

What Does the Research Say? Locating and Interpreting Special Education Technology Research

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I. Introduction

A. About this session

Questions about the research-base for special education technology practices are increasingly asked at the local, state, and federal level. Participants in this session will learn how to access the latest research on special education technology and how research can be used to answer important questions about the use and value of assistive and instructional technology.

B. About the presenter

Dave L. Edyburn, Ph.D., is an Associate Professor in the Department of Exceptional Education at the University of Wisconsin-Milwaukee. Dr. Edyburn's teaching and research interests focus on the use of technology to enhance teaching, learning, and performance. He has authored over 80 articles and book chapters on assistive and instructional technology. Dr. Edyburn's most recent books include: *What every teacher needs to know about assistive technology* (2003, Allyn & Bacon), and *The Electronic Scholar: Enhancing Research Productivity with Technology* (1999, Merrill/Prentice Hall). Dr. Edyburn is also the publisher and editor of *Special Education Technology Practice*. He is one of three editors of the book, *The Handbook of Special Education Technology Research and Practice*. Since January 2004 he has served as editor of *Remedial and Special Education*.

C. About the participants

Show of hands: teachers, administrators, vendors, graduate students, teacher educators, researchers, others?

II. Snapshot of Current Indicators Impacting Research in Education

Efforts to improve student achievement in IDEA and No Child Left Behind have intensified attention on the research base that supports effective practice. Increasingly, parents, teachers, administrators, and policy makers are asking questions focused on issues of effectiveness. However, most educational leaders and technology specialists do not have the time or experience to address these concerns.

A. No Child Left Behind (NCLB)

Education in the United States appears to have entered into a new era. While difficult for many people to appreciate at the time, the passage of the No Child Left Behind (NCLB) Act of 2001 (P.L. 107-110) is beginning to cast its shadow as a defining landmark event in American education. Advanced primarily as an education accountability act, the law requires states to develop curriculum standards, standardized assessments of students' performance in meeting the standards, emphasis on helping all students to read by the end of grade three, and sanctions for consistently low-performing schools. The emphasis on the scientific-based evidence underlying educational practice has moved educational research into an arena with attention that it has seldom seen. To learn more about NCLB, visit: <http://www.ed.gov/nclb/>

Three critical components of NCLB must be understood:

1. Annual yearly progress (AYP)
2. Scientifically based research
3. Closing the achievement gap

B. Restructuring of the ERIC System

Effective December 19, 2003 the ERIC system has been restructured. That is, the former ERIC database and services, ERIC clearinghouses websites, including AskERIC, and their toll-free telephone numbers have been closed. The U.S. Department of Education has identified a contractor to develop a new model for the ERIC database and services. In essence, no new material will be added to the ERIC system until the new contractor has been identified and engages in a start-up period. For additional information, visit: <http://www.lib.msu.edu/corby/education/doe.htm>.

Effective immediately, change your ERIC bookmarks to <http://www.eric.ed.gov>.

Many people are questioning the wisdom of this action in light of the emphasis on educational research in NCLB. While ERIC has always had a backlog between the time a journal was published and the time that the citation appeared in the database, the current situation suggests a void of at least 12-18 months before new journal citations are captured. Further, the new contractor will only be required to index 1,000 educational journals; down significantly from the 4,400 journals that were indexed by old ERIC system. As a result, significant questions must be raised about how this action will impact the scholarship of the profession.

C. Resources

For additional information about NCLB and issues associated with research and assistive technology, consult the following articles.

1. No Child Left Behind: Implications for Assistive Technology
<http://www.ataccess.org/resources/nochild.html>

A fact sheet by Lisa Wahl for the Alliance for Technology Access analyzes the impact of NCLB for assistive technology.

2. Edyburn, D.L. (2004). Consumer or producer of assistive technology research: Has NCLB altered your role? *Closing the Gap*, 23(3), 12-13, 24.

Outlines a strategy for creating collegial study groups to examine issues of NCLB, research, and assistive technology and our roles as producers vs. consumers of educational research. Provides readings and resources to facilitate four study group sessions.

III. Locating Research

Six strategies for accessing the research knowledge base will be demonstrated and discussed.

A. Getting started

Often it is helpful to have a launching place to provide some orientation to getting started in how to locate special education research. The following is one such useful resource.

