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The Role of Research in K-12 District Decision Making

Prepared by Working Group A

TOPIC DESCRIPTION

The Role of Research in K-12 District Decision Making Working Group investigated how district leaders make decisions about educational technology purchases. In a recent study, district leaders reported they rely more heavily on peer or consultant recommendations, pilot tryouts, and end user recommendations than on traditional “rigorous evidence” when making purchasing decisions (Digital Promise, Improving Ed Tech Purchasing, N.D.). Further, adoption of an ed-tech product is not necessarily linked to its impact on student learning outcomes (Herold, 2016). Anecdotal evidence indicates that often K-12 district and school leaders do not seek or require research (of any sort) about ed-tech products prior to their purchase despite limited resources and high stakes for student achievement.

WORKING GROUP LEADS

Aubrey Francisco

Hal Friedlander

RESEARCH LEAD

Sara Dexter

LOGISTICS LEAD

Michelle Dreyband

WORKING GROUP MEMBERS

Adam Geller, Britt Neuhaus, Christina Luke, Dwight Jones, Jessie Woolley-Wilson, Josh Starr, Karen Cator, Katrina Stevens, Leslie Ledford, Maia Sharpley, Mark Miller, Terry Nealon, and Tim Hudson

PURPOSE OF THE RESEARCH

Our goal was to better understand district leaders’ reasoning and processes for selecting and deploying a digital product, including which, if any, types of data are used to support decision making. We purposely selected five districts at the leading edges of ed-tech innovation and

conducted case studies about a recent purchase they had made of an instructional, classroom-oriented digital product (defined as a product used by teachers and/or students in the classroom for the purposes of student learning). In these case studies, we interviewed leaders and teachers about the goal they had for purchasing the product and the processes they used to make their purchasing decision, including who was involved and what data were collected.

RESEARCH QUESTIONS

We hypothesized that there is an overall logic that organizes a district's instructional technology purchasing and the related implementation decisions. Our research questions asked: What is driving K-12 districts' instructional technology purchases? What sources of information and processes are leaders currently using to make these purchasing decisions? What data are districts collecting to judge the efficacy of various instructional technology products?

METHODOLOGY & PARTICIPANTS

We interviewed two to three people (an administrator who led the purchase plus another administrator or a teacher-leader who was involved in it) in 5 districts who are part of Digital Promise's League of Innovative Schools (League). We felt League members offered the best opportunity to learn about some of the more thoughtful purchase approaches used in K-12 schools. The semi-structured interviews were conducted by three researchers, and were each about 30-45 minutes in length. Interviews were taped and transcribed, and then analyzed in qualitative research software by one researcher using a structured coding scheme consisted of thirteen codes derived from our conceptual framework of a classic logic model and a model for the decision making process. Code reports were systematically reviewed to produce case reports per site; these and the thematic code reports were then used for cross-case analysis.

PRELIMINARY FINDINGS

We found there is an overall logic that drives ed-tech decision making and implementation in these forward-thinking K-12 districts. The decision-making processes per district varied, but in three instances the purchase we investigated began with a need or request expressed by teachers. Meeting teachers' instructional needs for ed-tech products with a solution teachers would use was a key concern. In some cases, the purchase was new, and in others teachers had already been using a free version and expanded adoption of the product district-wide. Once heard by a district leader, teachers' requests kicked off a pilot process that included a review of the product's compatibility with existing infrastructure and instructional goals, and a classroom-based trial with selected teachers, during which leaders collected qualitative or quantitative data from teachers or stakeholder committees, and in some cases they planned to later collect student-level data.

We found each district has a standard of evidence regarding if an instructional technology product "works" for their students--but these districts' concerns about evidence are more *casual* than *causal*. That is, efficacy is of true concern in these five districts, but not as it is used in design of research (i.e., being able to attribute causality based upon a quasi-experimental or randomized control trial design). Ahead of purchases, leaders checked products' compatibility

with district technology systems and instructional philosophy and goals. During piloting, districts collected data on usage (log data), leaders and users' impressions of the product (gathered via surveys and observations), and in some cases, product analytics. In several cases there were plans to investigate product usage in relation to student-level outcome data. The nature and granularity of the data collected depended upon the type of product (i.e., a database of reading materials scaled to reading ability, versus a program designed to teach grammar skills, reading, or writing), and implementation stage.

RECOMMENDATIONS

These innovative districts already use more thoughtful and involved decision making processes for ed-tech than has been previously reported as typical in K-12 schools. Nevertheless, the cases suggest several implications for how to strengthen the chain of data-based reasoning. One is to better leverage teacher voice, which we saw was often an important part of their process, to understand the instructional need the ed-tech product is intended to address, so that research can be designed to determine whether the product meets that specific need. If leaders create district routines to gather and synthesize stakeholder input to select ed-tech products (e.g., through stakeholder meetings, flowcharts or decision trees), it would clarify to all stakeholders how to give input on a product and increase the amount and quality of that input. This in turn would likely allow leaders to identify the type of information needed from research on educational technology products. A second implication is districts may need additional support to conduct more rigorous pilots that involve collecting data they can use to determine whether an educational technology product “works” for their students. Numerous organizations have developed frameworks and recommendations (e.g., Department of Education Rapid Cycle Evaluation Coach, Learning Assembly Toolkit, Digital Promise ed-tech Pilot Framework), yet additional systemic support is likely necessary to help districts implement these tools and practices. A third implication is to work with ed-tech companies to help them identify the intended impact of their product, and develop specific measures districts might use to assess changes in student learning outcomes (such as learner analytic features, log data, etc.).

