0.55	0.00	1/23/2002	14-N	C	081	R4WC078	XXXX	NA
					0.66	0.00	3/13/2002	18-R	A	127	R5WC099	QR5W04	Organizing Research Information
					0.30	0.00	3/13/2002	18-R	C	128	R5WC100	QR5W04	Organizing Research Information
					0.62	0.00	3/13/2002	18-R	D	129	R5WC101	QR5W04	Organizing Research Information
2.11		42.2	0.51	0.44	0.00	3/13/2002	18-R	B	130	R5WC102	QR5W04	Organizing Research Information	
				0.32	0.28	12/4/2001	10-J	C	061	R5H48	PR5H08	Spring, The Pasture	
				0.70	0.68	12/4/2001	10-J	B	063	R5L25	PR5L04	Fossils, Journey	
				0.42	0.41	12/4/2001	10-J	C	064	R5L29	PR5L04	Fossils, Journey	
3.014		47.2	0.00	0.72	0.66	12/4/2001	10-J	D	065	R5L26	PR5L04	Fossils, Journey	
				0.56	0.00	3/13/2002	18-R	B	131	R5WC103	XXXX	NA	
				0.62	0.00	3/13/2002	18-R	C	132	R5WC104	XXXX	NA	
				0.57	0.00	3/13/2002	18-R	A	133	R5WC105	XXXX	NA	
3.071		38.9	0.00	0.22	0.00	3/13/2002	18-R	D	134	R5WC106	XXXX	NA	
				0.61	0.00	12/12/2001	11-K	A	074	R5WC050	XXXX	NA	
				0.39	0.00	12/12/2001	11-K	D	075	R5WC051	XXXX	NA	
	0.49			0.00	12/12/2001	11-K	C	076	R5WC052	XXXX	NA		
3.074	39.3	0.00	0.36	0.00	12/12/2001	11-K	B	077	R5WC053	XXXX	NA		
			0.32	0.00	12/12/2001	11-K	B	078	R5WC054	XXXX	NA		
			0.40	0.00	12/12/2001	11-K	C	079	R5WC055	XXXX	NA		
			0.32	0.00	12/12/2001	11-K	B	080	R5WC056	XXXX	NA		
				0.62	0.00	12/12/2001	11-K	D	081	R5WC057	XXXX	NA	

◻ <0.50 p-value

Table 3.
2001-2002 Project Achieve
Middle - Low Performance Math Objectives

Math: Grade	Objective	Overall PA Objective Mastery	NC P-Value Avg per Obj.	ProjAch P-Value per Item	NC P-Value per Item	Test Date	Assessment #	Correct Answer	Test#	Item#	
6	1.08	47.8	0.51	0.47	0.38	11/16/2001	11-K	D	076	103591	
				0.46	0.64	11/16/2001	11-K	A	077	L6A06	
				0.53	0.66	11/16/2001	11-K	C	078	H6A06	
				0.38	0.37	11/16/2001	11-K	A	079	6R2	
	2.02	44.7	0.22	0.22	0.53	0.00	2/7/2002	17-Q	D	120	WCM6013
					0.65	0.23	2/7/2002	17-Q	A	121	60745
					0.39	0.19	2/7/2002	17-Q	A	122	60825
					0.22	0.23	2/7/2002	17-Q	D	123	103604
	2.03	46.9	0.14	0.14	0.52	0.00	2/7/2002	17-Q	A	124	WCM6014
					0.52	0.00	2/7/2002	17-Q	C	125	WCM6015
					0.35	0.00	2/7/2002	17-Q	C	126	WCM6016
					0.46	0.14	2/7/2002	17-Q	A	127	103605
	2.06	44.7	0.42	0.42	0.43	0.00	1/8/2002	14-N	B	100	M6WC009
					0.29	0.00	1/8/2002	14-N	D	101	T6A26
					0.46	0.00	1/8/2002	14-N	D	102	T7A05
					0.58	0.42	1/8/2002	14-N	B	103	L5A16
	2.12	37.1	0.29	0.29	0.65	0.00	5/1/2002	24-X	B	176	WCM6025
					0.30	0.37	5/1/2002	24-X	C	177	101383
					0.31	0.19	5/1/2002	24-X	C	178	102014
					0.26	0.30	5/1/2002	24-X	B	179	100470
	3.01	40.6	0.56	0.56	0.16	0.83	8/24/2001	02-B	C	009	T6A11
					0.39	0.70	8/24/2001	02-B	D	015	102726
					0.58	0.16	8/24/2001	02-B	B	018	102727
					0.44	0.54	8/24/2001	02-B	B	019	102728
	4.09	44.7	0.42	0.42	0.39	0.46	4/17/2002	23-W	D	168	H6A52
					0.40	0.24	4/17/2002	23-W	B	169	T6A22
					0.40	0.00	4/17/2002	23-W	B	170	6R1
					0.64	0.56	4/17/2002	23-W	D	171	H6A54
	2.09, 2.07, 2.08	42.2	0.51	0.51	0.72	0.43	3/12/2002	20-T	D	140	L6A29
					0.46	0.67	3/12/2002	20-T	A	141	H6A30
					0.32	0.43	3/12/2002	20-T	C	142	H7A30
					0.22	0.52	3/12/2002	20-T	D	143	102348
4.04 & 4.05	46.0	0.37	0.37	0.42	0.24	9/14/2001	05-E	B	033	6R1	
				0.29	0.24	9/14/2001	05-E	B	034	102766	
				0.74	0.16	9/14/2001	05-E	B	035	102859	
				0.34	0.77	9/14/2001	05-E	A	036	103336	
				0.33	0.28	9/14/2001	05-E	C	037	103337	
				0.62	0.54	9/14/2001	05-E	A	038	102376	
7	1.02	47.3	0.47	0.45	0.40	8/17/2001	01-A	D	002	103489	
				0.26	0.51	8/17/2001	01-A	C	003	70030	
				0.76	0.45	8/17/2001	01-A	C	005	102296	
				0.77	0.51	8/17/2001	01-A	B	008	103490	
				0.35	0.00	9/14/2001	03-C	D	017	WCM7001	
				0.38	0.00	9/14/2001	03-C	A	018	WCM7002	
				0.51	0.00	9/14/2001	03-C	D	019	WCM7003	
				0.41	0.00	9/14/2001	03-C	C	020	WCM7004	
				0.50	0.00	1/25/2002	16-P	C	105	WCM7022	
				0.39	0.00	1/25/2002	16-P	B	106	WCM7023	
				0.52	0.00	1/25/2002	16-P	D	107	WCM7024	
				0.46	0.00	1/25/2002	16-P	A	108	WCM7025	
	2.10	43.5	0.00	0.00	0.22	0.00	9/14/2001	03-C	D	021	WCM7005
					0.21	0.00	9/14/2001	03-C	B	022	WCM7006
					0.46	0.00	9/14/2001	03-C	A	023	WCM7007
					0.68	0.00	9/14/2001	03-C	B	024	WCM7008
	4.08	47.7	0.26	0.26	0.19	0.00	3/21/2002	21-U	A	145	WCM7033
					0.48	0.20	3/21/2002	21-U	D	146	104100
					0.33	0.20	3/21/2002	21-U	B	147	102401
					0.46	0.39	3/21/2002	21-U	C	148	70473

Table 3.
2001-2002 Project Achieve
Middle - Low Performance Math Objectives

Math: Grade	Objective	Overall PA Objective Mastery	NC P-Value Avg per Obj.	ProjAch P-Value per Item	NC P-Value per Item	Test Date	Assessment #	Correct Answer	Test#	Item#
8	1.08	45.7	0.35	0.66	0.38	8/24/2001	02-B	D	008	102939
				0.60	0.46	8/24/2001	02-B	A	009	103735
				0.29	0.34	8/24/2001	02-B	C	014	100663
				0.22	0.33	8/24/2001	02-B	A	015	81112
				0.33	0.14	11/9/2001	10-J	A	076	81112
				0.55	0.41	11/9/2001	10-J	B	077	103733
				0.58	0.34	11/9/2001	10-J	B	078	103815
	1.11	38.8	0.20	0.57	0.41	11/9/2001	10-J	D	079	103816
				0.69	0.31	8/24/2001	02-B	D	006	102895
				0.24	0.00	8/24/2001	02-B	C	010	80274
				0.35	0.15	8/24/2001	02-B	C	011	102276
	2.03	33.1	0.17	0.29	0.14	8/24/2001	02-B	D	012	80927
				0.31	0.27	4/11/2002	21-U	D	169	101568
				0.34	0.19	4/11/2002	21-U	D	170	103786
				0.25	0.14	4/11/2002	21-U	B	171	T8A48
				0.45	0.06	4/11/2002	21-U	D	172	103688

