

# National Assessment Governing Board

## Ad Hoc Committee on NAEP Background Information

August 1, 2013  
2:00 p.m.-4:00 p.m.

### AGENDA

2:00 – 2:05 pm	Welcome and Introductions <i>Terry Holliday, Committee Chair</i>	Attachment A
2:05 – 2:25 pm	Update on Implementation of Board Policy on Background Questions and Use of Contextual Data in Reporting <i>James Deaton, NCEC Staff</i>	Attachment B
2:25 – 2:55 pm	<b>ACTION:</b> Revisions to NAEP Background Information Framework <i>Committee Discussion</i>	Attachment C
2:55– 3:05 pm	<b>ACTION:</b> Terminology for Background Questions <i>Committee Discussion</i>	Attachment D
3:05 – 3:20 pm	<b>ACTION:</b> Organizing Board Consideration of Background Questions and Reporting on Contextual Data <i>Larry Feinberg, NAGB Staff</i>	Attachment E
3:20 – 3:50 pm	Exploratory Analysis on Using NAEP Data for Key Education Indicators <i>Alan Ginsburg, Consultant</i>	Attachment F
3:50 – 4:00 pm	Presentation to Governing Board <i>Committee Members</i>	

# **National Assessment Governing Board**

## **Ad Hoc Committee on NAEP Background Information**

### **BACKGROUND AND PURPOSE**

As part of the resolution on NAEP background questions, adopted by the Governing Board in August 2012, an Ad Hoc Committee on NAEP Background Information is to be established for one year. Its purposes are as follows:

1. Monitor implementation of the Policy Statement on NAEP Background Questions and the Use of Contextual Data in NAEP Reporting, adopted August 4, 2012.
2. Review the *NAEP Background Information Framework*, adopted August 1, 2003. Recommend revisions, additions, or replacement, as deemed necessary or desirable.
3. Recommend a permanent arrangement for Board consideration of background questions and the reporting of contextual data in NAEP. This work is now divided between the Reporting and Dissemination and Assessment Development committees of the Board.

### **SPECIFIC ISSUES**

As listed in the resolution, these include:

- Making greater use of contextual data in NAEP Report Cards and focused reports.
- Using background data to describe patterns and trends, including the educational experiences of different student groups.
- Detailed frameworks to support the selection of non-cognitive topics and questions, including their connection to student achievement.
- Clusters of questions on topics of continuing interest, such as technology and out-of-school learning, to be used regularly or rotated across cycles.
- Modules on issues of current policy interest.
- Elimination of duplicative, low-priority, or unproductive topics and questions.
- Use of questions from international assessments, such as TIMSS and PISA.
- Improved measures of socio-economic status (SES), including exploration of SES index.
- Spiral sampling and rotation of background questions in different years.
- Increasing the maximum time for students to answer background questions.
- Additional focused reports with the appointment of advisory committees in some cases.
- Exploratory analyses of existing data that may form the basis for subsequent reports.
- Consistency of wording to preserve trends.
- Further improvements in the NAEP Data Explorer.

## **COMMITTEE COMPOSITION AND TIMELINE**

The Ad Hoc Committee will include Board members with a variety of perspectives and membership in different standing committees of the Board. The Committee will convene during each quarterly meeting of the Governing Board, and is expected to make its final report in August 2013.

### **COMMITTEE MEMBERSHIP**

Terry Holliday, Chair

Doris Hicks

Andrew Ho

Brent Houston

Dale Nowlin

Joseph O'Keefe, S.J.

Susan Pimentel

Leticia Van de Putte



## **Policy Statement on NAEP Background Questions and the Use of Contextual Data in NAEP Reporting**

### **INTRODUCTION**

By statute, the purpose of the National Assessment of Educational Progress is to provide a “fair and accurate” measure of student achievement and achievement trends. Academic or cognitive questions are its primary focus; the American public is its primary audience. However, in addition to reporting on what American students know and can do, NAEP has collected data for more than 40 years that provide a context for reporting and interpreting achievement results. According to the statute, such factors, both in and out of school, must be “directly related to the appraisal of academic achievement.”

In each assessment NAEP administers background questionnaires for students, their teachers, and schools. The questionnaires deal with educational experiences and other factors, such as teacher training or out-of-school learning activities, that are related to academic achievement. Data on several hundred background or noncognitive variables are available on the Internet through the NAEP Data Explorer. However, for more than a decade, little use has been made of this information in NAEP reports. The data have received minimal attention and had little impact despite the considerable efforts expended in developing and approving questionnaires and collecting and tabulating responses.

In October 2011 the National Assessment Governing Board convened an expert panel to recommend how to make better use of existing NAEP background questions and to propose an analytic agenda for additional topics and questions that would be useful in developing education policy and of value to the public. The panel report, entitled, *NAEP Background Questions: An Underused National Resource*, was presented to the Board in March 2012 by Marshall Smith, former U.S. Under Secretary of Education, who chaired the six-member panel.

Many of the panel recommendations build on the *Background Information Framework for the National Assessment of Educational Progress*, adopted by the Governing Board after it received final authority from Congress over non-cognitive items on the assessment. The framework was adopted in 2003, but has not been fully implemented.

The following policies are based on recommendations by the expert panel. The Board has also taken into consideration a wide range of public comment and the analysis provided by the National Center for Education Statistics.

It is important to understand that the National Assessment is not designed to show cause-and-effect relationships. Its data should not be used to “prove” what schools should do. But, as the *Background Information Framework* declares, NAEP’s “descriptions of the educational circumstances of students..., considered in light of research from other sources, may provide important information for public discussion and policy action.” The Board believes the National Assessment should improve upon its efforts to collect contextual information and present it clearly to the public, which will add to NAEP’s value to the nation.

## **POLICY PRINCIPLES**

1. NAEP reporting should be enriched by greater use of contextual data derived from background or non-cognitive questions asked of students, teachers, and schools. Such data will be used both in regular Report Cards and in special focused reports.
2. Reporting of background data will describe patterns and trends, including the educational experiences of different groups of students. Care should be taken not to suggest causation.
3. Detailed frameworks will be published with the theoretical rationale and research evidence that support the selection of topics and questions in background questionnaires and their connection to student achievement. Such frameworks should be updated for each assessment cycle and provide the basis for new topics and questions.
4. An ad hoc committee of the Board will be established for one year to monitor implementation of this resolution, review the *NAEP Background Information Framework*, and recommend a permanent arrangement for Board consideration of background questions and the reporting of contextual data in NAEP.

## **IMPLEMENTATION GUIDELINES**

### ***For Questions and Questionnaires***

1. Clusters of questions will be developed on important topics of continuing interest, such as student motivation and control over the environment, use of technology, and out-of-school learning, which could be used regularly or rotated across assessment cycles.

2. Modules will be prepared for special one-time studies to provide descriptive information on issues of current policy interest.
3. A thorough review will be conducted to eliminate duplicative or low-priority questions. Unproductive topics and questions will be dropped.
4. NAEP will include background questions from international assessments, such as PISA and TIMSS, to obtain direct comparisons of states and TUDA districts to educational practices in other countries.
5. Because of the value of preserving trends, consistent wording of questions should be maintained on topics of continuing interest. Changes in wording must be justified. However, as practices and circumstances change, new questions will be introduced in a timely manner to gather data on topics of current interest.
6. The development and use of improved measures of socio-economic status (SES) will be accelerated, including further exploration of an SES index for NAEP reporting.

#### ***For Data Collection***

7. The maximum time for students to answer the background questionnaire will be increased from 10 to 15 minutes on new computer-based assessments. Consideration should be given to a similar increase in paper-and-pencil assessments.
8. Whenever feasible, assessment samples should be divided (spiral sampling) and background questions rotated in different years in order to cover more topics without increasing respondent burden. These practices will be initiated in the assessments of reading and mathematics, which are conducted frequently, and considered for other subject areas if the frequency of testing permits.

#### ***For Reporting***

9. Special focused reports with data through the 2013 assessment will be issued on the following topics: private schools, charter schools, gender gaps, and black male students. Reports shall include significant contextual information as well as cognitive results. Advisory committees, composed of a range of knowledgeable persons, may be appointed to provide input on reporting issues.
10. Exploratory analyses will be carried out to determine if existing background questions may form the basis for additional focused reports. Such reports may be issued by the Governing Board as well as by the National Center for Education Statistics.

11. The NAEP Data Explorer should be further improved to make data more accessible to general, non-specialist users. Tables and very simple-to-construct charts will be prepared to present data on important topics of wide public interest. Additional means of disseminating information, using new technology such as simple apps that would allow parents, teachers, and others to access background and achievement data, will be explored.

## **NOTE TO Ad Hoc Committee on Background Information on Revisions to Background Information Framework**

The revisions proposed to the Background Information Framework for NAEP are intended to make it conform to the Policy Statement on NAEP Background Questions and the Use of Contextual Data in NAEP Reporting, which the Board adopted in August 2012. The changes would also update the text of the framework, which was adopted ten years ago.

Also attached is an annotated version of the August 2012 resolution, showing the pages in the framework where changes are proposed.

A new foreword is attached that explains the key changes.



**Background Information**

**Framework**

**for the**

**National Assessment of**

**Educational Progress**

**National Assessment Governing Board**  
**Adopted August 1, 2003**  
**PROPOSED CHANGES July 2013**

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# Preface

*by the National Assessment Governing Board*

The National Assessment of Educational Progress (NAEP) has been established by law to monitor the academic achievement of American students. In addition to its academic assessments, NAEP has collected information from hundreds of non-cognitive or background questions about students, their educational experiences in class and at home, their teachers, and their schools. Some of these questions provide data for NAEP's reporting categories, but far more have been used to give context to NAEP results or to track factors associated with academic achievement. Some have been used by scholars in social science research.

Concerns have been raised about the selection of background variables, the quality of the information obtained, and the validity of inferences drawn from it. There is also concern about the burden that collecting background information places on respondents and on the NAEP program. After the National Assessment Governing Board was granted final authority over the background questions in early 2002, it adopted a policy to focus NAEP background data on the primary purpose of the National Assessment—to provide sound, timely information on the *academic* achievement of American students. The Board also initiated a process to prepare a general framework to guide the collection and reporting of background data.

It is important to understand the National Assessment is not designed to prove cause-and-effect relationships; it cannot prescribe what should be done. But its descriptions of the educational circumstances of students at various achievement levels—considered in light of research from other sources—may provide important information for public discussion and policy action. [Used with other research, the contextual data collected by NAEP may give insights into how achievement can be improved as well report to the public on how school personnel and resources related to achievement are distributed.](#)

This framework will define the purpose and scope of NAEP's system of collecting background information, including background questionnaires and other sources of non-cognitive data. It will establish criteria for reporting background information as part of the National Assessment. The approach it suggests provides for asking various groups of questions to various samples of students at various times.

The framework reflects the following key principles:

- The selection of background topics and questions shall be designed to fulfill all legal requirements for the National Assessment and to carry out decisions regarding what NAEP will report and how to report it.

- Background information shall provide a context for reporting and interpreting achievement results and, as the statute provides, must be “directly related to the appraisal of academic achievement and to the fair and accurate presentation of such information.”
- The collection of background data shall be designed to obtain information that is objective, valid, reliable, and of consistently high quality.
- The system of background data collection shall be efficient and designed to minimize the burden on respondents and on the NAEP program. As much data as possible should be obtained from school records and other reliable data sources.
- These principles shall apply both to the collection of general background information and to subject-specific background questions. The frameworks for the latter must be focused and prioritized, indicating a core set of variables for regular reporting and a more comprehensive set to be collected and reported less frequently.
- The priority order for background information is as follows: (1) reporting categories, as required by law; (2) contextual factors with a well-established relationship to achievement; and (3) subject-specific information.

There is one other consideration—the ~~new~~ role of the National Assessment in the No Child Left Behind Act of 2001. Under this law, all states receiving federal Title I aid are required to participate every two years in NAEP’s state-level samples of reading and mathematics in grades 4 and 8. The results ~~will~~ provide an independent yardstick to compare trends on NAEP with performance on each state’s own set of required exams.

Because No Child Left Behind places particular emphasis on closing the persistent performance gaps between various student groups, NAEP must be able to report on changes in achievement for all groups specified by law. Through its background questions, the National Assessment ~~might~~ can also provide useful information about the students left behind and those who are ahead of them, including the sorts of schools that high-achieving and low-achieving students attend, the courses they take, the patterns of how they are taught, and the qualifications of their teachers. Over time, such descriptive information will allow NAEP to track changes in contextual and instructional factors related to student achievement and in the distribution of important educational resources.

In sum, the purpose of this Background Information Framework is to focus the collection and reporting of background data by the National Assessment and to establish clear priorities and limits. We hope to make it possible that with far fewer non-cognitive questions than it has had in the recent past, NAEP will serve the purposes of law and

provide the American public and decision makers with useful information. We are committed to improving the quality of data collected and the reporting of results.

## Executive Summary

The National Assessment of Educational Progress (NAEP) is a federally authorized survey of student achievement at grades 4, 8, and 12 in various subject areas, such as mathematics, reading, writing, science, U.S. history, the arts, and foreign languages. The No Child Left Behind Act of 2001 (P.L. 107-110) requires the assessment to collect data on specified student groups, including race/ethnicity, gender, socioeconomic status, disability, and limited English proficiency. It requires fair and accurate presentation of achievement data and permits the collection of background or descriptive information that is related to academic achievement and aids in fair reporting of results. The intent of the law is to provide representative-sample data on student achievement for the nation, the states, and subpopulations of students and to monitor progress over time.

The National Assessment Governing Board (NAGB) sets policy for NAEP and determines the content framework for each assessment. As a result of the No Child Left Behind Act, the Board is responsible for selecting and approving all of NAEP's non-cognitive or background questions, as well as the cognitive items over which it has had final authority since 1988. This Background Information Framework will guide the development and selection of non-cognitive topics and questions, starting with the NAEP 2006 assessment. It will fulfill the purposes of law and implement Board policy.