EdTech Decision-Making in Higher Education

Prepared by Working Group B

TOPIC DESCRIPTION

The study “EdTech Decision-Making in Higher Education” investigated the decision-making inputs, processes, and practices around the acquisition of technology to facilitate teaching and learning at colleges and universities.

WORKING GROUP LEAD

Fiona Hollands

RESEARCH LEAD

Stephanie Moore

LOGISTICS LEAD

Emily Kinard

WORKING GROUP MEMBERS

Alison Griffin, Amy Bevilacqua, Bill Hansen, Bror Saxberg, David Kim, Deborah Quazzo, Fred Singer, Jerry Rekart, Kristin Palmer, Matt Chingos, MJ Bishop, Phil Hill, and Whitney Kilgore

PURPOSE OF THE RESEARCH

The goals of this study were to:

- Understand the various factors and information sources that influence decisions about educational technology acquisition and use in higher education.
- Provide transparency regarding the steps and stakeholders involved in the EdTech decision-making process in higher education.
- Identify and showcase best practices in EdTech decision-making processes to share with other higher education leaders and EdTech providers.
- Identify ways in which education researchers, higher education decision-makers, and EdTech providers can collaborate to serve the best interests of learners.

RESEARCH QUESTIONS

We posed the following research questions:

1. What sources of information are higher education leaders and faculty currently using to make education technology acquisition decisions?
2. How is research used in the decision-making processes of higher education leaders and faculty?
3. Do institutions of higher education conduct their own investigations or research into how well EdTech products currently being used work?

METHODOLOGY & PARTICIPANTS

We interviewed 52 EdTech decision-makers from 43 institutions of higher education (IHEs) from September 2016 to April 2017. The interviews elicited information on who participates in decision-making about EdTech to facilitate and support teaching and learning; where these decision-makers obtain information on EdTech products and trends; and which individuals or organizations they perceive to be opinion leaders, change makers, or innovation leaders in EdTech.

We asked interviewees to identify an EdTech decision in which they had recently participated and discuss the goals of the decision, the stakeholders affected, the decision-making process itself, and the role of research in the process.

PRELIMINARY FINDINGS

We found that the most common source of information about EdTech products and trends for decision-makers is colleagues and that this information is gathered most often at network events.

We observed that social media and other online sources are replacing traditional sources of information; Interviewees rarely mentioned research organizations, think tanks, or peer-reviewed journals.

Our data suggested that, for non-profit IHEs, decision-making is often protracted, inclusive, and “consultative,” while for-profit IHEs often have swifter, more centralized decision-making processes.

Interviewees reported using the following criteria to select EdTech products:

- Feasibility of implementation
- Features and functionality
- User experience/usability

- Cost/ROI
- Vendor capacity and relationship.

For only 11% of the decisions discussed were impact on student outcomes explicitly mentioned.

While 39% of the decisions involved piloting products on campus, these results were rarely shared publicly.

All interviewees reported conducting research when making EdTech decisions, though their definitions of research varied considerably. Many interviewees noted the dearth of rigorous research on EdTech products and strategies.

RECOMMENDATIONS

Recommendations for IHE decision-makers:

- Beware of the echo-chamber; talk to people outside of higher education
- Use Net Promoter Score to gauge feedback
- Step up the rigor of pilots by using comparison groups and measures to assess actual student learning
- Share EdTech pilot findings and consider conducting multi-site pilots with other IHEs

Recommendations for researchers:

- Identify effective pedagogical strategies that EdTech supports
- Develop use cases and studies of real-world implementation of EdTech products
- Differentiate findings by context and type of student
- Investigate success factors for scaling up EdTech use

Recommendations for vendors:

- Tailor your pitch to the IHE's needs, and customize your product
- Be transparent about what is functional vs. aspirational
- Aim for mutually beneficial relationships with "partners"
- Offer a pro bono exchange to an IHE: free EdTech for free research

Recommendations for funders:

- Fund a hub for sharing results of EdTech pilots
- Fund grantees to share study findings
- Develop tiered funding levels for EdTech research to reflect the amount of higher education investment in products
- Focus on student learning

Research Spending and Popular Educational Technology Products

Prepared by Working Group C

TOPIC DESCRIPTION

We will report survey and summary interview results regarding product developers' use of research in the phases of product design, product updating, measuring outcomes, and marketing. We will report on the types of research companies conduct, the kinds of outcomes they envision for users of their products, and their future research goals.

WORKING GROUP LEAD

John Hutton

RESEARCH LEAD

Joe Garofalo

LOGISTICS LEAD

Lori Rupsch

WORKING GROUP MEMBERS

Amy Hughes, Ann Flynn, Colleen Pacatte, Daniel Pianko, Glen Harvey, Gunnar Councilman, Joe Garofalo, John Hutton, Jon Fullerton, Joshua Marland, Karen Sullivan, Lori Rupsch, Luyen Chou, Perry Samson, and Tammy Wincup

PURPOSE OF THE RESEARCH

The goal of this working group was to explore the role research has played in the development and marketing of the most popular educational technology products. Research questions included:

1. To what extent do the developers of popular educational technology products refer to, conduct, or commission research to support the development of, and assess the efficacy of, their products?
2. What student and teacher outcomes do product developers envision or expect from the use of their products?