	<0.50 p-value
--	---------------

**Table 4.
2001-2002 Project Achieve Assessment Costs**

Equipment		Type of Use	Cary	Creech	Hodge Rd	Rand Rd	Smith	Vance	E.Garner	E.Wake	E & R Dept.	Total
\$ 7,125.00	Computers	New for exclusive use							1500			1500
		Existing, redesignated for exclusive use		750		750	750		750	750		3750
		Existing, nonexclusive use	375		375			375			750	1875
\$ 6,000.00	Printers	New for exclusive use							1200	1200		2400
		Existing, redesignated for exclusive use			600	600	600					1800
		Existing, nonexclusive use	300	300				300			900	1800
\$ 34,677.00	Scanners and Answer sheets	New for exclusive use	3725	3725	3725	3725	3725		3725		7450	29800
		Existing, redesignated for exclusive use						1862.50		1862.50		3725
		Existing, nonexclusive use										0
		Answer sheets (18 cases @ \$64/1000)										1152
Software			3300	3300	3300	3300	3300		3300		6600	\$ 26,400.00
Printing												\$ 24,131.27
Item-writing												\$ 15,850.00
Total Cost												\$ 114,183.27

Table 5.
2001-2002 Project Achieve Item-writer Effectiveness

Grade	Math	Reading
3	87%	72%
4	94%	53%
5	72%	44%
6	(C&I)	68%
7	(C&I)	58%
8	40%	76%

Table 6.
2001-2002 Project Achieve Item-writing Costs by Grade Level

Grade	Math	Reading
3	\$1,400	\$435
4	\$850	\$1,190
5	\$700	\$1,070
6	NA	\$840
7	NA	\$1,005
8	\$440	\$920
Total	\$3,390	\$5,460

Project Achieve Charts of 2001-2002 Assessment Results

Figure 1. School Overall Performance - Grade 3 Math

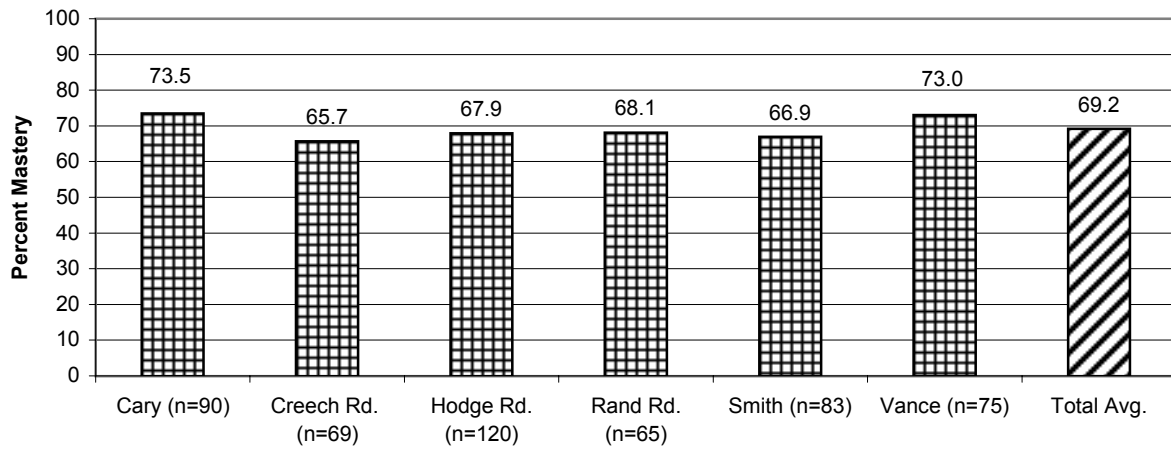
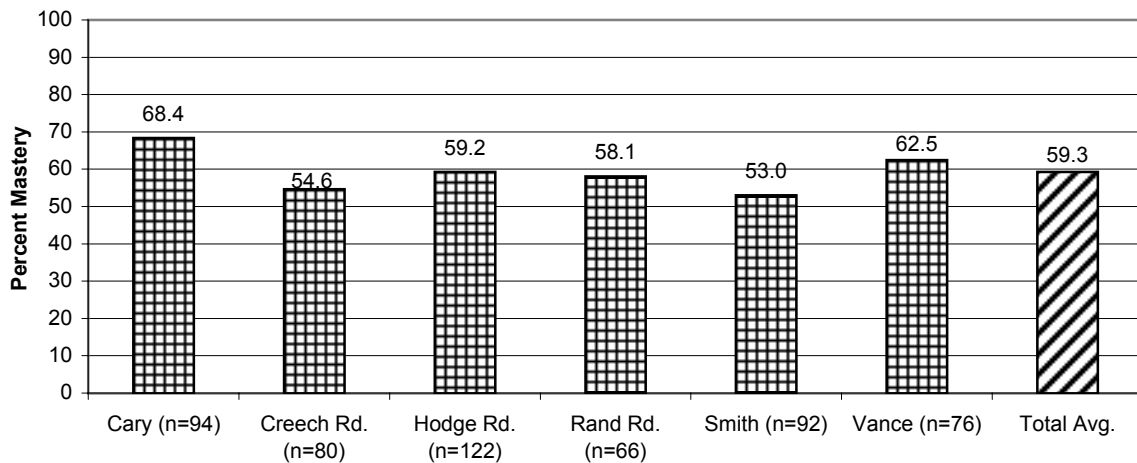


Figure 2. School Overall Performance - Grade 3 Reading



Project Achieve Charts of 2001-2002 Assessment Results

Figure 3. School Overall Performance - Grade 4 Math

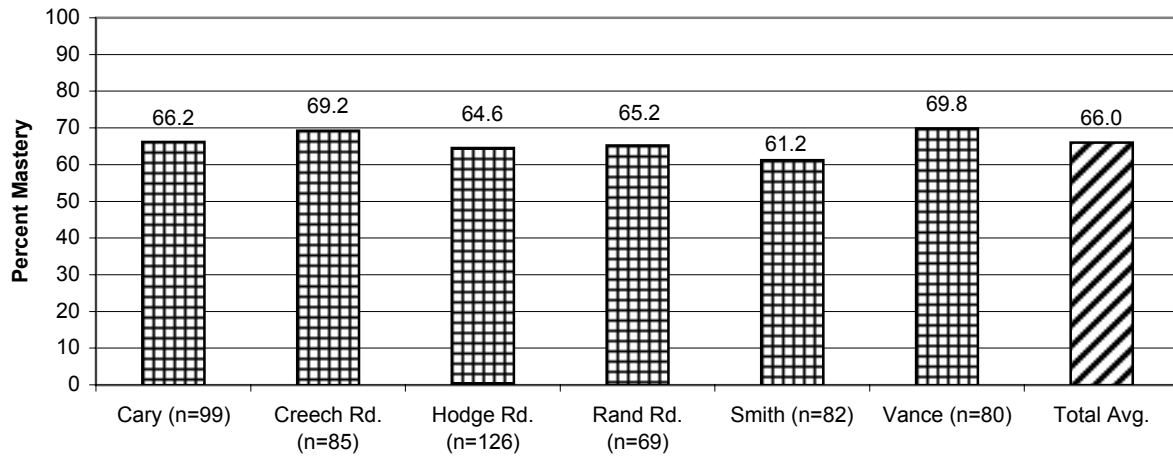
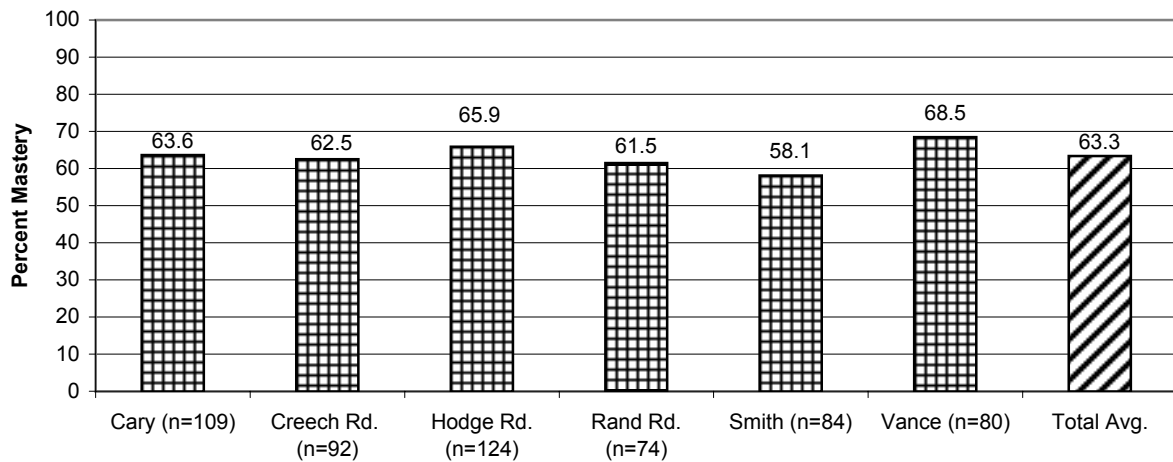


