

Measuring Technology and Engineering Literacy (TEL) on the Nation's Report Card

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Abstract

In the spring of 2016, the National Assessment of Educational Progress (NAEP) (also known as 7KH 1DWLRQ ¶V 5HSRUW & DUG UHOHDVHG UHVXOWV RI (TEL) assessment, which was administered to a national sample of grade eight students in 2014. In this session, the TEL content specialist from the National Center for Education Statistics (NCES) will share: 1) the key elements of the framework, and how the framework was developed; 2) how the 8th-grade assessment was developed and delivered, including sample items; and 3) the results of the 2014 assessment at grade eight, including scale scores, achievement levels, and comparison of student groups.

Keywords

NAEP, Nation ¶Report Card, Technology and Engineering Literacy

Session Papers Summary

In 2014, about 21,500 eighth-grade students across the nation were administered the Technology and Engineering Literacy (TEL) assessment. TEL is completely computer-based and presents interactive real-world scenario-

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achievement by providing G D W D D E R X W K R Z use \$ R d e v a l u a t e p r i n c i p l e s V W X G H Q W V
technology and engineering to solve authentic, real-world problems with a broad definition of
technology, as anything humans make to address needs and desires. Prior to 2014, assessments
have focused only on mathematics or science, the well-

Beyond its computer-based administration, TEL comprises sets of questions involving discrete items as well as long and short scenarios. The innovative interactive scenario-based tasks ask students to perform a variety of actions using a diverse set of tools to solve problems and meet goals. The scenarios depict realistic situations and feature video, audio, and interactive simulations to prompt either multiple choice or constructed response answers. For example, one already-released TEL task asks students to play the role of an engineer who is brought to a remote village to determine why the local water well has stopped working. The NAEP Science assessment has included similar items since 2009, and on TEL, the marriage of content to item construction results in exciting new paths forward in assessment development. Not only should such a complex and realistic situation challenge the problem-solving skills of students but the interactive nature of the tasks should also immerse the students in the problem and deeply engage them with the assessment. These scenario-based tasks do not represent the typical problem set students encounter during school or on traditional tests, but instead stretch the capacity of students to apply their knowledge and skills. The tasks also help assessment specialists by monitoring and collecting data about student actions as the students interact with the tasks.

What NAEP Can Report About TEL

The results of the 2014 TEL assessment at grade eight, including scale scores, achievement levels, and comparison of student groups were released as a Nation's Report Card in May, 2016. The third paper in this session will present TEL results with an emphasis on the survey questionnaires and student response patterns allowing for NCES and others to better understand V W X G H Q W D F K L H Y H P H Q W W D N L Q J I X O O D G Y D Q W D J H R I highlight reporting features for NAEP Report Cards, based on these important data sources. For example, a TEL reporting feature is to better summarize student and school contextual information. The NAEP survey questionnaires administered with each assessment now include clusters of questions, which will help NAEP aggregate responses across multiple questions into an index. Different topics will have different reportable indices. The relative unfamiliarity of TEL raises the importance of understanding the in-school and out-of-school learning opportunities for these skills and knowledge. The questionnaires include items on demographics as well as TEL-specific questions about student experiences with technology, e.g., whether they studied technology or engineering topics in school and in what technology and engineering-related activities they participate inside and outside of school. The contextual variables captured