3. What kinds of research do product developers conduct or commission? What kinds of research would they like to see or conduct?
4. What sources of funding do product developers have for efficacy research?

METHODOLOGY & PARTICIPANTS

We developed and administered a survey to companies developing educational technology products. We used SurveyMonkey to distribute the survey via a link through personal emails from working group members to contacts identified at the selected companies. Seventeen out of 44 contacts responded to the survey. Those company representatives who completed the survey were asked if they were willing to be interviewed to provide more context to their survey responses. Interview questions were based on survey questions but follow up and probing questions were asked to clarify responses and provide further detail or explanations. A total of 12 interviews were conducted. The interviews lasted approximately 30 to 40 minutes.

PRELIMINARY FINDINGS

Most companies reported that they are conducting research in the form of expert reviews, small-scale pilot studies, case studies, and focus groups. Some of this research takes place in actual classrooms, while some of it is done in company labs and other spaces. These companies rely on small one or two-group studies (some with pre-post assessments), observations, teacher reports, continual user feedback, user journals, field notes, videos, and student stories and creations. Some school districts are conducting their own efficacy research, with data supplied back from the companies. Most of the interview respondents reported that their companies do little to no “formal” research on their product’s efficacy. While some have employed third party researchers, overall there is little being done with formal controlled comparisons or randomized controlled trials. However, there are companies who do see the value in formal research; several are engaged in, or planning, more formal research.

RECOMMENDATIONS

There may be plenty of opportunities to work with technology product developers to design and carry out formal types of efficacy research. Most company representatives said that they were interested in having more formal efficacy research done on their products, using more controls and validated instruments. Some companies are gearing up for this work now. Others are interested in longitudinal studies to track performance changes over time, and even larger case studies, using standardized test measures. Overall, a main goal for these responding companies is to better understand the contexts and factors that lead to learning, with some more specifically concerned with being able to connect overall performance to the features and usage of their products.

Evidence and Quality of Efficacy Research in Education Technology Companies

Prepared by Working Group D

TOPIC DESCRIPTION

What is the extent and quality of efficacy research conducted by education technology (EdTech) companies focused on student learning outcomes in K-12 education?

Specifically, of the research being conducted by EdTech companies on their products, to what extent is there a focus on efficacy research geared towards understanding the impact of the edtech tool on student-level outcomes? What kind of research are they conducting (e.g., efficacy, effectiveness, scale-up) and what is the quality of the research (e.g., rigorous, reliable, unbiased)? In addition, to what extent do claims about product efficacy by this subset of EdTech companies match the actual research evidence available to inform user decision-making? Findings from this investigation will be used to provide recommendations on strategies for strengthening the quality of efficacy studies and evidence-based research by K-12 EdTech companies targeting improvement in student learning outcomes.

WORKING GROUP LEADS

Mahnaz Charania

David Daniel

RESEARCH LEAD

Chris Hulleman

LOGISTICS LEAD

Isabelle Callaway

WORKING GROUP MEMBERS

Andy Rotherham, Britte Cheng, David Wiley, Eva Dundas, Jason Lange, Jill Buban, Julie Young, Pete Wheelan, Mark Schneiderman, and Michael Staton

PURPOSE OF THE RESEARCH

This research focuses on understanding the extent & quality of research by EdTech developers on digital tools designed to improve K-12 student learning. Specifically, we investigated the following:

1. What kind of research is being conducted by Ed Tech companies on their products (e.g., efficacy, effectiveness, scale-up)?
2. Of the efficacy research being conducted on EdTech products, who is doing the research and with what quality (e.g., rigorous, reliable, unbiased)?
3. To what extent do claims about product efficacy by EdTech companies match the actual research evidence?

We hope to identify strategies to improve the support and accountability for reliable, research-based development of EdTech tools by developers. These results will enable us to push forward the collaborative dialogue between developers and users of Edtech tools to consider establishing standards for conduct of efficacy and/or effectiveness studies to inform selection and use of evidence-based Edtech tools.

RESEARCH QUESTIONS

In regards to the research questions, we predict:

1. Most ed tech companies are not conducting efficacy research to inform understanding of tool impact; rather, they are focusing on perception data and ease of use through consumers who are willing to try out their products.
2. Most ed tech companies do not have an in-house research process.

METHODOLOGY & PARTICIPANTS

A mixed-methods online survey was developed for EdTech companies to respond regarding their product's design, development, impact, and usage. Between 3/23-4/14, we received responses from 30 companies. For those whom data was available, 73% had products used by over 10,000 students per year, and 75% focused on math, english, or writing skills. We also conducted a deep dive on 44% of the 144 companies that made some claim of product efficacy. First, we used the scoring rubric produced by Digital Promise to score the quality of each of the research studies on a scale from 1 (low quality) to 18 (high quality). Second, we compared the degree of alignment between the efficacy claims made by the company and the actual research.

PRELIMINARY FINDINGS

Based on the survey results, 10% of the companies conduct efficacy research (laboratory experiment design) and 80% conduct effectiveness research.

