

# FOCUS *on* EXCEPTIONAL CHILDREN

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## Celebrating Special Education Research

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The National Center for Special Education Research (NCSE) is one of the four Institute of Education Sciences (IES) centers. The mission of NCSE is to support rigorous research to expand knowledge and understanding of the needs of infants, toddlers, children, and youth with disabilities and to improve services provided under the Individuals with Disabilities Act (IDEA). Since NCSE awarded its first grants in 2006, it has helped to transform special education research and practice. It has funded relevant and rigorous research to improve school readiness and education outcomes for learners with or at risk for disabilities, from infancy through transition from high school – and more recently in postsecondary education. The IES/NCSE training programs have been instrumental in developing the next generation of researchers and enhancing the skills of established researchers.

This article is based on a lecture at the University of Kansas in October 2022, as part of The Edward L. Meyen Distinguished Lecture Series (Figure 1 provides links to the content in this article). The first Meyen Lecture was given by Dr. Grover J. (Russ) Whitehurst, the first Director of IES when IES was still in its early years and NCSE in its infancy. In the introduction to Dr. Whitehurst's talk, Dr. Don Deshler said that at IES Dr. Whitehurst had created a "new standard" for education research and rigor and had the courage to fight off the criticisms of those who bring about a cultural change. His "steadfast insistence on an apolitical approach to research" had won him the praise and respect of many of his critics. Those two features of IES – as a standard setter and as an independent and nonpartisan science agency – continue to be critical to fostering the education sciences.

Some of the points made by Dr. Whitehurst in the first presentation of the Meyen lecture series (paraphrased in bold below) are of note 15 years later.

**The role of the Federal government in advancing science is rooted in the Constitution.**

Section 8 of the Constitution lays out the powers of Congress and includes the power to establish a navy, coin money, establish the post office and "promote the Progress of Science." The importance of science seems to have been appreciated even in the earliest days of this country.

**The National Institutes for Health (NIH) devotes 40 percent of its budget to research. The US Department of Education devotes less than 1% of its budget to research.**

Dr. Whitehurst presented these figures in 2007. The proportion of IES to the overall Department of Education budget is still less than 1%. Of note, the proportion of NCSE's budget to the Office of Special Education Programs budget is less than a half a percent.

**There is "low supply and low demand" for education research.**

While this was a concern at the time of Whitehurst's lecture, it is no longer the case. The focus on evidence has risen dramatically since 2007, with a particular impetus from the Foundations for Evidence-Based Policymaking Act of 2018 (Evidence Act). The call for "evidence-based practice" is everywhere.

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\*Dr. McLaughlin served at the time of the lecture as the Commissioner of the Institute of Education Sciences National Center for Special Education Research (NCSE). This article has been adapted from the Edward L. Meyen Distinguished Lecture by Dr. Joan E. McLaughlin, presented at the University of Kansas on October 20, 2022. Her 2022 presentation can be viewed at <https://www.youtube.com/watch?v=pGhx5eRyfyEhe>.

**The IES training programs would change the training and the capacity in the field.**

This forecast was spot on—from Summer Institute methods training to postdoctoral fellowships and early career grants—the capacity to do rigorous research has increased dramatically since 2007. Additional information about these programs is presented later in this article.

**IES has tried to provide stability and predictability – for example, in peer review and funding programs with a long-term sense of priorities.**

NCSER has had success in this area, with the establishment of standing programs of research and training programs, and the highly standardized peer review process. The exception to this is funding uncertainty. Without funding certainty, it has been difficult to be predictable and the long-term programs of research have been disrupted when there were insufficient funds to run the competitions or limited the scope of the competitions.

The vision Dr. Whitehurst laid out for IES and what NCSER, and indeed all of IES, has accomplished is worth celebrating. The following discussion focuses on NCSER's accomplishments in special education research, including the work to build evidence, develop an infrastructure for research, and provide training opportunities for those entering the field and established researchers wanting to enhance their methodological skills.

While research on individuals with disabilities occurs outside of NCSER—through federal funding sources

like NIH and NSF and other sources such as private foundations—only the work of NCSER is discussed here.

**BUILDING EVIDENCE**

NCSER's objectives are to (1) Develop or identify education interventions (broadly defined as practices, programs, policies, and approaches) that enhance education outcomes and can be widely deployed; (2) Identify what works and what does not work and thereby encourage innovation and further research; (3) Understand the processes that underlie the effectiveness of education interventions and the variation in their effectiveness; and (4) Develop measures to assess education outcomes and progress. The progress in meeting these objectives is discussed by the types of NCSER grants awarded since 2006.

