Focus on NAEP

National Assessment of Educational Progress

Grade 12 Participation and Engagement in NAEP

The National Assessment of Educational Progress (NAEP) provides an accurate portrait of student academic performance with the participation of only samples of schools and students, rather than every school and student in the country. This approach, however, requires the sufficient participation of the sampled schools and students otherwise NAEP cannot accurately reflect our nation's population. Accurate results also require that participating students be engaged in, and do their best on, NAEP assessments to demonstrate what they know and can do. Historically, school and student participation rates have been greater at grades 4 and 8 than at grade 12. And since the grade 12 NAEP assessment is a voluntary assessment with "low-stakes" for students (i.e., students do not receive a NAEP score), there is potential concern that twelfth graders might not be showing up to take NAEP nor engaging to do their best work.

NAEP ensures that the samples of schools and students that participate in its assessments accurately represent the country by following the statistical standards for participation rates set by the National Center for Education Statistics (NCES). NCES is the federal statistical agency that administers NAEP and it conducts research studies on, and monitors indicators of, the engagement of students who take NAEP. This Focus on NAEP discusses the research on 12th-grade students' participation and engagement in the NAEP assessments, and the quality control processes that NCES has put in place to ensure the best data collection from this student group.

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Institute of Education Sciences

1 Participation in NAEP

Because NAEP is given in a sample of schools whose students reflect the demographics of the nation, it is important that a high proportion of selected schools and students participate in NAEP. Otherwise, the sample of students assessed may not accurately reflect the country. One of the ways that NAEP confirms that the sample of students accurately reflects the nation is to track participation rates—that is, the percentage of schools and students selected for the sample that actually participate in the assessment. If participation rates are low, the sample of students taking the assessment may not accurately reflect the nation's students. NCES monitors three types of participation rates: the **school participation rate**—the percentage of participating schools selected to be part of the NAEP sample; the **student participation rate**—the percentage of sampled students in participating schools who take the assessment; and the **overall participation rate**—which combines the school and student participation rates.

School Participation Rates

Figure 1 shows school participation rates in the NAEP reading assessment over time at grades 4, 8, and 12. In 2015, 88 percent of the selected schools participated at grade 12, compared to 97 percent of schools at grade 4 and 96 percent of schools at grade 8. Historically, while grade 12 school participation rates have been lower than grades 4 and 8, it has increased from 70 percent in 1998 to 88 percent in 2015. An NCES standard requires that any time a school response rate falls below 85 percent, a nonresponse bias analysis must be conducted (see "Nonresponse Bias Analysis" later in this document).

Student Participation Rates

Figure 2 shows student participation rates in the NAEP reading assessment over time. In 2015, 78 percent of the sampled 12th-grade students in participating schools took part in the NAEP assessment, compared to 94 percent of students at grade 4 and 92 percent at grade 8. Over this time period, the grade 12 student participation rate was lowest in 2005. Similar to the policy for school participation rates, any time student participation rates fall below 85 percent, NCES requires that a nonresponse bias analysis be conducted (see "Nonresponse Bias Analysis" later in this document).

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), various years, 1998–2015 Reading Assessments.

Figure 1. School participation rates over time for NAEP national reading assessment, by grade: Various years, 1998–2015