Most companies reported utilizing user feedback and engagement and do not conduct efficacy research. A few companies (n=3) who spoke about efficacy studies being a priority stated that they infuse their product development with useful data on lesson completions and create multiple pathways to improve on the product overtime. Generally, 57% conduct their research internally and 20% leverage external partners to collect data. In addition, of the 63 companies that made efficacy claims: 54% had some research to support their claim; 41% had no research to support their claims, and 5% had research that did not match their claims.

RECOMMENDATIONS

Although Ed Tech developers value research to inform their products, they are not conducting rigorous research. They stated that only about half (48%) of the consumers (i.e., schools) often/always ask for evidence yet 90% reported that they were very or extremely confident that their product has the intended impact.

Improving the evidence-base and conduct of research on Ed Tech tools will require a sustained, collaborative relationship between all invested stakeholders: developers, education administrators, researchers, teachers, and especially students. An important start would be to differentiate efficacy from effectiveness research and to identify the critical data elements through a guidebook that must be monitored by the developers and available to the consumer (e.g., school, teacher) to track and support student learning. These expectations must be established prior to tool uptake by the school and utilized by Ed Tech developers as they iterate on their products.

Institutional Competence in Evaluating Efficacy Research

Prepared by Working Group E

TOPIC DESCRIPTION

Significant investments have been made in educational research in the US. Technologies continue to emerge that can provide ever more powerful learning experiences, if properly integrated into curricula and used effectively by well-prepared educators. However, in spite of significant investments in research and the introduction of new technologies in schools, there is little evidence of substantial improvement in learning and instruction.

Effective use of technology requires prepared teachers, ongoing support, continuing professional development, and more emphasis on formative, authentic and ongoing assessment that is aligned with the effective forms of learning activities (U.S. Department of Education's National Educational Technology Plan, 2016). The context for adoption and use of technology in schools has changed. Teacher preparation programs must respond to these changes in order to remain relevant. This research was conducted as a next step toward understanding how schools of education might best prepare future teachers, principals, and superintendents to make effective choices with respect to acquiring, implementing, and assessing the use of learning technologies.

RESEARCH LEAD

Glen Bull

LOGISTICS LEAD

Ileen Warner

WORKING GROUP MEMBERS

Research Group: Charles Hodges, Ellen Meier, J. Michael Spector, Joseph South, and Kay Persichitte

Advisory Group: Amy Nowell, Benjamin Gaines, Bob Wise, Brad Lane, Dave Edyburn, David Steiner, Jeffrey Cohen, Jeremy Shorr, Joseph South, Kinshuk, Lou Pugliese, and Teresa Foulger

PURPOSE OF THE RESEARCH

This working group investigated two related questions:

1. What knowledge and competence do faculty members and leaders in educational institutions need to possess with respect to assessment of the efficacy of learning technologies in order to prepare competent teachers?
2. What can, or should, schools of education do to promote this knowledge?

METHODOLOGY & PARTICIPANTS

The task force conducted interviews with institutional leaders to determine their perspectives. Four pilot interviews were conducted. Based on the pilot interviews, the interview questions were revised. Deans, department chairs, and other leaders at institutions nominated by task force members were then interviewed.

The goal was to establish what is being done in the preparation of teachers and educational leaders and what deans, department chairs and other leaders in the area of pre-service training of teachers and school administrators believe might be done differently to improve those programs. This preliminary research utilized a semi-structured interview. The primary purpose of this pilot study was to develop a robust set of issues and concerns that can be addressed on a much larger scale.

The interviews were used to develop preliminary recommendations (below). This was a first step in identifying the ways to enable and facilitate effective use of technologies to improve learning and instruction in American schools.

PRELIMINARY FINDINGS

The task force concluded that schools should equip teachers with the knowledge and skills needed to evaluate learning outcomes associated with use of new technologies through the following actions:

- Introduce technology in a pedagogical and content-specific context rather than in isolation.
- Rather than focusing on teaching specific technologies that may quickly become obsolete, prepare teachers to learn how to learn about new technologies that will emerge throughout their professional careers.
- Provide superintendents and principals with a pedagogical framework that allows them to understand how technology use may differ across grade levels and content areas.
- Connect preservice teachers and future education leaders to professional learning networks that they will continue to use throughout their professional careers.

- Connect the use of technology with pedagogical approaches in content areas supported by learning science and instructional design findings, such as in the area of project-based learning.
- Ensure that teacher education and educational leadership faculty members have the requisite knowledge and skills to deliver a curriculum that is consistent with the preceding recommendations.

RECOMMENDATIONS

Actionable objectives are needed for each item in the preceding section. One of the biggest gaps identified is with respect to preparation of school leaders. There is an opportunity to consider how current and future school leaders might best be prepared to provide effective leadership for effective integration of learning technologies in schools. A working paper developed by the University Council for Educational Administration (UCEA) could provide a starting point for this work.

Assessment items should be designed for each actionable objective (including evidence of impact on student learning and/or motivation) to better understand the implementation process and when it has been successful. Measurement of impact on learning can be very difficult. In order to create assessment items related to impact, we recommend returning to the leaders in schools of education and the administrators (superintendents and principals) of the school systems in which teacher education students are being placed to invite their reactions and comments regarding the final recommendations.

This follow-up would invite their input regarding whether their institution's response to the recommendations, including whether they might implement any of them. For institutions that may consider pilot implementation of the recommendations, information regarding the resources and steps that might be needed to attempt implementation should be gathered.

