

## VI. Measurement of Student Achievement in MSAP-supported Schools

Strengthening students' knowledge of academic subjects and skills needed for successful careers in the future is a primary legislative purpose of MSAP and a primary focus of the MSAP performance indicators and this evaluation. All applicants for MSAP grants must describe project objectives for addressing this legislative purpose, and all grantees must annually provide data on their projects' progress toward meeting their objectives.

In the nationwide MSAP evaluation, we are addressing student achievement in two ways. First, we are investigating the achievement objectives that grantees specified as MSAP performance indicators in their applications. We are then documenting the degree to which those objectives are met, as reported in grantees' annual performance reports to the U.S. Department of Education (ED). Second, we intend to conduct a series of detailed analyses using comprehensive student achievement data from several of the Case Study sites. Such data will support more rigorous analyses (e.g., comparing the growth of magnet students and similarly situated non-magnet students) than are possible using grantees' self-reports, which vary widely in scope and sophistication. During the first year of the evaluation, the principal activities of the student achievement study were to identify each project's objectives, translate them into a uniform, analyzable format, and record them in an electronic database. Through questions included in the MSAP Project Director interviews, we also attempted to verify and refine the objectives we had coded.

This chapter outlines the characteristics of the achievement objectives of 289 programs in 56 MSAP projects.<sup>1</sup> It is based on information found in the narratives of grantees' applications and in grantees' 1998–99 performance reports. We classified each achievement objective along several dimensions including the subject area measured, the type of measure used, the nature of the change called for in the objective, the time frame established for measuring the outcome (e.g., annually or only in the third year of the grant), and the use of comparisons between the performances of magnet and similarly situated non-magnet students. Due to lack of specificity in the grant application narratives, it was not possible to classify some objectives on all of the dimensions that are discussed in this chapter. In such cases, the objective was coded on as many dimensions as possible, and as “missing” or “unclassifiable” on those dimensions for which classification was impossible.<sup>2</sup>

Progress toward meeting achievement objectives during the first year of operation is not discussed here because complete data for many grantees were not available at the time analyses for this

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<sup>1</sup> Overall, the 57 MSAP projects include 293 programs in 292 schools. The programs include both whole school programs and programs within a school (PWSs). Accordingly, this chapter refers to the objectives of magnet *programs* rather than the objectives of magnet *schools*. The analysis of student achievement objectives excludes four magnet programs. Three comprise the entire set of magnets in one MSAP project. All three used 1998–99 as a planning year, and the objectives described in the district's MSAP application and 1998–99 performance report were too vague to be coded with any certainty. The fourth program was in a school that is phasing in grades K through 5 over several years. It was excluded because all of its achievement objectives pertain to grades that will not be part of the magnet during the grant period.

<sup>2</sup> A more detailed discussion of the data collection and recording process is included in the Overview Appendix.

report were being conducted (during the summer of 2000). Results will be presented in the evaluation's second year report in 2001.<sup>3</sup>

Throughout this chapter, we report on the percentage of *magnet programs* that have at least one achievement objective in a particular category (e.g., an objective for mathematics, an objective based on alternative assessments, or an objective calling for specified amounts of improvement each year of the grant). We have chosen not to focus on the percentage of *objectives* of each type. This is because the magnet projects vary widely in the numbers of objectives they report for their programs. Under these circumstances, statistics based on the overall numbers of objectives falling into various categories would over-represent programs with larger numbers of objectives.<sup>4</sup> The average numbers of objectives per program are 8.8 for elementary school programs, 9.7 for middle school programs, 11.9 for high school programs, and 12.8 for programs in the six schools serving combined levels (e.g., grades 6–12). Many of these objectives pertain to multiple grades within a school, and most grantees plan to track objectives separately for each grade.

## Subject Areas Measured by Grantees' Student Achievement Objectives

As shown in Figure VI-1 below, virtually all MSAP-supported programs, regardless of grade level,<sup>5</sup> include at least one objective for student achievement in language arts (reading, writing, or English) and at least one objective for achievement in mathematics.<sup>6</sup> These are the subjects that state and district testing programs cover most consistently and over the largest number of grades. Consequently, they are the subjects for which standardized test data are most readily available for tracking student achievement in MSAP-supported schools. Thirteen programs lacked explicit mathematics objectives, and eight of these also lacked explicit language arts objectives. However, in seven cases (including two that lacked both mathematics and language arts objectives), the program did report achievement objectives

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<sup>3</sup> All 57 MSAP grantees submitted performance reports for their first year of operation (1998-99), but 34 (60 percent) of the reports either contained no student achievement results or lacked results for some or all of the standardized tests mentioned in the projects' student achievement objectives. Twenty-eight of these grantees stated that they would submit addenda to their reports in fall 1999, once they had obtained test results for the 1998-99 school year. (The others either said that the results would be reported in 1999-2000 performance report or made no explicit commitment to send an update.) By summer 2000, ED had sent AIR supplementary reports containing updated student achievement results for 7 of the 28 projects.