**EXPLORATION RESEARCH**

NCSER supports exploratory research to develop, clarify, or expand theories of action and conceptual frameworks by examining relationships between learner, educator, education setting, and/or policy factors and meaningful education outcomes. NCSER funded 70 exploration studies between 2006 and 2022. Thirty-eight of these studies were completed during that time and 31 of these had publications. (Note that additional publications are expected once studies are completed).

Exploratory research informs and helps guide the field. For example, one exploration project analyzed process data collected in recent administrations of the National Assessment of Educational Progress (NAEP) to better understand universal design and accommodations for students with disabilities. Given the increasing reliance on online assessments, we need to know what is and is not working for these students. Exploratory work in multiple NCSER-funded grants analyzing data from the National Longitudinal Transition Studies helped us identify needed research and changes in practice to better support students with disabilities transition from high school.

NCSER also funds meta-analyses through exploration grants. These analyses identify rigorous research on a topic, summarize the findings across studies, and provide direction for future research. There are several completed and ongoing meta-analytic projects in NCSER, including one focused on factors related to treatment intensity for effective communication for individuals with autism spectrum disorder and complex communication needs, and another targeting intervention practices

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associated with positive outcomes for students with attention-deficit/hyperactivity disorder.

### ***DEVELOPMENT STUDIES***

NCSER supports research to develop or modify and pilot interventions that can be scaled up to benefit education outcomes for students with disabilities. Development grants are often where innovation in research takes place. These grants are intended to improve current practice and to help further our understanding of what works for whom and under what conditions. The largest number of NCSER grant awards goes toward development research. From 2006 through 2022, 226 grants for development work were funded. Of these, 161 grants were completed during that time, and 142 had publications. About two-thirds of those with publications have shown promise for providing beneficial outcomes for students with disabilities, which is a respectable “hit” rate for development research. It is also important to note that if there is no evidence for the promise of an intervention, this is not necessarily a research failure. This outcome can mean going back to the drawing board, but often it is with lessons learned from the completed research about what an intervention might need to be successful. For example, there might be a need to increase the intensity of the treatment (such as more time spent in intervention activities) or better professional development to support teachers in intervention implementation.

### ***CAUSAL STUDIES***

NCSER supports causal studies to assess the impacts of interventions on learner education outcomes. These studies document how and where the intervention is implemented and the necessary support, including at what cost, for implementation with fidelity. NCSER has funded 156 causal studies (including efficacy, effectiveness, and follow-up studies) from 2006 to 2022. Ninety-six were completed during that time, and 89 of these had publications. At the end of 2022, 49 of these studies had been reviewed by the What Works Clearinghouse (WWC), and 34 of those reviewed met standards.

The field needs scientific evidence from causal studies to inform how best to improve education outcomes for students with disabilities. For example, thanks largely to IES research, recent WWC practice guides in [math](#) and [reading](#) have stronger evidence than ever to support instruction in these two key areas. All 6 of the recommendations in the math practice guide have strong evidence to back them up, and 3 of the 4 recommendations

in the reading practice guide have strong evidence; the other has moderate evidence. Both practice guides have been viewed and downloaded thousands of times since publication.

The WWC also puts out evaluations of the evidence on specific interventions (such as those focused on improving math instruction or improving academic, social, and transition outcomes for students with disabilities) as well as reviews of single studies with the goal of helping practitioners identify trustworthy research to inform decisions and improve student outcomes.

A survey with over 500 teachers was recently conducted by the research organization Child Trends to help the IES Research Centers (NCSER and the National Center for Education Research or NCER) think about dissemination strategies. The survey found that a number of teachers use IES as a resource for information to guide their practice, including the WWC’s systematic reviews, practice guides, and reviews of individual studies; articles in the Education Resources Information Center (ERIC); and the blogs of the two IES Research Centers “Inside IES Research”. Of note is that the percentage of special education teachers reporting consuming information from IES resources “regularly” or “sometimes” was found to be higher (56 to 62 percent) than general education teachers (26 to 37 percent).

### ***MEASUREMENT***

NCSER supports research to develop, refine, and/or validate measures for use by educators and education researchers. From 2006 to 2022, NCSER funded 70 projects focused on the development and/or validation of measures for students with disabilities. Forty-eight of these were completed during this time, and 45 had publications.

There is an incredible need for measures that address disability, in research and practice. In addition, numerous measures are currently being used with learners with disabilities that have little to no information on the reliability or validity for use with these learners.