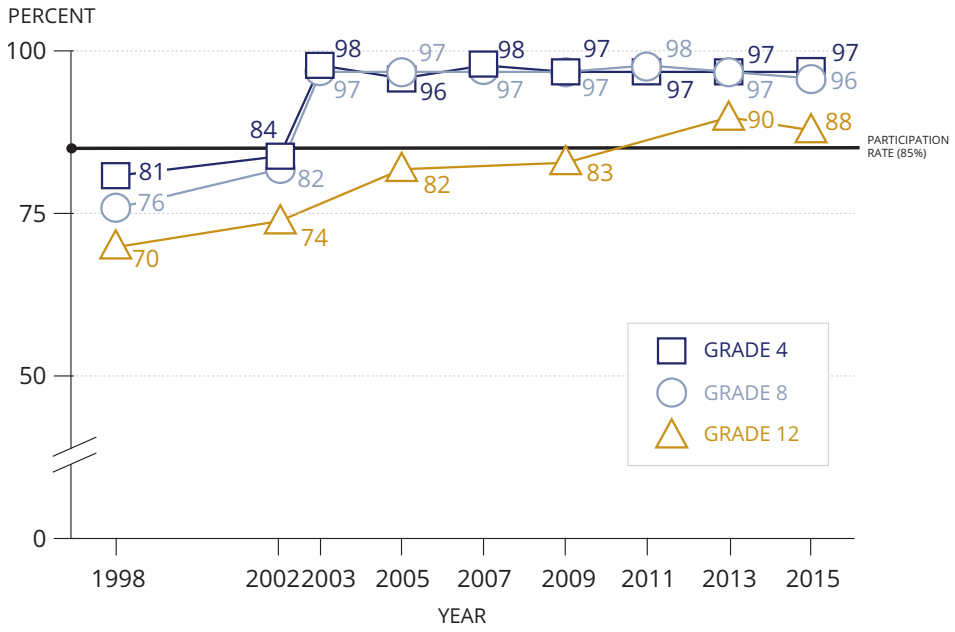
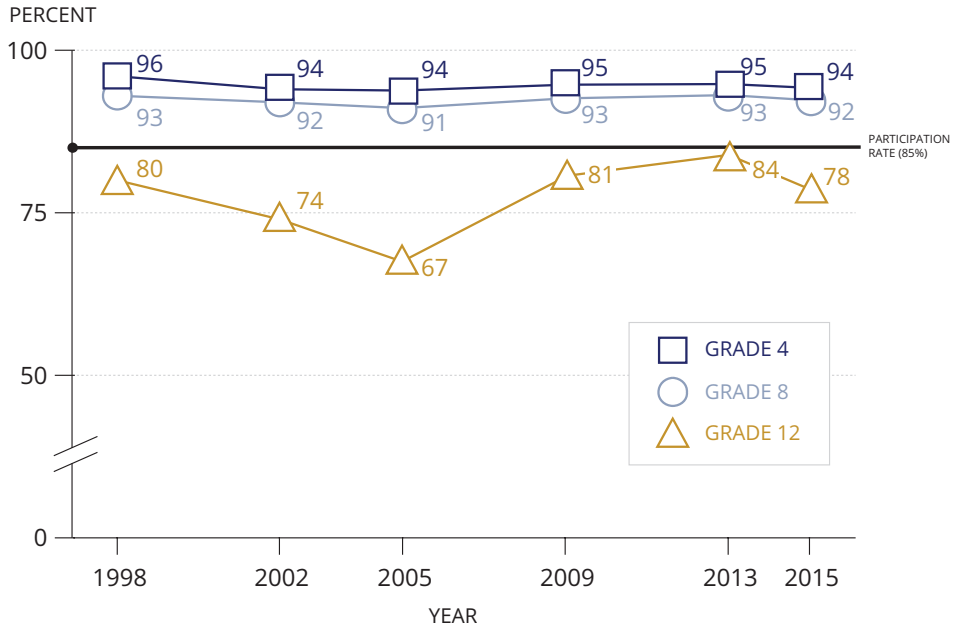


Figure 2. Student participation rates for NAEP national reading assessment, by grade: Various years, 1998–2015

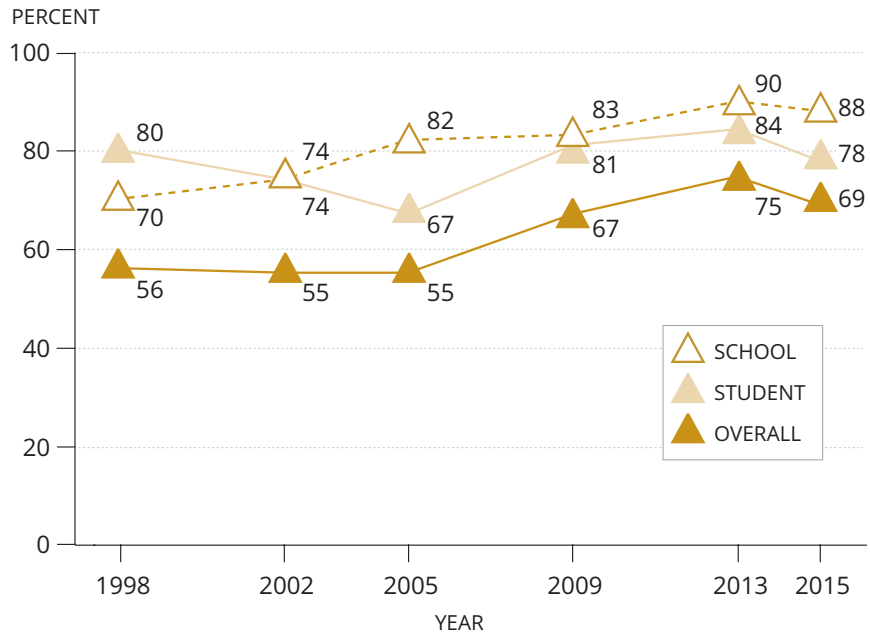


SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), various years, 1998–2015 Reading Assessments.

Grade 12 Overall Participation Rates

The grade 12 overall participation rates for each administration of NAEP between 1998 and 2015 are shown in **figure 3**. The overall participation rate provides a comprehensive indicator of participation and is calculated by multiplying the school and student rates. For example, in 2015, 78 percent of students in 88 percent of the sampled schools participated in NAEP at grade 12. Thus, the overall participation rate was found by multiplying the 88 percent school rate by the 78 percent student rate (88 percent x 78 percent = 69 percent). Grade 12 overall participation rates have varied over time, but have increased from their lowest levels in 2002 and 2005.

Figure 3. Grade 12 participation rates for NAEP national reading assessment, by type: Various years 1998–2015



NOTE: Overall is a combination of school and student participation rates.