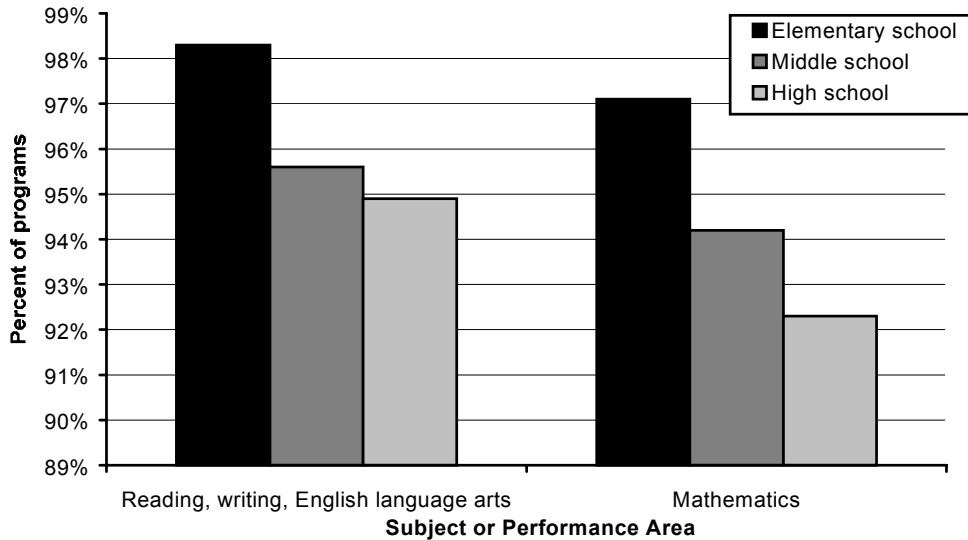
<sup>4</sup> For example, the percentage of each elementary program's objectives that focus on language arts averages about 44 percent, while for the average high school program, language arts account for 31 percent of all objectives. By contrast, language arts account for 42 percent of all elementary program objectives recorded in the database, and 27 percent of all high school program objectives. This chapter will report the first set of statistics rather than the second.

<sup>5</sup> Schools are classified as elementary (including K-8), middle, high, or combined level, based on the grades they enrolled in 1999–2000.

<sup>6</sup> See Table A-VI-1 in Appendix VI.

involving composite scores on tests that undoubtedly incorporated both mathematics and language art sub-scores.<sup>7</sup>

**Figure VI-1**  
**Percentage of Programs with One or More Objectives in Language Arts and Mathematics, by Level**



n=283 programs<sup>8</sup>: 174 elementary, 70 middle, 39 high school programs  
 Source: MSAP applications and performance reports, Project Director Interviews

As may be seen in Figure VI-2, a vast array of other academic content areas, career awareness, vocational skills, and behavioral outcomes also is the subject of magnet program achievement objectives, but these occur with less frequency than the objectives associated with language arts and mathematics.<sup>9</sup> The popularity of these objectives varies predictably with different grade levels. Elementary and middle school programs are more likely than those in high schools to have achievement objectives related to

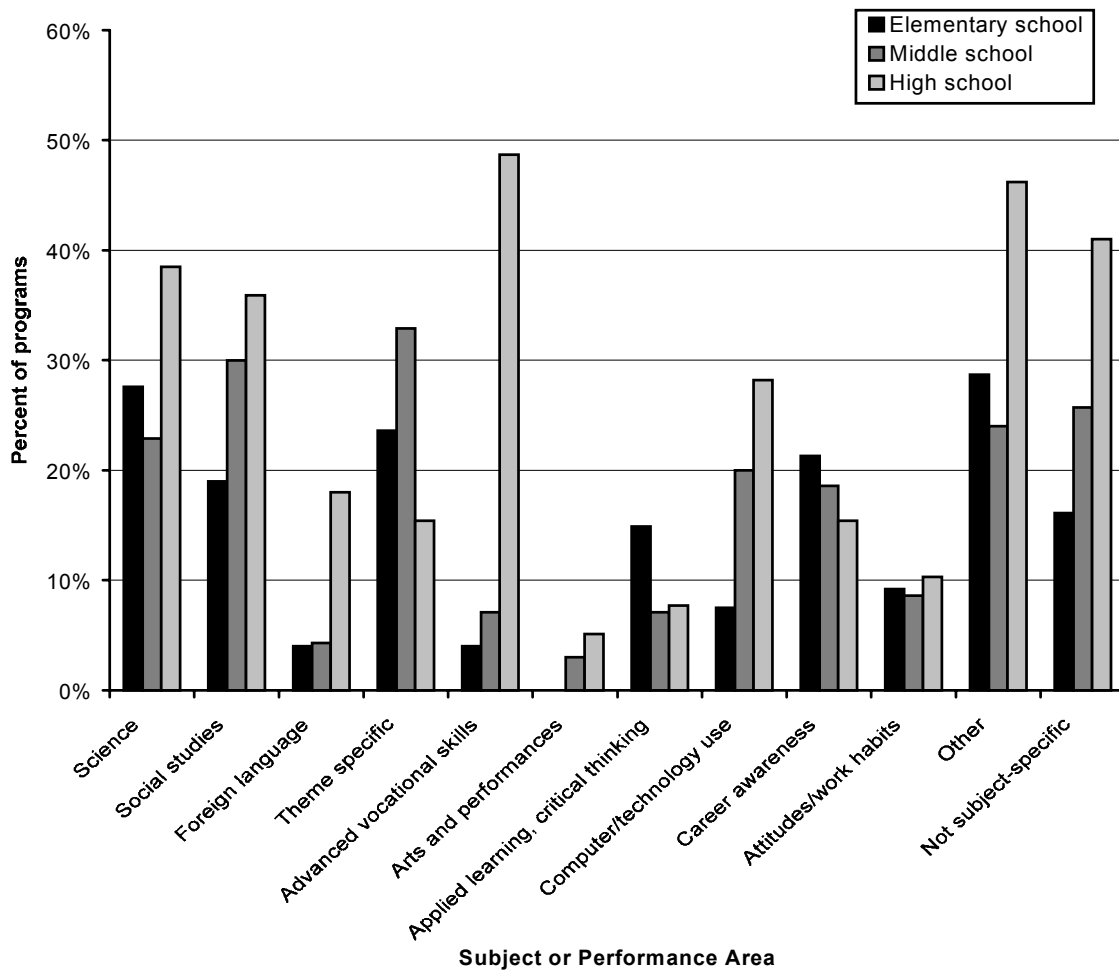
<sup>7</sup> Of the six remaining programs, all of which lack explicit objectives for both mathematics and language arts, three are middle school programs that did not base achievement objectives on standardized test scores. All planned to document student accomplishments on theme-related projects. (One, a science magnet program, planned to assess student performance through individual projects that incorporated science, mathematics, and computer technology. The other two programs had a generic achievement objective that “100% of the students enrolled in the magnet schools will develop and demonstrate skills in magnet theme-related subjects as demonstrated by products such as plays, competitions, articles, oral presentations, models, science fair exhibits, and performances. This will be documented on an annual basis by the classroom teacher and reviewed by an independent outside evaluator in the spring of each project year.”) Finally, three programs had no specified achievement objectives. Two of the programs serve early elementary grades that do not participate in state and district standardized testing. The other program is a new school that opened on a limited basis in 1999-2000. The district’s grant application made a general reference to state and district tests. When we contacted the Project Director to determine what subjects would be tested, we were told that because the school had served only a few students in 1999-2000, the project did not plan to compare scores between 1999-2000 and 2000-01, as such a plan had not been stated in the application.