### ***BUILDING AN INFRASTRUCTURE FOR RESEARCH***

From its earliest days IES has been building an infrastructure for high quality research, and NCSER has been working to support this effort in special education. This work has included setting standards for research, identifying principles that can enhance the ability of research to be transformative, developing and enhancing research

methods, supporting peer review of research grant applications, and providing training for future and established researchers.

### **STANDARD SETTING**

Throughout its 20-year history, IES has continued to develop standards and guidance that have shaped research funded by NCSER. The What Works Clearinghouse (WWC) has played an important part in this effort through its reviews of the quality of research in educational interventions. The WWC provides a Procedures and Standards Handbook for these reviews, with the latest update, Version 5.0, released in August 2022. These standards have helped shape the requirements and guidance in NCSER’s request for applications (RFAs). The procedures and standards for review have, and will continue to, evolve over time. The single case design (SCD) review procedures and standards are an important component of this evolution for special education. These standards have been updated and taken off “pilot” standards status, and no doubt will undergo further revision as this design and special education practice continue to evolve.

### **COMMON GUIDELINES**

IES and the National Science Foundation worked together to provide cross-agency guidelines that reflect a common understanding of the goals and expectations of various types of research – including exploratory, development, and causal impact studies. These [Common Guidelines](#) were published in 2013. [Guidelines for replication research](#) were added in 2018.

### **STANDARDS FOR EXCELLENCE IN EDUCATION RESEARCH (SEER)**

The SEER principles were developed under IES Director Mark Schneider to complement the focus that IES has for many years put on the internal validity of studies and evaluations. Table 1 identifies the nine SEER principles.

The SEER principles have been encouraged and sometimes required in grant applications, depending on the project type. Resources continue to be developed to support the field in addressing these principles in research planning and can be found on the [IES webpage](#) for the SEER principles.

### **INVESTMENT IN RESEARCH METHODS**

IES has also invested significant funding into developing research methods and providing resources for

**Table 1:** IES Standards of Excellence in Education Research (SEER) Principles

- Pre-register studies
- Make findings, methods, and data open
- Address inequities in learners’ opportunities, access to resources, and outcomes
- Identify interventions’ components
- Document treatment implementation and contrast
- Analyze interventions’ costs
- Use high-quality outcome measures
- Facilitate generalization of study findings
- Support scaling of promising interventions

broader dissemination. Specifically, IES created a research competition (funded by NCER) designed to further our understanding of the best methodological and statistical practices in the education sciences. This competition also supports the work of early career scholars. Over 100 grants have been supported under this program, including research on single-case design. IES has also invested in funding [methodological resources](#) to support high-quality research. Examples of resources that the two IES Research Centers have commissioned or helped develop include papers on designing cluster randomized-controlled trials; the role of between-case effect size in conducting, interpreting, and summarizing single-case research; and an introduction to sequential, multiple assignment, randomized trial (SMART) designs.

### **SCIENTIFIC PEER REVIEW**

Scientific peer review is a critical part of the infrastructure that IES has built. Peer review is overseen by the IES Office of Science, separate from the research centers that run the grant competitions. This “firewall” is intended to allow for a peer review process that is as objective as possible and to free program officers to provide technical assistance to applicants.

The procedures for technical and scientific peer review have been approved by the National Board for Education Sciences, which is one of the mandated tasks of the Board as outlined in the [founding legislation for IES](#). More information on the peer review process and the link to where you can offer your services as a peer reviewer can be found [here](#).

### **RESEARCH TRAINING IN THE IES RESEARCH CENTERS**

The two IES Research Centers have invested heavily in research training, and researchers focusing on learn-

ers with disabilities have benefited from the programs funded by both Centers. The NCER programs of research support training beginning with undergraduates considering careers in the education sciences, pre- and post-doctoral training, and methods training for current research scientists. Methods training through NCER has included workshops and summer institutes in randomized controlled trials, quasi-experimental design, implementation science, cost analysis and cost-effectiveness, and meta-analysis.

The NCSER-funded training programs have included early career development and mentoring and postdoctoral training in special education and early intervention. NCSER has complemented the training in education research methods supported by NCER with those of particular interest to researchers focused on students with disabilities, including single-case design and sequential, multiple-assignment, randomized trial, or SMART designs that can help education researchers build and evaluate high-quality adaptive interventions.

