

Archived Information

U.S. Department of Education – Planning and Evaluation Service

ASSESSING THE EDUCATIONAL TECHNOLOGY PROFICIENCIES OF STUDENTS AND EDUCATORS

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Purpose

This study reviews and synthesizes research on efforts to measure, report and use data on student, teacher, and administrator proficiencies in the knowledge and use of educational technology. This includes a focus on instruments used by state education agencies and local education agencies to assess these proficiencies. This information will be used to inform Department of Education activities in this area, including work on program performance indicators and in program evaluations such as the Integrated Studies of Educational Technology.

Proficiency in the use of educational technologies is increasingly important as an instrumental skill for students and educators. The Technology Literacy Challenge Fund and other Federal programs actively support increased use of educational technology for increased technology proficiency and improved teaching and learning.

While ET proficiencies are increasingly vital—and of increasing concern to policy makers and program managers-- accurately measuring these skills faces many complexities. Rapid change in these technologies and in their uses makes assessing these skills for trend information challenging. With these changes, particular proficiencies may become more or less important, their interrelations may change, and so on. The rapidly growing power of the electronics, and emerging technologies (such as voice recognition and artificial intelligence) mean that the salience of today's skills for practice five or ten years down the road are at best hard to predict. Additional complexities arise from differences in what technology proficiencies are appropriate at various grade levels, and in the specificity of the proficiencies required in various areas, particularly for students in upper grade levels and educators.

Methods of assessing these proficiencies vary widely. Some states utilize paper and pencil tests to assess student proficiency in educational technology. Others conduct on-line assessments of proficiency. Portfolios of work are another approach to measuring educational technology proficiency. Some states rely on course taking requirements for courses dealing with educational technology as a proxy measure of proficiency. The methods used for large-scale assessment of these proficiencies pose important issues of accuracy, burden and cost.

The diversity of activity across states and various other assessment providers may provide opportunities to learn of promising practices and pitfalls, with the states serving as educational laboratories to spur innovation and help identify what works.

So far, however, no study or document has synthesized the previous or ongoing work on this important topic.

Research Questions

- **What are the theoretical and empirical foundations for measuring and monitoring proficiencies in educational technology?** What are the differences of knowledge and proficiency in educational technology that are being measured by states? How long does it take to develop proficiencies? What are the developmentally and instructionally appropriate age and grade levels for developing particular proficiencies? How stable are the proficiencies, and what are the implications for measurement and management of education programs?
- **What approaches (and instruments) are currently used--and what is their utility as a policy guide?** What is the validity and reliability of currently used educational technology proficiency assessments for both macro purposes (such as informing policy on professional development and procurement of equipment), and for micro purposes (such as making high stakes decisions regarding school staff such as principals, teachers, as well as individual students). How do various modes of assessment (such as paper-and-pencil tests, on-line tests, performance demonstrations, and work portfolios) compare in terms of appropriateness for these various uses, accuracy, flexibility, burden and cost? How do course requirements compare as a proxy measure of educational technology proficiency?
- **What are the conceptual and practical issues in implementing large-scale assessments of educational technology proficiencies on an ongoing basis?** What are the benefits and drawbacks of various state approaches to measuring student technology proficiency? What are the unintended consequences, such as capture by vested interests, of locking in standards even as they are becoming obsolete, of hindering modernization and innovation? What are the strengths and weaknesses of the various approaches currently being used by states and others? Use of states as laboratories of democracy, piloting, decentralizing—and related issues of how to obtain cumulative, comparable information for guiding policy.
- **Are there promising or best practices** in assessing technology proficiencies at the micro and/or macro levels?
- **What research and evaluation is needed in this area?** Are there important gaps in the theoretical and empirical foundations of work in this area? Areas where additional research or evaluation would be particularly valuable in informing education policy and practice?

In addressing each of these study questions, the study addresses issues of to what extent there is a rigorous empirical knowledge base in this area, what are the important gaps in information, and what policy relevant information is needed in the short and longer term to inform policy.

General Evaluation Design and Data Collection Activities

Conducted by SRI International, this study *Assessing the Educational Technology Proficiencies of Students and Educators* reviews and synthesizes conceptual and empirical work on measuring proficiency in the knowledge and use of educational technology by students, teachers, and school administrators. The report will provide a summary and synthesis of conceptual and empirical work in this area, identify and review current state and local instruments used for such assessments, and identify issues in developing and implementing standards and large-scale

assessments of proficiencies in these areas. Results of this study would inform the Department's strategic plan and as well as for broader program and evaluation activities.

The study gathers and analyzes instruments from states, commercial providers, and nonprofit organizations (such as ISTE) that assess the technology proficiencies of students, teachers, and other educational staff. It focuses primarily on instruments used on a large-scale (including but not limited to assessments used by states), including information on instruments under development and information on what is known regarding the validity and reliability of the instruments and their various uses.

The review and synthesis of the available empirical data and research on educational technology proficiencies of students, teachers, and administrators will include information on approaches (and instruments) used by states and districts to assess education technology proficiencies. Information regarding identified studies will be entered into the Research Articles Profiling System (RAPS) database of empirical studies of educational technology. The list of studies and findings generated by RAPS will be included as part of the final report under this task. The final report will include the results of the literature review, including information about promising practices as empirically verified, as part of the broader work on instructional effectiveness and school improvement.