<sup>8</sup> The n does not include 6 combined-level programs.

<sup>9</sup> See Table A-VI-2 in Appendix VI for detailed results, including those for six combined-level schools that are not included in Figure VI-2.

school-wide themes.<sup>10</sup> High school programs typically offer a variety of specialized academic and vocational opportunities, and they are more likely than elementary and middle school programs to include objectives for arts and performances, computer skills, and advanced vocational skills. High school programs also are more likely than programs for other grade levels to report objectives in the “other” and “non-subject-specific” categories. The “other” category includes objectives that involve multiple subject assessments (e.g., high school competency exams), failures in academic courses, enrollment in or successful completion of honors or college preparatory courses, and teacher ratings of students’ work habits and their accomplishments in music and physical education. “Non-subject-specific” objectives involve behavioral outcomes such as end-of-year promotions or retentions; dropout, graduation, attendance, and college aptitude test-taking rates; overall grade point averages; identification for a gifted program; and participation in community-based experiences.

**Figure VI-2**  
**Percentage of Programs with One or More Objectives in Other Subjects and Performance Areas, by Level**



n=283 programs  
 Source: MSAP applications and performance reports, Project Director Interviews

<sup>10</sup> Examples of theme-specific objectives include student productions that coordinate knowledge and skills from multiple disciplines that are the focus of a magnet school program such as mathematics, science, and computer technology, or language and fine arts.

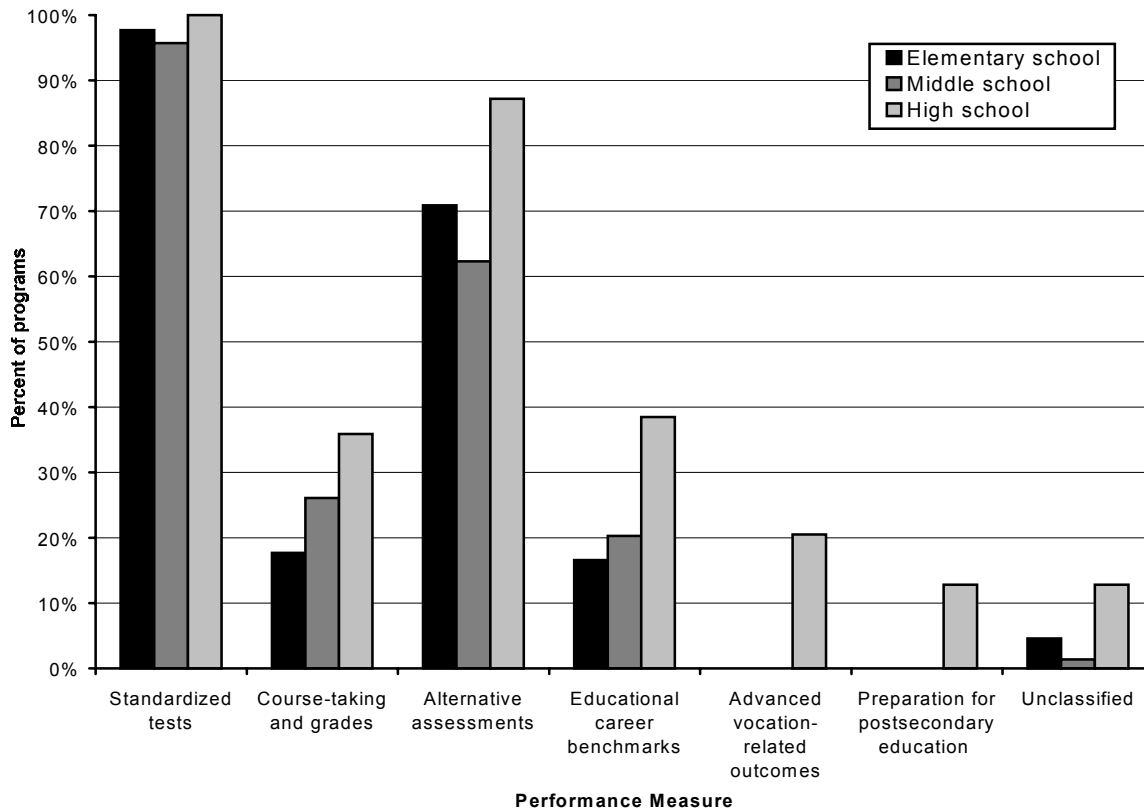
## **Kinds of Performance Measures on which Achievement Objectives Are Based**