Figure 4. School Overall Performance - Grade 4 Reading



Project Achieve Charts of 2001-2002 Assessment Results

Figure 5. School Overall Performance - Grade 5 Math

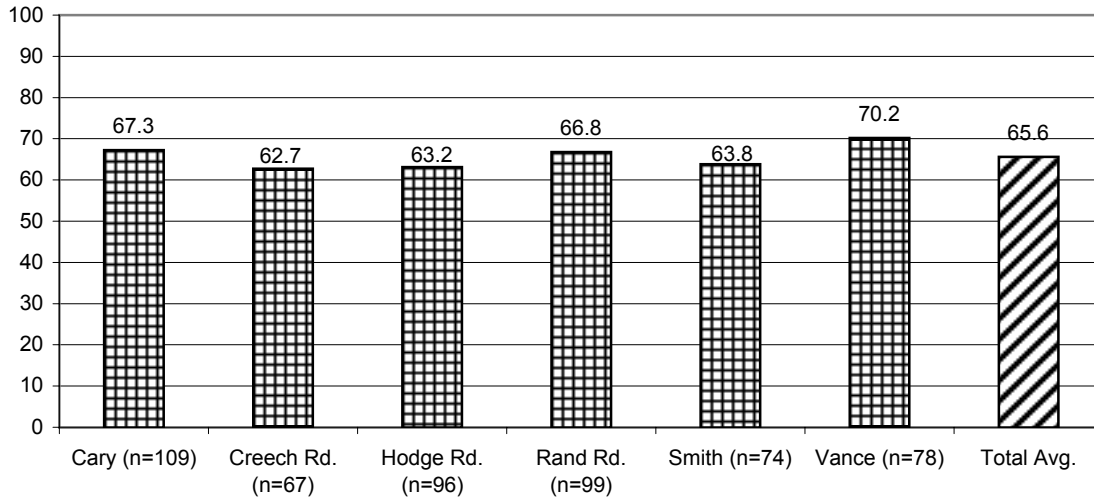
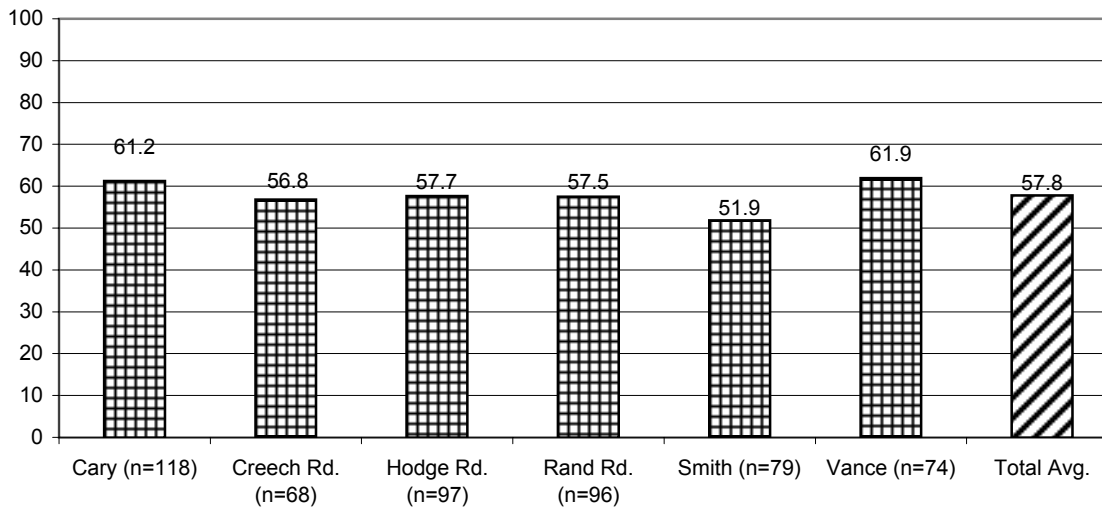
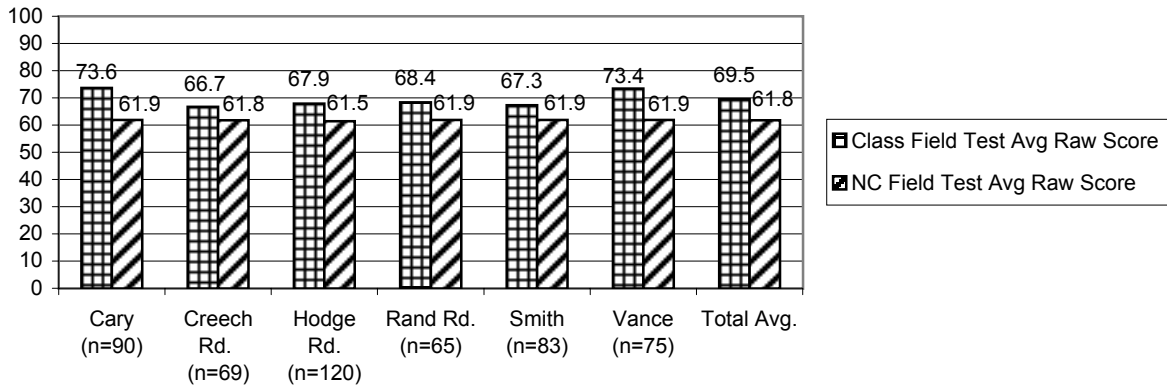


Figure 6. School Overall Performance - Grade 5 Reading

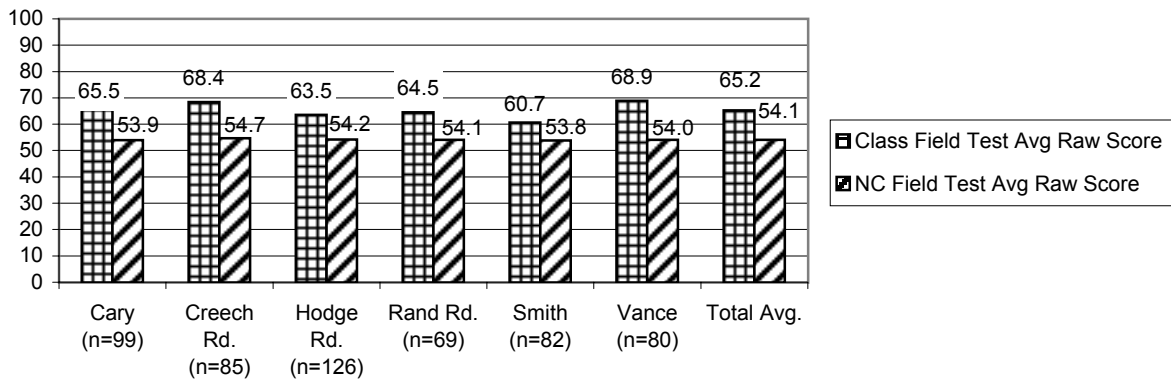


Project Achieve Charts of 2001-2002 Assessment Results

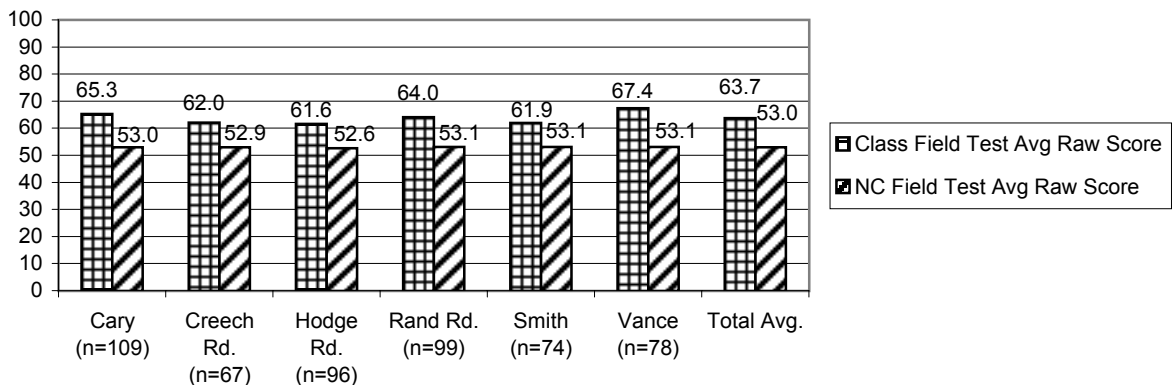
**Figure 7. School-State Comparisons on Grade 3 Math Field-Tested Items
(184 of 237)**



