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# Committee on Standards, Design and Methodology

May 25, 2023

10:00 am – 11:30 am ET

[Zoom Link](#)



## AGENDA

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**10:00 – 10:10 am**    **Welcome and Updates**

*Suzanne Lane, Chair*

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**10:10 – 10:30 am**    **Follow-up Discussion: NAEP State-Level  
Sample Sizes and Effect Sizes**

*Suzanne Lane*

Attachment A

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**10:30 – 11:30 am**    **Reaction to Achievement Levels  
Communications Plan**

*Suzanne Lane*

*Carey Wright, Vice Chair*

Attachment B

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## COSDAM Discussion on NAEP State Sample Sizes and Effect Sizes May 25, 2023

The purposes of this session are to: (1) revisit the original concerns regarding state-level sample sizes that led to the November full Board and March COSDAM discussions, (2) describe COSDAM's current stance on addressing sample size concerns based on previous discussions and recent investigations, and (3) determine if further consideration is warranted regarding potential use of effect sizes more generally for NAEP reporting.

By way of background, a November 2022 plenary session highlighted recent reduced state-level sample sizes on NAEP Reading and Mathematics assessments. NCES shared that the reduction was driven by budgetary needs and informed by technical investigations. They also shared that there were two types of notable impacts of reduced state-level sample sizes to 2022 reporting: a) a small number of subgroups for some states that had been reported in previous administrations could not be reported in 2022, and b) the standard errors increased, requiring larger year-to-year differences to be identified as statistically significant compared to prior years.

The March 2023 COSDAM meeting included a follow-up discussion on ideas brainstormed by Board members to address the decrease in sample size and decide which warrant further consideration. The discussion resulted in two key conclusions: members encourage the National Center for Education Statistics (NCES) to (a) identify how to budget for increased state-level sample sizes in the future to match pre-2022 levels, and (b) investigate whether effect sizes may be used in addition to significance testing to capture meaningful differences that statistical significance testing may miss due to smaller sample sizes.

Following the March 2023 session, Board staff, NCES staff, and the COSDAM chair and co-chair investigated the suggestion to use effect sizes to address decreased state-level sample sizes. The [NAEP standards](#) specify that effect sizes may be considered for statistically significant results:

***GUIDELINE 5-1-4H:*** *When the results of an analysis are **statistically significant**, it is useful to consider the substantive interpretation of the size of the effect. For this purpose, especially in instances where the units of measurement are not easily interpretable, the observed difference can be converted into an effect size to allow the interpretation of the size of the difference.*

Thus, using effect sizes to address the concern that decreased sample sizes may impact our ability to detect meaningful differences when statistical significance is not found is not in line with NAEP standards. However, outside the scope of the sample size concern, COSDAM may consider whether effect sizes should be considered for NAEP reporting in general to provide additional meaning for statistically significant findings.

## **COSDAM Discussion of Achievement Level Communications: Next Steps May 25, 2023**

In this session, Suzanne Lane (Chair) and Carey Wright (Vice Chair) will present a plan for developing materials for improved achievement levels communications, and Committee for Standards, Design and Methodology (COSDAM) members will have a chance to react.

### **Background**

COSDAM members have had recent discussions surrounding improved communications of the NAEP achievement levels to address activities identified in the [Achievement Levels Work Plan](#), adopted by the Board in 2020. The work plan was developed in response to recommendations 4 – 6 from the [2016 National Academies of Sciences, Engineering, and Medicine \(NASEM\) evaluation of NAEP achievement levels](#).

COSDAM members previously brainstormed stakeholders to focus achievement level communications efforts. Though COSDAM members agree that all stakeholders are important, they determined it important to first focus on those who are most likely to consume, use, and disseminate the information. They identified the following stakeholder groups as the most immediate priority: state school chiefs/superintendents, state testing directors, district superintendents, business leaders, and journalists. As an example, journalists were identified as a more immediate priority than a teacher or parent, because a teacher or parent is likely to read about achievement levels through information disseminated by a journalist.

COSDAM has also discussed the information they believe is most important to relay about achievement levels to stakeholders. This includes basic information including the definition of what NAEP is and what achievement levels are (e.g., the overarching policy definitions). COSDAM members expressed communications documents could include examples from the recently developed Reporting Achievement Level Descriptions (ALDs) and released NAEP items or examples from NAEP item maps (brief descriptions of NAEP items linked to the achievement scale) to illustrate what performance at each achievement level means. COSDAM members also stressed the importance of including proper and improper interpretations and uses of achievement level data. Presenting this information succinctly may require multiple documents geared towards specific stakeholders.