Standardized test results are by far the most common measure of student achievement embedded in MSAP program objectives. As seen in Figure VI-3 below, virtually all programs base at least some of their objectives on scores of annually administered standardized tests.<sup>11</sup> Alternative assessments, mentioned by over 70 percent of the programs, are the second most popular type of achievement measure. Some are intended to document student performance in academic knowledge and skill areas not covered by district or state assessments, and may need to be developed by the magnet staff or program evaluator during the initial years of the grant. For example, one project planned to devise an internet research task and a rubric to assess students' mastery of computer research skills; several projects planned to assess students' career awareness, work-related habits, or attitudes toward school using surveys or teacher ratings. Some "theme-related" objectives (as described in the last section) involve projects or performances that demonstrate mastery of material related to the school's theme. Other alternative measures are established district or state measures (e.g., rubric-driven writing or mathematics assessments). Although many programs include objectives based on alternative assessments, they represent a relatively small fraction of objectives overall: while standardized tests account for about 73 percent of the average program's objectives, alternative assessments account for about 15 percent. Most of the alternative measures are also collected or reported annually.

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<sup>11</sup> See Table A-VI-2 in Appendix VI.

**Figure VI-3**  
**Performance Data upon Which Objectives Are Based**  
**(Percentage of Programs with One or More Objectives Based on Measure, by Level)**



n=283 programs  
 Source: MSAP applications and performance reports, Project Director Interviews

A variety of other achievement measures is used by smaller proportions of programs. Such measures tend to be more popular for high schools than elementary and middle schools:

- Course-taking (including course-completion and earning a passing grade) is mentioned in the objectives of 22 percent of programs overall and 36 percent of high school programs.
- Benchmarks in students’ educational careers (including promotion, graduation, and dropout rates) are mentioned by 21 percent of programs overall and 38 percent of high school programs.
- Only a few programs—all in high schools—include objectives pertaining to advanced vocational education outcomes (e.g., earning certificates of competency in vocational skills) and preparations for postsecondary education (e.g., completing particular courses required for college admission, taking and earning qualifying scores on college entrance examinations).
- Most of the objectives whose measurement type could not be classified stated that there would be a strong statistical correlation between student achievement outcome measures and measures of the degree of alignment between the implemented program

and state standards. This category of objective was included in the evaluation plans of several projects that had contracted with the same evaluator.<sup>12</sup>

## Types of Objectives Set

Student achievement objectives may be characterized in terms of the nature of the change required to attain the desired performance level, as well as the time frame within which the objective is to be realized. In addition, since MSAP programs are intended to bring together and benefit diverse students, achievement objectives may also be characterized according to the degree to which disparities in the performance of different student groups are addressed.

