

Institute of Education Sciences Director's Biennial Report to Congress

Fiscal Years 2011 and 2012

November 2013

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U.S. DEPARTMENT OF EDUCATION



INTRODUCTION & OVERVIEW

The Institute of Education Sciences (IES) is the primary research and evaluation arm of the U.S. Department of Education. Authorized by the Education Sciences Reform Act of 2001 (ESRA), the Institute's mission is to expand fundamental knowledge and understanding of education and to provide education leaders and practitioners, parents and students, researchers, and the general public with unbiased, reliable, and useful information about the condition and progress of education in the United States, about education policies, programs, and practices that support learning and improve academic achievement and access to educational opportunities for all students, and about the effectiveness of federal and other education programs.

ESRA requires the director to transmit a biennial report to the President, the Secretary of Education, and Congress that includes:

- a description of the activities carried out by and through the national education centers during the prior fiscal years;
- a summary of each grant, contract, and cooperative agreement in excess of \$100,000 funded through the national education centers during the prior fiscal years, including, at a minimum, the amount, duration, recipient, and purpose of the award, and the relationship, if any, to the priorities and mission of IES;
- a description of how the activities of the national education centers are consistent with the principles of scientifically valid research and priorities and mission of IES; and
- such additional comments, recommendations, and materials as the director considers appropriate.

This is the fifth biennial report and covers activities for fiscal years 2011 and 2012 (October 1, 2010 to September 20, 2012.) The fourth biennial report covered the transition period between John Q. Eaton, who became director on June 1, 2009, and Grover J. "Russ" Whitehurst, IES' inaugural director. This is the first report to cover a time span with Easton as director for the entire 2 years.

In his first years at IES, Easton committed to maintaining the agency's rigorous standards for research, evaluation, statistics, and assessment. Through new research priorities approved by the National Board for Education Sciences and numerous public statements, Easton also promised a renewed emphasis on relevance, accessibility, and timeliness in IES work. Ultimately, IES will be judged by practitioners and policymakers seeking guidance from the research community on how useful and helpful they find IES activities, studies, and products.

Maintaining Rigor, Promoting Relevance

In FY 2010 and 2011, IES launched several new initiatives aimed at increasing relevance and usability. These are described in greater detail in the IES Center reports following in this document, but highlights include:

- In January 2012, the National Center for Education Evaluation and Regional Assistance (NCEE) awarded new contracts for the Regional Educational Laboratories (RELs). The scope of work and expectations for the RELs changed significantly from the previous set of awards, which focused on conducting a small number of large-scale evaluations. The defining feature of the new RELs is the *Research Alliance*, a joint effort among REL and other researchers, practitioners, and policymakers. The research alliances focus on a limited number of locally determined, relevant topics of interest, such as early childhood education, English language acquisition, digital learning, and college preparation, for example. The driving premise behind the alliances is that collaboration and partnering among researchers and practitioners and policymakers will lead to relevant and useful research.
- As state longitudinal data systems have grown more robust with the assistance of federal funding administered through IES, there are concerns that the data in these systems are used productively by states. To help address this concern, National Center for Education Statistics (NCES) and NCEE together support state data users in efforts jointly sponsored by the RELs and the National Data Forum (an NCES activity).
- In order to improve access to information and promote wider distribution of evidence, IES undertook a range of new activities in this time frame, many of which are still

underway but nearing completion. These include significant enhancements to the What Works Clearinghouse (WWC) website that enable more users easier access to more information. Similar changes were begun in ERIC. NCES developed more data tools allowing users to extract more detailed information from NCES data sets, including National Assessment of Educational Progress (NAEP) results.