After 2005, NCES initiated a major effort to raise grade 12 participation rates. This effort was based, in part, on the recommendations of a working group of high school principals convened by NCES to provide guidance on how to increase grade 12 school and student participation rates. These recommendations resulted in a wide variety of changes, including changes to sample selection notification, and the development of a Best Practices Guide for school administrators.

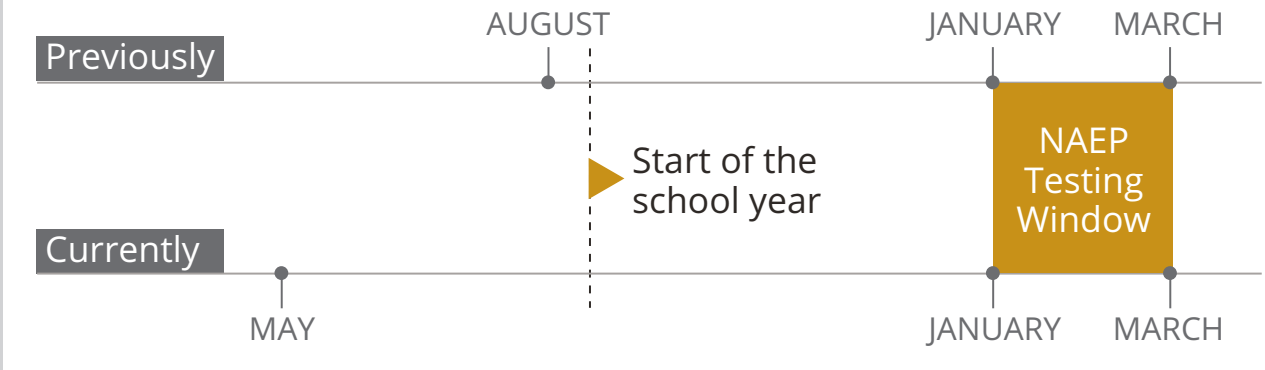
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2015 Reading Assessment.

Recommendations to Improve Grade 12 Participation

Early Notification to High Schools

A very practical, and readily implemented, suggestion that arose from the working group was to provide early notification to the high schools selected to participate in NAEP in the coming year. The NAEP administration window is from mid-January to early March, and notification of NAEP selection was previously sent in the preceding August. NCES advanced the notification to the preceding May, allowing high school administrators to more easily accommodate the NAEP administration in the next year's school calendar (see **figure 4**).

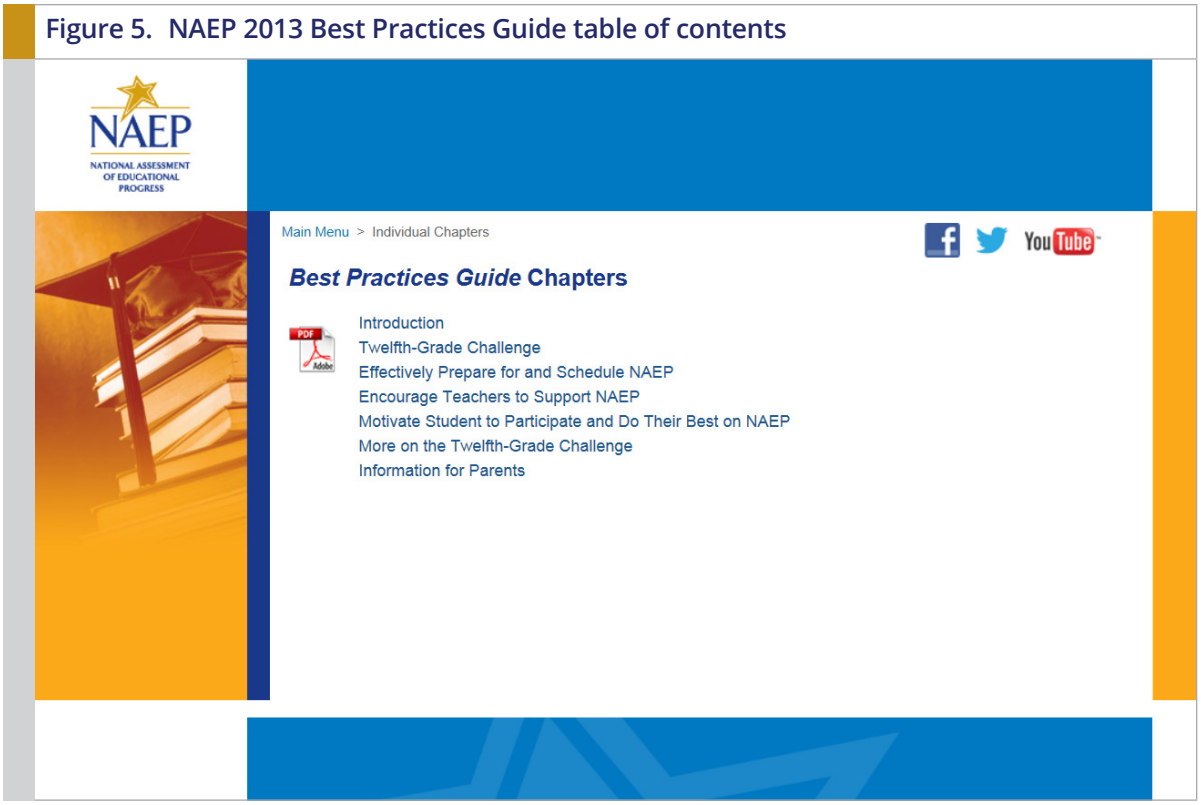
Figure 4. NAEP school selection notification timeline for a typical high school



