

NAEP Technology and Engineering Literacy

A New Frontier in Assessments

To what extent can young people analyze the pros and cons of a proposal to develop a new source of energy? Construct and test a model or prototype? Use the Internet to summarize information in order to solve a problem? The need to answer these questions, along with the exploding growth in the world of technology, led to the creation of the first-ever national assessment of technology and engineering literacy (TEL), administered by the National Assessment of Educational Progress (NAEP).

What is technology and engineering literacy?

Technology—which includes anything humans make to address needs and desires—has become increasingly important and prevalent in daily life. Americans need to understand the essential characteristics of technology, how technology influences society, and how people affect its development. These understandings are a type of literacy that all citizens should have, no matter their career path. Technology and engineering literacy is about using, understanding, and evaluating technology as well as applying engineering principles needed to develop solutions to realistic problems.

How does this new assessment gauge levels of technology and engineering literacy?

An important and innovative design feature of the TEL assessment is its use of scenario-based tasks. These multimedia simulations use videos and interactive graphics to set up realistic situations. Then, students are asked a series of questions to demonstrate their knowledge and skills to solve problems within this practical context. For example, one TEL scenario-based task requires students to investigate why the well in a remote village is not working and how it can be fixed. In another, students are asked to troubleshoot and fix the habitat for a classroom iguana.

How did NAEP survey students' opportunities to develop technology and engineering literacy?

When students took the TEL assessment, they also responded to a questionnaire about their experiences in learning about and using technology and engineering. For example, students were asked about the different settings where they learned about technology and engineering principles (school, community, home, etc.). There was also a questionnaire to principals of each school where students took the assessment. Although this contextual information cannot be used to explain scores, it gives a fuller picture of how students are currently developing literacy in these critical fields.

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How did NAEP decide to measure skills in technology and engineering literacy?

Technology and engineering literacy does not test computer programming ability or familiarity with mobile devices or apps. Instead, NAEP partnered with a diverse group of technology and engineering experts, business leaders, educational policymakers, and teachers to define what mattered most and decide how to assess it. NAEP worked with these leaders to review the relevant research, look at examples of good practices and standards, and draft a set of technology and engineering literacy assessment objectives. NAEP then collected feedback from thousands of community representatives. After several refinements, the National Assessment Governing Board—which oversees NAEP—unanimously adopted *The 2014 Technology and Engineering Literacy Framework*, which outlines the content and design of the assessment.

Who took TEL?

A national sample of more than 20,000 eighth graders in public and private schools took the assessment in the winter of 2014. In the future, TEL will be administered to grades 4, 8, and 12 if funding permits.

How will the TEL results be reported?

For decades, NAEP has reported student achievement results in many subjects, including mathematics and science. *The Nation's Report Card: Technology and Engineering Literacy* will work in the same way, describing student performance nationally. The results will show the percentage of students who scored at the *Basic*, *Proficient*, and *Advanced* achievement levels for NAEP, and include the overall average score for the full test and average sub-scores for each of the three major areas of TEL content. The report will not include results specific to states or districts, but will include regional and demographic summaries and contextual information from TEL school and student questionnaires.

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