



EDUCATION

Some Thoughts On How This Study Relates to Other Education Technology Studies

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The NCEE Study Highlights the Challenge of Determining Conditions in Which Technology Can Be Effective in Education

- **Some of the most promising education technology products, did not, in the aggregate, improve student achievement**
- **Interesting questions raised by results reported to date**
 - **Did averaging of effects from several products mask positive effects from a few of them?**
 - **Would the products be effective with increased teacher experience with the products**
 - **Why don't promising classroom activities (teacher as facilitator, individualized instruction, more on-task behavior, etc.) lead to significantly higher test scores?**
 - **Were the products utilized as well as we can expect in real-world conditions?**

***How might studies like this
interplay with other rigorous studies
to help us build evidence about
effective interventions?***

IES Has Laid Out a Comprehensive Plan for Developing and Testing Education Programs, Practices and Policies

	Duration (years)	Cost
Identification studies (Goal One)	2	\$700,000
Development projects (Goal Two)	3	\$1,500,000
Efficacy and replication projects (Goal Three)	4	\$3,000,000
Scale up evaluations (Goal Four)	5	\$6,000,000

Carrying an Intervention Through This Program is Time Consuming and Expensive

- **Conducting one each of the Goals One, Two, Three, and Four studies might require more than 14 years and \$11 million**
- **Successful completion of this series of studies might incrementally contribute to the evidence base of what works**
 - **Rigorous evidence for a single product, covering one content area in certain grade levels (e.g. middle school mathematics)**
- **What will the success rate be?**
- **Do we have the resources and patience to build a comprehensive evidence base?**
- **Will a selection process that is partly driven by the interests of individual researchers naturally result in optimal coverage of topic areas, grade levels, and approaches?**

This Program Also Involves Major Commitments from the Education System

- **A series of Goals One through Four studies for one product might require participation in randomized experiments by**
 - **Dozens of schools**
 - **Hundreds of educators**
 - **Many thousands of students**
- **In two IES-funded RCT studies of education technology RAND has found many schools reluctant to participate due to, for example**
 - **Disruption imposed on operations by randomized designs**
 - **Testing burdens on students**
 - **The necessity for control group units to forego or delay implementing a change that may appear highly desirable**
- **Can the education system support all of the rigorous studies needed to develop a comprehensive evidence base?**

Is There a Less Costly, More Systematic Way to Build a Scientific Evidence Base?

- **Minimize the number of large studies**
- **Help identify the most promising things to target**
- **Help to shape the coverage of topic areas, grade levels, or approaches**

Multi-Product Studies Like the NCEE Study Could Play a Dual Role

- 1. Test a class of products for overall effects of an approach**
 - **Select clusters of interventions that are similar enough to include in a single study**

- 2. Screen promising products before subjecting them to full-scale effectiveness studies**
 - **Under power the study for any individual product**
 - **Accept a high level of Type I error (20%?) in exchange for reducing Type II error**
 - **Gather implementation data to help guide refinement of products that fail this screen**

Hypothetical Savings

- **Instead of 16 Goal Four studies (\$96 million)**
 - **One pilot study (\$10 million ?)**
 - **Followed by, say, 6 Goal Four Studies (\$36 million)**

- **Would result in a 50% reduction in**
 - **Cost**
 - **Burden on the education system**

Designs of Screening Studies Must Not Inhibit Fidelity of Implementation

- Curriculum adoptions are often long-term and school- or district-wide, possibly causing teachers to
 - Implement with greater fidelity
 - Continue using technology in the face of difficulty
 - Receive more support from peers or school/district staff
- Do many of our study designs create unrealistic implementations by
 - Preventing schools or districts from implementing the intervention in all of the schools or classes they would normally implement in?
 - Setting up expectations that the intervention is not permanent?
 - Giving too much discretion for adopters to discontinue use?
 - For example, in the NCEE study, teachers could opt to discontinue using the products if they believed they were ineffective or difficult to use



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