When NAEP began in 1969-70, its background information was limited to gender, race/ethnicity, and literacy materials at home. During the 1980s the array of non-cognitive questions expanded greatly, both to provide more contextual information and in an effort—never fully realized—to use the assessment for educational research.

This background data framework will refocus the collection of non-cognitive variables on NAEP's primary mission: providing a fair and accurate measure of student achievement and on achievement trends over time. Thus, the framework is a guide for gathering important information that will assist in reporting and understanding NAEP results. NAEP may contribute to research into improving education policy and practice, ~~but—~~its role in this respect is limited, but, used with other research, the contextual data collected by NAEP may give insights into how achievement can be improved as well report to the public on how school personnel and resources related to achievement are distributed.

~~and the framework is not a comprehensive list of possible factors to explore.~~

Since by law NAEP may only collect information that is “directly related to the appraisal of academic achievement,” it must concentrate on non-cognitive variables that are known from other research to have such a relationship. The law also specifically prohibits NAEP from asking about personal or family beliefs and attitudes. These points



are emphasized in the Governing Board Policy Statement on the Collection and Reporting of Background Data by the National Assessment (adopted on May 18, 2002). That policy is incorporated into this framework. It is attached in the appendix.

## **PRIORITIES**

The following priorities for collecting and reporting non-cognitive information should be followed in planning background questionnaires, the frequency with which questions are asked, and the samples from which data are collected.

- (1) ***Student reporting categories*** that are required by law must be collected as a regular component of all NAEP assessments. These include race, ethnicity, gender, socio-economic status, disability, and limited English proficiency. A core of SES information should be collected in every assessment, such as type of community and poverty status. An expanded set of SES variables may be included periodically or administered to limited samples. Efforts should be made to develop a composite measure or index of SES.
- (2) ***Other factors that provide a context for results*** should be sampled periodically, or on a rotating basis, over several NAEP cycles, although a limited set may be asked in every assessment. Contextual factors may include courses taken, student mobility, school safety and discipline, teacher-related factors such as demographics and experience, other factors related to students and schools, and educationally-relevant variables outside school. Modules should be prepared for special studies to provide descriptive information on issues of current policy interest. Although many non-cognitive variables may be of interest, they must be limited to meet the needs of NAEP reporting. In all cases, they non-cognitive variables must be clearly related to academic achievement or to the fair presentation of achievement results.
- (3) ***Subject-specific background information*** should be gathered at the same time that achievement in a subject is assessed. This may include relevant course content and requirements, teacher preparation, and other factors related to student achievement. Questions will not be designed to determine effective practices, but to show patterns and trends of factors of interest, based on previous research. Like the contextual information, most of these variables should be sampled periodically, or on a rotating basis, over several administrations of the subject exam, although a limited core set may be repeated every time the assessment is given.

## **SELECTION CRITERIA**

Key criteria for selecting non-cognitive topics and questions are as follows:

- ***Does the current or proposed non-cognitive variable relate to the primary purpose of NAEP and how?*** The primary purpose of NAEP is to report on the academic achievement of students to the American public. It is not to report on the causes of that achievement. Other surveys with longitudinal data are far better suited to examining causality. NAEP's choice of which non-cognitive variables to measure should be guided by how and to what extent the variables selected will support NAEP's primary mission.
- ***Do the current or proposed non-cognitive variables meet professional standards for reliability and validity?*** The NAEP legislation requires that the assessment "use widely accepted professional testing standards (P.L. 107-110, Sec. 411 (b) (5)." This requirement applies equally to non-cognitive and academic variables.
- ***How stable is the non-cognitive variable from period to period?*** If a variable shows little change from year to year, it should be reviewed to determine whether it should be deleted or used on a periodic basis rather than in every assessment.
- ***If new questions are added, have others been deleted in order to limit the burden and expense of NAEP's background questionnaires?*** There will always be pressure to collect more information. Mechanisms must be developed to make sure the burden of background questionnaires does not expand over time.
- ***Does a question address specific behavior rather than conclusions?*** Even for such questions, however, caution is advisable because self-reports are often unreliable.
- ***Will the topic or question meet the test of broad public acceptability and not be viewed as intrusive or prying?*** NAEP's non-cognitive questions are not kept secure, and all of them are to be posted on the Internet. Possible objections should be considered in deciding whether or not a question will be asked.
- ***Does the topic or question deal with a factor in which trends over time are important?***
- ***Will the information obtained be of value in understanding academic performance and taking steps to improve it?*** This is a fundamental issue to be addressed in evaluating all background questions proposed for NAEP.

Because of the value of preserving trends, consistent wording of questions should be maintained on topics of continuing interest. Changes in wording must be justified. However, as practices and circumstances change, new questions will be introduced in a timely manner to gather data on topics of current interest. NAEP should include background questions from international assessments, such as PISA (Program for International Student Assessment) and TIMSS (Trends in International Mathematics and Science Study), to obtain direct comparisons of states and TUDA districts to educational practices in other countries.

## DATA COLLECTION

Whenever possible, NAEP should use information from school records and other reliable data collections in order to improve the validity of the information collected and limit the background questionnaires in NAEP itself. In exploring the utility of different data sources, the following criteria should be considered: (1) reliability, (2) universality, (3) currency, (4) respondent burden, (5) logistics, (6) efficiency and cost-effectiveness, and (7) the impact on timeliness of NAEP reporting.

Of the student reporting categories in Priority 1, information on gender, race/ethnicity, disability status, and limited English proficiency shall be collected in a uniform manner in all NAEP samples. NAEP is also required to collect information on socio-economic status. This will continue to be done in all samples, although there may be some variation in the number of factors on which data are obtained with a uniform core and more extensive data gathering in some cases.

Because socio-economic status cannot be measured simply or directly, NAEP has used “proxy” variables, such as eligibility for free or reduced-price lunch (a measure of poverty), parent education, and the number of reading materials in the home. The framework provides that NAEP explore development of a composite index for SES derived from ~~the proxy variables information currently collected from students and schools~~. To the extent that the index can be sharpened by additional data from readily available sources, such as zip codes and the census, this option should also be considered. Occasionally and in limited samples, more extensive SES questions may be asked. Although NAEP may never be able to produce a full composite of SES, based on family income, education, and occupation, efforts should be accelerated to develop and use improved measures of socio-economic status, including an SES index. should be made to find an approximation that is more informative than the current set of proxy variables.

For the past two decades, NAEP has collected information on a lengthy list of student, teacher, school, and beyond-school factors that may provide a context for achievement results and are of interest to policymakers, researchers, and the public. Yet, NAEP’s design as a cross-sectional survey places serious limitations on the inferences that can properly be drawn from this information. We propose a careful review of the contextual factors in NAEP to focus on the most important variables related to public policy. All such information must be clearly related to student achievement, as shown by other research. Different questions should be cycled in and out of the assessment periodically, and the use of data from non-NAEP sources should increase. Information should be collected at meaningful intervals in ways that may show significant patterns and change over time.

The collection of subject-specific background information should be focused, limited, and prioritized as part of the subject-matter frameworks adopted by the Board. For subjects tested regularly at two-year or four-year intervals~~each subject~~ there should

be a small core set of background items administered to the full sample each time a subject is assessed. An additional, more comprehensive set of questions should be administered periodically or to smaller subsamples.

Whenever feasible, student assessment samples should be divided (spiral sampling) and background questions rotated in different years in order to cover more topics without increasing respondent burden. These practices should be initiated in the assessments of reading and mathematics, which are conducted every two years, and considered for other subject areas if the frequency of testing permits.

Clusters of questions should be developed so that indexes may be prepared on important topics rather than relying on individual items alone. These clusters could be used regularly or rotated across assessment cycles.

Thorough reviews should be regularly conducted to eliminate duplicative or low-priority questions. Unproductive topics and questions should be dropped.

Detailed frameworks will be published with the theoretical rationale and research evidence that support the selection of topics and questions in background questionnaires and their connection to student achievement. Such frameworks should be updated for each assessment cycle and provide the basis for new topics and questions.

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In constructing questionnaires it is important to place strict limits on the respondent burden they impose. As much data as possible should be obtained from school records and other reliable data sources. The average individual response time to answer background questionnaires for each assessment, as calculated in accordance with Office of Management and Budget (OMB) procedures, shall be limited as follows: ~~ten~~ 10 minutes for each student on paper-and-pencil tests, 15 minutes per student on computer-based assessments, 20 minutes for each teacher, and 30 minutes for each school. Consideration should be given to increasing student response time on paper-and-pencil questionnaire if deemed practical and productive.

## REPORTING

NAEP reporting should include contextual variables and subject-specific background information to enrich and give perspective to results. Consistent with space and operational limitations, descriptive information should be part of NAEP Report Cards and summary and highlights reports. The reports should present information on patterns and trends of non-cognitive variables known to have a relationship to academic achievement and may contain disaggregated data on school conditions and practices for various groups of students. Data on courses taken before NAEP assessments (either from transcripts or questionnaires) is of great public interest and can be related to academic results.

In addition, ~~supplemental special~~ reports ~~may should~~ be prepared that focus on particular ~~aspects of the background data collected~~ topics of public interest and importance. These reports should feature significant contextual information as well as cognitive results. ~~In all cases, NAEP reports published by the National Center for Education Statistics must not state conclusions as to cause and effect relationships and avoid simplistic presentations that imply best practice.~~

All background questions and data collected by NAEP should be posted on the Internet so the public may be able to consider them in discussing results. Complete data files should be made available to researchers for further analysis. In all cases, NAEP reports published by the National Center for Education Statistics must not state conclusions as to cause and effect relationships, and avoid simplistic presentations that imply best practice.

## RESEARCH

As a cross-sectional survey without longitudinal data, the National Assessment is able to document school conditions and practices. It can report on achievement results. But it cannot properly be used to establish direct cause-and-effect relationships. Still, over the past three decades, NAEP has been part of two important research endeavors—exploring changes in the black-white test score gap since 1970 and seeking to establish the impact of state-level reforms during the 1990s. By monitoring achievement well, NAEP has provided sound data for researchers to use. ~~NAEP results have been critical in identifying research hypotheses.~~ Its contextual variables have added valuable information. Its large data sets have been combined with other information to tease out meaning and policy implications, though NAEP's own reports have properly steered clear of these activities.

The Governing Board believes that by doing its main task of monitoring educational achievement well NAEP can make a valuable contribution to education research. ~~The NCES program of secondary analysis grants for researchers to analyze NAEP data should continue. Educational researchers~~ Researchers should be involved, under the auspices of NCES, in developing NAEP background questionnaires, validity studies, and other data collection efforts to carry out the provisions of this framework.

The primary purpose of NAEP is to provide fair and accurate information on student achievement. Its primary audience is the American public. The Governing Board believes that in serving its purpose and audience well, NAEP can contribute to educational research. It welcomes the interest and efforts of researchers.

# Chapter One: Introduction

The National Assessment of Educational Progress is the only continuous long-term measure of student achievement in the United States in elementary and secondary schools. Its primary purpose is to report to the American public on academic achievement and its change over time.

## Nature and Purpose of NAEP

The NAEP survey consists of two major components: academic assessments that measure the achievement of students on a broad range of content, and non-cognitive survey questions that collect descriptive information from students, teachers, and school administrators about demographic characteristics and the educational process. Since 1969 NAEP has measured achievement in most areas of the school curriculum, including mathematics, reading, writing, science, U.S. history, world geography, civics, economics, foreign language, computer science, and the arts. The content of NAEP assessments is determined through a framework development process that articulates the content parameters for each area and recommends subject-specific non-cognitive areas for data collection and reporting.

NAEP's purpose is to report to the public on the status of academic achievement in America. The assessment does not report results for individual students, but only for groups of test-takers having large, representative samples, e.g., students from rural schools, from various ethnic groups, or from participating states, and, on a trial basis, large urban school districts. It must be able to provide data for fair and accurate comparisons between the states and subgroups on which it reports. The background data play a crucial role in ensuring the fair comparisons—over time and between student groups—that are at the heart of NAEP's mission and value.

## Nature and Purpose of Background Data

The most recent NAEP reauthorization (P.L. 107-110) gives the National Assessment Governing Board “final authority” to approve “all cognitive and non-cognitive assessment items.” This framework deals with the non-cognitive side of the Board's responsibility, including the items that identify students in NAEP's required reporting categories and the other information that provides a context for results and tracks factors associated with academic achievement.

The term “non-cognitive,” as used in the law, seems more inclusive than the phrase “background questions” by which the collection of non-academic information has been termed by NAEP in the past. However, non-cognitive is also less readily understandable than background information, and so the two terms will be used interchangeably in this document. Both will refer to all of the information beyond the academic assessment that NAEP uses to make its academic results more meaningful to the public.

When NAEP began, the collection of non-cognitive data was limited to the demographic categories of gender and race/ethnicity, and to two measures of home environment or socio-economic status—level of parents’ education and literacy materials in the home. In addition, an index was constructed, based on data from the U.S. Census and a brief school questionnaire, to report achievement results for schools in three types of communities—disadvantaged urban, advantaged urban, and rural.

During the 1980s the use of non-cognitive questions was greatly expanded to accommodate several functions within NAEP (Reckase, 2002). First, they were used to define a more extensive array of subgroups of the student population for reporting purposes. For example, NAEP results are now reported by gender, race/ethnicity, parents’ highest level of education, type of school, participation in Title I, and eligibility for free/reduced-price lunch

A second reason for collecting non-cognitive information is to inform educational policy by describing the contexts for learning, sometimes called ~~opportunities~~ opportunity-to-learn (Mullis, 2002). Broadly, this involves the content specified in the curriculum, whether and how that content actually is taught, students’ propensity to learn, as well as home and school factors that can enhance learning.

In conjunction with the descriptions of students, background information about educational settings and experiences can reveal striking differences in how important aspects of education and educational resources are distributed among different groups. For example, do disadvantaged minority students have less access to science laboratory equipment than more advantaged groups? Do girls take less rigorous mathematics courses than boys? The data on course taking has been used widely to discuss the patterns and trends in mathematics achievement. Having this information as part of NAEP has added to the public impact of assessment results.