- In this reporting period, IES began an ambitious project with the National Science Foundation to develop an evidence framework to guide the funding of education research. The framework describes six types of education research studies. The key contribution of this effort is the clear definition for the kind of evidence needed to qualify to conduct a specific type of research and the expectation for the evidence to be generated from the study. The framework should lead to more productive development activities as well as more comprehensive and nuanced testing of interventions, programs, and tools. Ultimately, the evidence framework will contribute to greater aggregation of useful knowledge generated by education research grants across the government.
- In FY 2012, the National Center for Education Research announced a new research topic, Researcher-Practitioner Partnerships. These build on an extant program called Evaluating State and Local Programs and Policies that required partnerships between researchers and state or local education officials to conduct rigorous evaluations. The new grant program focuses on nascent partnerships, and in fact, encourages the development of these collaborations. Researchers and practitioners are required to jointly define research questions, conduct exploratory and descriptive research, and to consider next steps, whether that is additional research or action. Like the research alliances supported by the RELs, the assumption driving the partnership grants is that by having a stake in the research activities, practitioners will have greater trust for and understanding of the research and will therefore be more likely to use the findings (or extend the research agenda, if appropriate). These two research topics set the stage for a third topic on continuous improvement research in education. Work on this topic began in FY 2012 but was not announced until later and will be described in a subsequent biennial report.
- In its quest for greater relevance, IES has endeavored to build stronger ties to program offices in the Department of Education. We have sought more advice in developing new

research competitions described later in this document, in planning evaluation studies, in conducting data collections, and in providing more frequent briefings on findings from funded studies and summary reports. In August 2012, IES organized and hosted a full day symposium on the reliability, validity, and use of value-added measures of student achievement. Planned jointly with staff from other offices of the Department, this symposium brought together researchers from a range of disciplines and perspectives to describe the current state of knowledge around value add models. IES posted a comprehensive summary of the meeting and two-page briefs written by each of the meeting participants on its website.

Organization of This Report

This report comprises three sections: An overview of IES; highlights of IES center activities, accomplishments, and findings; and an appendix containing all awards made in fiscal years 2011 and 2012.

Organization, Staff, and Budget

IES encompasses four centers: The National Center for Education Research, the National Center for Education Statistics, the National Center for Education Evaluation and Regional Assistance; and the National Center for Special Education Research. IES has a staff of approximately 185 full-time research scientists, statisticians, and other professionals.

In FY 2012, IES had a total budget of \$610,977,000. These funds were administered by the four centers as follows:

- The National Center for Education Research administered \$172,434,000 for research and research training grants from the research, development, and dissemination appropriation.
- The National Center for Education Statistics administered \$108,748,000 for statistics, \$129,616,000 for assessment, \$38,077,000 for statewide data systems, and \$5,265,000 for surveys and assessments using funds from other Department of Education offices.
- The National Center for Education Evaluation and Regional Assistance administered \$14,078,000 for dissemination activities from the research, development, and

dissemination appropriation, \$57,426,000 for the regional educational laboratories, \$11,415,000 for special education studies and evaluations, and \$24,813,000 for evaluations of Department of Education programs using funds appropriated for other Department offices.

- The National Center for Special Education Research administered the \$49,905,000 appropriation for research in special education.

In addition, the National Board for Education Sciences was budgeted approximately \$200,000 of the research, development, and dissemination funds to carry out its activities.

Scientific Peer Review Process

Research Grants. Between October 1, 2010 and September 30, 2012, the Standards and Review Office in IES (SRO) handled the processing and scientific peer review of applications to the Institute's FY 2011 and FY 2012 research competitions. During this period, 2,428 applications were reviewed by 58 review panels comprising 1,065 external scientific reviewers. In addition, the first round of FY 2013 reviews, which culminated with panel meetings in October 2012, was almost complete by the end of this period. That review session involved an additional 363 applications, which were reviewed by 184 external reviewers across 9 review panels. In addition to the regular research competitions, SRO also managed the external peer review of 31 applications to the Institute's FY 2012 Statewide Longitudinal Data Systems grant competition.

Institute Reports. During the period from October 1, 2010 through September 30, 2012, SRO handled the scientific peer review of 150 reports from IES centers. Of these reports, 86 were from NCES, 54 were from NCEE, and 8 were from NCSER, and 2 were joint NCSER/NCER reports.

Outreach and Communications

IES continues to inform the public and reach out to practitioners, policymakers, and others through the IES website (<http://ies.ed.gov>), which has a wealth of information from the National Center for Education Statistics, the *What Works Clearinghouse*, the Education Resources Information Center, the regional educational laboratories, research and development centers,

conferences, publications, and other products. The website continues to evolve as IES strives to make its work more accessible and ensure that it continues to meet the needs of a wide range of education stakeholders in a well-organized and useful manner.