The Best Practices Guide

Additionally, the working group suggested the development of a Best Practices Guide (U.S. Department of Education 2012), with tips for administrators and teachers to improve 12th-grade student participation and engagement. Each year, NAEP State Coordinators (coordinators serve as liaisons between NCES and each jurisdiction) customize and distribute a Best Practices Guide, which includes resources for explaining the importance of NAEP to teachers, students, and parents (see **figure 5**). These resources include short videos that can be used to explain what NAEP is and the importance of participating in NAEP for school staff and students (https://nces.ed.gov/nationsreportcard/about/schools.aspx).

Figure 5. NAEP 2013 Best Practices Guide table of contents



The Use of Incentives to Increase Participation

Using the suggestions and tips in the Best Practices Guide as survey categories, NCES gathers data from high school coordinators about what high schools are doing to increase student participation, including the use of incentives, which range from recognition of participation to free food. Some schools use more than one incentive. Data from the 2015 NAEP administration are shown in **table 1**. Eighty percent of schools offered a certificate of community service (see **figure 6**), which could appeal to students who have a community service requirement. Fifteen percent of schools did not provide any incentive to students.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2014 Best Practices: Guide for Supporting Twelfth-Grade NAEP Participation.

Table 1. Percentage of schools indicating use of various incentives, by description of incentive: 2015

Description of incentive	Percentage of schools
NAEP Certificate of Community Service	80
Food incentive before or after the assessment	23
School provided no incentives for the students	15
Recognition at a school or awards assembly	9
All students given item for participating (e.g., lunch line pass, key chain, early release, restaurant coupon, etc.)	7
Lottery for items	7

Figure 6. Sample NAEP Community Service Certificate

The Use of Motivational Strategies to Increase Participation

High school coordinators also employ a number of strategies to motivate students who are selected for NAEP to participate in the assessment (**table 2**). In 2015, 69 percent of schools offered a formal (e.g., written) or informal (e.g., verbal) "thank you" for participating in NAEP and 45 percent of schools met with students to explain the importance of NAEP. Seven percent of schools did nothing to motivate the selected students to participate in NAEP.

Table 2. Percentage of schools indicating use of various motivation strategies, by description of strategy: 2015

Description of incentive	Percentage of schools
Thank students for participating in NAEP	69
Senior class meeting, assembly, pep rally for NAEP	58
Senior class advisors, teachers, counselors, and administration urged the students to participate	48
Importance of NAEP stressed at beginning of assessment session by school staff	45
Invite teachers, counselors to attend assessment sessions	15
Publish an article about NAEP in school or local newspaper, school website, newsletter	9
The school did nothing to motivate the students	7
Use talking points to answer student questions about NAEP	2
Provide students references to the NCES websites to find additional resources and past results	1
Show the NAEP student video to selected students	1
Share a NAEP student PowerPoint presentation	0

Nonresponse Bias Analysis

NCES requires a nonresponse bias analysis if the school participation rate falls below 85 percent, or if the student participation rate for any major reporting group falls below 85 percent, to determine if the responding sample accurately reflects the population. If the responding sample has different characteristics from the overall population, it may introduce bias into the results.

In 2015, the grade 12 school participation rate in NAEP exceeded the 85 percent threshold. However, the student participation rate (78 percent) did not meet this threshold. NCES conducted nonresponse bias analyses for both schools and students. While some significant differences were found between the responding and population distributions of major reporting characteristics using the base weights, there were no differences found in the distributions when the adjusted weights were applied. Thus, there is no evidence that the sample failed to accurately represent the population.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2015 Mathematics and Reading Assessments.

What is a nonresponse bias analysis?

A nonresponse bias analysis uses information known about the sampled schools and students from the sampling frames used to select the sample to compare the sample of schools and students participating in the study with the overall population. For schools, this includes the type of school (public, private, or Bureau of Indian Education), the number of students within each grade, Census region, whether the school is located in an urban-centric locale and the distribution of reporting subgroups. For all eligible students, the distributions of sex, race/ ethnicity, relative age, free or reduced price lunch eligibility, student disability status, and English language learner status are known. Thus, despite not observing assessment performance or survey variables for the nonresponding students and schools, NCES can still compare the distribution of some characteristics between the respondents and the full population.

