

# Background and Recommendation on the NAEP Technology and Engineering Literacy (TEL) Assessment

As NCES prepares the Request for Proposals (RFP) for the next five-year contract for the NAEP program, the National Assessment Governing Board (Board) has begun reviewing the [NAEP Assessment Schedule](#). As part of that review, Board staff and NCES reviewed the TEL Assessment and have prepared a joint staff recommendation for consideration at the Quarterly Board meeting in August 2023.

## Background

The TEL assessment was designed to assesses students' abilities to apply technology and engineering skills to real-life situations, predominantly using interactive scenario- based tasks. A brief history follows.

- **2006:** The National Academy of Engineering and the National Academy of Sciences recommended that the Governing Board develop a framework for a NAEP assessment in technology and engineering literacy.
- **2010:** The TEL Framework was approved by Board with the intention to assess at one grade level (grade 8) to test the feasibility of the new assessment and whether the data could be reported.
- **2014:** TEL was first administered, to approximately 20,000 students in grade 8. The Board expressed desire to expand TEL from grade 8, to add grade 12 in 2018 and grade 4 in 2022 but the budget did not permit such an expansion.
- **2018:** Approximately 15,400 grade 8 students took TEL.
- **2021:** The Governing Board voted to cancel the 2024 TEL administration because: (1) moving the TEL assessment to the updated NAEP platform would have incurred excessive costs; (2) the budget could only support administration of one out of the three subscales; (3) the framework was outdated; and (4) it was not possible to maintain trend because the laptops used previously no longer met requirements.

## Staff Analysis of Key Issues

### 1. Assessment Content

The pace of change in the field of technology is, by far, faster than the pace at which the Board can currently update NAEP assessments frameworks and NCES can update NAEP assessment items. The time that it currently takes to conduct these activities can create up to a five-year gap between a framework update and the administration of a new assessment, a lifetime relative to the time in which major technological leaps can take place.

Additionally, unlike all other NAEP subjects, the TEL assessment measures content which generally is not required by most schools, but which may be learned in non- mandatory electives or outside of school.

The proposed 2028 NAEP Science Assessment Framework, at the direction of the Board, will incorporate the limited aspects of technology and engineering that are commonly part of science education but will not consolidate the Science and TEL frameworks. This makes the remainder of the TEL Framework more supplemental in nature because it mostly measures skills learned outside of most education systems, raising questions about the utility of TEL data for the education policy and practice community.

## 2. Ability to Report Score Trends

The NAEP program changed the devices for digital administration so the platform for TEL is outdated, to the point of obsolescence. Thus, any future administrations of TEL could not maintain trend with the 2014 and 2018 data.

## 3. Reporting and Use of TEL Results

A 2019 report commissioned by the Board reviewed post-release media coverage of previous TEL results. Compared to other NAEP assessments, the releases resulted in fewer published articles and TEL was identified as the assessment least used by researchers.

## 4. Budget Considerations:

The TEL assessment is expensive because: (1) the assessment framework relies primarily on scenario-based tasks (SBTs) which are more expensive to develop than other item types, and (2) the assessment requires a much larger sample than other national-only NAEP assessments because students take longer to respond to SBTs, which reduces the number of students who respond to each item completely, that then must be compensated for with a larger sample.

## **Joint Staff Recommendation**

The NAEP TEL Assessment promised to provide information to the public on the technological understanding and engineering know-how of the nation's students. While the two administrations of TEL in 2014 and 2018 provided insights to the nation, given

- (a) overall budget constraints; (b) the relative costliness of the TEL assessment; (c) the rapid pace at which technology changes is misaligned with the slower pace of NAEP item development; (d) the operational constraints which prevent reporting TEL score trends; (e) the limited use of TEL data by stakeholders; and (f) that the proposed 2028 NAEP Science Framework which will incorporate limited aspects of technology and engineering that are most relevant to science education,

Governing Board staff and NCES staff jointly recommend that:

1. The Board should take action to remove the 2028 administration of the TEL assessment from the NAEP Assessment Schedule.
2. TEL should *not* be considered a high-priority assessment when the Board considers future, comprehensive updates to the NAEP Assessment Schedule.