National Board for Education Sciences (NBES)

The National Board for Education Sciences oversees the primary functions of IES. The board is composed of 15 highly qualified education experts and researchers representative of the research community and general public.

The board members and term expiration dates are:

- Anthony S. Bryk (November 28, 2015)
- David J. Chard (November 28, 2015)
- Darryl Ford (November 28, 2016)
- Adam Gamoran (November 28, 2015)
- Robert C. Granger (November 28, 2014)
- Kris D. Gutierrez (November 28, 2016)
- Larry V. Hedges (November 28, 2015)
- Susanna Loeb (March 15, 2016)
- Bridget Terry Long (November 28, 2016)
- Margaret R. (Peggy) McLeod (November 28, 2016)
- Judith D. Singer (November 28, 2014)
- Robert A. Underwood (November 28, 2016)
- Hirokazu Yoshikawa (November 28, 2015)

There are two vacancies on the board.

The NBES held six meetings during this biennium and submitted annual reports for 2011 and 2012 to Congress, the director, and the Secretary of Education. These reports, as required, “assessed the effectiveness of the Institute in carrying out its priorities and mission, especially as such priorities and mission relate to carrying out scientifically valid research, conducting unbiased evaluations, collecting and reporting accurate education statistics, and translating research into practice.” In the Chair’s Message in the 2012 NBES annual report, Bridget Terry Long stated:

“IES has been effective in producing the research, programs, and tools necessary to support educational practice, policy, and research. The accomplishments of IES, and the researchers and innovators supported by IES funding, are numerous and will continue to have positive impacts on the lives of students as well as many other parts of our society. As we note many times in this report, IES has ably led the way as the quality and breadth of educational research continues to grow.”

Grant and Contract Awards

IES carries out its programs through grants, contracts, and cooperative agreements. The appendix includes all awards made in fiscal years 2011 and 2012. The appendix may be accessed at <http://ies.ed.gov/aboutus/>.

Conclusion

Since the previous biennial report, IES has undertaken several initiatives to increase the relevance and usability of its work while maintaining a fundamental commitment to rigorous standards. These initiatives are described in this report. Several other initiatives were under formulation in this reporting period and will be described in the next report.

HIGHLIGHTS OF CENTER ACTIVITIES

National Center for Education Research (NCER)

In FY 2011, NCER received and reviewed 906 applications to its research and training programs and awarded 90 grants; in FY 2012, NCER received and reviewed 783 applications and awarded 71 grants. Over this two-year period, the total investment in new research and training programs was \$283.5 million. The newly funded research projects address many of the issues at the top of the nation’s education improvement agenda, including how to improve early childhood education, respond more effectively to students’ social-emotional needs in the classroom, and increase postsecondary access and success. For example, researchers at Columbia University are revising and expanding a popular preschool curriculum, *Getting Ready for School*, so that it provides a more fully integrated approach to supporting parents and early childhood teachers in fostering young children’s language and literacy, mathematics, and self-regulation skills, and will conduct an evaluation to determine whether the curriculum improves children’s school readiness. At Stanford University, researchers are developing a computer-based intervention designed to teach sixth- and seventh-graders how to regulate their emotions and adopt a “growth mindset” – i.e., the ability to improve academic performance with increased effort. The researchers will then examine whether the intervention leads to improvements in students’ grades and test scores, and how academic outcomes are mediated by students’ attitudes and emotional functioning. And a team of researchers at the CNA Corporation are evaluating the impact of the Florida College and Career Readiness Initiative, which uses test scores to identify 11th grade students likely to graduate high school but also likely to need remediation in college. The study will determine whether remediation offered in the 12th grade improves academic preparation and leads to better college performance.