Associated performance indicators will be developed. A series of vignettes will be developed that will provide readers with a compelling narrative of outcomes in schools of education that implement the recommendations.

There is a serious lack of technology implementation expertise in today's schools. Consideration should be given to the development of "Technology Specialist" certification programs in the states to address this gap. Teachers and administrators need help in learning how to introduce technology based on pedagogical approaches in content areas. Administrators at all levels need professional advice about digital capacity, content, and appropriate use. Digitally savvy students need educators who are deeply knowledgeable about the links between emerging pedagogies in the content areas and the use of technology. Technology specialists can help develop the pedagogical and organizational capacity of their schools, based on a growing understanding of teaching and learning from the learning sciences.

RELATED PUBLICATIONS

1. Bull, G. Thompson, A., Schmidt-Crawford, D., Garofalo, J., Hodges, C., Spector, J.M., Ferdig, R., Edyburn, D. & Kinshuk (2016). Evaluating the Impact of Educational Technology, *Journal of Digital Learning in Teacher Education*, 32:4, 117-118.
2. Bull, G., Spector, J. M., Persichitte, K., & Meier, E. (2017). Preliminary recommendations regarding preparation of teachers and school leaders to use learning technologies. *Contemporary Issues in Technology and Teacher Education*, 17(1).
3. South, J. (2017). Commentary: Response to “Preliminary recommendations regarding preparation of teachers and school leaders to use learning technologies.” *Contemporary Issues in Technology and Teacher Education*, 17(1).
4. Bull, G., Spector, J. M., Persichitte, K., Meier, E. (2017). Reflections on preparing educators to evaluate the efficacy of educational technology: An interview with Joseph South. *Contemporary Issues in Technology and Teacher Education*, 17(1).
5. Hodges, C.B., Carpenter, J. P., & Borthwick A. C., (2017). Commentary: Response of the American Association of Colleges for Teacher Education to an interview with Joseph South regarding the preparation of educators to evaluate the efficacy of educational technology. *Contemporary Issues in Technology and Teacher Education*, 17(1).
6. McCleod, S., & Richardson, J. W., (in press). Commentary: Response of the University Council for School Administrators to an interview with Joseph South regarding the preparation of educators to evaluate the efficacy of educational technology. *Contemporary Issues in Technology and Teacher Education*, 17(1).

But Do They Work?: The Complicated Role of the Evidence of Effectiveness in EdTech Products

Prepared by Working Group F

WORKING GROUP LEAD

Susan Fuhrman

LOGISTICS LEAD

Torra Haynes

WORKING GROUP MEMBERS

Andrew Smith, Bill Hughes, Brad Lane, Dror Ben-Naim, Eric Chagala, Eric Westendorf, James Tieng, Jason Palmer, Lawrence Friedman, Rusty Greiff, Stephen Smith, Thomas Ralston

PURPOSE OF THE RESEARCH

In recent years, there has been a proliferation of new instructional technologies aimed at improving education. Unlike other areas of development and investment, relatively little attention has been paid to demonstrating the effectiveness of new products. As a result, it's possible that time and money are being wasted on products that are not actually improving learning. The report seeks to further our understanding of how stakeholders (investors, developers, established vendors, and others) define the effectiveness of products and value evidence of such effectiveness. Our goal is to increase thoughtful attention to the role of research in the development, investment, and procurement processes.

Three questions framed our research:

- 1) How do educational technology investors, developers, and established vendors value evidence on products?
- 2) How should effectiveness be judged?
- 3) What voices are trusted in judging effectiveness?

METHODOLOGY & PARTICIPANTS

We explored (through a survey and semi-structured interviews) how stakeholders describe what it means to them for an EdTech product to be “effective,” how they value various types of research in making that assessment, and how they think about the sources of evidence about effectiveness.

KEY FINDINGS

1. Most stakeholders understand a product’s efficacy to be related to both educational outcomes and to market potential. They value research that speaks to effectiveness.
2. However, what is characterized as valued research varies; worthy research is not necessarily available; and it is not yet clear that a case can be made for more expensive, rigorous research.
3. The research, education, development and investment communities will benefit from continued collaboration to develop research approaches that are valid, valued and available.

QUESTION 1: TO WHAT EXTENT DO STAKEHOLDERS VIEW PROOF OF A PRODUCT’S EFFICACY AS IMPORTANT?

Survey respondents reported that they valued some evidence of a product’s ability to influence educational outcomes (increased student learning etc.) However, researchers and other education-related stakeholders reported viewing evidence of student learning as being far more important than did those in the technology and investment sectors.

There is more agreement across roles about the importance of usage data. Survey respondents in both the education and technology/investment sectors viewed usage rates as being quite important to their decision to move forward with a product.

The EdTech world respondents do view proof of a product’s contribution to student learning as important. But they also consider other measures like customer satisfaction.

QUESTION 2: WHAT MEASURES MATTER TO STAKEHOLDERS?

There is general agreement that data on student engagement from the product’s learning analytics function can play an important role in assessing whether a product works. And, for many stakeholders, the prospect of data about product outcomes from randomized controlled trials (RCTs) is also promising – except for entrepreneurs. Those responsible for funding products (philanthropists, investors, and entrepreneurs) view data from case studies as being nearly as useful to them as data from RCTs or data about student engagement, while educators

and product developers do not view case studies as being as important a source of data.