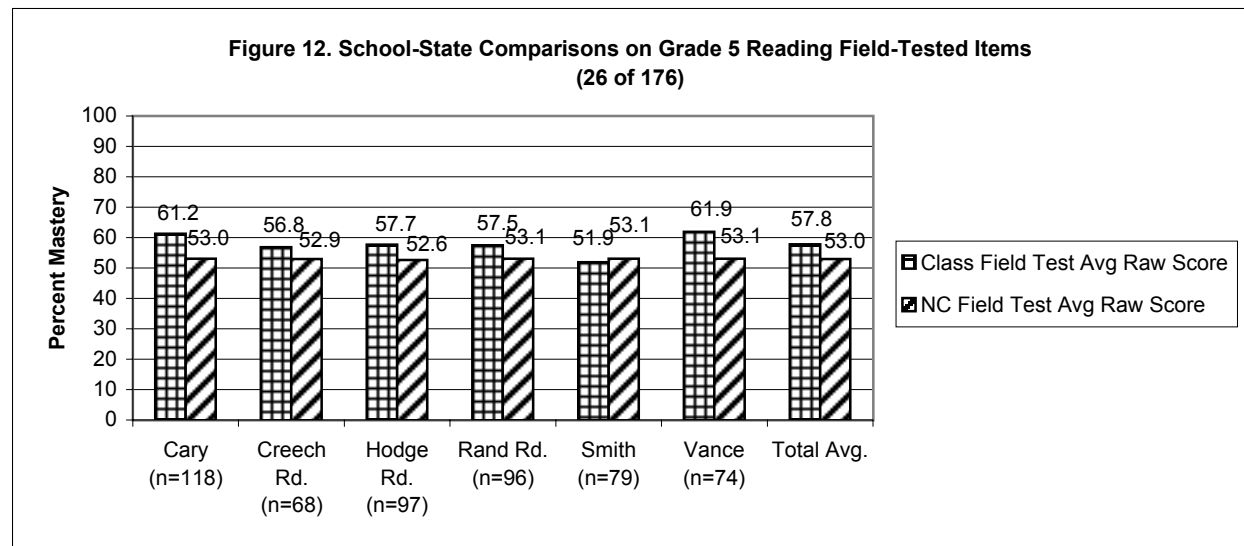
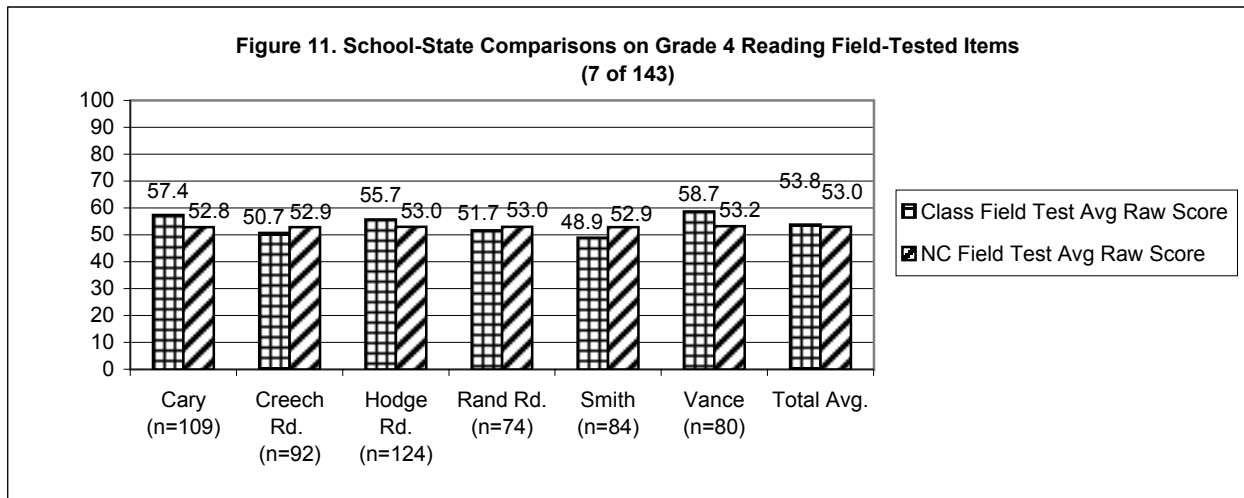
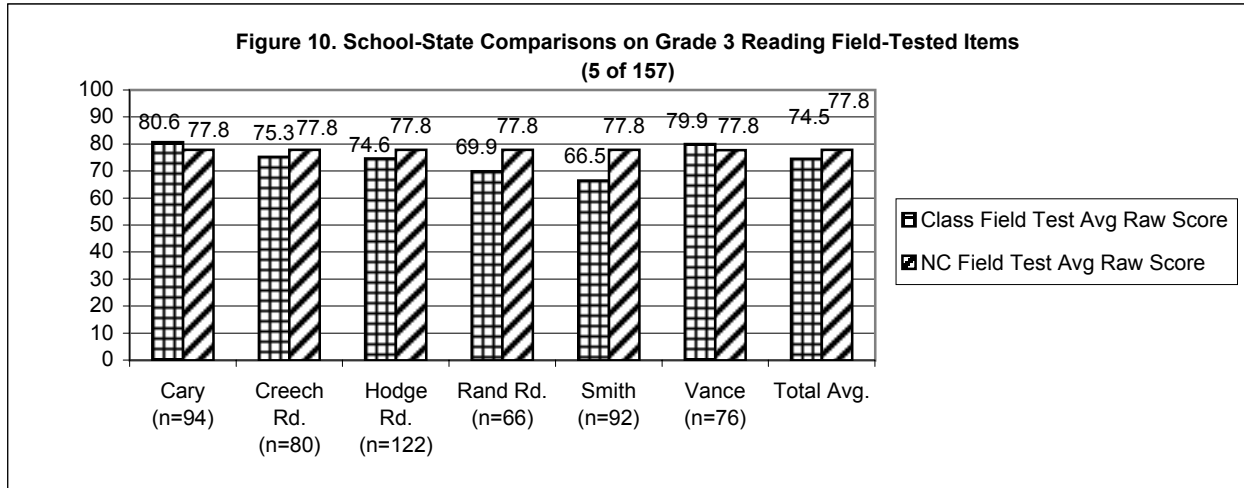
**Figure 8. School-State Comparisons on Grade 4 Math Field-Tested Items
(210 of 232)**



**Figure 9. School-State Comparisons on Grade 5 Math Field-Tested Items
(126 of 240)**



Project Achieve Charts of 2001-2002 Assessment Results



Project Achieve Charts of 2001-2002 Assessment Results

Figure 13. Project Achieve Grade 3 Math - Average Mastery by Objective and Overall Average

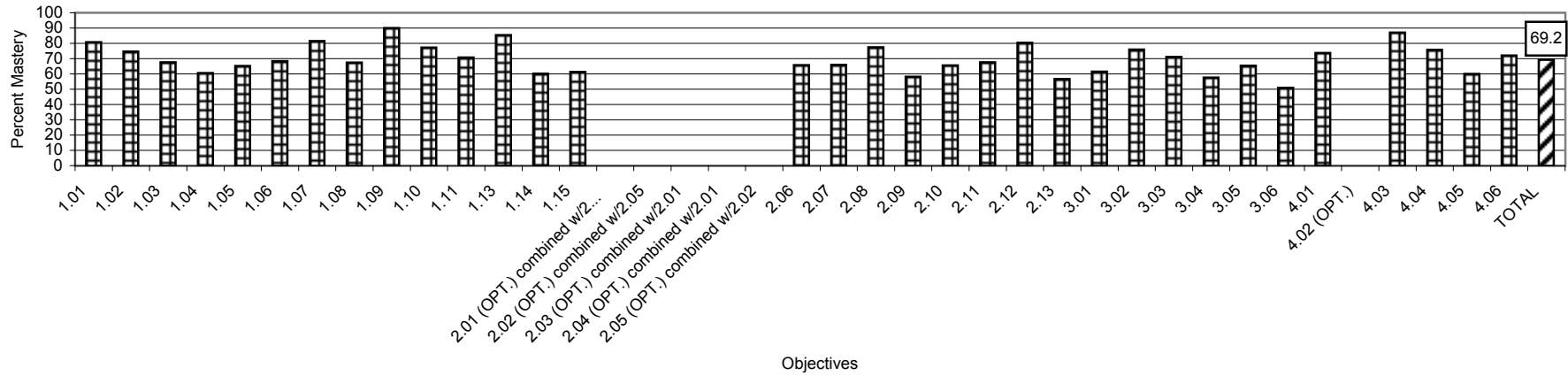


Figure 14. Project Achieve Grade 4 Math - Average Mastery by Objective and Overall Average