A third function of the non-cognitive questions has been to support research into factors that may be related to student achievement. The background questions serving this function have sought information not only on curriculum, teaching methods, and discipline in the school, but also on educational activities at home. For example, *The 1998 NAEP Reading Report Card* (Donahue, Voelkl, Campbell, & Mazzeo, 1999) reports on television viewing, daily reading habits, classroom reading and writing assignments, and discussion of schoolwork at home. While secondary researchers have used NAEP to investigate relationships to student achievement, the basic design of the assessment as a cross-sectional survey without longitudinal data limits its usefulness. Research has been

most productive when NAEP is combined with other data sources and in descriptive studies that track changes over time.

Non-cognitive data are also necessary to support certain technical functions of NAEP. For example, some non-cognitive information is used to evaluate the potential for bias resulting from non-participation. That is, did the students absent or refusing to participate in the assessment differ in such significant ways from those who did take part that results were changed? Non-cognitive variables also play an important role in NAEP's sampling and weighting procedures, and sometimes in checking the validity of results. Many of these variables are taken from other data sources, such as the Common Core of Data (CCD), but some come from the administration roster collected from schools prior to testing, the records kept by test administrators, and student questionnaires.

Finally, NAEP non-cognitive questions have been used in the technical process for preparing estimates of student proficiency distributions on the cognitive component of the assessment. But their role in this process is limited to facilitating data analysis. Only the student responses to cognitive questions are used to determine achievement results. Background variables are used to define the groups for which cognitive data are reported.

Once test results for a group are determined, the NAEP analytic process makes use of background data available to prepare a second data set—identical in its group scores to the first—that can be handled by much simpler computer programs to prepare other analyses and reports. However, only the background factors to be reported on are needed for this analytical work, called conditioning. The precision of NAEP results is not reduced if background items not used for reporting are eliminated.

This background information framework will focus the collection of non-cognitive information on NAEP's primary mission: providing, as the law stipulates, "a fair and accurate measurement of student academic achievement and reporting trends in such achievement" over time. Thus, the framework is a guide for gathering important information that will assist in reporting and understanding NAEP results.

## **Development of NAEP Background Information Framework**

In the Policy Statement on Redesigning the National Assessment of Educational Progress (adopted in August 1996), the Governing Board sought to improve the validity of background information on NAEP, increase the efficiency with which it is collected, and reduce the number of background questions in the assessment itself. The statement was based on the report of a Design/Feasibility Team (Forsyth et al, 1996), headed by Robert Forsyth, which recommended a design that would rotate the collection of non-cognitive data into distinct modules administered over several assessment cycles. NAGB endorsed implementing that recommendation through a system of *comprehensive* and *standard* NAEP assessments that would be administered on a cyclical basis (NAGB, 1996).



*Standard* assessments would ask a short, essential core of background questions associated with a content area. Periodically, a *comprehensive* assessment would employ a much fuller complement of such questions to probe that area more extensively. Although some efforts have been made to reduce the background questionnaires and streamline data collection, the full impact of the NAGB policy has not yet been realized.

In early 2002, the No Child Left Behind Act transferred final authority over the non-cognitive questions from the National Center for Education Statistics to the National Assessment Governing Board. The Board adopted a new policy governing the development and selection of non-cognitive questions in May 2002, and initiated a process to prepare a general framework for non-cognitive data (NAGB, 2002). This framework would define the scope of NAEP background questionnaires, the priorities for collecting non-cognitive information, and the criteria for reporting non-cognitive data in NAEP. (See Appendix for full text of the policy.)

The Board created an Ad Hoc Committee on Background Questions and conducted an all-day workshop on the NAEP non-cognitive questions on September 24, 2002. Six consultants prepared and presented papers at the meeting that was attended by Board members, academic researchers, representatives of the national teacher organizations and other education groups, and NAEP contractors and staff. The six consultants are identified on the title page as contributors to this document.

In the months after the workshop, a draft framework was prepared. It was refined at several meetings of the Ad Hoc Committee, posted for public comment on the Internet, and was the subject of a public forum in Washington, D.C., on May 1, 2003. Altogether, oral comment and written testimony were received from 22 persons and organizations, many with differing perspectives and views. The Ad Hoc Committee and the Board carefully considered these comments, and the draft framework was revised at a Committee meeting on June 25. The Committee heard additional comment and made final revisions on July 31. The background information framework was reviewed by the full Governing Board several times during the course of its development. The Board adopted it unanimously on August 1, 2003.

While this framework is not a consensus document, it does encompass the thinking of a wide range of researchers, policy analysts, and users of NAEP data. It is the product of discussion and deliberation by the Governing Board, and incorporates Board decisions on the nature and focus of the background information to be included in NAEP. The framework will become operative in the 2006 National Assessment.

## **Requirements of NAEP Statute**

The No Child Left Behind Act of 2001 (P.L. 107-110) requires NAEP to collect information on gender, race/ethnicity, socio-economic status, disability, and limited English proficiency. It must report test data on these groups, whenever feasible, that is cross-tabulated, compared, and reported according to the categories required.

The law also requires NAEP to collect only information that is directly related to academic achievement and to the presentation of such information in a fair and accurate manner. This means that NAEP needs to concentrate on variables that are known to be related to achievement rather than on theoretical constructs. The statute requires the Governing Board to ensure that all NAEP questions are “free from racial, cultural, gender, or regional bias”—a provision from previous law. But it adds new language that questions must be “secular, neutral, and non-ideological” and must not “evaluate or assess personal or family beliefs and attitudes.”

In their report on the bill, the House-Senate conference committee that negotiated its final form says the law “does not preclude the use of non-intrusive, non-cognitive questions, approved by the National Assessment Governing Board, whose direct relationship to academic achievement has been demonstrated and is being studied as part of [NAEP] for the purposes of improving such achievement.” The report language is not binding, but is intended to guide implementation of the law. *This framework emphasizes that the legal prohibitions must be followed in preparing background questions and collecting any other non-cognitive data for NAEP.*

In addition, the law makes it clear that NAEP may not disclose any personally identifiable information or maintain any system of records that contains such data. These restrictions are not new. They have dictated careful procedures in the past, which must be continued.

## **Purpose and Rationale of Background Information Framework**

The purpose of the framework on background information is similar to that of NAEP’s content area frameworks: to guide the development of the assessment. The content frameworks have described the topics to be tested by NAEP and provided an outline of the assessment for each subject area. Purposefully, the frameworks attempt to be independent of a particular pedagogy. They do not specify what educational resources or processes should be used, but rather describe important achievement results. They provide states, schools, policymakers, and the public with a logical outline of the approach used in constructing the assessment.

The framework for NAEP background data will specify the parameters of the assessment from a reporting perspective. The background information that NAEP uses in its reports helps to give context and meaning to the cognitive results. It must be collected in a systematic way from the NAEP testing samples either through questionnaires or from other reliable sources, such as school records and other federal surveys. Collecting descriptive information from a variety of sources can improve the quality of the data obtained and increase efficiency while reducing the burden on respondents.

The Governing Board adopted a Policy Statement on the Collection of Reporting of Background Data on May 18, 2002 (NAGB, 2002). The statement is incorporated into this framework and attached in the Appendix.

A further statement, entitled Policy Statement on NAEP Background Questions and the Use of Contextual Data in NAEP Reporting, was adopted by the Board on August 4, 2012. It has been used in revising the framework text and has been included in the Appendix.

# Chapter Two: Priorities and Criteria For Collecting and Reporting Non-cognitive Data on NAEP

This chapter presents priorities for collecting and reporting non-cognitive information on NAEP. It also includes the criteria for selecting particular topics and questions, and for determining the frequency with which various data elements are reported. A final section presents criteria for identifying and selecting background data sources.

## Priorities for Non-Cognitive Information

The following priorities for collecting and reporting non-cognitive information are based on legal requirements, the purposes of NAEP, and the strengths and limitations of the assessment. They should be followed in planning background questionnaires, the frequency with which questions are asked, and the samples from which data are collected.

- (1) ***Student reporting categories that are required by law must be collected as a regular component of all NAEP assessments.*** These include race, ethnicity, gender, socio-economic status, disability, and limited English proficiency. A core of SES information should be collected in every assessment, such as type of community and poverty status. An expanded set of SES variables may be included periodically or administered to limited samples. Efforts should be made to develop a composite measure or index of SES.
  
- (2) ***Other factors that provide a context for results should be sampled periodically, or on a rotating basis, over several NAEP cycles, although a limited set may be asked in every assessment.*** Contextual factors may include courses taken and course requirements, student mobility, school safety and discipline, teacher-related factors such as teacher demographics, preparation, credentials, and experience, and other factors related to students, schools, and educationally-relevant variables beyond the school. Modules should be prepared for special studies to provide descriptive information on issues of current policy interest. Although these types of non-cognitive variables are of interest, they must be limited so that they meet the needs of NAEP reporting. In all cases, they-non-cognitive variables must be clearly related to

academic achievement or to the fair presentation of achievement results.

- (3) ***Subject-specific information may be gathered at the same time that academic achievement in a particular area is assessed.*** This may include relevant course content and requirements, teacher preparation, and other factors related to achievement in the subject assessed. Questions will not be designed to determine effective practices, but to show the patterns and trends of factors of interest, based on previous research. Like other contextual information, most of these variables should be sampled periodically, or on a rotating basis, over several administrations of the subject exam, although a limited core set may be repeated every time the assessment is given.

With regard to the points above, Walberg (2002) makes a suggestion that might be a workable solution to consider. Just as students in the NAEP samples do not respond to all the questions, say, in reading, but only to a portion of those for any one grade-level, so too, the non-cognitive questions could be rotated through different (smaller) NAEP samples. These non-cognitive “testlets” could be rotated through the NAEP samples by class or school, with students receiving different, expanded “testlets” in addition to a core set of background questions.

### **Criteria for Selecting Non-cognitive Topics and Questions**

The Advisory Council on Education Statistics (ACES), a technical panel that used to advise the National Center for Education Statistics, spent a considerable amount of effort on the issue of NAEP non-cognitive questions. Its guidelines, adopted in May 1997, include a set of key questions that should be utilized in selecting topics and questions for NAEP background data collection. The questions with commentary are summarized below:

- ***Does the current or proposed non-cognitive variable relate to the primary purpose of NAEP and how?*** The primary purpose of NAEP is to report on the academic achievement of students to the American public. It is not to report on the causes of that achievement. Other surveys with longitudinal data are far better suited to examining causality. NAEP’s choice of which non-cognitive variables to measure should be guided by how and to what extent the variables selected will support NAEP’s primary mission.
- ***Do the current or proposed non-cognitive variables meet professional standards for reliability and validity?*** The NAEP legislation requires that the assessment “use widely accepted professional testing standards (P.L.107-110, Sec. 411 (b) (5).” This requirement applies equally to non-cognitive and academic variables. It is already known that some non-cognitive variables in NAEP have weak reliability (e.g., data from 4<sup>th</sup> graders on their parents’ highest level of education and the self-reports of teachers on classroom

practice). If more reliable sources of such data cannot be found, these variables should be deleted from the assessment.

- ***How stable is the non-cognitive variable from period to period?*** If a variable shows little change from year to year, it should be reviewed to determine whether it should be deleted or used on a periodic basis rather than in every assessment.

- ***Is the proposed or current non-cognitive variable of timely interest?*** The educational environment changes from time to time, and consequently public interest in particular variables will change as well. It would serve NAEP well to review the set of non-cognitive variables periodically with this criterion in mind, deleting those that do not meet the test of timeliness and substituting others of current interest.

- ***If new questions are added, have others been deleted in order to limit the burden and expense of NAEP's background questionnaires?*** There will always be pressure to collect more information. Mechanisms must be developed to make sure the burden of background questionnaires does not expand over time.

- ***Does a question address specific behavior rather than conclusions?*** For example, a question that asks teachers whether they adhere to national standards in mathematics or another subject is conclusionary and hard to interpret, since many teachers are apt to say yes, regardless of what they do. It would be better to ask about specific behaviors, such as homework assignments or computer use. Caution is advisable in this area too because self-reports are often unreliable.

The Board believes three other important criteria must also be considered:

- ***Will the topic or question meet the test of broad public acceptability and not be viewed as intrusive or prying?*** NAEP's non-cognitive questions are not kept secure and must readily be available to anyone requesting a copy. Under Board policy, all questions asked are to be posted on the Internet. Possible objections should be considered in deciding whether or not to ask them.

- ***Does the topic or question deal with a factor in which trends over time are of importance?*** If trends are deemed important and the factor is related to achievement, the topic or question should be included periodically on a four-year or eight-year cycle, rather than being part of the background questionnaire each year. For example, measuring television watching in every NAEP assessment is not necessary. But it can be valuable to measure TV-watching every four or eight years to find out whether or not it is increasing.

- *Will the information obtained be of value in understanding academic performance and taking steps to improve it?* This is a fundamental issue to be addressed in evaluating all background questions proposed for NAEP.

Because of the value of preserving trends, consistent wording of questions should be maintained on topics of continuing interest. Changes in wording must be justified. However, as practices and circumstances change, new questions will be introduced in a timely manner to gather data on topics of current interest. NAEP should include background questions from international assessments, such as PISA (Program for International Student Assessment) and TIMSS (Trends in International Mathematics and Science Study), to obtain direct comparisons of states and TUDA districts to educational practices in other countries.

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### Criteria for Selecting Data Sources

NAEP has collected non-cognitive information from students, teachers, and schools, using NAEP background questionnaires. There are also administration rosters, completed by test administrators at the school level in advance of testing to determine characteristics of the testing samples. The Common Core of Data (CCD) is used to identify characteristics of schools (e.g., Title I funding), and schools also complete a questionnaire on special needs students (e.g., students with disabilities and limited English proficiency).

However, the collection of non-cognitive data may be shifted among these sources or to new sources in order to improve reliability, increase efficiency, or reduce burden. State management information systems and data collected for school report cards, ~~as required by the No Child Left Behind Act, may have~~ become ~~very increasingly~~ useful for NAEP. *Whenever possible, NAEP should use information from school records and other reliable data collections about students and schools in order to improve the validity of the information collected and limit the background questionnaires in NAEP itself.*

In exploring the utility of different data sources, the following criteria should be considered:

- **Validity** – Is the data obtained from the new source a valid indicator of what it purports to measure?
- **Reliability** – Is the data from the new source at least as reliable and consistent as that from the source previously used?
- **Universality** – Can the required data be collected by this method for all (or almost all) of the students and schools participating in NAEP and will it support valid comparisons over time?