The interviews added further explanation and nuance to the survey's findings.

- RCTs were not only difficult and expensive to conduct, but they were not necessarily ideal for the desired purpose: testing these products in a vacuum, outside of the “real world” does not necessarily reflect how the product will perform in schools.
- Interviewees were not sure the consumers can sufficiently distinguish between more and less definitive research. Customers were more likely to be interested in testimonials and recommendations from other users who similar to them.
- A number of respondents complained that others in the field misused research, claiming more rigor and generalizability than their data permitted. The customers are not knowledgeable enough to know the data has been misused.

QUESTION 3: WHOSE RESEARCH SPEAKS THE LOUDEST?

Our data suggests that individual stakeholder groups value data that is provided by members of the same stakeholder group. For example, researchers trusted other researcher organizations when looking for reliable information.

The interview respondents generally supported the idea of third party, researcher-led evaluations, and a number had commissioned them. But they did note the expense, and even though they had funding in their budgets for research, lacking evidence of definitive impact on sales and appreciating the willingness of buyers to take word of mouth about as seriously as data, increasing research spending could be challenging.

RECOMMENDATIONS

We must assist those untrained in research to understand more of it, and bring research and practice together in the name of EdTech effectiveness and accessibility.

Role of Federal Funding & Research Findings on Adoption & Implementation of Technology-Based Products & Tools

Prepared by Working Group G

TOPIC DESCRIPTION

The federal government has made significant investments in the development, empirical testing, and dissemination of technology-based products for use in education over the past 50 years. Despite these investments, the extent to which district and school-based personnel actually adopt and use products after grant-sponsored pilot tests end is largely unknown (Yamaguchi & Hall, 2017). What is known is the private sector in the domain of educational technology product development currently spends more money in one year to develop and distribute products than the entirety of government-sponsored research in the past 15 years (Winters, 2015). The members of this working group used the backdrop of federally funded research to examine how school districts and schools make decisions for the purchase, adoption, and continued implementation of technology-based products.

WORKING GROUP LEAD

Craig Roberts

RESEARCH LEAD

Michael Kennedy

LOGISTICS LEAD

Emily Kinard

WORKING GROUP MEMBERS

Kathy Stack, Pat DeKlotz, and Valerie Truesdale

PURPOSE OF THE RESEARCH

The purpose of this study is to gather survey and qualitative data that sheds light on the extent to which school district personnel make high quality research evidence (the type prioritized by the federal government when awarding grants) part of their decision-making processes for

purchasing, adopting and implementing technology-based products. University faculty and other scholars who receive grant funds, primarily through the Department of Education, are generally not entrepreneurs, and are at risk of dropping lines of inquiry related to technology products when funding for a project ends. While the government does have competitions that allow businesses to compete for grant dollars, most funds in this domain go to university or agency-based researchers. Investments in products and projects are made, results are achieved, but the results rarely reach the ears of key decision-makers in schools.

Our main hypothesis was that district and school based personnel make decisions for purchasing and adopting technology-based products for their schools based on variables that prioritize the existence of independent, peer-reviewed research. Because the federal government has and continues to play an important role in helping researchers develop and bring new technology-related products and tools to life, it is logical to expect school-based personnel to honor those investments, and actively seek them out as top choices for use in schools.

METHODOLOGY & PARTICIPANTS

We conducted a survey of district and school based personnel from 17 states. 515 individuals completed the survey. About 24% are district tech supervisors, 22% are assistant superintendents, 7% superintendents, 27% are teachers, 10% are principals. 47% work primarily in the District Office, 18% work across schools, 13% are in a middle school, 12% are in a high school, 10% work primarily in an Elementary School. The respondents come from Urban (31%), Suburban (26%), Rural (23%) and Mixed Districts (20%). 76% of respondents are directly involved or consulted regarding technology purchasing decisions. 24% report not having any say. We also interviewed two technology leaders from two districts in a Mid-Atlantic state.

PRELIMINARY FINDINGS

We asked survey respondents, “When making purchasing and/or adoption decisions regarding a new technology-based product (assume for academic instruction) for your district or school, how important is the existence of peer-reviewed research to back the product?” Only 11% said they would not buy or adopt a program if peer-reviewed research was absent. Another 41% said strong consideration is given to whether peer-reviewed research is present, 41% said this is considered, but not key, and the remaining 7% said they would purchase/adopt products without strong research. Thus, almost 90% of respondents to our survey do not insist a research backing be in place prior to adoption/purchase and implementation, and nearly half either pay lip service or do not care if research is in place.

RECOMMENDATIONS

Our field needs a paradigm shift in terms of how schools should insist that developers actually test their products prior to purchase. School-based personnel should demand technology developers collect at least some evidence prior to purchasing or adopting technology. The federal government should generate policies and procedures that help researchers translate their research into more practical terms, and also help practitioners evaluate research evidence prior to adoption/purchase. One idea is to build credibility for products with some sort of universal scoring system based on how much evidence it has, that consumers could look to when making purchasing or adoption decisions. Products created using funding from the government and tested using high quality research methods would have a higher score.