In March 2023 COSDAM sought feedback from the Reporting and Dissemination (R&D) committee to gain insight from a communications and dissemination perspective on developing effective materials. They offered the following recommendations for successful communications:

- Be brief – those who are interested in learning more can refer to supplemental documentation (e.g., a report summarizing validity information, full set of Reporting ALDs)
- Provide a meaningful story for journalists (e.g., though inaccurate, journalists sometimes refer to NAEP Proficient as “on grade-level” because it is simple. We should seek to provide them a simple, accurate interpretation that can be easily pulled and used in reporting.)

- Include information about interpretations and uses of achievement levels in media preparation meetings held in advance of NAEP releases
- Add state governors to the list of stakeholders for immediate priority
- Involve R&D members throughout the process

**Supporting Documentation**

The Board's communications contractors have recently developed documents to present the Reporting ALDs that may be a useful starting point for developing broader achievement level informational documents. Reporting ALDs that describe what students performing at each achievement level likely know and can do are currently available for Reading, Mathematics, Science, U.S. History, and Civics. A [Reporting ALD communications document](#) was developed in advance of the November 2022 Mathematics and Reading data release, and a similar document was produced in advance of the May 2023 U.S. History and Civics release (see Attachment B-2). The U.S. History and Civics document incorporates sample items and item map information to go along with statements from the Reporting ALDs.



## The Nation's Report Card: U.S. History and Civics Achievement Levels

The National Assessment of Educational Progress (NAEP), or The Nation's Report Card, measures eighth graders' understanding of U.S. history and civics.

The U.S. history assessment measures students' knowledge, perspective, analysis, and interpretation of U.S. history. The civics assessment measures students' knowledge and skills in identifying, explaining, analyzing, and defining civic knowledge.



### NAEP Achievement Levels

- Students performing at the **NAEP Basic** level have partial mastery of prerequisite knowledge and skills that are fundamental for performance at the *NAEP Proficient* level.
- Students performing at the **NAEP Proficient<sup>1</sup>** level have demonstrated competency over challenging material, including subject-matter knowledge, application of such knowledge to real-world situations, and analytical skills.
- Students performing at the **NAEP Advanced** level have shown superior performance.

<sup>1</sup> *NAEP Proficient* does not signify being on grade level, like state assessments, which often align to state grade-level expectations, and NAEP achievement levels are distinct from those used on state assessments.

Examples of skills and knowledge most eighth-grade students performing at each achievement level demonstrate in **U.S. history and civics** are below.

## U.S. History



### NAEP Basic

Identify simple historical concepts in primary or secondary sources.<sup>2</sup>

#### Example of Knowledge or Skill<sup>3</sup>

Understand the historical context of the Gettysburg Address, for example, that soldiers were killed in a Civil War battle.



### NAEP Proficient

Read and interpret primary and secondary sources to make inferences and draw conclusions.

#### Example of Knowledge or Skill

Evaluate arguments for or against women's right to vote.



### NAEP Advanced

Analyze primary and secondary sources to contextualize and explain historical ideas and events.

#### Example of Knowledge or Skill

Interpret, after reading an excerpt of the Gettysburg Address, what President Lincoln thought was at stake.

## U.S HISTORY EXAMPLE



Example of a U.S. history assessment question<sup>4</sup> that most students scoring at *NAEP Proficient* can answer:

[The cartoon<sup>5</sup> depicted] is about women's fight for the right to vote. The message of the cartoon is that women should not vote because if women voted:

- A. Men would lose their jobs
- B. People would have too many children
- C. They would not pay enough attention to their families**
- D. They would have to go fight in wars

## CIVICS EXAMPLE

Example of a civics assessment question that most students scoring at *NAEP Proficient* can answer:

What do all constitutional governments have?

- A. Legal limits on political power**
- B. A president as the head of government
- C. A bill of rights
- D. Separation of church and state

## Civics



### NAEP Basic

Describe the structure and function of government.

#### Example of Knowledge or Skill

Explain one way Congress fulfills a constitutional responsibility.



### NAEP Proficient

Identify separation of powers and checks and balances.

#### Example of Knowledge or Skill

Understand the components of constitutional governments.



### NAEP Advanced

Analyze the functions of the three branches of government.

#### Example of Knowledge or Skill

Infer appropriate actions that citizens can use to influence government.

<sup>2</sup>These are excerpts from the Reporting Achievement Level Descriptions, which summarize the knowledge and skills measured by multiple related items.

<sup>3</sup>The knowledge and skills are taken from previously used items that most students performing at the associated achievement level answered correctly.

<sup>4</sup>Questions included are released questions from previous assessments and are available at [www.nationsreportcard.gov](http://www.nationsreportcard.gov).

<sup>5</sup>Courtesy of the Museum of American Political Life. University of Hartford, Hartford, CT.