Both NCSER and NCER are partnering on a project to help identify the experiences of recipients of the various training programs post-training. Preliminary indicators suggest that these programs are making a difference. For example, since 2008, NCSER has awarded 20 post doctoral program grants to 13 institutions. About 80 fellows have graduated from these programs and gone on to work as faculty or research scientists at colleges and universities. The content focus of the postdoctoral programs has included research related to autism spectrum disorders; social and behavioral strategies to support learning; emotional and behavioral disorders; early intervention; reading; and multi-tiered systems of support.

Between 2013 and 2022, NCSER made 36 grants to early career investigators in over 30 institutions. Six of these are now PIs or co-PIs on grants from other NCSER competitions.

Since 2016, NCSER has funded methods training grants focused on single-case and adaptive interventions and SMART designs. These grants have trained hundreds of established researchers. Attendees at these trainings have included researchers interested in designing and implementing high-quality single-case and SMART studies and methodologists who teach university classes and want to learn more about these methods to strengthen their instruction.

## CONCLUSION

It has been 20 years since Congress authorized NCSER through the Individuals with Disabilities Education Act. Throughout this time, NCSER has worked to ad-

dress significant challenges, including staff reductions, the Covid pandemic, and budget cuts, to help shape the landscape of special education research. The broad portfolio of NCSER-funded research has included exploratory, development, causal impact, and measurement grants that together have made meaningful contributions to our understanding of students with disabilities and the barriers they face in education settings and informed theory and practice. NCSER, in collaboration with other IES Centers, has set high standards and provided guidance to ensure scientific rigor in research that is meaningful and practical. The IES training programs have been instrumental in ensuring researchers have the knowledge and tools to advance the field long term. There is much to do, but as everyone in special education knows well, progress deserves to be celebrated.

Readers interested in learning more about the specific research and researchers that NCSER has funded over the years can follow the [IES Research Blog](#). NCSER blog posts include the work of researchers who have spent decades conducting research in special education, such as Drs. Lynn and Douglas Fuchs, multiple researchers in a particular topic area, such as school discipline for students with disabilities, and early career researchers who describe their research but also offer advice for those starting in the field. Videos of Joan McLaughlin and Grover J. (Russ) Whitehurst's Edward L. Meyen Distinguished lectures can be found at <https://specialedu.ku.edu/events-resources/lectures/edward-l-meyen-distinguished-lecture-series/archives>

## ABOUT THE AUTHOR

Dr. McLaughlin received her bachelor's degree in psychology from the University of Notre Dame and her master's and doctoral degrees in Developmental Psychology from Cornell University. Prior to her terms as Commissioner, Dr. McLaughlin served as Deputy Commissioner of NCSER from 2009 to 2013, as well as Program Officer for the Early Intervention and Early Learning in Special Education research portfolio. Her doctoral thesis was on early language learning, and the important work that NCSER grantees were doing to support early intervention drew her to NCSER. Before joining IES, Dr. McLaughlin spent 16 years working in the Education and Family Services area of Abt Associates Inc., where she led numerous evaluations of Federal education, food assistance, and early childhood programs. At Abt, she honed her management and methodological skills, including conducting randomized controlled trials in schools and child development programs. Dr. McLaughlin also served as a Program Officer in the Office of Analysis and Evalu-

ation at the USDA's Food and Nutrition Service, where she oversaw studies of programs and initiatives focused on maternal and child health and child nutrition. In her first job out of graduate school, she served in the Program Evaluation and Methodology Division of the U.S. Government Accountability Office.

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### Figure 1: Links to content in the article

IES Research Blog

<https://ies.ed.gov/blogs/research/>

What Works Clearinghouse. (2022). *What Works Clearinghouse procedures and standards handbook, version 5.0*. U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance (NCEE). This report is available on the What Works Clearinghouse website at <https://ies.ed.gov/ncee/wwc/Handbooks>.

Common Guidelines for Education Research and Development

<https://ies.ed.gov/pdf/CommonGuidelines.pdf>

Common Guidelines on Replication & Reproducibility in Education Research

<https://ies.ed.gov/pdf/CompanionGuidelinesReplicationReproducibility.pdf>

SEER principles and resources

<https://ies.ed.gov/seer/>

IES methodological resources

<https://ies.ed.gov/funding/resources.asp>

Education Sciences Reform Act, the founding legislation for IES

<https://www.govinfo.gov/content/pkg/COMPS-747/pdf/COMPS-747.pdf>

IES peer review information

[https://ies.ed.gov/director/sro/application\\_review.asp](https://ies.ed.gov/director/sro/application_review.asp)