At the school level, there are three major steps to the nonresponse bias analysis. First, the distribution of a set of characteristics is compared between respondents and the eligible population using the school base weights. Then, nonresponding schools are replaced with substitutes to ensure an adequate sample size. Thus, the second analysis compares the distribution of the responding sample with substitutes to the eligible population distribution for each characteristic, still using the school base weights. Finally, the distribution of characteristics for the responding sample with substitutes is compared to the eligible population distribution with weights adjusted for nonresponse. These comparisons are done separately for private schools and Bureau of Indian Education public schools.

For the student nonresponse bias analysis, the distribution of characteristics of the responding sample is first compared with the distribution of characteristics from the eligible population using the student base weights. A second analysis is then conducted with nonresponse adjustments made to the student weights. Both analyses are conducted separately for public schools and private schools.

It should be noted that the nonresponse bias analyses conducted is limited to the known characteristics of the population, and thus performance comparisons between the respondents and population cannot be conducted.

2 Engagement of Students

For assessment results to be valid, test takers should be sufficiently engaged with the assessment tasks to reflect their knowledge and skills accurately (Wise and DeMars 2006). Thus, in the context of NAEP, engagement refers to how much effort students put into understanding the assessment tasks and producing the answers that the tasks request. Since engagement cannot be measured directly, NCES has explored several indicators of engagement, such as item response rates and omit rates. Additional research has explored student engagement through the use of incentives and student interviews. There is little evidence to suggest that grade 12 students are not engaged in the NAEP assessments.

Item Response Rates

For each NAEP assessment, NCES looks at the rate at which students respond to questions as one way of judging their level of engagement with the assessment. NAEP administers two types of questions: mulitple-choice and constructed-response (open ended). Multiple-choice questions require students to select the correct answer from the four or five choices offered to them (see **figure 7**). Constructed-response questions require students to develop an answer to receive credit (see **figure 8**), but it is important to note that the presence of a response does not necessarily mean that it is correct or that it reflects a student's best effort. NAEP monitors the rate of responses to constructed-response questions as an indicator that students are putting forth effort and are engaged in the assessment tasks.

Figure 7 displays an example of a grade 12 multiple-choice question in mathematics:

Figure 7. Sample of a grade 12 multiple-choice question

Which of the following expressions is NOT equivalent to $(a + b)(x + y)$?

Ⓐ $(a + b)x + (a + b)y$

Ⓑ $a(x + y) + b(x + y)$

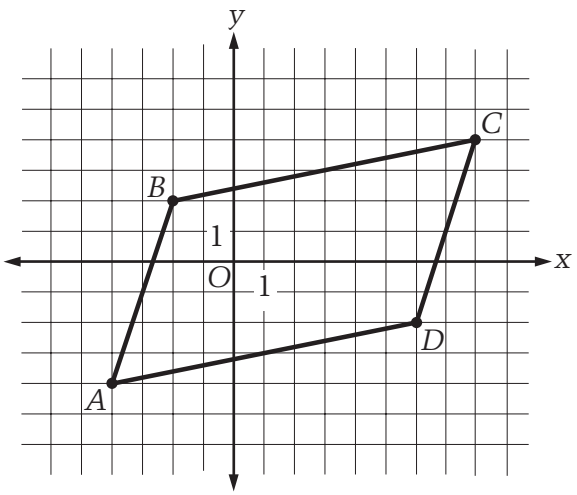
Ⓒ $(b + a)(y + x)$

Ⓓ $ax + by$

Ⓔ $ax + bx + ay + by$

An example of a grade 12 constructed-response item in mathematics is shown below:

Figure 8. Sample of a grade 12 constructed-response question



In the figure above, the vertices of $ABCD$ are $A(-4, -4)$, $B(-2, 2)$, $C(8, 4)$, and $D(6, -2)$.

Give a mathematical justification that $ABCD$ is a parallelogram.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2015 Mathematics Assessment.

A key indicator of engagement in NAEP is the extent to which students respond to all of the questions with which they are presented (i.e., the response rate). NCES calculates the response rate for each item and then computes the average across all items. For example, if the response rates for five items were 95 percent, 96 percent, 97 percent, 98 percent, and 99 percent, then the average response rate for the assessment would be 97 percent. In other words, the more questions students answer, the higher the average response rates. The overall response rate is a weighted average based on all of the items, regardless of item type; since there are more multiple-choice items than constructed-response items (especially in mathematics), the overall rate will be closer to the multiple-choice rate than to the constructed-response rate.

Table 4 presents 2015 response rates by subject, grade, and item type. In reading, the overall response rate was 93 percent in 4th grade, 96 percent in 8th grade, and 96 percent in 12th grade. For multiple-choice questions only, the response rate in reading was 94 percent in fourth grade, 97 percent in eighth grade, and 99 percent in 12th grade. In mathematics, the response rate for multiple-choice questions was 96 percent in grades 4 and 8 and 97 percent in grade 12. The similarity of the response rates at all three grade levels suggests that grade 12 students are as engaged when taking NAEP as are students in grades 4 and 8.