- **Currency** – Will data obtained from a new data source be current enough to relate clearly to the assessment being conducted? If data from the census or some other source is several years old it may not accurately describe school or neighborhood conditions at the time of testing.
- **Respondent Burden** – Will the new source(s) reduce the burden on students, teachers, and schools in filling out NAEP questionnaires? Will the total amount of respondent burden be decreased?
- **Logistics** – Will the alternative source(s) be logistically possible, or will there be more logistical problems than with the previous data source? Logistics includes such considerations as cost, time, administrative personnel resources, and steps needed to ensure accurate coding and data analysis.
- **Efficiency and cost-effectiveness** – How efficient will the new data source be in comparison to the previous one? For example, it may be more efficient to collect data from a state management information system about the state’s schools, teachers, or students, rather than obtaining it from the test samples directly, but efficiency and cost-effectiveness should be determined before a change is made.
- **Timeliness of NAEP reporting** – How will a change in data sources affect the speed with which NAEP can be reported? Some changes will speed operations, but those that slow down NAEP reporting are not desirable.



## Chapter Three: Topics and Types of Background Data

This chapter will cover the non-cognitive topics that are required for reporting under the No Child Left Behind Act of 2001 (P.L. 107-110), as well as those that should be considered for inclusion in NAEP on a cyclical basis. It discusses socioeconomic status (SES), contextual factors of interest to public policy, and subject-specific variables.

### Demographic Reporting Categories

The demographic variables ~~currently~~ collected by NAEP come from two sources. Information is obtained from school records on ~~are~~ gender, age, race/ethnicity, and two elements of socio-economic status (SES)— participation in Title I and eligibility for free or reduced-price lunch, which is based on family income. The school records are also used to indicate whether a student is classified as disabled. In addition, information is obtained on disability status and on students who are classified as ~~or~~ limited English proficient. All of this information is collected on an administration roster, completed from school records in advance of testing. In addition, data on race/ethnicity is also collected on the NAEP student questionnaire, and students are asked to report on the highest level of each parent’s education and on several aspects of home environment, including number of books, internet access, and whether they have their own bedroom.

A more extensive questionnaire is completed by school staff on each student selected for NAEP who is classified as either disabled or limited English proficient (LEP). For students with disabilities (SD), the questionnaire collects data on the specific disability and its severity, the student’s Individualized Education Plan (IEP), type of curriculum, whether the student participates in standardized testing (with or without accommodations), and the accommodations allowed on state and district standardized tests in presentation, response, setting, and timing. For LEP students, the questionnaire covers native language, number of years of academic instruction in English, percent of instruction in English and/or native language, and the testing accommodations provided under district or state policy. In the future, NAEP might also identify students who recently exited from LEP programs and track their achievement.

NAEP is required to collect information on all of these categories (except age), but has some discretion in determining definitions and aggregating responses. These data will continue to be collected in a uniform manner in every NAEP assessment, although, for socio-economic status, as explained in the section below, there may be some variation, with a uniform core and more extensive data-gathering in some cases.

## Socio-economic Status (SES)

Under current law, NAEP is required to collect information on socio-economic status. SES also is clearly a factor that has been shown to be related to academic achievement in many research studies, beginning with the Equality of Educational Opportunity Commission Report (Coleman et al., 1966). The research community's consensus over the past four decades has been to deal with the influence of SES on other achievement-related variables by holding SES constant while examining the other effects, for example, adjusting for SES while looking at effects of class size or teacher training. NAEP does not adjust for SES, but it does report on the relationship between student achievement and SES proxy variables like parents' education or Title I participation.

NAEP has not been able to measure SES directly, using its present set of questions and data sources, i.e., the student, teacher, and school questionnaires. The assessment has used "proxy variables" for SES, including students' eligibility for the National School Lunch program, participation in Title I, parents' education, and the number of reading materials in the home (newspapers, magazines, books, etc.)—information on the latter two factors being reported by students in the assessment samples. In addition, NAEP uses census data to classify schools into different types of location, based on Census Bureau definitions, such as central city, suburban/large town, and rural/small town. The questions on newspapers and magazines were dropped in the mid-2000s as circulation dwindled, and were replaced by an item on internet access.

Strictly speaking, these are individual proxy variables and are not combined into a composite variable. However, both the questions on parent education and home environment are-have been coded in a pseudo-composite manner. For example, the parent education related to the student is the higher of either the mother's or father's education level. On the four home environment questions used,-until the mid-2000s student responses are-were coded differently for a "yes" answer to two questions or fewer, "yes" to three questions, and "yes" to four questions, as well as omitted responses (Allen, Carlson, & Zelenak, 1999).

At the lower grade levels, students' reports of their parents' education are questionable at best, while the National School Lunch program sorts students only into three categories (Yes, No, and Unknown) and Title I into two categories (Yes or No). For many years, NAEP used a reporting category of disadvantaged urban schools, constructed from information provided by school principals. This was discontinued in the mid-1990s because the category lacked a consistent definition from year to year and between different state samples. There also were serious doubts about the reliability of the information on which it was based. The data on eligibility for the National School Lunch Program have also become increasingly problematic because of expansion of the program and administrative changes allowing whole-school or whole-district eligibility in high-poverty areas. In short, there has been considerable concern over many years about the quality of the SES measures in NAEP, both for reporting to the public and for analysis by researchers.

Barton (2002) suggests two alternative approaches for improvement: (1) a composite index for SES, or (2) a parent questionnaire. A composite index is viable using the same information that is currently collected in NAEP, or perhaps augmented with a few targeted questions or census data, possibly the zip code of student home addresses. *The necessary analytical work should be initiated through small research studies using extant NAEP data sets in order to check systematically the validity of a composite index as a better measure of SES in NAEP samples. The results could vary by grade level, in which case, adjustments might be needed in the way the data are collected, augmented, and/or confirmed. NAEP may never be able to produce a full composite of income, education, and occupation, but efforts should be accelerated to develop and use improved measures of socio-economic status, including an SES index. ~~made to find an approximation that is more reliable than the current set of individual proxy variables.~~*

In November 2012, an expert panel convened by the National Center for Education Statistics recommended prompt development of an SES composite measure.

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The argument in favor of this approach is that it advances the goals of the current law without impacting data collection in unforeseen ways. Barton suggests that such an index would enable NAEP to report results in terms of SES quartiles (much the same way that the National Educational Longitudinal Survey, NELS, does). Further, it would allow the assessment to report cross-tabulations on distributions of students in the NAEP achievement level categories by SES. A good measure of SES would improve the monitoring of achievement gaps among various racial/ethnic groups, although sample sizes may not be large enough within all ethnic groups or types of schools. Finally, a composite SES index may be beneficial to states and districts in the Trial District Assessment (TUDA), enabling NAEP to compare the performance of groups of students with the same socio-economic status, which is a factor of high public and policy interest.

The argument against such an approach is that SES would continue to be measured indirectly, i.e., by using proxy variables, albeit through a composite index. There would also be disagreements about precisely which variables to include in the index and how to weight different factors. For example, Armor (D. J. Armor, personal communication, December 18, 2002) has suggested that two variables ~~recently~~ deleted from the NAEP student questionnaire in 2000 be reinstated, namely, the number of siblings in the home and family status (student lives with both parents, mother or father, neither). These variables were dropped because of concerns about intrusiveness, but they may be of considerable importance in constructing an SES index. The item on number of parents in the home was restored in 2013. The Board will have to weigh the considerations involved, and may decide there is value in using them periodically or in limited samples.

A parent questionnaire has been proposed as a more reliable means of collecting SES data than relying on student reports, school records, or census data. Other National Center for Education Statistics surveys, for example, NELS and the Early Childhood

Longitudinal Study, have employed parent questionnaires that ask direct questions regarding occupation and income.

However, the National Assessment of Educational Progress involves far more students than any of these research surveys. Accordingly, a parent questionnaire on NAEP would entail far more respondent burden and might arouse more controversy, making it more difficult to accomplish the primary mission of the assessment to measure student achievement. A parent questionnaire has been considered by NAGB in the past, but rejected as too burdensome and intrusive. Because these considerations are still persuasive, particularly as the scope of NAEP has expanded, no work should be undertaken on developing a parent questionnaire.

*In sum, because of its importance and the requirements of law, information on socio-economic status must be collected in all NAEP samples, although there may be some variation in the number of factors on which data are obtained. ~~Research Efforts should be conducted made to develop into creating a composite measure or index of SES based on school records and the student questionnaire. To the extent that an index can be sharpened by additional information from readily available sources, such as zip codes and/or census data, this option should be considered as well.~~*

*A core of SES information should be collected in every assessment, such as type of community (e.g., central city, rural, etc.), poverty status (e.g., eligibility for free or reduced-price lunch and Title I participation), reading materials in the home, and level of parent education. ~~nn though steps Steps must be taken to ensure that such data are reliable. An expanded set of Additional SES variables may be included also be periodically and included administered to limited samples, including, such as number of siblings and parents at home, possession of computers, and parent occupation. Periodically, an expanded set may be administered.~~*

*~~NAEP should explore the use of an SES index derived from proxy variables currently in either the administration roster or student questionnaire. To the extent that an index can be sharpened by additional information from readily available sources, such as zip codes and/or census data, this option should be considered as well.~~*

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## Public Policy Contextual Factors

For the past two decades NAEP has collected information on student, teacher, school, and beyond-school factors that are of interest to policymakers and the public. For students, some of these factors have included course-taking patterns, TV-watching, homework, and use of computers. For teachers, the contextual factors have included educational background, credentials, years of experience, and participation in professional organizations, to name a few.

The lists of factors have been long. They have become burdensome both to respondents and to the efficient scoring, analysis, and reporting of the NAEP survey. The way they have been reported—through simple one-way tabulations—has encouraged unwarranted conclusions about cause-and-effect relationships.

*We propose a careful review of the contextual factors on which information is collected by NAEP to focus on the most important variables related to public policy. All such information must be clearly related to student achievement, as shown by other research. ~~Data should be obtained periodically, on a rotating basis, over several NAEP cycles, although a limited set of factors may be included in every assessment~~ Modules should be prepared for special studies to provide descriptive information on issues of current policy interest. ~~Information-Data~~ should be collected at meaningful intervals in ways that may show significant patterns and change over time.*

Two documents are helpful in surveying the research base and presenting alternatives for NAGB to consider. The first is *Monitoring School Quality: An Indicators Report* (Mayer, Mullens, & Moore, 2001), prepared by Mathematica Policy Research, Inc. for NCES. This report presents a research synthesis, indicating factors for which there is a research base showing a strong relationship to academic achievement. The synthesis, involving a review panel as well as statistical analyses, identifies the following as factors related to student results: the academic skills of teachers, teacher assignments (such as out-of-field teaching), course content, student discipline and school safety, class size, and focus on academic achievement. Other sources of information are available on all of these factors, but only through NAEP can they be related to the achievement of broad groups of students over time.

The second document, *Making Connections* (Greenberg, Stancavage, Farr, & Bohrnstedt, 2001), was prepared for NCES by the American Institutes for Research and presents an elaborate typology of non-cognitive variables that could be measured by NAEP. It is organized into seven broad categories of non-cognitive information related to students, instructional content and practice, teachers, schools, school community factors, beyond school factors, and federal, state, and district policy. The listing goes beyond what NAEP can and should handle, but its discussion is thoughtful and the document is useful for planning.

## **Subject-Specific Background Data**

For each subject assessed by NAEP, additional subject-specific background information has been collected from students, teachers, and schools. These data fall into the broad category of instructional content and practice. Under that umbrella come such topics as the curriculum taught, course offerings, class management and style, ability grouping, and modes of instruction. Subject-specific data collection has expanded enormously over the past two decades, and in recent years has included five to ten minutes of questions for students, about 30 minutes of questions for teachers, and 30 to 45 minutes for school administrators.

~~Now is the time for t~~These questions ~~to should~~ be focused, limited, and prioritized. Future subject-matter frameworks adopted by the Governing Board should spell out clearly what these priorities will be.

Whenever feasible, student assessment samples should be divided (spiral sampling) and background questions rotated in different years in order to cover more topics without increasing respondent burden. These practices should be initiated in the assessments of reading and mathematics, which are conducted every two years, and considered for other subject areas if the frequency of testing permits.

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~~The design for doing this was presented to the Board in the 1996 report of a Design/Feasibility Team of prominent researchers (Forsyth, R. et al, 1996). The group recommended that a core set of non-cognitive questions should be administered to students each time a subject is assessed by NAEP. In addition, a more comprehensive questionnaire would be given whenever a new framework is introduced and repeated every eight to ten years. For example, an extensive set of background questions in reading and mathematics (grades 4 and 8) was administered in 2003, the baseline year for the No Child Left Behind legislation. Another complete set should be administered in mathematics in 2005 and in reading in 2007, the years in which revised frameworks are first used, and then should be repeated at an interval of eight years. In the intervening years, only the more limited core modules will be administered. Similar patterns should be established~~considered for the school and teacher questionnaires.

~~In The~~ NAEP assessments ~~in other subjects given at intervals of four years or more~~, such as writing, science, history, ~~geography~~, and civics, ~~should have~~ a core set of non-cognitive questions should be administered to the full sample, with different sets of longer, more extensive questionnaires being administered to smaller sub samples.

With states ~~now~~ required to participate in NAEP every two years, the total number of students tested has expanded substantially from what it was in the program's first decades. This makes even more compelling the case for limiting the NAEP background questionnaires and rotating the background questions.

Clusters of questions should be developed so that indexes may be prepared on important topics rather than relying on stand-alone items only.