Among the major awards in FY 2011 and FY 2012 were three new Research and Development centers. The goal of the new *Center for Analysis of Postsecondary Education and Employment*¹ is to advance knowledge regarding the link between postsecondary education and the labor market. It will examine the trajectory of employment and earnings growth for students who complete any postsecondary education, including traditional Bachelor’s and Associate’s degree

¹ <http://capseecenter.org>

programs, short-term occupational degrees, and non-credit workforce programs. It will also investigate outcomes for students enrolled in for-profit institutions, a relatively new and growing segment of postsecondary education. The purpose of the new *Center for the Study of Adult Literacy (CSAL): Developing Instructional Approaches Suited to the Cognitive and Motivational Needs for Struggling Adults*² is to advance our understanding of ways to improve the reading skills of struggling adult learners reading at the 3rd to 8th grade levels. The Center will both conduct exploratory work on underlying cognitive and motivational processes that contribute to or impede reading development, and develop and evaluate a multi-component reading intervention for this population. In addition, CSAL will examine the adequacy of measurement instruments and assessments for this population. The third new research and development center, the *National Center for Analysis of Longitudinal Data in Education Research (CALDER)*³, supports an ongoing effort to understand state and district education personnel policy issues and their relationship to student outcomes. CALDER will pay special attention to efforts by state and local education agencies to turn around low-performing schools and improve college/career ready outcomes for secondary school students. Its work draws on longitudinal administrative data from six states (Florida, Missouri, New York, North Carolina, Texas and Washington) and the District of Columbia.

Building Knowledge: From Exploration to Effectiveness

NCER supports a wide range of research, from exploratory studies designed to identify factors that facilitate or impede students' educational progress, to pilot projects designed to develop and assess the promise of new intervention strategies, to rigorous evaluations designed to measure the efficacy or effectiveness of education policies and programs. Over the past decade, IES has funded 70 projects that build directly on the findings and lessons from projects supported with previous IES funding. These investments are leading to a deeper understanding of ways to improve student outcomes and to wider adoption of evidence-based strategies.

The work of Douglas Clements and his colleagues is one example⁴ of a research team taking an intervention from the development stage to large-scale implementation and evaluation across

² <http://csal.gsu.edu/>

³ <http://caldercenter.org/>

⁴ For a succinct summary of this line of work, see: Clements, D.H., & Sarama, J. (2011). Early Childhood Mathematics Intervention. *Science*, 333: 968-970.

three states. Clements and his colleagues developed the *Building Blocks* curriculum to address children's early mathematical knowledge through small- and large-group classroom activities. Developed with funding from the National Science Foundation (NSF), this curriculum has been evaluated in a series of IES-funded efficacy and scale-up studies. The intervention has shown consistent positive effects on the mathematics achievement of young at-risk children in prekindergarten and during the early years of formal schooling. In the most recent findings, the team has learned that children in kindergarten and first grade classrooms whose teachers were taught about the pre-k *Building Blocks* intervention outperformed children who only received the intervention in preschool, and those who were in the control group. In addition, the preschool intervention continues to show benefits at the end of first grade when teachers are aware of the mathematics skills that these young learners bring to the classroom as a result of participating in *Building Blocks*.

NCER is working to make sure that all of the research it funds is easily accessible and useful to a wide variety of audiences, including policymakers, practitioners, researchers, and the general public. NCER researchers regularly give briefings, present at conferences, and publish in peer-reviewed scientific journals. A new policy implemented in 2012 requires all peer-reviewed publications to be submitted to the Education Research Information Clearinghouse, where they can be downloaded free of charge. In addition, NCER submits studies that report positive impacts of interventions on student outcomes to the What Works Clearinghouse for independent review. In FY 2011 and in FY 2012, 20 interventions evaluated with NCER funding were identified as improving student outcomes in reading, writing, mathematics, science, and access to and retention in postsecondary education.

In sum, then, the work of NCER contributes to the mission of the Institute to generate evidence-based knowledge that can be used to support improvements in education outcomes for all students. Researchers are building systematic and sustained knowledge in areas of critical importance to education and learning with the support of IES.