Like many other large-scale assessments, NAEP has traditionally administered paper-and-pencil assessments and has recently begun to transition to digitally-based assessments. Paper-and-pencil based NAEP was designed so that test takers marked each response directly in their NAEP test booklets rather than on a separate answer sheet, as is also shown in figure 7. This prevented students from spending their assessment time making irrelevant patterns on their answer sheets (e.g., “Christmas tree” pattern) by filling in certain ovals rather than answering the questions. NAEP’s digitally-based assessments require students to enter their responses directly into the testing system and eliminates the need for answer sheets altogether. Digitally-based assessments afford new and exciting opportunities to explore many other indicators of engagement such as time spent on each item, number and type of edits to a constructed response, as well as many other new features such as system or platform tools such as calculators, thesaurus, or look back buttons. Digitally- based assessment also open up new possibilities such as interactive items types and the use of multimedia in the items.

Table 4. Response rates, by subject, grade, and item type: 2015

Item type	Mathematics			Reading		
	Grade 4	Grade 8	Grade 12	Grade 4	Grade 8	Grade 12
Overall	96	95	95	93	96	96
Multiple-choice	96	96	97	94	97	99
Constructed-response	95	93	90	90	93	93

NOTE: Off-task responses are excluded from the computation of these rates.

Table 5 shows the grade 12 response rates for the different item types over time. Response rates have been numerically increasing over time.

Table 5. Grade 12 response rates, by subject, year, and item type: Various years, 1992–2015

Item type	Mathematics			
	2005	2009	2013	2015
Overall	92	94	95	95
Multiple-choice	96	97	97	94
Constructed-response	84	87	90	90

	Reading							
	1992	1994	1998	2002	2005	2009	2013	2015
Overall	92	91	93	93	94	95	96	96
Multiple-choice	96	96	96	97	97	98	99	99
Constructed-response	89	88	91	91	91	92	93	92

NOTE: Off-task responses are excluded from the computation of these rates.

In addition to looking at item response rates as an indicator of engagement, NCES also considers the content of what students submit. An unengaged student might respond to a constructed-response item, but that response might be unrelated to the question being posed and therefore scored as "off task." Examples of off-task responses include writing the same word over and over, or writing about something that is unrelated to what the item asked. Average percentages of off-task responses for the 2015 mathematics and reading assessments were less than 1 percent across the three grades assessed (**table 6**).

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), various years, 1992–2015 Mathematics and Reading Assessments.

Table 6. Item level average percentage of students with off-task responses across all constructed response items, by grade and subject: 2015

Subject	Grade	Average percent off-task across all items
Mathematics	4	0.12
	8	0.44
	12	1.08
Reading	4	0.49
	8	0.38
	12	0.67

Omit Rates

An unengaged student might not respond to any or all test questions, so NCES examines "nonresponse" rates as an indicator of student engagement. As shown in **table 7**, in 2015, nonresponse rates for grade 12 appear to be similar to, if not lower than, those for grades 4 and 8. Although the data are not shown, this pattern is consistent across years as well.

Table 7. Item level percentage of students with omit and nonresponse rates, by grade and subject: 2015

Subject	Average percent nonresponse across all items			Average percent omit across all items		
	Grade 4	Grade 8	Grade 12	Grade 4	Grade 8	Grade 12
Mathematics	4	5	5	2	2	3
Reading	7	4	4	2	2	2

NOTE: "Omitted" is part of "nonresponse."

Nonresponse rates include items that were not reached and items that were omitted. "Not-reached" items are unanswered questions at the end of a timed block, indicating that the student most likely ran out of time before getting to them. "Omitted" items are different—they refer to items that the student intentionally skipped (i.e., the responses to these item are missing, but subsequent items are answered). Studies have found that most students skip a question because they do not know the answer (e.g., Jakwerth, Stancavage, and Reed 1999). Furthermore, an analysis of nonresponse rates for NAEP indicated that omitted items were consistent with a lack of knowledge and not a lack of motivation (Hoffman and Trippe 2005). In the 2015 NAEP administration, omit rates for mathematics and reading were generally low (table 7), suggesting a fair amount of student engagement. Again, although the data are not shown, this pattern is also consistent across years.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2015 Mathematics and Reading Assessments.

Additional Research

Another aspect of test performance is motivation. Motivation, in perhaps the broadest of terms, is often described in the context of perseverance and the importance a student places on a task. NCES has done some experimental and quasi-experimental research on motivation; the studies are discussed briefly below.

Several studies investigating financial incentives were conducted but resulted in different conclusions. A study by O'Neil et al. (1992) investigated motivational test conditions by offering students financial rewards to try harder on a test (i.e., a subset of NAEP math items). The study concluded that while financial rewards improved the mathematical performance of 8th-graders, they had no effect on the mathematical performance of 12th-graders. However, the results of a 2009 study (Braun, Kirsch, and Yamamoto) found that monetary incentives did have a meaningful impact on the performance of 12th-grade students on the NAEP reading assessment. The study involved three treatments groups: (1) a group offered a fixed sum of money to participate in the test, (2) a group offered a financial sum contingent on performance, and (3) a control group offered no incentives. Students in the control group scored lower than students in the two incentive groups. It was also found that incentives for participation had a weaker impact than incentives for performance—students in the first group (fixed sum to participate) scored, on average, 3.4 points higher than those in the control condition, whereas students in the second incentive group (sum contingent upon performance) scored 5.5 points higher. Typically, changes of 2 points or more between NAEP administrations are regarded as noteworthy.