~~NCES should prepare for Board review and approval a plan indicating the frequency, sample size, and schedule of rotation for all background variables and questions on which information is to be collected by NAEP. This should include both questionnaires and alternate data sources to obtain core reporting data, subject-specific information, and data on achievement-related contextual variables from a variety of NAEP samples—national only, national and state, and a subset of the national sample. The plan should indicate the frequency and schedule of rotation for each of the questions proposed. It should also indicate any questions needed for~~

*quality control purposes. The recommendations should be prepared with input from researchers and state policy analysts, as appropriate, and updated on a regular basis.*

Table 1 presents a model schedule for comprehensive and core sets of subject-related variables through 2013. It is based on the schedule of assessments approved by the Board in May 2003.

**Table 1**  
**Model Data Collection Schedule for Comprehensive and Core Sets of Non-Cognitive Variables by Subject Area**

<b>Subject Area</b>	<b>Data Collection Year for Comprehensive Set of Variables</b>	<b>Data Collection Year for Core Variables Only</b>
Reading	2003, 2007, 2013	2005, 2009, 2011
Mathematics	2003, 2005, 2013	2007, 2009, 2011
Foreign Language (12)	2004, 2012	
World History (12)	2010	TBD
Economics (12)	2006	TBD
Civics	1998, 2012	2006
Writing	2002, 2011	2007
Arts (8)	1997, 2008	
Science	2000, 2009	2005
US History	2001, 2006	
Geography	2001, 2010	

NOTE: Based on schedule approved by NAGB on May 17, 2003.

## **Chapter Four: Non-cognitive Data Sources and Collection**

This chapter discusses the sources of non-cognitive information for NAEP and the reporting categories that the information describes. It includes a NAEP Background Information Matrix, organized by priorities, which summarizes the types of descriptive information NAEP collects, reporting units, and data sources.

### **NAEP Student, Teacher, and School Samples**

The NAEP student samples vary in size and purpose. Their overall total has become very large. Starting in 2003, national NAEP samples are specified at the state and jurisdictional levels, with approximately 3,000 students per subject and grade (4 and 8 only) for each of the 50 states, plus the District of Columbia, and Department of Defense domestic and overseas schools. Puerto Rico (in mathematics only) has a sample of about 3,000. In addition, the ten Trial Urban District Assessment (TUDA) districts have sample sizes of the order of 3,000 to 5,000 each. There also are a nationally-representative sample of charter schools, totaling about 3,000 students, and national private school samples totaling about 12,000 in each grade.

At grade four, therefore, the total NAEP sample approximates 436,000 students. The grade eight sample is about the same at 432,000 (excepting charter schools). The grade 12 sample is for a pilot test and includes only about 6,000 students (Rust, 2002). In most future years the twelfth grade samples are expected to have about 30,000-40,000 students assessed in national samples only for three subjects.

In addition to the nearly one million students tested, about 80,000 teachers of those students complete teacher questionnaires and some 13,000 schools complete school questionnaires. Several thousand school districts also supply data for the assessment. The sampling and weighting procedures in NAEP use data from the CCD files as well as census data and school-level achievement data from the states for improving NAEP stratification procedures. The NAEP non-cognitive data collection effort is enormous and challenging.



## Other Data Sources

The Governing Board is strongly committed to improving the quality of background information while reducing respondent burden and the complexity of data collection and analysis. The self-report questionnaires given to students, teachers, and schools are sometimes burdensome to fill out, labor-intensive to collate and analyze, and subject to concerns about reliability. All questionnaires should be scrutinized to replace as many items as possible with data from centralized records, gathered by test administrators, or, ideally, from computerized data files.

The data available from federal, state, district, and school records should be carefully explored. ~~With implementation of the school report card requirements of the No Child Left Behind law, In recent years~~ much more information ~~should be~~ become available ~~soon~~ in standardized computer formats. Barton (2002) has suggested some specific sources of data collected outside of NAEP that should be considered to improve NAEP reporting. These include the U.S. Census, Quality Education Data, Inc. (QED), and the Common Core of Data (CCD) and School and Staffing Survey (SASS), both compiled by the National Center for Education Statistics.

This approach of utilizing more data from outside specific NAEP data collections has been elaborated on extensively in the ~~most recent~~ evaluation of NAEP by the National Academy of Sciences (Pellegrino, J.W., Jones, L.R., & Mitchell, K.J., 1999). The panel proposed “a coordinated system of indicators for assessing educational progress, housed within NCES and including NAEP and other currently discrete, large-scale data collections (p. 34).” Figure 1 is reprinted from the NAS report to show the extent of these data collections on students, teachers, and schools, and to indicate what might be obtained from these other sources. To use them for NAEP would greatly lessen the burden on the assessment itself. Merged data sets could be made available, some to the general public, and more to researchers in restricted data files.

For many years state-level NAEP reports have included appropriate collateral data that provide a context for interpreting NAEP results; see for example the *NAEP 1996 Mathematics: Report Card for the Nation and the States* (Reese et al., 1997). These state contextual variables have included enrollment in elementary and secondary schools, poverty status of children from 5 to 17 years old, number of children receiving disability services, per-pupil expenditures, pupil-teacher ratios, and average teacher salaries. To the extent that these data are readily available and are helpful in setting a context for interpretation of NAEP results the practice ought to be continued. However, more effort should be made to ensure that such data are ~~as~~ up-to-date ~~as possible and easily accessible as part of NAEP reporting on the Internet.~~

**Figure 1**

**Overview of Current NCES Data Collections**

<b>Data and Design Elements</b>	<b>NAEP</b>	<b>NELS</b>	<b>ELS</b>	<b>ECLS</b>	<b>TIMSS</b>	<b>CCD</b>	<b>PSUS</b>	<b>SASS</b>	<b>NHES</b>
<b>Data Elements</b>									
Student achievement	x	x	x	x	x				
Student background characteristics	x	x	x	x	x	x	x	x	x
Home and community support for learning	x	x		x	x				x
Standards and curricula					x				
Instructional practices and learning resources	x	x		x	x			x	
School organization/governance					x			x	
Teacher education and professional development	x				x	x	x	x	
Financial resources					x	x	x	x	
School climate	x	x		x	x			x	x
<b>Design Elements</b>									
Type of design (CS=cross-sectional; L=longitudinal)	CS,L	L	L	L	CS	L	L	CS,L	CS
Periodicity (TBD=to be determined)	2,4, or 6 yrs	2-6 yrs	TBD	TBD	TBD	Annual	Biennial	2-5 yrs	2-3 yrs
Unit of observation (S=student; T=teacher; A=administrator; P=parent; SC=schools; D=district; ST=states; H=households)	S,T,A	S,T,A	S,A,P	S,T,A,P	S,T,A,P	SC,D,ST	SC	T,A,SC	H
Data collection method (S=survey; R=record analysis; I=interview; V=video; C=case study; O=other)	S	S,R	S,O	S,O	S,R,V,C	S,R	S	S	I
Population of inference (N=national; S=state; G=demographic group)	N,S,G	N,G	N,G	N,G	N	N,S,G	G	N,S,G	N,G

NELS: National Education Longitudinal Study of 1988

ELS: Educational Longitudinal Study of 2002

ECLS: Early Childhood Longitudinal Study

TIMSS: Third International Mathematics and Science Study

CCD: Common Core of Data

PSUS: Private School Universe Survey

SASS: Schools and Staffing Survey

NHES: National Household Education Survey

NOTE: From *Grading the Nation's Report Card: Evaluating NAEP and Transforming the Assessment of Educational Progress* (pp.36-37), by J.A. Pellegrino, L.R. Jones, & K.J. Mitchell, 1999, Washington, DC: National Academy Press. Copyright 1999 by the National Academy of Sciences. Reprinted with permission.

## NAEP Background Information Matrix

The types of descriptive information NAEP collects, reporting units, and data sources are summarized in the NAEP Background Information Matrix, which is displayed as Figure 2. The matrix is intended to assist in conceptualizing NAEP background information collections. It is organized by priorities—both for types of information and for how data should be obtained. Note that in each case information is to be obtained from reliable official records before it is sought through questionnaires.

The entries in the cells are illustrative, showing the kinds of information that are currently collected by NAEP and the various data sources (records and questionnaires) that are used. As the principles of this framework are implemented, more information will come from records, less from questionnaires. The sources with higher reliability and less respondent burden should be utilized in priority order.

The Ad Hoc Committee on NAEP Background Questions considered a proposal by Paul Barton (2002) to permit states or groups of states to add customized sets of questions to the background questionnaires. Although these might track progress on topics of particular interest and increase support for NAEP, the Committee felt strongly that the proposal should not be pursued because any customization of NAEP questionnaires would create serious logistical and quality control problems.

*In constructing questionnaires it is important to place strict limits on the respondent burden they impose. The average individual response time to answer background questionnaires for each assessment, as calculated in accordance with Office of Management and Budget (OMB) procedures, shall be limited as follows: ~~ten~~ 10 minutes for each student on paper-and-pencil tests, 15-minutes per student on computer-based assessments, 20 minutes for each teacher, and 30 minutes for each school. Consideration should be given to increasing student response time on paper-and-pencil questionnaires if deemed practical and productive.*

Figure 2

NAEP Background Information Framework

Reporting Unit and Data Sources	Type of Information			
	Student Reporting Categories	Socio-Economic Status Core  Expanded	Other Contextual Information	Subject-Specific Information
<b>STUDENT</b> <b>School Records</b>  <b>Questionnaire</b>	Gender Race/ethnicity SD/LEP  Race/ethnicity	Free/RP lunch participation Title I  Parent education Reading materials <u>and Internet access</u> in home <u>Own bedroom</u> <u>Parent occupation</u>	New enrollee Type/degree of disability  Daily reading Discuss school work <del>TV-watching</del> Absenteeism Language in home <u>After-school learning activities</u>	Course taking in mathematics  Time spent on math homework Good in math?
<b>SCHOOL</b> <b>Dist/State Recds</b> <b>School Records</b>  <b>CCD/Census</b> <b>Questionnaire</b>	School type (public, private, charter, etc.) School ach. data  Community type	% Free/RP lunch participation Title I funding	Grade structure Days of instruction Enrollment % LEP  % students absent % teachers absent Enrollment mobility Grade retention Teacher retention Graduation rates Post-secondary ed rates	Graduation requirements in math and science. Higher level math courses Graduation testing  Extracurricular options in math and English. Availability of computers for writing.
<b>TEACHER</b> <b>School Records</b> <b>Dist/State Recds</b> <b>Questionnaire</b>			Race and Gender Experience Credentials  Undergrad/Grad content training Professional Devel	Correct for spelling and grammar? Frequency of science lab work
<b>STATE</b> <b>CCD/Census</b> <b>State Records</b> <b>Questionnaire</b>	Region		Non-NAEP contextual variables	
<b>DISTRICT</b> <b>CCD/Census</b> <b>State Records</b> <b>District Records</b> <b>Questionnaire</b>		Community type (urban, rural, etc.)		

NOTE: Information type and data sources are arranged in priority order.

## Chapter Five: Using Background Data to Report NAEP Results

This chapter discusses the descriptive information that NAEP should provide, the levels of disaggregation ~~now~~ possible with merged national and state samples, and the importance of minimizing causal interpretations.

### Use of Descriptive Information in NAEP

NAEP reporting should include contextual variables and subject-specific background information to enrich and give perspective to results. Consistent with space and operational limitations, descriptive information should be part of NAEP Report Cards and summary and highlights reports. The reports should present information on the patterns and trends of non-cognitive variables known to have a relationship to academic achievement.

In addition, special supplemental reports ~~may-should~~ be prepared that focus on particular ~~aspects of the background data collected~~ topics of public interest and importance. Such reports should feature significant contextual information as well as cognitive results. Advisory committees, including a range of knowledgeable persons, may be appointed to provide input on reporting issues. In all cases, NAEP reports published by the National Center for Education Statistics must not state conclusions as to cause and effect relationships and avoid simplistic presentations unsupported by research that may imply best practice.

All background questions and data collected by NAEP should be made available on the Internet at the time of the initial release of the principal academic results or soon afterwards so the public may be able to consider them in discussing results. Complete data files should be available to researchers for further analysis.

## **Implementing No Child Left Behind**

The intent of the No Child Left Behind Act of 2001 (P.L.107-110) ~~is~~has been to hold public schools accountable for closing achievement gaps between different groups of students. NAEP ~~is~~has asked to contribute to this end by providing an accurate measure of current levels of student achievement and ~~to~~monitoring change over time.

Descriptive information about all students, but particularly on low-performing groups, ~~would~~can contribute powerfully to the dialogue on the challenges before American education. For example, the NAEP achievement levels focus on the segments of the performance distribution that are at or above *Basic*, *Proficient*, and *Advanced*. Information ~~should~~can also be provided about those *Below Basic*, who clearly have been “left behind:” e.g. the proportion having qualified teachers, receiving free or reduced-price lunch, or moving to different schools frequently, as measured by attending the same school for less than two years.

Such profiles of low-performing or high-performing students ~~would~~should not attempt to ascribe causation, but they ~~would~~can provide important information on the distribution of practices and resources that are of concern to the public and policy-makers. Periodic collections of such background data ~~could~~can be used to track change in the distribution of these factors over time. Do the trends seem favorable or adverse to educational progress?

## **Disaggregation of NAEP Data**

~~For more than three decades~~Since it was established NAEP has provided data disaggregated by race/ethnicity, gender, school type (e.g., public/private), and community type (e.g., urban/rural). ~~The No Child Left Behind~~Current law calls for disaggregation by major subgroups (when feasible) of race, ethnicity, and gender, and also by socioeconomic status, disability, and limited English proficiency.

Because of the large size of the ~~recently~~combined national and state NAEP samples, NAEP reports ~~should~~bear able to provide information disaggregated at a much greater level of detail than was possible in the program's first decades. ~~Pooling the data from all states, which now are required to provide NAEP samples in fourth and eighth grade reading and mathematics will produce a much enlarged national sample that will sharply reduce the number of empty cells in any cross-tabulations~~. Such disaggregation ~~might~~adds to the richness of NAEP reporting even ~~with~~for only a limited set of non-cognitive questions. Disaggregation is also very important for reporting on the distribution of student characteristics within the different achievement levels, as described above.