### Nature of Change

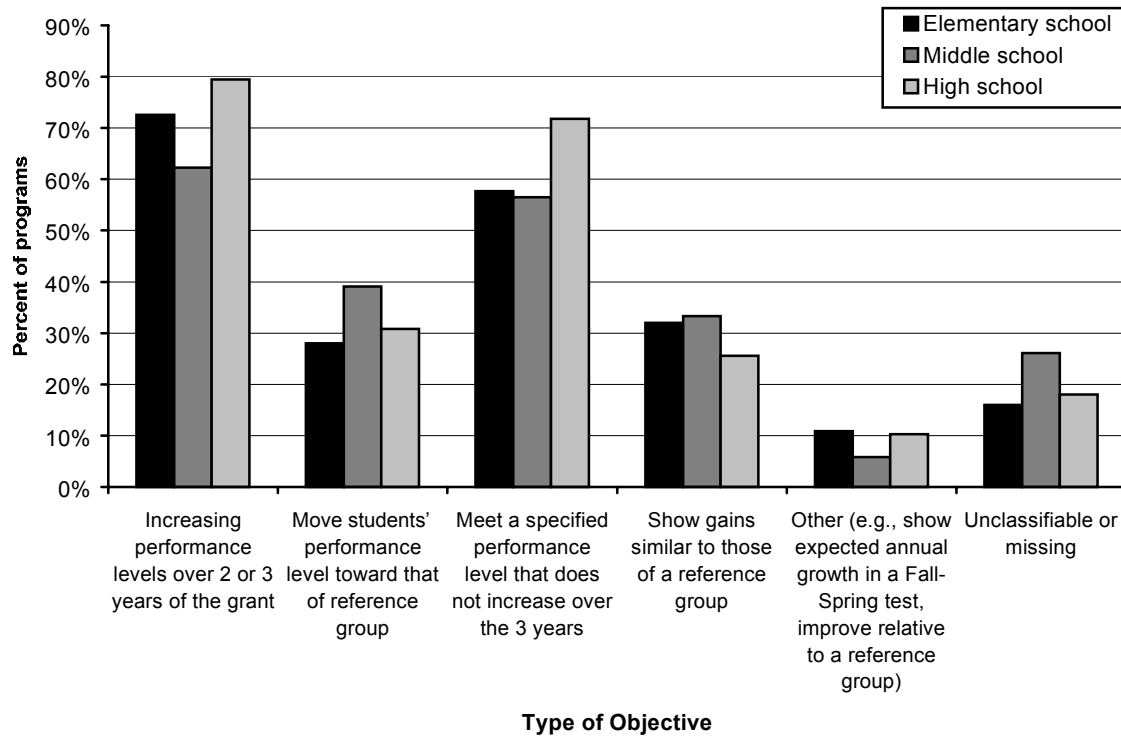
MSAP projects' achievement objectives call for a variety of attainments. While many objectives explicitly describe annual, incremental improvements in performance over a baseline level, others do not explicitly reference a baseline level for years prior to the MSAP grant. As shown in Figure VI-4, overall about 70 percent of the programs report one or more objectives involving annual increases in achievement relative to a baseline.<sup>13</sup> About 60 percent include one or more objectives targeting a specified criterion level of performance. Smaller proportions of programs include objectives that require more complicated calculations: comparisons of magnet students' average performance relative to that of comparison groups, or comparisons of the amount of improvement accomplished by magnet students and non-magnet students. Just under 20 percent of programs reported at least one objective for which we could not determine or classify the nature of the desired change. Included among these were the objectives mentioned in the previous section that involved correlations between student achievement gains and program implementation measures.

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<sup>12</sup> Arguably, these "correlation goals" should not be counted as achievement objectives, since they involve a relationship between student performance gains and the degree of program implementation, rather than a goal for student achievement *per se*. However, these objectives are included in this report because they were listed among the student achievement objectives in grantees' applications and were mentioned again in grantees' first year performance reports as achievement objectives that would be addressed in Year 3.

<sup>13</sup> See Table A-VI-3 in Appendix VI.

**Figure VI-4**  
**Types of Performance Level Attainments in Achievement Objectives**  
**(Percentage of Programs with One or More Objectives, by Level)**



n=283 programs  
 Source: MSAP applications and performance reports, Project Director Interviews

Although the MSAP purpose of strengthening student academic knowledge and marketable skills is often described as “improving student achievement,” not all of the achievement objectives call for annual increases in levels of magnet student performance across the years of the grant. Furthermore, not all objectives involve explicit comparisons between student performances prior to and during the years of the grant. Often (but not always) in such cases, baseline data do not exist because a measure was first used in spring 1999, or was to be developed by project staff during the early stages of the magnet project.

The following two types of objectives are most frequently specified:

- The most common type of objective involves a steady increase in performance levels over two or three years of the grant. Over two-thirds of the MSAP-supported programs include at least one objective of this type. Most of these explicitly call for increases in performance relative to performance in a baseline year (e.g., an increase by a specified percent of the baseline or by a specified number of percentile points). Others specify performance benchmarks without relating them to prior performance levels (e.g., the percentage of students scoring “proficient” on an examination will be at least 55 percent in spring 1999, 60 percent in spring 2000, and 70 percent in spring 2001).
- The second most common type of objective, mentioned by about 60 percent of the programs, calls for the attainment of a specific (and unchanging) level of performance. Some of these objectives are constant across the years of the grant (e.g., at least 85 percent of students will meet a criterion each year), while others are to be



attained by the third year of the grant. In many of these cases, grantees intend to track annual progress toward the Year 3 objective, but in other cases they intend to develop alternative assessments that will not be fully operational until the second or third year of the project.

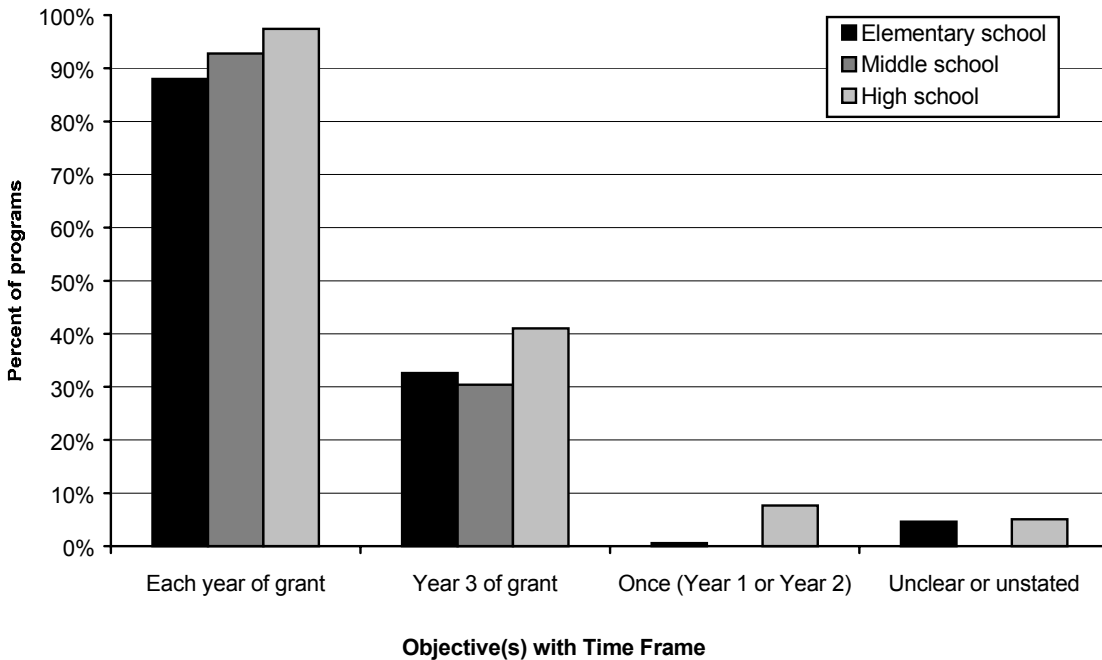
Two other types of objectives are each mentioned by about one-third of MSAP programs:

- student performances that meet or exceed those of a reference group (e.g., matched non-magnet students, the district average), and
- gains in magnet student performance that match gains of a reference group.

**Time Frame**

Figure VI-5 presents the time frame for measuring achievement objectives.<sup>14</sup> Nearly all programs (90 percent) include some objectives toward which progress is to be tracked over all three years of the grant. On average, this type of objective accounts for almost 80 percent of programs’ total objectives. The only other reporting schedule that accounts for a significant number of objectives calls for a performance level to be attained by the end of the third year of the grant. A third of the MSAP programs include one or more of these objectives, which on average accounted for about 19 percent of the programs’ objectives.

**Figure VI-5**  
**Time Frame for Measuring Achievement Outcomes, by Level**



n=283 programs  
 Source: MSAP applications and performance reports, Project Director Interviews

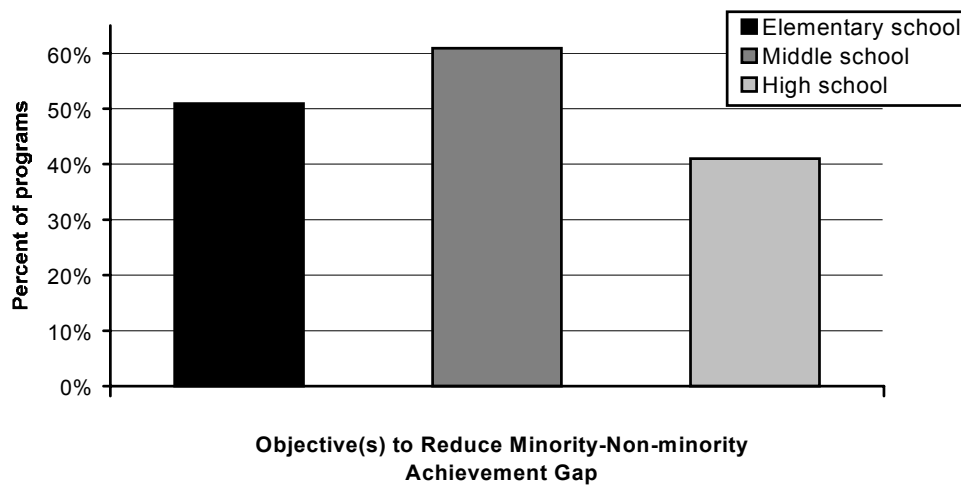
<sup>14</sup> See Table A-VI-4 in Appendix VI.

## Gap Reduction

As seen in Figure VI-6, just over half of the programs included achievement objectives for reducing disparities between the performance levels of minority and non-minority students.<sup>15</sup> This type of objective is more popular at the elementary and middle school levels than at the high school level. About two percent of the programs also have objectives to reduce male-female performance disparities.

The fact that gap reduction objectives are set by many programs should not obscure the fact that most achievement objectives do not explicitly call for gap reduction. On average, gap reduction objectives represent about 20 percent of a program's total objectives.

**Figure VI-6**  
**Programs with Objectives to Reduce Minority-Non-minority Achievement Disparities**



n=283 programs  
Source: MSAP applications and performance reports, Project Director Interviews

## Kinds of Baseline or Comparison Groups Projects Use to Assess Achievement Outcomes

By far the most popular method for reporting improvement in students' achievement is to compare the performances of successive cohorts of students (e.g., comparing the average reading score of fourth grade students in spring 1998 with the average score of fourth grade students in spring 1999, 2000, and 2001). As shown in Figure VI-7, objectives of this type are mentioned by almost three-quarters of the programs, and on average account for about half of their total objectives.<sup>16</sup>

The popularity of this type of comparison is not surprising because a large and increasing number of states is electing to assess only a few benchmark grades (e.g., 4, 8, and 10) rather than several consecutive grades using the same family of instruments. In the absence of consecutive grade testing, it is difficult if not impossible for most districts and their evaluators to track the progress of individual students over time. The other most common practice for reporting student achievement levels involves no