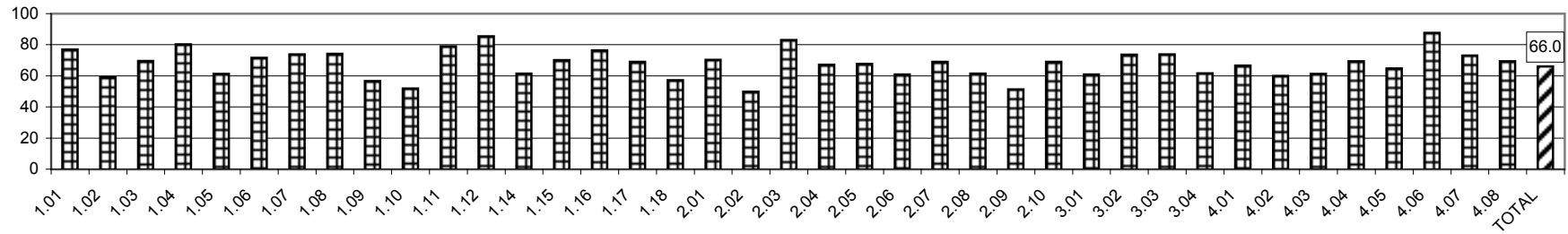
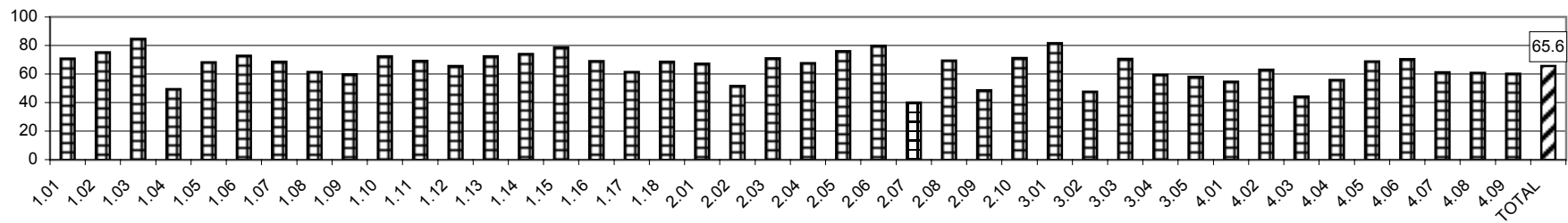
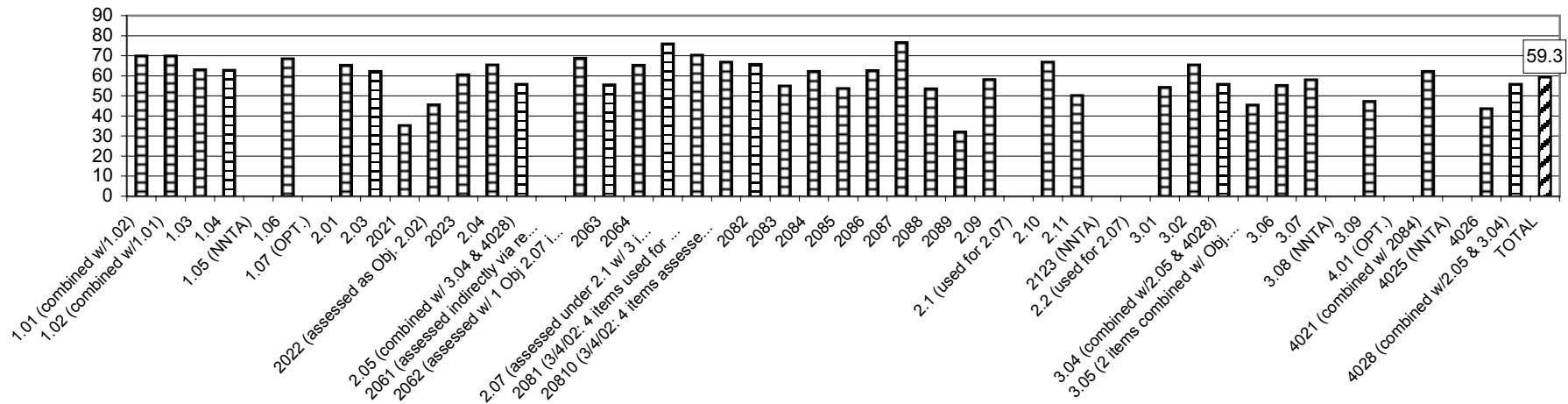


Figure 15. Project Achieve Grade 5 Math - Average Mastery by Objective and Overall Average



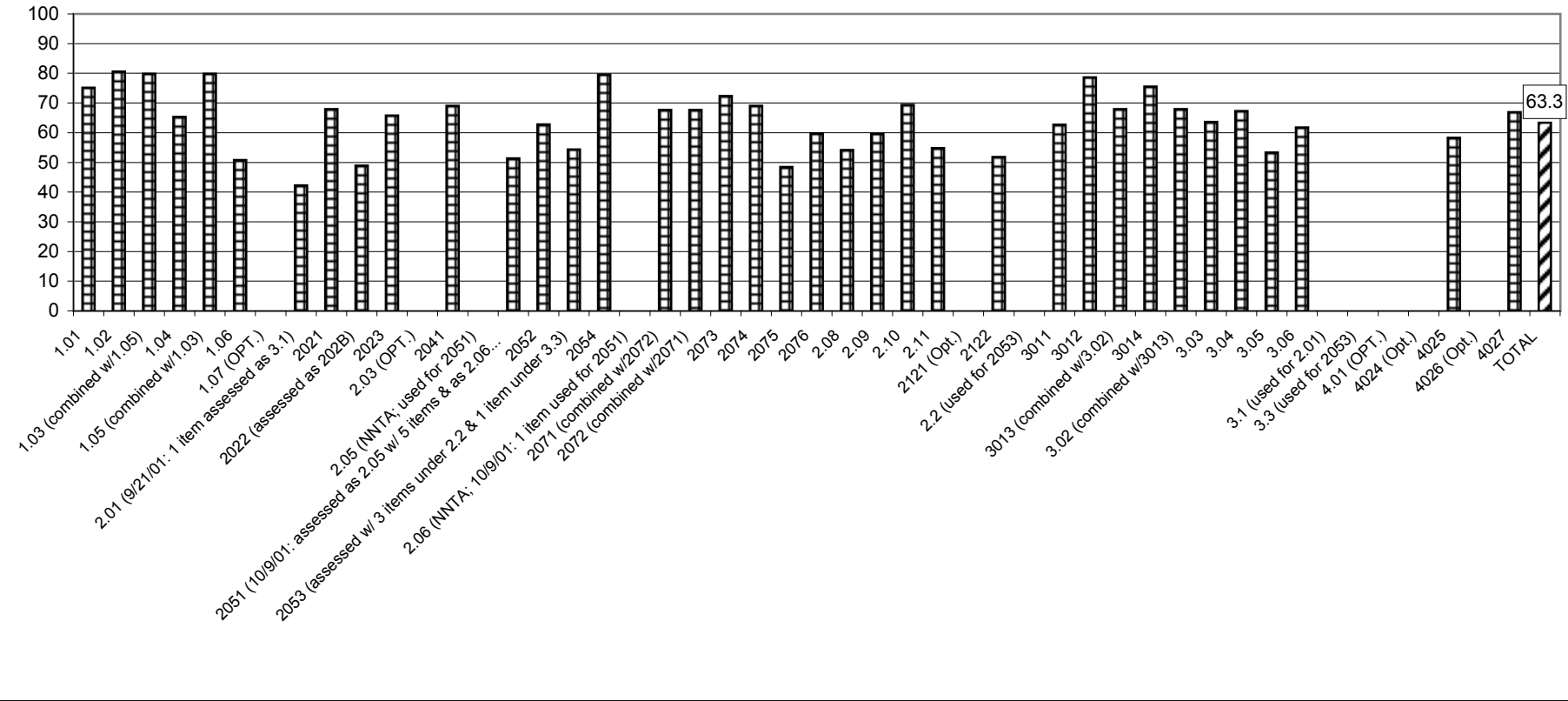
Project Achieve Charts of 2001-2002 Assessment Results

Figure 16. Project Achieve Grade 3 Reading - Average Mastery by Objective and Overall Average



Project Achieve Charts of 2001-2002 Assessment Results

Figure 17. Project Achieve Grade 4 Reading - Average Mastery by Objective and Overall Average



Project Achieve Charts of 2001-2002 Assessment Results

Figure 19. School Overall Performance - Grade 6 Math

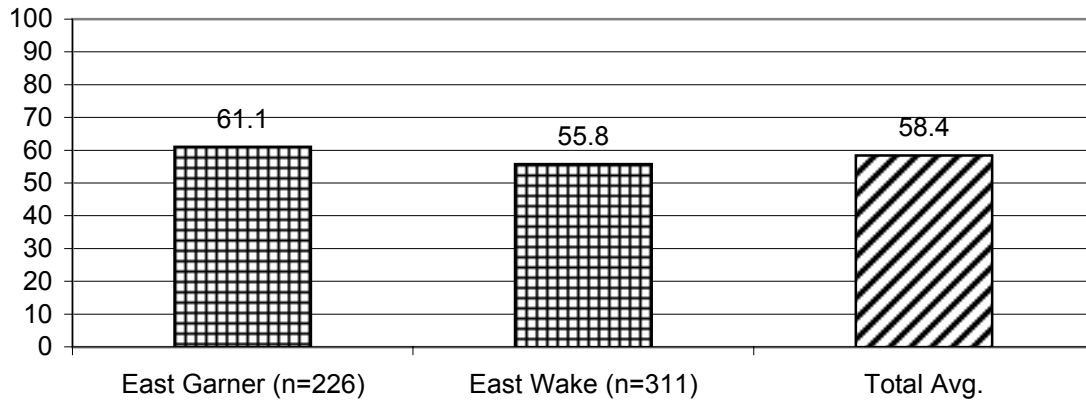
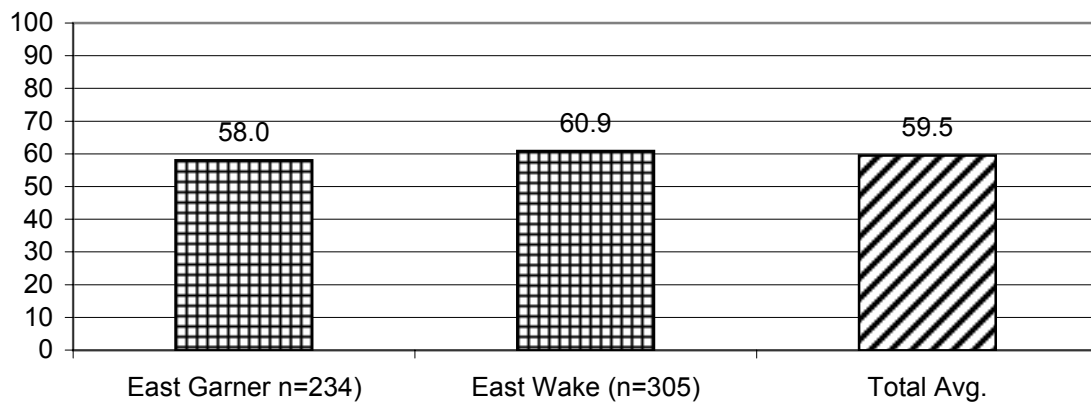