## Minimizing Causal Interpretations

NAEP has often reported on the average performance of students by particular non-cognitive variables. One example, presented in many NAEP reports until the early 2000s, was the average scale score of students ~~who that~~ watch different amounts of television each day, cf. *The Nation's Report Card: Reading, 2000* (Donahue et al., 2001). Another example ~~is has been~~ the average scale scores for 12th graders who report different amounts of time working at a part-time job, cf. *The Nation's Report Card: Mathematics, 2000* (Braswell et al., 2001).

While there may be a correlation between TV-watching and reading performance, or between hours working outside school and math results, NAEP is not designed to prove cause-and-effect relationships. As a cross-sectional survey, nearly all of its data is on current activities and practices—not on the complex chain of experience in school and outside, of prior learning and achievement that all contribute heavily to current academic performance. While the correlations may be of interest, they cannot be conclusive. But they may be cited to stimulate discussion or encourage further research. ~~Yet, NAEP has encouraged simple causal inferences by reporting average scores for varying amounts of time spent on current activities.~~

There is one important exception to the absence of data on learning-related activity over time. This is the information NAEP collects on the transcripts of high school seniors and its questionnaires on courses that students have taken and schools provide. These do show prior instruction before current exams. The trends in course taking have been of great public interest and it is reasonable to relate them to student achievement.

*NAEP reports should present information on the patterns and trends of non-cognitive variables known from other sound research to have a relationship to academic achievement. These presentations should be straightforward and impartial, and care must be taken to avoid stating conclusions as to cause and effect relationships.* ~~Further analysis of any relationships should be left to researchers.~~

### NAEP Data Explorer and Other Online Means of Data Dissemination

The NAEP Data Explorer should be further improved to make data more accessible to general, non-specialist users. Tables and very simple to construct charts should be prepared to present data on important topics of wide public interest. Additional means of disseminating information through new technology should be explored. These may include simple apps that would allow parents, teachers, and others to access pertinent contextual data as well as NAEP achievement results.

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## Chapter Six: Using NAEP in Educational Research

As a cross-sectional survey without longitudinal data, the National Assessment of Educational Progress is able to document school conditions and practices. It can report on achievement results. But it cannot properly be used to establish direct cause-and-effect relationships. Still, over the past ~~three-four~~ decades, NAEP has been part of ~~two-three~~ important research endeavors—exploring changes in the black-white test score gap since 1970; ~~and~~ seeking to establish the impact of state-level reforms during the 1990s; ~~and evaluating the stringency of state standards enacted under No Child Left Behind.~~

By doing its main task of monitoring achievement well, NAEP has provided sound data for researchers to use. NAEP results have been critical in identifying hypotheses for other research to pursue. Its large data sets, ~~including contextual variables~~, have been combined with other information to tease out meaning and policy implications, though NAEP's own reports have properly steered clear of these activities.

The Governing Board believes the National Assessment can be of value to educational research and the interest of researchers in the assessment should be encouraged. ~~The NCES program of secondary analysis grants for researchers to use NAEP data should continue.~~ Educational researchers should be involved, under the auspices of NCES and its contractors, in developing NAEP background questionnaires and other data collection efforts to carry out the provisions of this framework.

This chapter considers the limitations and strengths of NAEP for educational research and discusses research that has made use of NAEP data. The chapter draws on papers by David Grissmer, senior research scientist at RAND, who has used NAEP extensively in analyzing educational factors and trends.

### NAEP's Limitations and Strengths for Research

The primary purpose of NAEP is to *accurately and fairly monitor achievement* over time *and accurately and fairly compare achievement across states and important sub-groups of students*. Beyond providing such data, any research with NAEP, particularly into the causes of academic achievement, is severely limited by its design.



As a representative sample survey, in which no individual student takes more than a small part of the full exam, NAEP has shortcomings in most of the elements commonly used to evaluate academic achievement (Podgursky, 2002):

- It provides no prior data on student achievement, and can't be made longitudinal to do so.
- It can only collect contemporaneous information on school practices and resources, and has no way of ascertaining how students were taught or what school experiences they may have had in previous years.
- There is considerable measurement error in survey responses obtained from teachers and schools because they may well give the expected "right" answers rather than report accurately what they do.
- The current classroom practices that teachers report may be a response to student achievement levels, not the cause of such achievement, and it is difficult to disentangle causation.
- It is difficult for NAEP to get good information on socio-economic status or family background factors, but these are powerfully correlated with academic achievement, and must be controlled for in any analysis of school effects.

On the other hand, NAEP does have unique strengths and comparative advantages (Grissmer, 2003), and thus has the potential to address some important research and public policy questions with its cognitive data and background information:

- NAEP is the only data set on student achievement that has collected data from nationally representative samples of students continuously from 1969-70 to the present.
- It is the only data set that has collected academic achievement data simultaneously, repeatedly, and consistently from three separate age groups.
- It is the only data set that collects from statistically reliable samples at the state level, and within states for different types of communities (central city, suburban and rural) and for racial/ethnic groups within most states.
- NAEP has far larger sample sizes than any other nationally representative survey of student achievement, such as the National Education Longitudinal Study (NELS) and the Early Childhood Longitudinal Study (ECLS). These surveys are only approximately 10 to 20 percent as large as NAEP in any single application, and 1 to 5 percent as large as NAEP for any repeated data collection.
- NAEP is the only survey that tests a wide range of academic subjects.

- NAEP achievement measures at fourth and eighth grade fill an important void in measuring the well-being of children during this developmental period.
- NAEP generally incorporates a higher quality and unique design of test instruments, administrative procedures, and scoring methodology, compared to other data sets.

## **Previous Use of NAEP in Research**

As a result of its strengths, NAEP has been used in important educational research by authors such as David Grissmer, Alan Krueger, David Armor, and Christopher Jencks. These studies point to an important comparative advantage of NAEP, namely, that it is the only representative sample data in existence on student achievement in the United States from 1969 to 2002. Thus, research into important historical questions about the effects of changing families, communities, and schools on achievement almost require NAEP data. Without NAEP, it is unlikely that the significant narrowing of the black-white score gap would be known and its possible causes the subject of research.

Similarly, NAEP data have been used to help analyze the effects of differences in resources, systemic reform initiatives, differential opportunity for learning, and other educational policies on state-level academic achievement. Such research has concluded that the rates of improvement in achievement varied markedly across states in the 1990s, and that changing resources or demographics cannot account for the gains in the states with most rapid improvement. This research points to another strong comparative advantage of NAEP. State NAEP is the only survey that includes representative samples of students in many different states, and thus plays a central role in monitoring and explaining the differences in academic achievement and achievement trends across the states. NAEP can identify where positive trends are occurring so researchers can puzzle out causation.

A review of research studies using NAEP (Grissmer, 2003) suggests that only a small proportion of the non-cognitive items collected by the assessment have been utilized in productive research. Also, such research has often supplemented NAEP with data from other sources, such as the U.S. Census and the Common Core of Data (CCD) and Schools and Staffing Survey (SASS), both conducted by the National Center for Education Statistics. However, the National Assessment played such a crucial role in these studies that they could not have been conducted without NAEP data, including some of its non-cognitive variables, principally those on socio-economic status, family structure, and school resources.

On the other hand, NAEP data have also been misused for simplistic and weak research. Many background items on school practice and student behavior have been used in a simplistic way to imply a direct, causal relationship to achievement while ignoring the complex mix of other, more fundamental factors that may well have a stronger impact. NAEP has encouraged such associations by presenting one-way

tabulations in its reports, e.g. average scale score by hours of television watched, type of reading instruction, or books read per week, and these have been disseminated widely to support particular beliefs or public policy positions. Simple, single variable linkages can often be misleading because of the strong correlations between many background variables, particularly with socio-economic status, prior academic achievement, or family background. They should only be included in NAEP reports when there is strong justification based on previous research.

Also, most of the hundreds of background questions in NAEP have never been used for either public reporting or research. Many come from the early 1980s, and would be difficult to justify in a sound research design today.

## Secondary Analysis Grants and District Samples

For ~~many years~~almost two decades NCES ~~has been making~~made awards to education researchers for secondary analyses of NAEP data. These explored a range of topics, often in combination with other data sets. Many of the studies ~~have~~ focused on state-to-state differences in student achievement and the impact of state-level policies, relying on NAEP academic data, a few background questions for SES controls, and much additional information from other sources. The program ~~has been~~was valuable as a means of encouraging the use of NAEP for research, and, in a few cases, notably the Grissmer studies, ~~has~~ had considerable impact. As in any grant program, all findings are the responsibility of the individual researchers, not of the agency making the grant.

~~The program should continue, and now that~~When NCES ~~has become~~became part of the Institute for Education Sciences in 2003, the ~~leadership of the new agency should ensure that these~~separate NAEP analysis grants ~~were absorbed in a more general research program.~~ are aligned with the research priorities of the Institute. We believe this program should increase awards that make use of NAEP data. Efforts should be made through training and other small-scale grants to expand capabilities for using NAEP in productive education research.

In addition, data from the school district NAEP samples in the Trial Urban District Assessment, which started in 2002, ~~will~~ provide important ~~new~~ opportunities for research. NAEP results for school districts can readily be combined with Census data, which include pertinent information on family background and socio-economic status. The school district samples can also be tied to important education policy variables, such as per pupil spending, for which information is available at this level but not for schools.

The primary purpose of NAEP is to provide fair and accurate information on student achievement. Its primary audience is the American public. The Governing Board believes that in serving its purpose and audience well, NAEP can contribute to educational research. It welcomes the interest and efforts of researchers.

## Chapter Seven: Review and Improvement of Non-cognitive Questions

This chapter discusses several mechanisms for the review and improvement of NAEP's non-cognitive questions and for implementation of the NAEP Background Information Framework.

### Independent Validity Studies

Since the early 1990s NAEP has had the benefit of independent outside advice on topics of urgency or interest. These studies have been very helpful to the Governing Board and NCES as they made decisions about the future of the NAEP program. For example, several years ago some research was conducted to examine the possibility of combining the NAEP national and state samples to achieve more efficiency and cost-savings. Starting in 2003 NAEP moved in that direction. The decisions surrounding the change, however, were only as good as the research that bolsters it. The work of the current NAEP Validity Panel, in conjunction with the current NAEP operations contractors, has contributed significantly to making the change possible.

The value of this kind of applied research cannot be overestimated. Neither can the value of the independent nature of this work. The NAEP program is very large and complex and demands a commitment of many resources from the NAEP contractors. NAEP contractors should not be burdened with conducting simultaneous research studies while carrying out the requirements of the operations contracts. There is a precedent for this approach in the current separation of responsibilities for operations and research in separate NAEP contracts. There are two reasons why independent validity studies on topics associated with the non-cognitive framework are recommended. First, there are some non-cognitive variables that will need validation, particularly if those variables are new or are new composite indexes of existing variables. Second, following the approach already established for the NAEP cognitive components, recommendations from such research studies ~~must~~ should be truly independent and free from any conflict of interest.

## Review of the Background Information Framework

~~This~~The background information framework should be reviewed on a periodic basis. ~~The~~ NAEP cognitive frameworks are reviewed every ten years. This policy was adopted at the time of the NAEP redesign in 1996. Reviewing a NAEP framework can result in major revision, minor revision, or even no revision and re-adoption. The framework may be updated as needed. A thorough review of the Background Information Framework should be undertaken ~~Since the background framework is a new undertaking, a required review after five years is appropriate with additional reviews every ten years~~s thereafter.

## References

Allen, N. L., Carlson, J.E., & Zelenak, C.A. (1999). *The NAEP 1996 Technical Report*. Washington, DC: U.S. Government Printing Office.

Armor, D.J. (December 18, 2002). *Comments on NAEP non-cognitive questions*. Available from the National Assessment Governing Board, 800 N. Capitol Street, NW, Washington, DC 20002.

Barton, P.E. (2002, September). *Perspectives on non-cognitive questions in the National Assessment of Educational Progress*. Paper presented at workshop on NAEP background questions. National Assessment Governing Board, Washington, DC. Available at <http://nagb.org>.

Braswell, J.S., Lutkus, A.D., Grigg, W.S., Santapau, S.L., Tay-Lim, B., & Johnson, M. (2001). *The Nation's report card: Mathematics 2000*. Washington, DC: U.S. Government Printing Office.

Coleman, J.S., Campbell, E.Q., Hobson, C.J., McPartland, J., Mood, A.M., Weinfeld, F.D., & York, R.L. (1966). *Equality of Educational Opportunity*. Report of the Equality of Educational Opportunity Commission (EEOC). Washington, DC: U.S. GPO for the National Center for Education Statistics.

Cowan, C.D., Hauser, R.M. et al (2012). *Improving the measurement of socioeconomic status for the National Assessment of Educational Progress: A theoretical foundation*. Washington, DC: National Center for Education Statistics. Available at <http://nces.ed.gov/nationsreportcard/researchcenter>

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Donahue, P.L., Finnegan, R.J., Lutkus, A.D., & Allen, N.L (2001). *The Nation's report card: Reading 2000*. Washington, DC: U.S. Government Printing Office.

Donahue, P.L., Voelkl, K.E., Campbell, J.R., & Mazzeo, J. (1999). *NAEP 1998 reading report card for the nation and the states*. Washington, DC: U.S. Government Printing Office.

Forsyth, R., Hambleton, R.K., Linn, R., Mislevy, R. & Yen, W. (1996). *Design/feasibility team report to National Assessment Governing Board*. Washington, DC: National Assessment Governing Board. Available at <http://nagb.org>.

Greenberg, E., Stancavage, F., Farr, B., & Bohrnstedt, G. (January 2001 draft). *Making comparisons: Using background information from the Nation's Report Card to understand student achievement*. Washington, DC: American Institutes for Research.

Grissmer, D. (2002, September). *Improving NAEP for research and policymaking*.