A more recent study by Ogut, Walton, and Dogan (2010) compared performance on NAEP (a lowstakes test) to performance on high-stakes college admission tests such as the SAT and ACT. Initial results revealed differential motivation between Black and White students, such that Black students were less motivated on NAEP than on college admittance tests.

Aitkin and Aitkin (2011) proposed a different approach to measuring engagement and motivation. In this study, the researchers used a latent class model of engagement, which determines probabilistically whether a student is engaged in the NAEP task or is guessing on the test items, by a random or other process which is not related to the student's ability. If a pattern of student responses fits the ability model poorly, it may indicate that the student is responding with a lack of engagement. The initial results have identified some possible characteristics of non-engaged students but more work needs to be done.

The results are mixed and do not necessarily address students' motivation to do well on NAEP since, like engagement, direct measurement of motivation is difficult. NCES continues to explore these issues, including new methodologies and models.

Conclusion

NAEP assessment data and administration evidence indicate that most 12th-grade students participate in and are engaged when taking NAEP assessments. Student response rate percentages are in the mid-90s, off-task and nonresponse rates are low, and most schools have found that simple techniques (such as a thank-you or certificate of participation) are enough to encourage students to participate. Nonetheless, NAEP remains committed to continuing to monitor and to increase 12th-grade participation and engagement. NAEP will continue to investigate this issue with student focus groups, digitally-based assessments, incentive analyses, engagement and motivation indicator analyses, and performance comparisons between NAEP and other assessments, such as college entrance exams. NAEP will continue to use strategies that have been successful and will build upon those practices with schools and students during the NAEP administration to maintain its "gold" standard and provide valid and reliable results.

References

Aitkin, M., and Aitkin, I. (2011). *New Item Models for Engagement: Simultaneous Identification of Engagement and Adjustment of Reporting Group Differences for Non-Engagement—Final Report.* Washington, DC: U.S. Department of Education, Institute of Education Sciences.

Braun, H., Kirsch, I., and Yamamoto, K. (2009). *An Experimental Study on the Effects of Monetary Incentives on Performance on the 12th Grade NAEP Reading Assessment.* Washington, DC: U.S. Department of Education.

Hoffman, R.G., and Trippe, M. (2005). *The Impact of Grade 12 Students' Non-Response to NAEP Open-Response Items* (FR-05-64). Alexandria, VA: Human Resources Research Organization.

Jakwerth, P.R., Stancavage, F.B., and Reed, E.D. (1999). *An Investigation of Why Students Do Not Respond to Questions.* Commissioned by the NAEP Validity Studies (NVS) Panel.

Ogut, B., Walton, E., and Dogan, E. (2010). *Examining 12th-Graders' Engagement/Motivation in NAEP Mathematics Assessment Using Data From High-Stakes Assessments.* Washington, DC: U.S. Department of Education.

O'Neil, H.F., Jr., Sugrue, B., Abedi, J., Baker, E.L., and Golan, S. (1992). *Experimental Studies on Motivation and NAEP Test Performance.* Washington, DC: U.S. Department of Education.

Wise, S., and DeMars, C. (2006). An Application of Item Response Time: The Effort-Moderated IRT Model. *Journal of Educational Measurement, 43,* 19–38.

U.S. Department of Education, National Center for Education Statistics. (2012). *2013 Best Practices Guide for Supporting Twelfth-Grade NAEP Participation.* Washington, DC: Author.

Further Reading

Bracey, G.W. (1996). Altering the motivation in testing. Phi Delta Kappan, 78(3): 251–252.

This article anecdotally examines strategies that may be used to increase student motivation on NAEP and presents evidence that students, twelfth-graders in particular, are not motivated when taking NAEP assessments.

Braun, H., Kirsch, I., and Yamamoto, K. (2011). An experimental study of the effects of monetary incentives on performance on the 12th-grade NAEP reading assessment. Teachers College Record, 113(11): 2309–44.

An experiment was conducted in which students were given an assessment similar to NAEP and placed into three groups: a fixed monetary incentive group, a contingent monetary incentive group, and a control group. Incentives, particularly the contingent incentive, were found to impact student scores, leading the authors to conclude that NAEP may underestimate grade 12 students' abilities due to a lack of motivation.

Brophy, J., and Ames, C. (2005). NAEP Testing for twelfth graders: Motivational issues. Washington, DC: National Assessment Governing Board.

This study examined grade 12 student motivation through the lenses of several different theories. The authors conclude that while NAEP participation currently does not provide value to students that would improve their motivation, the addition of incentives, appeal to student values, and improved testing conditions could potentially increase motivation.