Progress on the Reading for Understanding Initiative

In FY 2010, NCER launched a major initiative called Reading for Understanding Research (RfU) to help improve the reading ability of students from prekindergarten to twelfth grade. The

initiative is conducting basic research on processes that contribute to reading comprehension; developing and evaluating instructional approaches, curricula, technology, and teacher professional development programs to improve students' reading abilities; and developing and validating assessments of reading comprehension. Six research teams are involved in the effort, and meet regularly to discuss research plans and findings. Among the major accomplishments to date:

- *New Curricula.* All five core teams have developed, tested, and refined new interventions designed to improve reading for understanding in a variety of disciplines. These interventions include both supplemental curricula for use by entire classrooms and curricula targeted to meet the needs of struggling comprehenders at every grade level. Accompanying those curricula is a set of professional development materials for teachers designed to improve their capacity to use student discussion and debate to build language and reasoning skills. The interventions developed by the RfU teams are quite consistent with more rigorous, college and career ready standards. All the teams are developing materials and activities that focus on enriching the classroom language environment in some way. This suggests that the RfU interventions will be highly useful to states and school districts that are implementing more rigorous standards.
- *Novel Assessments.* A new assessment to measure deep comprehension, called the "Global Integrated Scenario-Based Assessment", or GISA, has been developed and field-tested for grades 2 through 12, and work is beginning on GISA for younger students. GISA attends to important moderators, such as background knowledge and motivation, and situates the reading task in a socially meaningful context. A battery of measures to assess component reading skills is also under development for use in conjunction with GISA so that performance can be interpreted in light of specific challenges in reading skills. In addition, the teams have developed and validated a number of other novel assessments, such as measures of academic language and perspective-taking, filling a void in currently available assessments.
- *Understanding the Development of Reading Comprehension.* Several teams are in the third year of conducting longitudinal studies that will shed new light on how reading comprehension develops from prekindergarten through adolescence. Researchers are

working to identify precursors of reading comprehension difficulties and successes, and hope to glean new insights on how to support the development of higher-level reading comprehension that is critical to success in middle and high school.

Improving Postsecondary Access, Retention, and Completion

NCER is also supporting research to help improve students' ability to attend and succeed in college. Two recent NCER-funded studies have identified strategies that address questions of affordability, enrollment, and academic progress. In the first study, Bettinger, Long and colleagues⁵ examined the effects of an intervention in which H &R Block tax preparers in two states provided information to low-income families on the cost of nearby colleges and an estimate of the amount of need-based aid the clients (or their children) would receive if they enrolled. In addition to this information, a subset of families received help in completing and filing the Free Application for Federal Student Aid (FAFSA), which most institutions require for students to receive financial aid. The study found that information alone did not affect college enrollment, but that the combination of information and FAFSA assistance produced significant effects on college enrollment for high school seniors, young adults already out of high school, and older adults. Building upon the successful outcomes of this study, the team received a FY 2012 award⁶ to test the effects of simplifying the financial aid application process and providing assistance at scale. The team will recruit participants in this scale-up evaluation from the 3.5 million individuals who use free tax-filing services.

In a second study supported with NCER funding, researchers examined whether taking two or more thematically linked courses as part of participation in a “learning community” improved the post-secondary outcomes of community college students in need of developmental education. Working in six community colleges across the United States, the National Center for Postsecondary Research⁷ found that students in learning communities experienced modest gains in credits earned but did not persist in college at higher rates than the comparison group. The

⁵ Bettinger, E. P., Long, B. T., Oreopoulos, P., & Sanbonmatsu, L. (2012). The role of application assistance and information in college decisions: Results from the H&R Block FAFSA experiment. *Quarterly Journal of Economics*, 127(3), 1205–1242.

⁶ Improving Information and Access to Financial Aid: Expanding the FAFSA Experiment (<http://ies.ed.gov/funding/grantsearch/details.asp?ID=1265>).

⁷ Visher, M.G., Weiss, M.J., Weissman, E., Rudd, T. and Wathington, H. D. (2012). The effects of learning communities for students in developmental education: A synthesis of findings from six community colleges. New York, NY: National Center for Postsecondary Research.

study affirmed the need for further development and testing of strategies that may lead to better outcomes for community colleges students who are placed into developmental education courses.