Educational Philanthropies

Prepared by Working Group H

TOPIC DESCRIPTION

This working group examined the evidence philanthropies gather about the efficacy of education technology interventions. First, we sought to determine which philanthropies have provided support for the explicit use of technology in education, funding the use of platforms, services or apps in the classroom. Second, we interviewed a sample of foundation staff to ascertain how they characterize the evidence of the efficacy of that technology. We sought to determine the ways in which the program officers in the foundations characterized efficacy and whether it was from the perspective of rigorously measuring education technology implementation outcomes or from the perspectives of levels of evidence including utility and feasibility of technology.

WORKING GROUP LEAD

Edith Gummer

RESEARCH LEAD

Bill Ferster

LOGISTICS LEAD

Michelle Dreyband

WORKING GROUP MEMBERS

Brad Lane, Carrie Morgridge, Keith Krueger, Linda Chaput, Mark Grovic, Matt Akin, Matthew Rascoff, Melina Uncapher, Michael Staton, Sara Schapiro, Saro Mohammed, and Stuart Udell

PURPOSE OF THE RESEARCH

This working group explored the following research questions:

1. What do philanthropies that provide funding for educational technology want from efficacy research to help guide their project's progress through pre-funding, formative and summative evaluation processes?
2. What kinds of evidence are they using now, and how does that evidence affect their funding, evaluation, and impact assessment strategies.

3. How do philanthropies define efficacy? Is it just a measure of student achievement, or can it cover usefulness of the intervention; the degree of student engagement, time savings, and actual use; the teacher's time savings and ease of use; and the administrator's perceived return on investment and ease of implementation?
4. What kind of efficacy research philanthropies would ideally be able to gather, with an eye toward advancing the field forward?

As philanthropies have developed what Frederick Hess and Jeffrey Henig describe as a “muscular” approach to supporting education to ensure a stronger advocacy for certain education innovations, there has also been a stronger push for funders to require and support evidence of the impact of the interventions they support.

This working group explored which philanthropies are funding education technology interventions and how they are influencing what evidence is collected about the effectiveness and impact of those technologies.

METHODOLOGY & PARTICIPANTS

We conducted interviews with these philanthropic funders of education to get some insight into the role efficacy plays in their funding decisions and program evaluations. These interviews were conducted via telephone by the researchers. These open-ended conversations ranged in length from 35 to 50 minutes.

These organizations represent the range of foundations currently funding education in the country. They were large or small, long established to more recently founded, and focused on technology or policy. Not all of the organizations funded educational technology directly, but most had some connection to ed-tech efforts in some manner.

PRELIMINARY FINDINGS

It is clear from our conversations with funders that their definition of efficacy varied from institution to institution. Most seemed to value the measure of student achievement to be the ultimate gauge of whether or not a given intervention is deemed successful.

It was hard to prove any direct or causal relationship between the intervention and student achievement. To compensate for this, when they did use any measures of efficacy, those methods were typically indirect.

Some institutions sought to make their measurement as proximal to the nature of the intervention themselves. Perhaps because of these inabilities in definition and causation, institutions did not have any formal mechanism in place to mandate the use of more formal efficacy measurement in either their initial or continuation funding decisions.

RECOMMENDATIONS

1. The wider community would benefit from better information about how education technology support is distributed across the education scene. A more systematic study of how education technology products are integrated with other funding initiatives is clearly needed.
2. A public-private partnership around studying the connection of implementation efforts with the research and development of education technology products would bring together federal, state, philanthropic and district/school efforts.
3. Having education technology efficacy a focus of the philanthropic support of the education accelerators and incubators around the country that was systematic across funding organizations might also coordinate efforts. A group such as Grantmakers for Education or the Philanthropy Roundtable might facilitate such coordination.

User Voice in Technology Decision-Making

Prepared by Working Group I

TOPIC DESCRIPTION

This study investigated the role of student, teacher, parent, or other end user preferences in technology decision-making in K-12 school districts and institutions of higher education. This working group explored what role students, teachers, parents, or other end users' preferences play in technology decision-making with educational institutions.

WORKING GROUP LEAD

Adam Stephens

RESEARCH LEAD

Jennie Chiu

LOGISTICS LEAD

Ileen Warner

WORKING GROUP MEMBERS

Bridget Burns, Sam Chaudhary, Tonika Cheek Clayton, Jason Edwards, Craig Jones, Melinda Karp, Scott Miller, Pam Moran, Cheryl Niehaus, Chad Ratliff, Kecia Ray, and Tim Renick

PURPOSE OF THE RESEARCH

Questions guiding the work included:

1. How, if at all, do various institutions currently collect user preferences/voice? If so, how are data used in decision-making, by whom, when, and why?
2. What are some exemplars of how student, teacher, or other end user preferences can be integrated into technology decision making?
3. What similarities and differences, if any, might exist across institutional contexts (e.g., colleges/universities, K-12)?

From the Digital Promise operational framework of technology acquisition, we hypothesized that user voice may not play a large formal role in decision making (Morrison, Ross, & Corcoran, 2014). However, we thought there may be some points at which teachers and faculty have more input than others. Teachers and students may be used in the discovery and/or evaluation of products, but not as much in the acquisition of products. We also hypothesized that there may

be disagreement about the level of user input among people in leadership with the decision-making authority and faculty or students at the same institution or district.

METHODOLOGY & PARTICIPANTS

A multiple case study design was used. For each case, three people were targeted for interviews: a person in a leadership position with educational technology decision-making power, a faculty member who was well-versed or known for using technology in their classes, and a faculty member who was representative of a normal user of technology for the institution/district. Data sources included interviews, supplemented by document analysis of school websites. Interview questions were based on the operational framework from Morrison et al. (Morrison et al., 2014). One researcher conducted 16 interviews with identified participants. In total, interview data from three universities and two K-12 districts were used.