Figure 20. School Overall Performance - Grade 6 Reading



Project Achieve Charts of 2001-2002 Assessment Results

Figure 21. School Overall Performance - Grade 7 Math

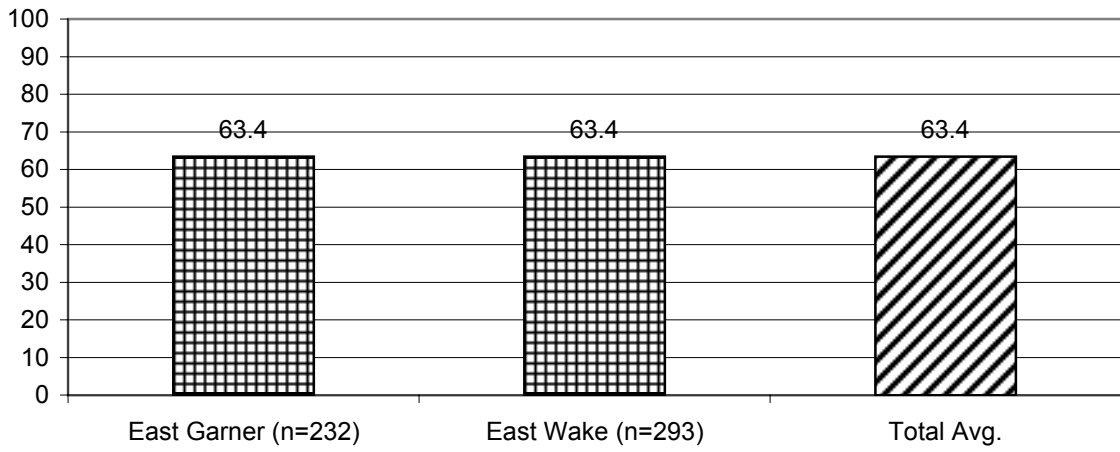
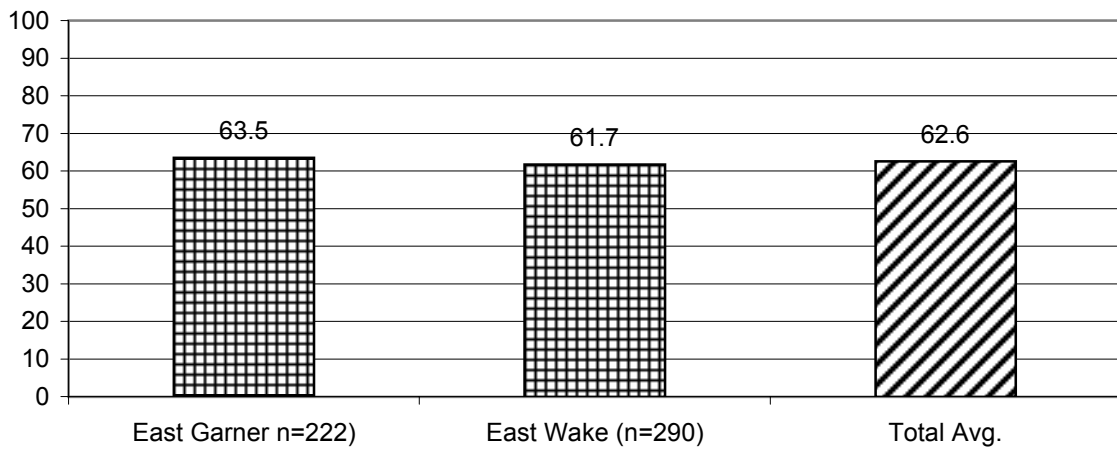


Figure 22. School Overall Performance - Grade 7 Reading



Project Achieve Charts of 2001-2002 Assessment Results

Figure 23. School Overall Performance - Grade 8 Math

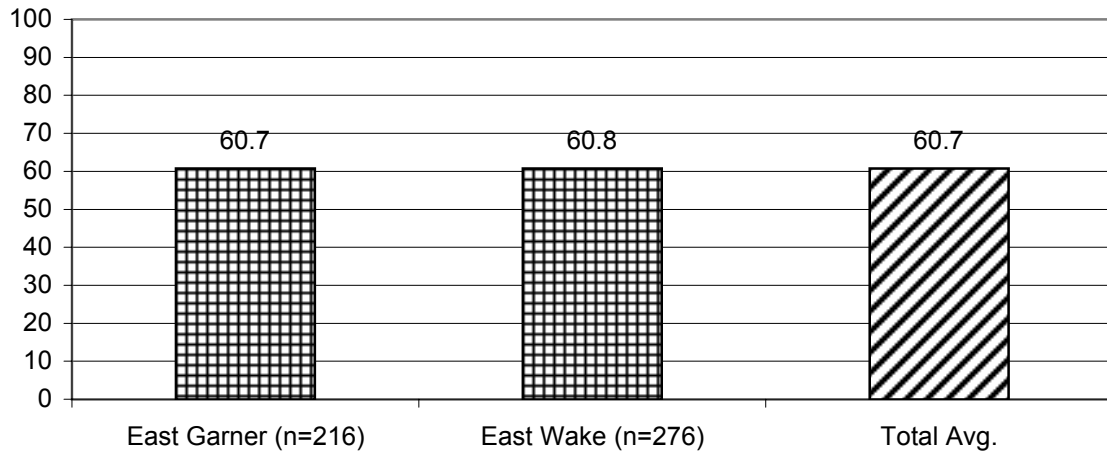
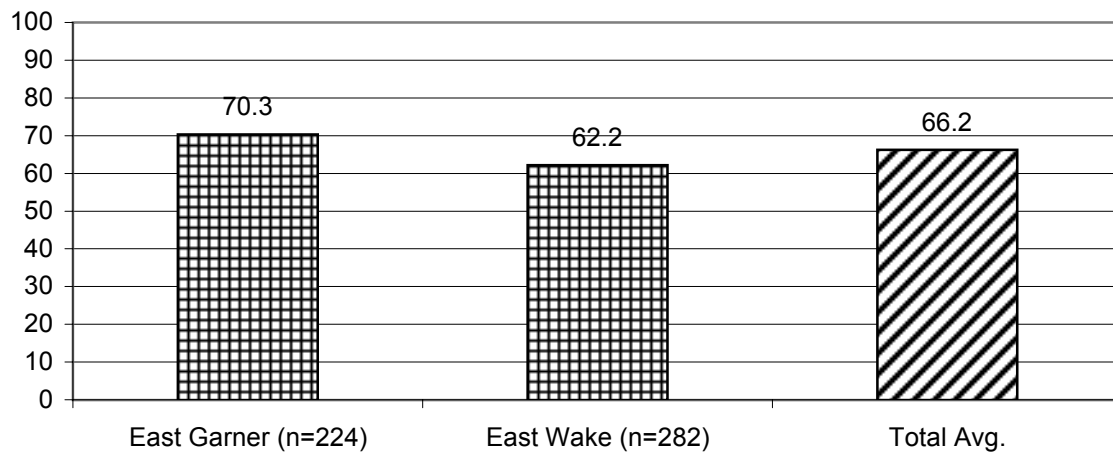
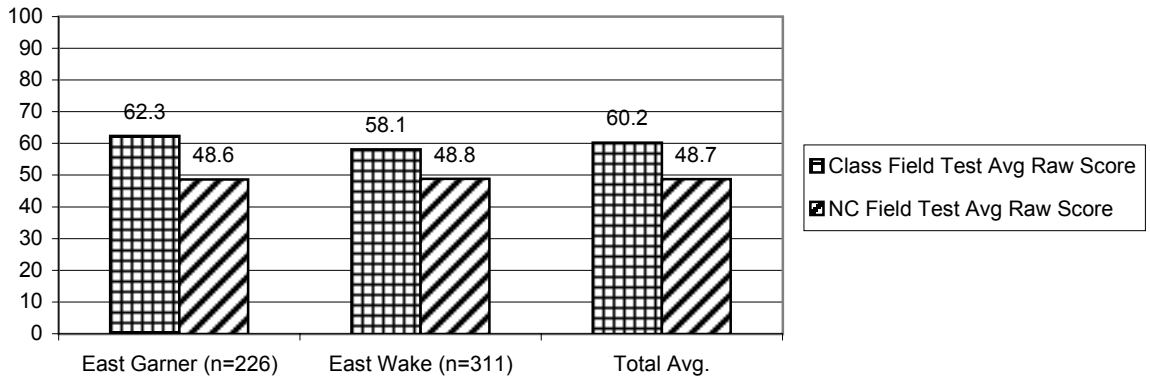