1. NICHY Connections...to Special Education Research: Where to Start
<http://www.nichcy.org/resources/researchtostart.asp>

B. Access bibliographies of historical works

Historical bibliographies often provide a unique glimpse of what has been done on a given topic. Two sources for archived bibliographies are listed below.

1. NCITE Research Synthesis
<http://idea.uoregon.edu/~ncite/documents/techrep/other.html>

Look for the fourth bullet (Quality and availability of assistive technology devices) and click on the following two links:

Research synthesis, Tech. Rep. No. 7 (1994) (PDF Format)
Executive summary, Tech. Rep. No. 8 (1994)

2. The SERC Library: Bibliographies
<http://www.ctserc.org/library/Articles/Bibliographies.shtml>

A gold mine of special education bibliographies. In particular, look for Assistive Technology bibliography

<http://www.ctserc.org/library/bibfiles/at.pdf>

Alternative and Augmentative Communication bibliography

<http://www.ctserc.org/library/bibfiles/aac.pdf>

Computers and Special Education bibliography

<http://www.ctserc.org/library/bibfiles/comp-sped-95-01.pdf>

C. Access assistive technology research from the source

Within the context of increased accountability and the desire for understanding the value of technology investments, three national research centers have been established to advance an agenda that will substantially increase the knowledge base surrounding assistive technology and its effective use by individuals with disabilities. Accessing the resources from these three national research centers allows educational leaders to be at the cutting edge of what is known about assistive technology.

1. National Assistive Technology Institute
<http://natri.uky.edu>

2. The ATOMS (Assistive Technology Outcomes Measurement System) Project
<http://www.atoms.uwm.edu>

3. Consortium for Assistive Technology Outcome Research (CATOR)
<http://www.atoutcomes.org>

D. Monitor journals reporting original research on special education technology

This strategy involves monitoring new issues of journals as they come up as well as browsing past issues. While clearly not as efficient as searching a database, it is effective and important given the current gaps in journal indexing.

1. Special Education Technology Print Journals

Assistive Technology
Closing the Gap
Journal of Special Education Technology
Special Education Technology Practice
Technology and Disability

2. Special Education Technology Electronic Journals

Assistive Technology Benefits and Outcomes
<http://www.atia.org/atob/ATOBV1N1/>
The Journal of Special Education Technology
<http://jset.unlv.edu>

D. Year in review: Innovative literature synthesis methodology

Most professionals report inadequate time to stay current with their professional reading. In addition, given the wide number of journals that publish work relevant to special education technology, how can a person find relevant articles?

Edyburn has created a new research methodology known as the comprehensive one-year review. Briefly, he reviews a large collection of professional journals, captures all articles relevant to special education technology, and then creates extensive indexes for

accessing the new additions to the knowledge base. Reviewing this article each year will provide readers with ready access to new advances in special education technology research and practice.

To obtain a copy of one of the annual reviews, access:

Edyburn, D.L. (2004). 2003 in review: A synthesis of the special education technology literature. *Journal of Special Education Technology*, 19(4).

Will be available online at: <http://jset.unlv.edu/19.4/>

Edyburn, D.L. (2003). 2002 in review: A synthesis of the special education technology literature. *Journal of Special Education Technology*, 18(3), 5-28.

Also available at: <http://jset.unlv.edu/18.3/edyburn/first.html>

Edyburn, D.L. (2002). 2001 in review: A synthesis of the special education technology literature. *Journal of Special Education Technology*, 17(2), 5-24.

Also available at: <http://jset.unlv.edu/17.2/edyburn/first.html>

Edyburn, D.L. (2001). 2000 in review: A synthesis of the special education technology literature. *Journal of Special Education Technology*, 16(2), 5-25.

Also available at: <http://jset.unlv.edu/16.2/Edyburn/first.html>

Edyburn, D.L. (2000). 1999 in review: A synthesis of the special education technology literature. *Journal of Special Education Technology*, 15(1), 7-18.

Also available at: <http://jset.unlv.edu/15.1/edyburn/first.html>

E. Literature synthesis tools

Tools that summarize the research knowledge base are very important for researchers and practioners. Locating a single synthesis resource on a topic of interest is often a valuable and efficient means for identifying the research on a given topic. Given the relative youth of the field of special education technology, our literature synthesis tools have been minimal while the knowledge base has been built. However, three useful resources are listed below.