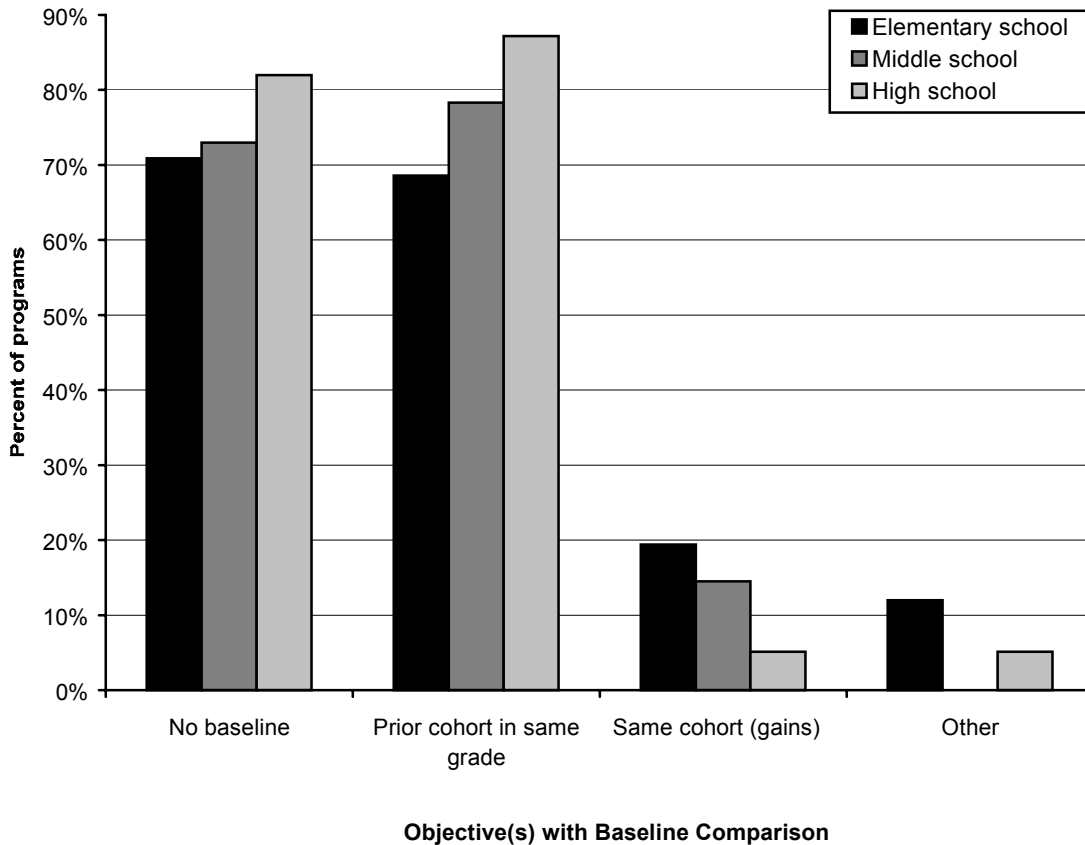
<sup>15</sup> See Table A-VI-5 in Appendix VI.

<sup>16</sup> See Table A-VI-6 in Appendix VI.

explicit baseline. Almost three-quarters of the programs include some achievement objectives that do not involve comparisons with baseline performance levels; these account for 34 percent of the average program’s total objectives.<sup>17</sup>

Objectives that seem to involve the tracking of individual gains are mentioned by 16 percent of the programs, but some of these plans may be revised as applicants contend with the realities of data collection and analysis they require.

**Figure VI-7**  
**Baseline Groups for Measuring Progress, by Level**



n=283 programs  
Source: MSAP applications and performance reports, Project Director Interviews

## External Reference Groups

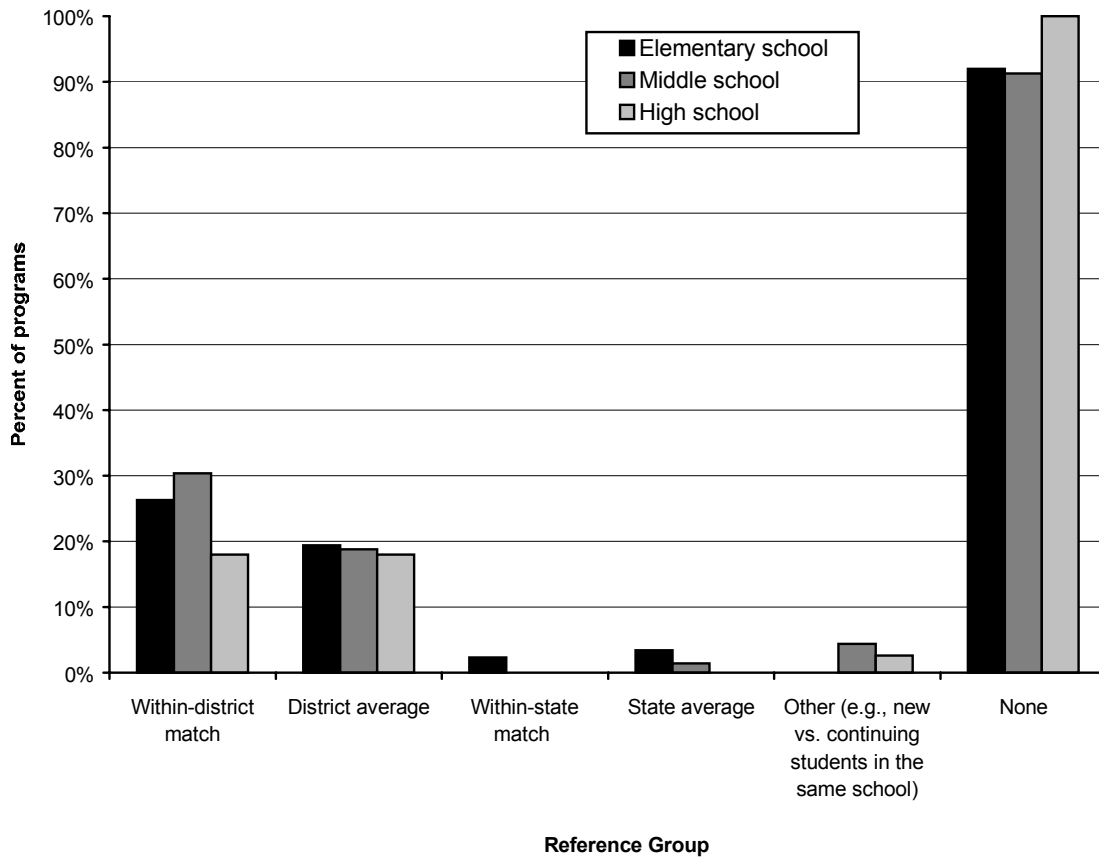
As is evident in Figure VI-8, MSAP grantees rarely proposed objectives that compared the performances of magnet students and similarly situated non-magnet students.<sup>18</sup> Nearly all programs included at least some objectives with no comparison groups (74 percent of the average program’s