Figure 24. School Overall Performance - Grade 8 Reading

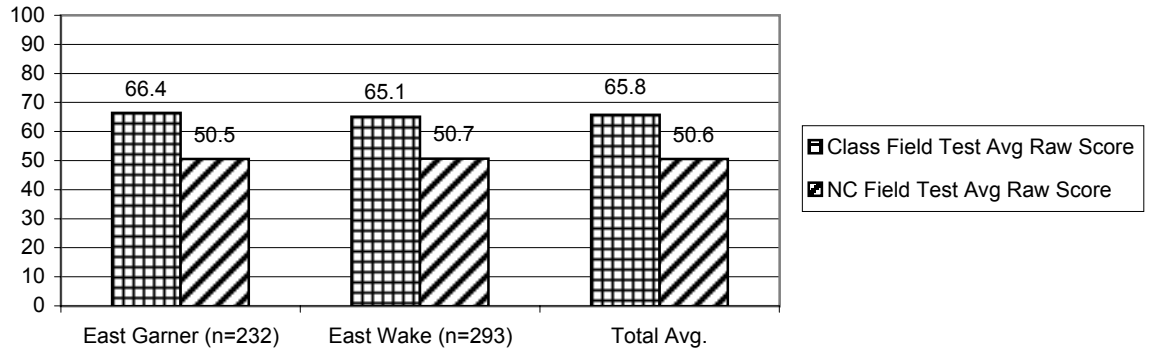


Project Achieve Charts of 2001-2002 Assessment Results

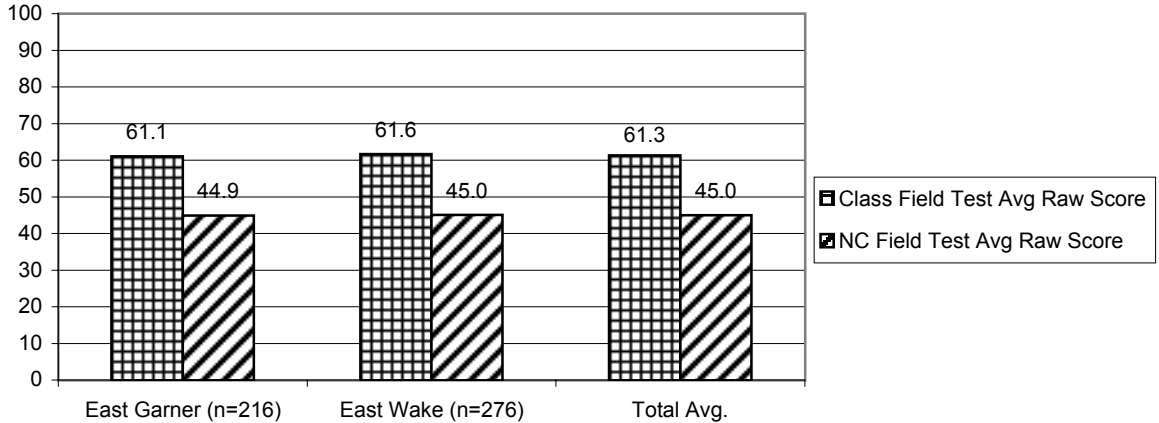
**Figure 25. School-State Comparisons on Grade 6 Math Field-Tested Items
(148 of 179)**



**Figure 26. School-State Comparisons on Grade 7 Math Field-Tested Items
(124 of 172)**

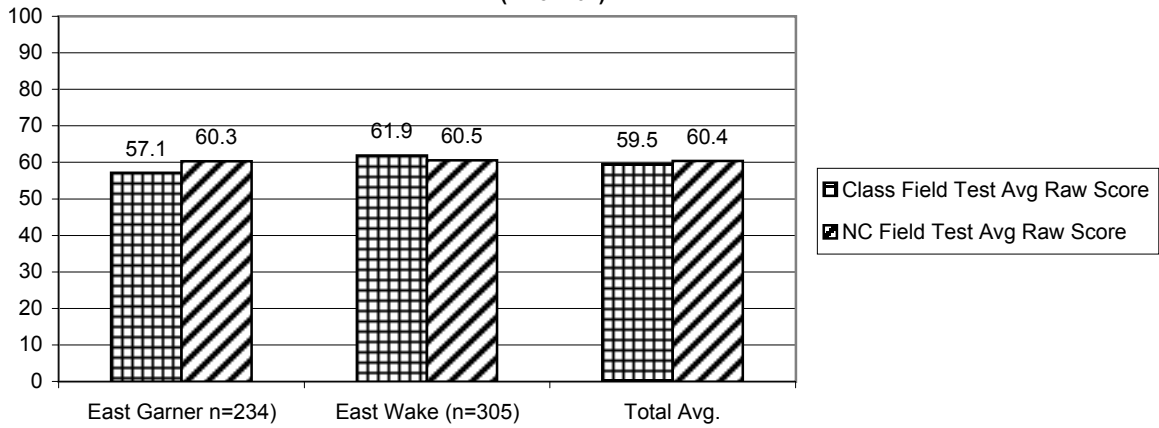


**Figure 27. School-State Comparisons on Grade 8 Math Field-Tested Items
(148 of 179)**

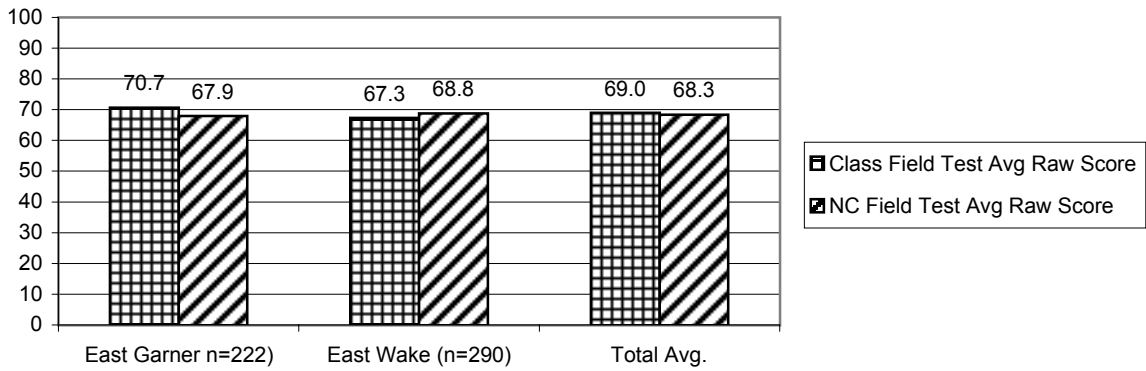


Project Achieve Charts of 2001-2002 Assessment Results

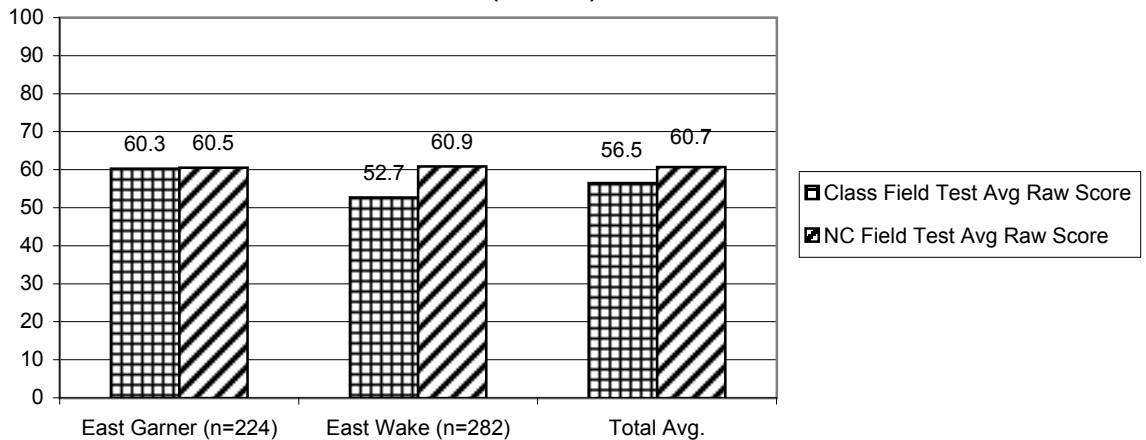
**Figure 28. School-State Comparisons on Grade 6 Reading Field-Tested Items
(11 of 164)**



**Figure 29. School-State Comparisons on Grade 7 Reading Field-Tested Items
(11 of 172)**



**Figure 30. School-State Comparisons on Grade 8 Reading Field-Tested Items
(28 of 165)**



Project Achieve Charts of 2001-2002 Assessment Results

Figure 31. Project Achieve Grade 6 Math - Average Mastery by Objective and Overall Average