1. CARET

<http://caret.iste.org>

CARET is a special project funded the International Society of Technology in Education (ISTE). The purpose of the project has been to capture and analyze the research literature on the effectiveness of educational technology. Interested readers can access this wealth of information at: <http://caret.iste.org/>.

The general format makes research especially accessible for educational leaders.

Selecting a topic (such as student achievement) then allows the reader to browse common questions and view answers with links and citations to the research that supports the response. This is a very useful resource for busy professionals.

2. *Handbook of Special Education Technology Research and Practice*
<http://www.knowledge-by-design.com>

Given the relative youth of the field of special education technology, we currently do not have a comprehensive synthesis of the literature like those found in more established fields like reading. That void will be filled as a new book is released in early 2005: *Handbook of Special Education Technology Research and Practice*. Educational leaders seeking to have ready-access to the research literature will find this one volume book to be an essential desk reference.

This comprehensive single volume reference contains 41 chapters on a wide range of topics: historical, legal, and policy foundations; access for diverse populations, assistive technology, disability specific technology applications; instructional design, technology and instruction; professional development; and trends and issues. The book is edited by Dave Edyburn, Kyle Higgins, and Randy Boone and features contributions from 90 authors. The hardcover book will be over 800 pages and will retail for \$89.95. To view the table of contents and obtain ordering information, visit the web site listed above.

3. What do we know? What do we need to know?

A comprehensive synthesis of the special education technology literature in six areas: accessibility, assistive technology, professional development, instructional technology, service delivery, and legal/policy issues. Describes what we know and advances questions about what we need to know in each area.

Edyburn, D.L. (2001). Critical issues in special education technology research: What do we know? What do we need to know? In M. Mastropieri, & T. Scruggs, (Eds.), *Advances in Learning and Behavioral Disabilities*, Volume 15, NY: JAI Press, pp. 95-118.

IV. Interpreting Research

Locating research is only part of the problem for those seeking to use research to improve educational practice. Another significant task involves reviewing and analyzing research studies to understand their relevance and quality. Many educational practitioners are often challenged by the technical nature of this task.

The following resources have been designed to facilitate tasks associated with interpreting research. These tools are ideal for building the capacity of educational leaders to use research to inform decisions.

A Policymaker's Primer on Education Research: How to understand, evaluate and use it
<http://www.ecs.org/html/educationIssues/Research/primer/index.asp>

Choosing Qualitative Research: A Primer for Technology Education Researchers
<http://scholar.lib.vt.edu/ejournals/JTE/v9n1/hoepfl.html>

Edyburn, D.L. (2003). Assistive technology and evidence-based practice.
ConnSense Bulletin. Available online: <http://www.connsensebulletin.com/edyatevidence.html>

V. Utilizing Research to Improve Professional Practice

Ultimately, the value of the resources that have been identified in this session need to be applied to the task of answering important questions about the use and value of assistive and instructional technology. Some interesting questions that educational leaders have posed relative to utilizing the research knowledge base:

- Is it appropriate to use technology with students with autism?
- Will assistive technology raise a student's score on the state's high stakes writing test?
- Are there differences in assistive technology outcomes between students of different ethnic groups?
- Which is better, product X or product Y?
- How can you demonstrate the impact of AT training?
- How do I know if AT works with my students?
- What is the best way to research AT effectiveness?
- How can you do research on AT when there is not a good definition of AT?
- Does assistive technology within a classroom setting raise children's success in reading?
- Will use of word prediction increase the amount a student writes?
- What cognitive skill level is necessary to support voice recognition training?
- What are the research indicators to warrant the high end communication devices? What is the percentage of students successfully using augmentative devices for both communication and curriculum needs?
- Are text processors (e.g., Kurzweil, WYNN, eReader) increasing reading fluency and comprehension for students who have print disabilities? Which students can benefit from text processors? Are text processors better than having audio text? Why?

- Is assistive technology effectiveness correlated (negatively or positively) with teacher computer literacy?
- What percentage of students with disabilities using AT in schools are able to find competitive employment after graduation?
- What are the interventions that close the “gap?”

Concluding Thoughts

As questions are raised about the research base in special education technology, it is important that educational leaders have access to original research as well as interpretive syntheses and analyses that serve to inform practice. The purpose of this session has been to profile resources that make the extant knowledge base more accessible.

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