- Paper presented at workshop on NAEP background questions. National Assessment Governing Board, Washington, DC. Available at <http://nagb.org>.
- Grissmer, D. (2003, January). *Utilizing NAEP for educational research*. Paper prepared for National Assessment Governing Board, Washington, DC. Available at <http://nagb.org>.
- Mayer, D.P., Mullens, J.E., & Moore, M.T. (2001). *Monitoring School Quality: An indicators report*. Washington, DC: U.S. Government Printing Office.
- Mullis, I.V.S. (2002, September). *Non-cognitive questions in TIMSS and PIRLS: An overview*. Paper presented at workshop on NAEP background questions. National Assessment Governing Board, Washington, DC. Available at <http://nagb.org>.
- National Assessment Governing Board. (1996, August). *Policy statement on redesigning the National Assessment of Educational Progress*. Washington, DC: Author.
- National Assessment Governing Board. (2002, May). *Policy statement on collection and reporting of non-cognitive data by the National Assessment of Educational Progress*. Washington, DC: Author.
- Pellegrino, J.W., Jones, L.R. & Mitchell, K.J. (Eds.) (1999). *Grading the nation's report card: Evaluating NAEP and transforming the assessment of educational progress*. Washington, DC: National Academy Press.
- Podgursky, M. (2002, September). *NAEP non-cognitive questions: What can we learn from NAEP about the effect of schools and teachers on student achievement?* Paper presented at workshop on NAEP background questions. National Assessment Governing Board, Washington, DC. Available at <http://nagb.org>.
- P.L. 107-110 No Child Left Behind Act of 2001. Section 602. Available at <http://nagb.org>.
- Reckase, M.D. (2002, September). *Contributions of non-cognitive questions to improving the precision of NAEP results*. Paper presented at workshop on NAEP background questions. National Assessment Governing Board, Washington, DC. Available at <http://nagb.org>.
- Reese, C.M., Miller, K.E., Mazzeo, J., & Dossey, J.A. (1997). *NAEP 1996 mathematics report card for the nation and the states*. Washington, DC: U.S. Government Printing Office.
- Rust, K. (September 26, 2002). *Technical memo: Sample design for 2003 NAEP*. Available from NAGB Board Meeting briefing book, November 14-16, 2002. Washington, DC. National Assessment Governing Board.

Smith, M.S., Chudowsky, N., Ginsburg, A., Hauser, R.M., Jennings, J., and Lewis, S. (2012). *NAEP Background Questions: An Underused National Resource. A report to the National Assessment Governing Board by the Expert Panel on Strengthening NAEP Background Questions.* Washington, DC. National Assessment Governing Board. Available at <http://nagb.org>.

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Walberg, H.J. (2002, September). *The National Assessment's most useful non-cognitive items.* Paper presented at workshop on NAEP background questions. National Assessment Governing Board, Washington, DC. Available at <http://nagb.org>.



## Appendix



Adopted May 18, 2002

### National Assessment Governing Board

#### Policy Statement on Collection and Reporting of Background Data by the National Assessment of Educational Progress

##### INTRODUCTION

As the Nation's Report Card, the National Assessment of Educational Progress (NAEP) is an on-going, Congressionally-authorized program to collect data through surveys on the academic knowledge and skills of American students. Its primary goal is to report fair and accurate information on student achievement in reading, mathematics, and other subjects taught in elementary and secondary schools. This information is to be made available in a clear and timely manner to members of the public, policymakers, and educators throughout the country.

Since it began in 1969-70, NAEP has administered, in addition to cognitive questions, background questionnaires that provide information for reporting categories and collect non-cognitive data on students, their family background, teachers, and schools. These have enriched reporting of the National Assessment and increased the precision of NAEP results. The background data have also been used in secondary analyses. However, because NAEP tests a cross-section of students at a particular time with no follow-up of the students tested, the assessment can only show correlations or associations rather than causal relationships between background factors and achievement.

By statute (P.L. 107-110), the National Assessment shall include, "whenever feasible, information collected, cross-tabulated, compared, and reported by race, ethnicity, socioeconomic status, gender, disability, and limited English proficiency." The statute provides that NAEP may "not evaluate or assess personal or family beliefs and attitudes" and may "only collect information that is directly related to the appraisal of academic achievement and to the fair and accurate presentation of such information." These provisions are intended to prevent intrusive, inappropriate, or unnecessary questions being asked about students and their families.

The law requires that the Governing Board take steps to ensure that all NAEP questions are “free from racial, cultural, gender, or regional bias, and are secular, neutral, and non-ideological.” However, a House-Senate Conference report, accompanying the legislation, says the law does not preclude the use of “non-intrusive, non-cognitive questions,” with a direct relationship to academic achievement.

The National Assessment is conducted by the Commissioner of Education Statistics under the policy guidance of the National Assessment Governing Board. The Board’s specific areas of responsibility include: (1) assessment objectives and test specifications; (2) the methodology of the assessment; (3) guidelines for reporting and disseminating results; and (4) “appropriate actions needed to improve the form, content, use, and reporting” of the National Assessment. Under the statute, the Board has “final authority” on the appropriateness of all NAEP items—both cognitive and non-cognitive.

To carry out these responsibilities, the National Assessment Governing Board hereby adopts guiding principles, policies, and procedures for the collection and reporting of background data by the National Assessment of Educational Progress.

## **GUIDING PRINCIPLES**

1. Background data on students, teachers, and schools is needed to fulfill the statutory requirement that NAEP include information, whenever feasible, disaggregated by race or ethnicity, socioeconomic status, gender, disability, and limited English proficiency. In addition, background data is collected to enrich the reporting of NAEP results by examining factors related to academic achievement. However, the collection of such data should be limited, and the burden on respondents kept to a minimum. It must always be considered in light of NAEP’s primary purpose: providing sound, timely information on the academic achievement of American students.
2. All background questions must be directly related to academic achievement or to the fair and accurate presentation of achievement results.
3. Issues of cost, benefit, appropriateness, and burden shall be carefully considered in determining the background questions to be asked and the samples to which they shall be administered.
4. In accordance with law, questions shall be non-intrusive and free from bias, and must be secular, neutral, and non-ideological.
5. No personally identifiable information shall be included in NAEP reports or data releases.
6. Decisions on the retention or addition of background items shall draw on technical studies on the reliability and validity of current and proposed

- questions and on the contribution such items make to the precision of NAEP results.
7. Consideration should be given to obtaining background information from non-NAEP sources and to avoiding duplication with other federal surveys.
  8. Questionnaires should be revised to keep background questions timely and related to academic achievement. Those questions showing little change over time and/or a stable relationship to achievement should be deleted or asked less frequently and to limited samples, unless required to assure the precision of NAEP results.
  9. Questions should not address personal feelings and attitudes.
  10. Since security considerations do not apply, background questionnaires shall be readily available to the public.
  11. Interpretation of results shall be limited in official NAEP reports and must be strongly supported by NAEP data. Because of the survey nature of the assessment, reports may show correlations and generate hypotheses, but may not state conclusions as to cause and effect relationships.
  12. Background questions for NAEP assessments shall be prepared in accordance with frameworks and specifications adopted by the Governing Board.
  13. The Governing Board shall review and approve all background items before they are administered in NAEP surveys or pilot and field tests.

## **POLICIES AND PROCEDURES**

### **1. Framework and Specifications**

The Governing Board will adopt a general framework for background questionnaires and specifications for the questions on selected topics and in specific subject areas.

Since this is a new area of responsibility for the Board, the process of developing a framework for background questions and specifications will begin with commissioned papers on relevant issues, such as the reliability and validity of current background questions, their contribution to improving the precision of NAEP results, their value and limitations for educational research, and changes that may be needed in response to the No Child Left Behind legislation. Following consideration of these issues, the Board will define the scope of

background questionnaires and adopt a process for preparing a framework and specifications. This work will include the active participation of teachers, education researchers, state and local school administrators, assessment specialists, parents of children in elementary and secondary schools, and interested members of the public.

## **2. Background Question Development**

In preparing background questions, the National Center for Education Statistics shall follow adopted frameworks and specifications, and consider the review criteria adopted by the Governing Board. NCES may use cognitive laboratories of students, teachers, and school officials to help determine the clarity and burden of proposed questions. Ad hoc advisory committees may also be established, comprised of teachers, parents, technical experts, and others interested in NAEP. Steps shall be taken to determine the reliability of questions used.

## **3. Governing Board Review and Approval of Background Questions**

Background questions for all NAEP pilot tests, field tests, and operational use shall be reviewed and approved by the Governing Board. The category of respondents, e.g. students, schools, and grade level, shall clearly be designated, as will the NAEP samples, e.g. national, state, or district, in which the questions will be asked.

For each questionnaire there shall be an explanation of its intended use in NAEP reporting and analysis and of the hypothesized relationships between the background items and student achievement that demonstrates the need to know such information. Technical data shall be presented on the reliability and validity of questions and, if applicable, on their contribution to improving the precision of NAEP results. The Board will use the explanations and data presented along with the review criteria in this policy statement in determining the appropriateness of background questions.

The Reporting and Dissemination Committee will have primary responsibility for the review and approval of background questions. The Assessment Development Committee will participate in the approval of questions relating to specific subject-matter assessments. Ad hoc committees of Board members may be established by the Board Chairman for background question review. Questions may also be reviewed by external advisors, including teachers, parents, and technical experts. Recommendations on background questionnaires shall be subject to final approval by the full Governing Board.

#### **4. Criteria for Governing Board Review**

The following criteria for review and approval of background questions are based on the most recent revision of the authorizing statute of the National Assessment of Educational Progress (P.L. 107-110) and the Guiding Principles of this policy statement:

- A. Background information is needed to fulfill the statutory requirement that NAEP report and analyze achievement data, whenever feasible, disaggregated by race or ethnicity, gender, socio-economic status, disability, and limited English proficiency. Non-cognitive data may enrich the reporting and analysis of academic results, but the collection of such data should be limited and the burden on respondents kept to a minimum.
- B. All background questions must be related to the primary purpose of NAEP: the fair and accurate presentation of academic achievement results.
- C. Any questions on conditions beyond the school must be non-intrusive and focused on academic achievement and related factors.
- D. Questions shall be free from racial, cultural, gender, or regional bias.
- E. All questions must be secular, neutral, and non-ideological. Definitions of these terms, accompanied by clarifying examples, are presented in Appendix A, as adopted in the Governing Board Policy on NAEP Item Development and Review.
- F. NAEP must not evaluate or assess personal feelings or family beliefs and attitudes unless such questions are non-intrusive and have a demonstrated relationship to academic achievement.
- G. Issues of cost, benefit, appropriateness, and burden shall be carefully considered in determining which questions to include in background questionnaires. These factors must also be considered in determining the frequency with which various questions shall be administered and whether they shall be included in both national and state samples.
- H. Background questions that do not differentiate between students or have shown little change over time should be deleted or asked less frequently and to limited samples.

#### **5. Public Access to Background Questions**

Since security considerations do not apply, all background questionnaires shall be readily available to parents, teachers, state and local officials, and interested members of the public. Such questionnaires shall be available before

field tests and operational assessments or at any other time members of the public wish to obtain them. Background questions in operational use shall be posted on the Internet prior to each assessment, accompanied by explanations and rationales.

## **6. Reporting of Background Information**

The presentation of background data in official NAEP reports shall be straightforward and impartial. Because of the survey nature of the assessment, reports may show correlations and generate hypotheses, but may not state conclusions as to cause and effect relationships. Any composite indices including demographic and socioeconomic factors shall be presented to the Board for approval before use as reporting categories in NAEP data releases and reports.

Background data should be available for extensive secondary analyses by scholars and researchers, who are responsible for conclusions reached. Responses to background questions shall be presented and tabulated on the Internet, although, if necessary, posting may be delayed for a brief period after release of the principal NAEP results.

## APPENDIX A: Definitions of Secular, Neutral, and Non-ideological Item Review Criteria

*From Governing Board Policy on NAEP Item Development and Review—  
5/18/02*

Items shall be secular, neutral, and non-ideological. Neither NAEP nor its questions shall advocate a particular religious belief or political stance. Where appropriate, NAEP questions may deal with religious and political issues in a fair and objective way. The following definitions shall apply to the review of all NAEP test questions, reading passages, and supplementary materials used in the assessment:

**Secular** — NAEP questions will not contain language that advocates or opposes any particular religious views or beliefs, nor will items compare one religion unfavorably to another. However, items may contain references to religions, religious symbolism, or members of religious groups where appropriate.

Examples: The following phrases would be acceptable: “shaped like a Christmas tree,” “religious tolerance is one of the key aspects of a free society,” “Dr. Martin Luther King, Jr. was a Baptist minister,” or “Hinduism is the predominant religion in India.”

**Neutral and Non-ideological** — Items will not advocate for a particular political party or partisan issue, for any specific legislative or electoral result, or for a single perspective on a controversial issue. An item may ask students to explain both sides of a debate, or it may ask them to analyze an issue, or to explain the arguments of proponents or opponents, without requiring students to endorse personally the position they are describing. Item writers should have the flexibility to develop questions that measure important knowledge and skills without requiring both pro and con responses to every item.

Examples: Students may be asked to compare and contrast positions on states rights, based on excerpts from speeches by X and Y; to analyze the themes of Franklin D. Roosevelt’s first and second inaugural addresses; to identify the purpose of the Monroe Doctrine; or to select a position on the issue of suburban growth and cite evidence to support this position. Or, students may be asked to provide arguments either for or against Woodrow Wilson’s decision to enter World War I. A NAEP question could ask students to summarize the dissenting opinion in a landmark Supreme Court case.

The criteria of neutral and non-ideological also pertain to decisions about the pool of test questions in a subject area, taken as a whole. The Board shall review the entire item pool for a subject area to ensure that it is balanced in terms of the perspectives and issues presented.

## Acknowledgements

The Ad Hoc Committee on NAEP Background Questions of the National Assessment Governing Board was chaired by Board member John H. Stevens. He also serves as chairman of the Board's standing Committee on Reporting and Dissemination, which has responsibility for reviewing all core NAEP background questionnaires and making recommendations on them to the full Board.