Cohen, A., Li, F., and Cho, S. (2005). A mixture model analysis of examinee motivation on a standardized achievement test. Athens, GA: The University of Georgia, Georgia Center for Assessment.

This study used IRT models to identify motivation-related response strategies on NAEP such as random responses. Groups of students were identified whose response pattern indicated random response to certain items.

Cohen, A.S., Li, F., and Cho, S.J. (2005). A mixture IRT model analysis of Grade 8 examinee motivation on the 2002 NAEP Reading Test. Athens, GA: The University of Georgia, Georgia Center for Assessment.

Using an IRT model and student characteristics based on grade 12 NAEP data to examine student motivation, the data indicate that motivation is related to response patterns.

Hoffman, R.G. (2004). Implications from motivation theory for NAEP participation and performance. Washington, DC: U.S. Department of Education, National Center for Education Statistics.

This study examines grade 12 NAEP motivation in the context of several motivation theories. The authors conclude that there is no single solution to the issue of student motivation, but that by changing administration procedures and the feedback structure, student motivation may be increased.

Hoffman, R.G., and Trippe, D.M. (2005). The impact of grade 12 students' non-response to NAEP open-response items. Washington, DC: U.S. Department of Education, National Center for Education Statistics.

This study examined the non-response rate to open-response NAEP items. The authors conclude that students are attempting to answer most open-response items and that non-response is more closely related to lack of ability to answer the item than to lack of motivation.

Jakwerth, P.M., Stancavage, F.B., and Reed, E.D. (1999). An investigation of why students do not respond to questions. American Institutes for Research.

A sample of students was interviewed about their reasons for non-response to NAEP items. Many students indicated many reasons that they did not respond to items including that they did not understand the question, did not know the answer to the question, or ran out of time. Most students indicated that they had tried hard on the test. Several recommendations are provided to improve future non-response rates.

(continued on next page)

Kiplinger, V.L., and Linn, R.L. (1993). Raising the stakes of test administration: the impact on student performance on NAEP. Educational Assessment, 3(2): 111–133.

This study examined the extent to which differences in test administration and levels of motivation impacted student performance on NAEP. Differences were found in performance on a subset of items based on the assessment conditions.

Levine, R., Salzfass, E.A., Reed, L., and Greenberg, E. (2004). Task 5: Cognitive laboratories to evaluate NAEP instructions. American Institutes for Research.

This study examined the impact of NAEP instructions on student motivation. Though there is evidence that students have medium to high effort levels on NAEP, the authors recommend potential changes to the instructions with the goal of increasing motivation.

National Assessment Governing Board Ad Hoc Committee on NAEP 12th Grade Participation and Motivation. (2005). Preliminary recommendations for discussion with the National Assessment Governing Board.

This paper advocates for a change in NAEP's orientation to appeal to superintendents, principals, and teachers when encouraging participation in twelfth-grade. Many different ways to improve both participation and motivation are discussed.

National Commission on NAEP 12th Grade Assessment and Reporting. (2004). 12th grade student achievement in America: A new vision for NAEP.

Student participation and non-response rates are used to demonstrate a lack of motivation in twelfth-grade NAEP. Steps to improve participation are suggested and research measuring motivation and engagement is recommended.

O'Neil, H.F. Jr., Sugrue, B., and Baker, E.L. (1995). Effects of motivational interventions on the national assessment of educational progress mathematics performance. Educational Assessment, 3(2): 135–157.

This study provided a monetary incentive for grade 8 students participating in NAEP and found that financial rewards increased student effort. The authors conclude that NAEP scores may represent what students can do with minimal effort.

Stokes, L., and Cao, J. (2009). Examination of low motivation in the 12th grade NAEP. Secondary Analysis Grant from Institute of Educational Sciences.

In this study grade 12 student motivation when taking NAEP was assessed. It was found that a certain subgroup of students had low motivation and that these students performed worse on NAEP. It was also found that students with low motivation had less intention to respond to NAEP items.

Focus on NAEP

Focus on NAEP is a publication series developed to highlight findings and summarize information on the ongoing development and implementation of National Assessment of Educational Progress (NAEP).

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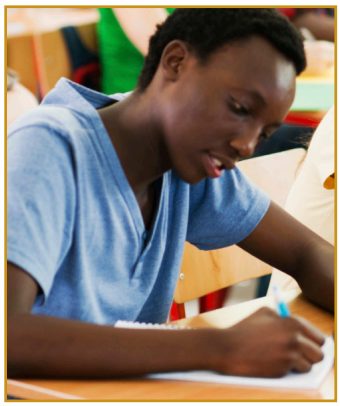

U.S. Department of Education

The National Center for Education Statistics (NCES), located within the U.S. Department of Education and the Institute of Education Sciences, is the primary federal entity for collecting and analyzing data related to education.

The National Assessment of Educational Progress (NAEP) is a congressionally mandated project sponsored by the U.S. Department of Education and administered by NCES. The Commissioner of Education Statistics is responsible by law for carrying out the NAEP project. The National Assessment Governing Board is responsible for setting policy for NAEP, including the NAEP achievement levels.

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