Looking Ahead: Building Partnerships between School Practitioners and Researchers

In order to make sure the research it funds is useful to practitioners – and to help researchers become more sensitive to school context and the challenges educators face – NCER is encouraging researchers to partner with state and local school officials in the design and conduct of their studies. In this way, NCER seeks to increase its funding of research that is based on practitioner needs and priorities. NCER took steps to highlight the critical role of school partners in the research process when it initiated the research program on *Evaluation of State and Local Education Programs and Policies*⁸ in FY 2009. A research team at Vanderbilt University received support through this program to collaborate with state officials in Tennessee on an examination of whether the Tennessee Voluntary Pre-K Program (TN-VPK) is attaining its primary objectives of enhancing the school readiness of economically disadvantaged children and improving their academic performance. In 2012, NCER established the *Researcher-Practitioner Partnerships in Education Research* program⁹ to increase the participation of practitioners in the generation of research questions and projects that may lead to future applications under NCER’s other grant programs. NCER received more than 70 applications for the Researcher-Practitioner Partnerships program in September 2012.

National Center for Education Statistics (NCES)

Longitudinal Studies

Through its longitudinal sample survey data collections, NCES provides policy makers and researchers with information about how experiences in educational settings interact with family and community influences to shape the educational development of the U.S. population. During the fiscal year 2011 and fiscal year 2012 time period, NCES continued to implement and pursue

⁸ <http://ies.ed.gov/ncer/projects/program.asp?ProgID=61>.

⁹ Additional information about the Researcher-Practitioner Partnership in Education Research Program can be found here: <http://ies.ed.gov/ncer/projects/program.asp?ProgID=81>.

longitudinal study initiatives that were just underway during the previous biennial report and to plan for future studies.

One of the more ambitious studies that NCES supported during this period was the Early Childhood Longitudinal Study: Kindergarten Class of 2010–11 (ECLS-K: 2011). ECLS-K:2011 is the second kindergarten cohort study undertaken by NCES and is designed to carefully maintain the strengths of the first kindergarten cohort study while simultaneously addressing some of its limitations. Central to the design of ECLS-K: 2011 and the previous cohort study is collection of information directly from the children themselves and from their parents, teachers, school administrators, and out-of-school care providers. These data allow study of change in child academic knowledge, social skills, and physical development. A significant limitation of the previous study was a lack of information about children during their second and fourth grade years. A second limitation was sparse information about summer learning loss and within school-year academic gains. At the time of the last biennial report, the fall kindergarten data collection of the study was just being completed. During the fiscal year 2011 and 2012 period, data collections were fielded to capture information about the children as they progressed through spring of their kindergarten year, fall of their first grade year, spring first grade, and fall second grade. The second grade data collections will provide policy makers and researchers with information lacking in the first kindergarten cohort study about development before, during, and after second grade. The fall and spring data collections in the kindergarten, first-grade, and second-grade years will allow policy makers and researchers to have a clearer understanding of factors that can ameliorate summer learning loss and that are related to boosts in within-school year academic gains. Annual spring data collections for the third, fourth, and fifth grade years are planned.

Longitudinal studies undertaken by NCES and other organizations as a whole have provided limited information about children's development during the middle grade period, typically defined as the period between fifth grade and ninth grade. To capture information about children during this developmental period, NCES initiated a new middle grade longitudinal study that will follow the development of children from sixth through eighth grade. During the 2011 and 2012 period, basic design features of the study were developed laying the ground work so that a middle grade longitudinal study could be fielded beginning with the 2016-17 school year. The

timing is important as it will facilitate cross cohort comparisons and analyses with ECLS-K: 2011 data and data from the next high school longitudinal study. Children in the ECLS-K:2011 will finish fifth grade in the 2015-16 school year (the last year of the study), and the next high school longitudinal study is currently slated to begin with a cohort of ninth grade students beginning in the 2019-20 school year.

The High School Longitudinal Study of 2009 (HSL: 09) is NCES's most recent high school longitudinal study. It began with a cohort of ninth graders in the fall of 2009. This study focuses on decisions regarding STEM course taking and postsecondary education. During the first follow-up (spring 2012), data were collected from and about students in the cohort during their eleventh grade year. NCES will survey this cohort again during the summer after their high school graduation in 2013 and again three years later when many members of the cohort will be in the third year of college. These collections will provide information about transitions into college and the work force. NCES is currently completing the third wave of data for its other ongoing secondary school longitudinal study (the Education Longitudinal Study of 2002), at the point at which many of the cohort members have completed college. As part of this study, NCES will also collect postsecondary transcripts and financial aid information. This study began with a tenth grade cohort in 2002.