The Ad Hoc Committee also included members of the Board's two other standing Committees—Assessment Development and Standards, Design, and Methodology—with a wide range of backgrounds and perspectives: Amanda Avallone, Dwight Evans, Thomas Fisher, Sheila Ford, Jo Ann Pottorff, and Sister Lourdes Sheehan. The Board Chairman, Darwin Winick, participated in many of the lively discussions that marked the Committee's deliberations.

Among the many discussants and presenters at the workshop and public forum, we wish to recognize the care and thoughtfulness of Robert Mislevy, of the University of Maryland, and Harold Wenglinsky, of Baruch College of the City University of New York. The comments submitted by Sandra Feldman, president of the American Federation of Teachers, were particularly perceptive and helpful. This project also benefited greatly from the continuing advice and insight of Paul Barton and David Grissmer, both of whom have used NAEP data for many years to understand and explain American education to its public.





## **Policy Statement on NAEP Background Questions and the Use of Contextual Data in NAEP Reporting**

### **INTRODUCTION**

By statute, the purpose of the National Assessment of Educational Progress is to provide a “fair and accurate” measure of student achievement and achievement trends. Academic or cognitive questions are its primary focus; the American public is its primary audience. However, in addition to reporting on what American students know and can do, NAEP has collected data for more than 40 years that provide a context for reporting and interpreting achievement results. According to the statute, such factors, both in and out of school, must be “directly related to the appraisal of academic achievement.”

In each assessment NAEP administers background questionnaires for students, their teachers, and schools. The questionnaires deal with educational experiences and other factors, such as teacher training or out-of-school learning activities, that are related to academic achievement. Data on several hundred background or noncognitive variables are available on the Internet through the NAEP Data Explorer. However, for more than a decade, little use has been made of this information in NAEP reports. The data have received minimal attention and had little impact despite the considerable efforts expended in developing and approving questionnaires and collecting and tabulating responses.

In October 2011 the National Assessment Governing Board convened an expert panel to recommend how to make better use of existing NAEP background questions and to propose an analytic agenda for additional topics and questions that would be useful in developing education policy and of value to the public. The panel report, entitled, *NAEP Background Questions: An Underused National Resource*, was presented to the Board in March 2012 by Marshall Smith, former U.S. Under Secretary of Education, who chaired the six-member panel.

Many of the panel recommendations build on the *Background Information Framework for the National Assessment of Educational Progress*, adopted by the Governing Board after it received final authority from Congress over non-cognitive items on the assessment. The framework was adopted in 2003, but has not been fully implemented.

The following policies are based on recommendations by the expert panel. The Board has also taken into consideration a wide range of public comment and the analysis provided by the National Center for Education Statistics.

It is important to understand that the National Assessment is not designed to show cause-and-effect relationships. Its data should not be used to “prove” what schools should do. But, as the *Background Information Framework* declares, NAEP’s “descriptions of the educational circumstances of students..., considered in light of research from other sources, may provide important information for public discussion and policy action.” The Board believes the National Assessment should improve upon its efforts to collect contextual information and present it clearly to the public, which will add to NAEP’s value to the nation.

## **POLICY PRINCIPLES**

1. NAEP reporting should be enriched by greater use of contextual data derived from background or non-cognitive questions asked of students, teachers, and schools. Such data will be used both in regular Report Cards and in special focused reports. **[New Foreword, pp. 5 and 8]**
2. Reporting of background data will describe patterns and trends, including the educational experiences of different groups of students. Care should be taken not to suggest causation. **[Chapter 5, pp. 37-39; also pp. 5 and 8]**
3. Detailed frameworks will be published with the theoretical rationale and research evidence that support the selection of topics and questions in background questionnaires and their connection to student achievement. Such frameworks should be updated for each assessment cycle and provide the basis for new topics and questions. **[p. 12]**
4. An ad hoc committee of the Board will be established for one year to monitor implementation of this resolution, review the *NAEP Background Information Framework*, and recommend a permanent arrangement for Board consideration of background questions and the reporting of contextual data in NAEP.

## **IMPLEMENTATION GUIDELINES**

### ***For Questions and Questionnaires***

1. Clusters of questions will be developed on important topics of continuing interest, such as student motivation and control over the environment, use of technology, and out-of-school learning, which could be used regularly or rotated across assessment cycles. **[pp. 12 and 30]**
2. Modules will be prepared for special one-time studies to provide descriptive information on issues of current policy interest. **[p.29]**

3. A thorough review will be conducted to eliminate duplicative or low-priority questions. Unproductive topics and questions will be dropped. **[p. 12]**
4. NAEP will include background questions from international assessments, such as PISA and TIMSS, to obtain direct comparisons of states and TUDA districts to educational practices in other countries. **[pp. 10 and 23]**
5. Because of the value of preserving trends, consistent wording of questions should be maintained on topics of continuing interest. Changes in wording must be justified. However, as practices and circumstances change, new questions will be introduced in a timely manner to gather data on topics of current interest. **[pp. 10 and 23]**
6. The development and use of improved measures of socio-economic status (SES) will be accelerated, including further exploration of an SES index for NAEP reporting. **[pp. 11 and 27]**

#### ***For Data Collection***

7. The maximum time for students to answer the background questionnaire will be increased from 10 to 15 minutes on new computer-based assessments. Consideration should be given to a similar increase in paper-and-pencil assessments. **[pp. 12 and 35]**
8. Whenever feasible, assessment samples should be divided (spiral sampling) and background questions rotated in different years in order to cover more topics without increasing respondent burden. These practices will be initiated in the assessments of reading and mathematics, which are conducted frequently, and considered for other subject areas if the frequency of testing permits. **[pp. 12 and 30]**

#### ***For Reporting***

9. Special focused reports with data through the 2013 assessment will be issued on the following topics: private schools, charter schools, gender gaps, and black male students. Reports shall include significant contextual information as well as cognitive results. Advisory committees, composed of a range of knowledgeable persons, may be appointed to provide input on reporting issues. **[p. 37]**
10. Exploratory analyses will be carried out to determine if existing background questions may form the basis for additional focused reports. Such reports may be issued by the Governing Board as well as by the National Center for Education Statistics.
11. The NAEP Data Explorer should be further improved to make data more accessible to general, non-specialist users. Tables and very simple-to-construct charts will be prepared to present data on important topics of wide public interest. Additional means of disseminating information, using new technology such as simple apps that would allow parents, teachers, and others to access background and achievement data, will be explored. **[p. 39]**

## **NAEP Background Information Framework: Proposed New Foreword - May 2013**

In October 2011, eight years after adoption of the NAEP Background Information Framework, the National Assessment Governing Board convened an expert panel to study the NAEP background questions and recommend possible changes. The six-member group was chaired by Marshall S. Smith, former dean of the Graduate School of Education at Stanford University and a former U.S. Under Secretary of Education. The panel's report, presented to the Board in March 2012, called the background questions "a potentially important but largely underused national resource." (Smith, et al., *NAEP Background Questions: An Underused National Resource. A Report to the National Assessment Governing Board by the Expert Panel on Strengthening the NAEP Background Questions*)

The report described the information gathered through background questionnaires as "a rich collection of student, teacher and school responses...that can help in understanding the context for NAEP achievement results and give insights into how to improve them." But it said over the past decade the questionnaires had been cut back and little used in NAEP reports. It urged NAEP to "restore and improve upon" its practice of the early 1990s by "making much greater use of background data, but do so in a more sound and research-supported way."

With "proper attention," the expert panel declared, NAEP's contextual data "could provide rich insights into a wide range of important issues about the nature and quality of American primary and secondary education."

After gathering public comment, the Governing Board adopted a Policy Statement on NAEP Background Questions and the Use of Contextual Data in NAEP Reporting. The policy, approved in August 2012, was based on recommendations by the expert panel and provided for an important change in emphasis:

- NAEP reporting should make greater use of contextual data in both regular Report Cards and special focused reports.
- The reporting of background data will describe patterns and trends, including the educational experiences of different groups of students. Such information will enrich NAEP reporting, but care should be taken not to suggest causation.
- Detailed frameworks will be published with the theoretical rationale and research evidence that support the selection of topics and questions and their connection to student achievement.
- Modules will be prepared for special studies to provide descriptive information on issues of current policy interest.

- NAEP will include contextual questions from international assessments to obtain direct comparisons of states and TUDA districts with educational practices in other countries.

The Board resolution included a set of implementation guidelines. It also established an ad hoc committee, which reviewed the framework.

The committee believes the approach adopted in the 2003 framework remains sound, as do many of its detailed provisions, but some updating is needed to reflect changes over the past decade and the August 2012 policy statement. The revisions are based largely on the 2012 resolution and are incorporated in the text that follows.

As NAEP makes the transition from paper-and-pencil to a computer-delivered assessment, the Board hopes the new technology will help make possible the range of topics and flexibility in sampling envisioned a decade ago while limiting the burden on students, teachers, and schools.

## **NOTE TO Ad Hoc Committee on Background Information on Terminology for Background Questions**

The Committee may wish to discuss the issue of whether to continue to employ the term “background questions” in referring to NAEP’s non-cognitive or contextual data questionnaires. NAEP has used “background questions” without any significant problems for about 40 years but the term may be seen by some to denote the intrusive personal questions in a “background investigation.” With this concern in mind NCES has avoided using the word “background” in recent materials for students, teachers, and schools. Instead it simply refers to these non-cognitive surveys as “student questionnaires” or “teacher questionnaires” or “school questionnaires.” However, articles on the NAEP web site use the terms “background data” and “background items” as well as “non-cognitive” items and questionnaires.

By law, NAEP is authorized only to collect background information that is “directly related to the appraisal of academic achievement, and to the fair and accurate presentation” of assessment results. NAEP must not evaluate or assess “personal or family beliefs and attitudes.” The assessment may not disclose “personally identifiable information” and cannot report data on individual students or schools. Under Board policy, adopted in 2002 and retained in the 2003 framework and new update, any questions on student attitudes toward school or various academic subjects, such as reading or science, must be “non-intrusive and have a demonstrated relationship to academic achievement.”

In the major international academic surveys—TIMSS, PIRLS, and PISA—the non-cognitive questionnaires are referred to in different documents as either background, context, or contextual questionnaires or simply as questionnaires. PISA, for example, publishes what it calls a Questionnaire Framework, which explains in its introduction that the testing program collects “background information on families, students, and schools that might be linked to [academic] achievement.” TIMSS publishes a Contextual Framework, which “provides the foundation for the information that will be collected via the TIMSS background questionnaires.”

The Ad Hoc Committee may wish to make a recommendation to the full Governing Board about which terminology NAEP should use.

## **National Assessment Governing Board**

### **Staff Recommendation on How to Organize Board Consideration of Background Questions and the Use of Contextual Data in NAEP Reports**

**July 8, 2013**

Since 2002 the law authorizing the National Assessment of Educational Progress has granted “final authority” on the appropriateness of all assessment items to the National Assessment Governing Board. The Board has delegated responsibility for reviewing and approving cognitive questions to its Assessment Development Committee, which also is in charge of developing test frameworks. However, consideration of non-cognitive or background questions has been divided.

The Assessment Development Committee (ADC) reviews the largest number, which are related to the specific subjects being assessed and based on recommendations in the assessment frameworks. A second committee, Reporting and Dissemination, reviews the core background questions asked of students, teachers, and schools in all NAEP subjects. These deal with the reporting categories of race, socio-economic status, limited English proficiency, and disability. They also concern a range of factors that provide a context for results and may affect academic achievement, such as student mobility, absenteeism, school safety, and course offerings and governance in regular and charter schools. The Reporting and Dissemination Committee has also overseen the general planning and procedures for developing background questions by the National Center for Education Statistics (NCES) and its contractors.

The Expert Panel on Strengthening NAEP Background Questions, in its report to the Board in February 2012, said this divided arrangement was unsatisfactory. It said coordination was poor and the background questions were of “secondary interest” to both committees. The panel suggested establishing a “unified standing committee” to monitor all aspects of background question development.

Board staff acknowledges the concerns that led to the expert panel recommendation but believes establishing a fifth standing committee of Board members would be unwieldy and unproductive. Instead, the staff believes there should be much greater coordination of the work on background questions by the ADC and Reporting committees. The committees should hold a joint meeting at least once a year on important policy issues and also to ensure that background questionnaires are of reasonable length and that the data obtained are used productively. Joint meetings on specific issues might be held more frequently and members of each committee should participate occasionally in item reviews conducted by the other. Also, members of the Committee on Standards, Design and Methodology (COSDAM) may participate in the joint meetings when their technical expertise is relevant to the issues discussed.

The Board policy, adopted in August 2012, states clearly that greater use should be made of contextual data as a means of enriching National Assessment reports and adding to the value of NAEP for public. This should enhance the importance of background or context questionnaires in the work of the two Board committees. The greater coordination between them should ensure against overlap and lead to more effective monitoring of questionnaire development and reporting.

## **NOTE TO Ad Hoc Committee on Background Information on Using NAEP Data for Key Education Indicators**

As authorized by the Policy Statement on Background Data last year, two Governing Board consultants are preparing an exploratory analysis on using NAEP data for key education indicators. The purpose of this project is to illustrate the usefulness of NAEP in developing a limited number of indicators to represent crucial components of the education system and their interrelationships. The key idea is that instead of starting with background variables and looking for education issues they might address, there should first be a framework of important education policy issues and objectives that can be used to identify relevant background variables.

This work is being undertaken by Alan Ginsburg, former Director of Policy and Program Studies at the U.S. Department of Education, who has completed several other exploratory analyses for the Board, and Marshall S. Smith, former Dean of the Stanford University Graduate School of Education, who chaired the Board's Expert Panel on Strengthening NAEP Background Questions, which presented its report in February 2012.

As explained in the statement of work for this project, an education indicator is an individual or composite statistic that measures progress toward an educational objective and is useful in a policy context. Such objectives are concerned not only with student performance but with the quality, equity, and efficiency of the education system in supporting academic achievement. One possible indicator might be the percentage of 8<sup>th</sup> grade science students with a teacher who majored or minored in science in college. Others might be the extent of severe absenteeism or the use of technology in science instruction.

At this meeting Alan Ginsburg will discuss the indicator project and present preliminary results. Additional information will be distributed under separate cover before the meeting.