<sup>17</sup> Examples of objectives without explicit baselines are the objective that 85 percent of students will meet a particular criterion each year, or that minority and non-minority course failure rates will be equal by the end of the grant period.

<sup>18</sup> See Table A-VI-7 in Appendix VI.

objectives involved no comparison group). The most common type of comparison, proposed by 26 percent of the programs, involved comparisons of standardized test scores of cohorts of demographically matched magnet and non-magnet students; these accounted for about 10 percent of the average program’s total objectives. The only other type of comparison made by a substantial number of programs was to the district average. Objectives embedding this comparison were mentioned by 19 percent of the programs and accounted for 12 percent of the average program’s total objectives.

**Figure VI-8**  
**Reference Group against which Magnet Student Performance Is Compared, by Level**



n=283 programs  
 Source: MSAP applications and performance reports, Project Director Interviews

## What We Learned

- MSAP grantees propose multiple achievement objectives for the students in their magnet schools.
- Virtually every program has objectives for student achievement in language arts and mathematics. Substantial numbers of programs have objectives pertaining to achievement in other academic subjects, performance and applied learning skills, job-related skills, career awareness, and behaviors relating to current and future academic success.
- Although a variety of performance measures is proposed, standardized test scores are

- by far the most common.
- Most programs have at least some achievement objectives that are framed in terms of steady improvement over a baseline level. A substantial fraction of objectives, however, is framed without explicit reference to prior performance levels of students in the same schools. In some cases, the objectives call for magnet students' achievement to compare favorably with that of an external reference group measured at the same time. In others, baseline data do not exist because the achievement measure involved is still being developed or is in transition.
  - Most objectives do not involve direct comparisons between the achievement of magnet students and external reference groups. When such comparisons are involved, the most commonly mentioned comparison groups are similar non-magnet students within the district and district averages.

## What We Hope to Learn

- The summary presented in this chapter is based on incomplete information. Although overall patterns in the achievement objectives are clear, the individual percentages presented in the chapter and the accompanying appendix will shift slightly as additional information is obtained. Several factors have contributed to this situation, including the imprecision with which objectives were described in MSAP applications; substantial changes in the state and district assessment programs upon which many objectives were based; grantees' reliance on alternative assessments that they plan to develop during the years of the grant (and thus could not be described in any detail in their applications); and the delayed submission of student achievement results to ED. We hope to finalize the initial generation of the objectives database soon through review of the 1999–2000 performance reports and late-arriving supplements to 1998-99 performance reports and through further discussions with MSAP Project Directors and evaluators.
- Our initial review of 1998-99 performance reports and interviews with MSAP Project Directors showed that substantial numbers of achievement objectives proposed in grantees' applications have been abandoned or were in the process of being revised. Frequently objectives have been rendered obsolete by changes in state and district testing programs. Other factors include the burden of obtaining and analyzing the data called for by the original objective, the recommendations of evaluation experts after the grant was awarded, and delays in the development of alternative assessments. Since most magnet projects did not present achievement outcome data in their first year performance reports (because the data were unavailable at the time the reports were submitted to ED), we were unable to present a detailed accounting of changes in achievement objectives in this report. During the second year of the national evaluation, we will continue to document these changes and investigate their causes.
- The database of objectives was created as a framework for tracking the extent to which grantees meet their objectives during the grant period. First- and second-year results are now becoming available. Through these data, we will investigate the grantees' success in meeting the objectives set forth in their applications and refined during the first year of program implementation.

- During the second year of the nationwide evaluation, we will begin to acquire electronic files of student achievement data (primarily standardized assessment scores in language arts and mathematics) from several Case Study districts. Data will be collected for students in the MSAP programs and, where possible, for demographically similar non-magnet students. With these data, we will conduct rigorous, controlled analyses of magnet student achievement outcomes over time. Results will be reported in the final report.