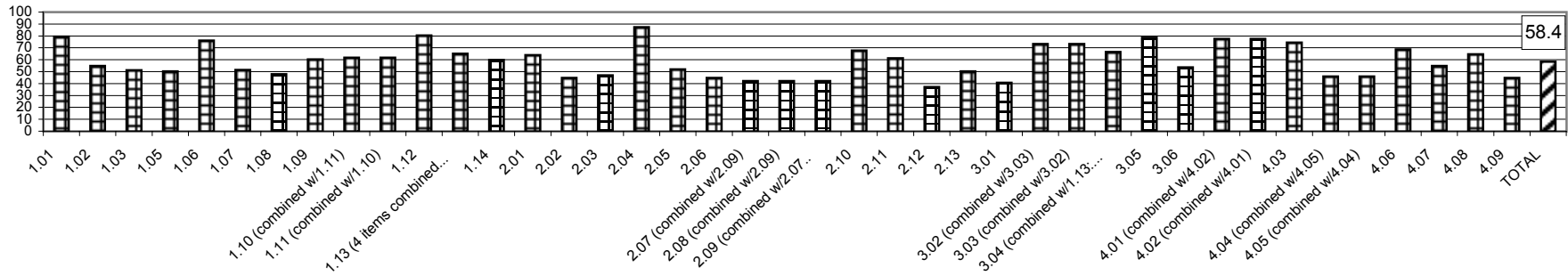


Figure 32. Project Achieve Grade 7 Math - Average Mastery by Objective and Overall Average

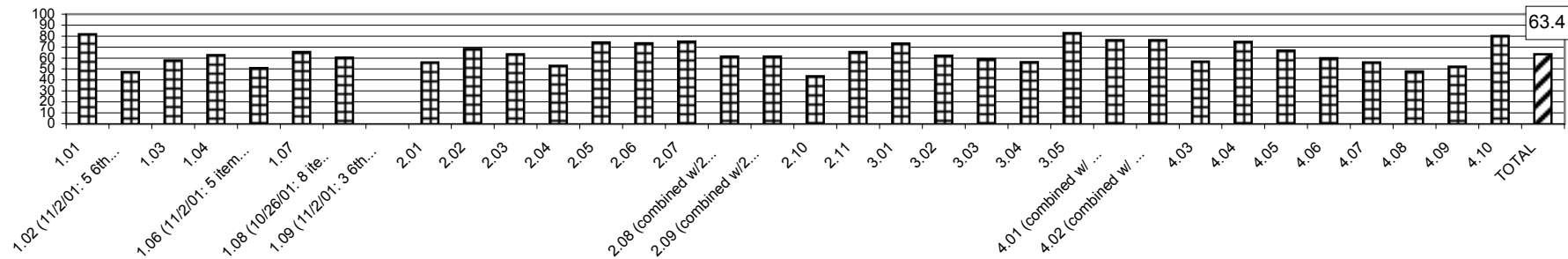
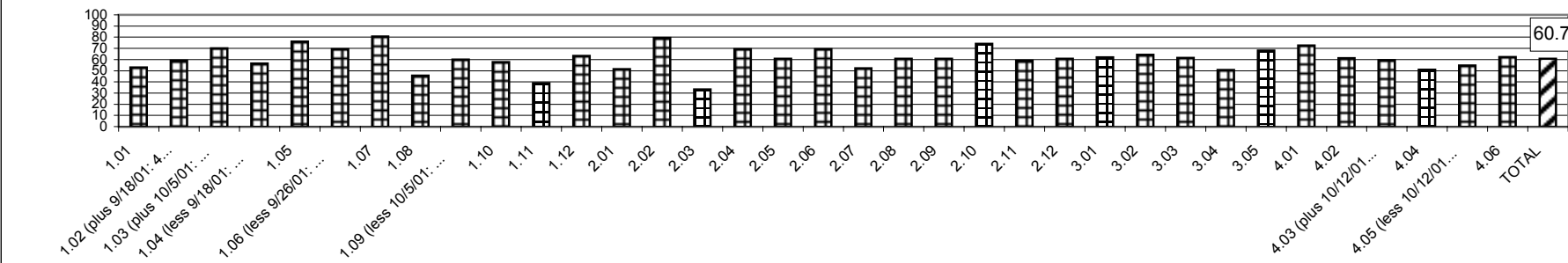


Figure 33. Project Achieve Grade 8 Math - Average Mastery by Objective and Overall Average



Project Achieve Charts of 2001-2002 Assessment Results

Figure 34. Project Achieve Grade 6 Reading - Average Mastery by Objective and Overall Average

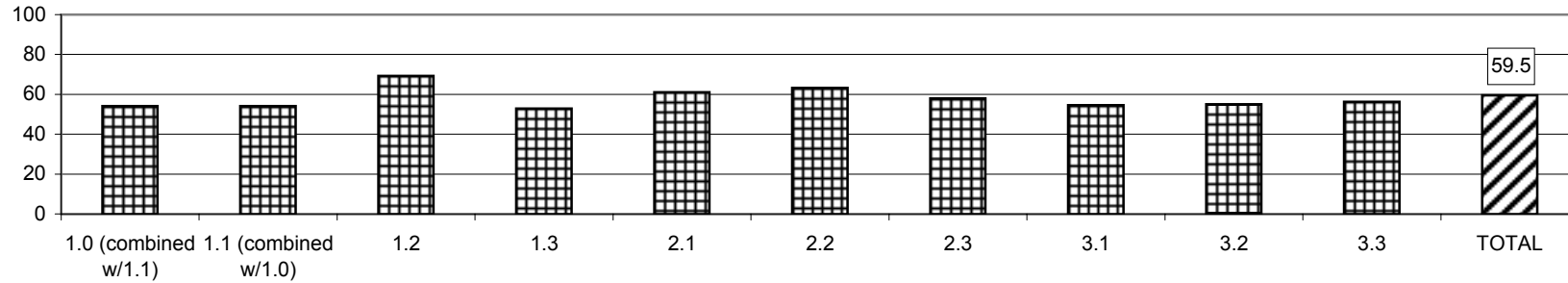


Figure 35. Project Achieve Grade 7 Reading - Average Mastery by Objective and Overall Average

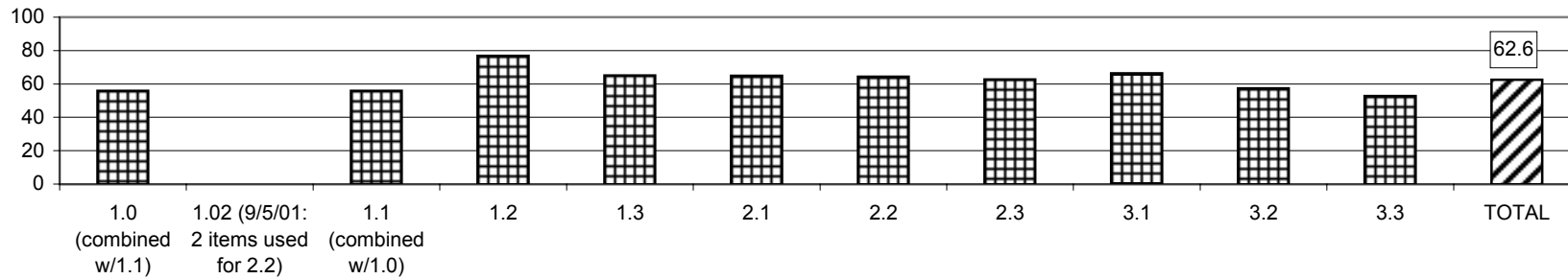
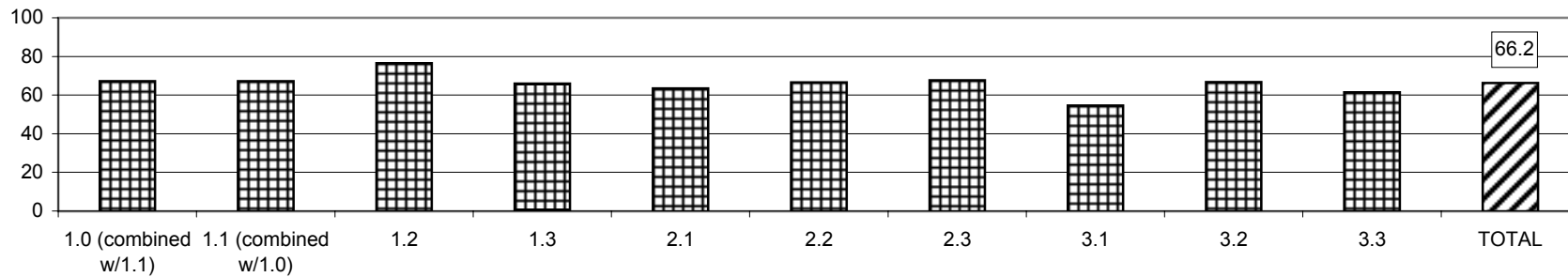


Figure 36. Project Achieve Grade 8 Reading - Average Mastery by Objective and Overall Average



REPORT ON 2001-2002 PROJECT ACHIEVE ASSESSMENTS

Author

Rosemary Reichstetter, Ed.D., Evaluation Specialist

Contributing Staff:

Roger Regan
Evaluation Assistant

Chuck Dulaney
Senior Director, School Accountability

Karen Banks
Assistant Superintendent, Evaluation and Research

E&R Report No. 02.28
June 2002

Department of Evaluation and Research
Instructional Services Division
Wake County Public School System
Raleigh, North Carolina
www.wcpss.net
(919)-850-1863