PRELIMINARY FINDINGS

In general, across all cases there was a relatively high level of stated faculty input for each of the action points, but less stated student input for each of the action points. In every case, participants discussed evaluating technology products by trying them out in classrooms and collecting at least anecdotal evidence of utility and effectiveness from faculty. Faculty and decision-makers had differing opinions on the level of faculty and student input in their institutions. Technology leaders described tensions with top-down and bottom-up approaches from faculty in terms of pedagogy and knowledge of technology affordances.

RECOMMENDATIONS

Overall, participants referenced many kinds of evaluations and classroom tests of technologies. If there were a way to harness or collect that information, this would provide: a rich dataset for researchers to work with, useful data to feedback to developers and tech companies, and potentially ways to use the data to inform policy around educational technology.

Crowdsourcing Efficacy Research and Product Reviews

Prepared by Working Group J

TOPIC DESCRIPTION

The EdSurge Product Index currently lists more than two thousand different education technology products and services. Many schools (K-12 and Higher Ed) feel completely overwhelmed by this abundance of choice, and have no reliable way to determine which products have been proven effective, and which are most likely to be a good fit for their local needs.

As a result, it appears that educators and administrators collectively spend countless hours needlessly duplicating efforts. They and their institutions engage in a similar process: they search on the web, read what they can find, or talk to a colleague. They identify a few candidate solutions, and perhaps, but not necessarily, do a pilot. Then they implement an educational technology product or service, without ever documenting or sharing the results of their efforts with anyone outside their institutions.

Working Group J seeks to discover what efforts may be underway around the country to aggregate and share educational technology product reviews, analysis of pilots, and efficacy research.

WORKING GROUP LEADS

Bart Epstein

Chris Rush

RESEARCH LEAD

David Slykhuis

LOGISTICS LEAD

Madeline Clements

WORKING GROUP MEMBERS

Betsy Corcoran, George Kane, Harold Levy, Jennifer Medbery, John Bailey, Matt Greenfield, Michael Feldstein, Michael Nagler, Nick White, Nicole Neal, Rahim Rajan, Rebecca Griffiths, Richard Culatta, and Steve Fleischman

PURPOSE OF THE RESEARCH

The educational technology landscape is exceedingly complex and crowded. About 13 billion dollars are spent annually on the purchase of educational technology (Future Source, 2017). Decision makers (e.g. policy makers, practitioners, private and public funders) often seek to identify the most effective products, and often struggle to determine the right tools for their institutions' needs. Before purchasing and implementing an educational product, educators may search users' comments and feedback, and discuss with individuals about their experiences, but they rarely share their efforts with other institutions. The primary goal of this project is to discover efforts that may be underway around the country to aggregate educational technology product reviews and efficacy research, analyze pilots, and to share the results. An additional goal is to start a conversation about what is missing from the current landscape and what should be considered.

School Districts spent \$13.2 billion on educational technology in 2015. For perspective, if this spending were a federal program, it would be the third largest expenditure behind Pell Grants and Title I. The Technology for Education Consortium estimates schools could save \$3 billion simply by receiving consistent pricing on educational technology products. This estimate does not even begin to include the billions of dollars spent on educational technology that is not used or does not produce the intended outcomes. If school had the tools to find the most appropriate educational technology at the right price it could revolutionize the educational technology market.

METHODOLOGY & PARTICIPANTS

First, a survey was developed asking respondents to identify any company or organization they knew of that might be doing work related to this topic. The results identified over 40 companies or organizations active in this space. The working group then evaluated the 40 companies and organizations and identified 14 as the leaders in the field.

The second phase of the research were interviews with organization leaders (5 total) and experts from state departments of education (46 participated) who were identified from the SETDA list of state DOE contacts.

The third phase of the study involved a more thorough examination of each of the 14 leading aggregators of crowdsourced reviews and research of educational technology.

PRELIMINARY FINDINGS

Only 6% of states indicated collecting any product reviews, and only 2% are collecting any research. 60% of state DOE experts reported that states do not help to collect and share a crowdsourced review of educational technology products. 64% of respondents also indicated

that they do not help to gather and share crowdsourced efficacy research of educational technology products.

The leading organizations in the field fall into four categories. One was focused very clearly on building massive libraries of educational technology resources and reviews. A second group of companies focused solely on research aggregation. Third, two projects take aim at creating more research around the efficacy of educational technology. Four of the organizations examined were focused on some aspect of educational technology purchasing.

RECOMMENDATIONS

Many of the structures needed for a universal crowdsourced platform of efficacy research and product reviews are available, but are not in one place. Sharing “best practices” with a crowd means engaging various schools’ staff members, understanding advantages and disadvantages of multiple educational technology products, and analyzing users’ experiences to avoid costly purchases that are ultimately ineffective. Buying educational technology products is a significant investment for institutions. Selection of new technology should not be based on marketing. It must be matched to teachers and students’ needs with evidence of effectiveness. Therefore, a universal crowdsourcing platform may present a unique opportunity to showcase educational technology tools to encourage decision makers (institutions, advisors, experts, policy makers, researchers and users of the system) to consider specific products and how they would meet their need.