NCES also fielded longitudinal studies focusing specifically on postsecondary students during fiscal years 2011 and 2012. NCES completed data collection for the 2011-12 National Postsecondary Student Aid Study (NPSAS). NCES also began the second data collection for the 2008 Baccalaureate and Beyond (B&B) study during 2012. This collection focuses on the experience of 2008 college graduates as they established themselves in the labor market or continued their education at the graduate school level. Both of these studies rely upon the Integrated Postsecondary Education Data System (IPEDS) as the data source for their sampling frames. NCES began collecting more information related to distance education through IPEDS, which allows it to identify institutions that provide distance education programs exclusively and provide data about enrollment in distance education in order to capture longitudinal data on students participating in these postsecondary programs.

National Assessment of Educational Progress (NAEP)

Over the past two fiscal years, NAEP has pursued two paths: providing nationally representative results of what America's students know and can do in various subject areas and planning for future NAEP adaptations to take advantage of new technologies. To continue moving the NAEP program forward, NCES convened a summit of diverse experts in assessment, measurement, cognition, and technology in August 2011. These experts discussed and debated ideas for the future of NAEP. A second summit of state and local stakeholders was held in January 2012. A panel of participants from the two summits developed a vision for the future of the NAEP program and made recommendations on the role of NAEP, based on the discussions and their own expertise. The resulting white paper is available on the NCES website (please see http://nces.ed.gov/nationsreportcard/about/future_of_naep.aspx).

NCES made significant advances in computer-based assessment during the past two fiscal years. The results from the 2009 Science interactive computer and hands-on tasks were released, including all of the interactive computer tasks (ICTs), so that this innovative assessment type could be shared with the public. In addition, NAEP administered its first fully computer-delivered assessment in 2011 – writing at grades 8 and 12. The results provided information on eighth- and twelfth-graders' ability to write on the computer for specific purposes and audiences, and on the extent to which they engaged in certain word processing actions (such as spell check) when composing their writing. NCES also conducted a study of fourth-graders' ability to write on the computer. Finally, NCES developed a new assessment in Technology and Engineering Literacy (TEL). Rather than simply testing students' knowledge of engineering or technology, TEL is designed to gauge how well students can apply their understanding of technology principles to real-life situations. TEL marks a departure from the typical NAEP assessment design because it is completely computer-based and includes interactive scenario-based tasks—an innovative component of NAEP. Students will be asked to perform a variety of these interactive tasks to solve problems within realistic scenarios.

In addition to advances in technology-based assessments, NCES has also been pursuing improvements to the measure of socio-economic status (SES) for NAEP. Currently, NAEP uses a student's eligibility for a free or reduced price lunch as a proxy for SES. Challenges with using this measure (including differing reliability across grades and school-level and jurisdiction-level

eligibility) led NCES to investigate other alternatives and to convene an expert panel to provide a theoretical foundation for an improved measure of SES for NAEP. Additional investigations will continue over the course of the next few years.

International Studies

In international studies, NCES continued to conduct or facilitate linking studies to obtain greater efficiency and enhance the usefulness of its statistical portfolio. The intent is to learn more about how the international assessments relate to assessments used more regularly in U.S. schools and to enable states to benchmark their performance internationally without the cost and burden of fielding international assessments themselves. The largest effort has been to link the National Assessment of Educational Progress (NAEP) and Trends in International Mathematics and Science Study (TIMSS) in mathematics and science at grade 8. To create the link, a subsample of students was administered special booklets during the 2011 NAEP administration window that contained both NAEP and TIMSS items. Likewise, during the 2011 TIMSS administration window a subsample of students was administered special booklets. By analyzing the relationship between student performance on NAEP and TIMSS items, NCES has been able to compare the validity, precision, and cost-effectiveness of three different methods of statistical linking. NCES has also learned valuable information about the extent to which the statistical properties of NAEP and TIMSS items are dependent on such factors as time of year of test administration, availability of accommodations for students with special needs, and length of test booklets. In addition to the national data collection for TIMSS, nine states were invited to participate in TIMSS with independent state representative samples to provide the data needed to validate the linking function.

In 2010, NCES administered a field test of a new assessment of adult literacy called the Program for the International Assessment of Adult Competencies (PIAAC). NCES administered the main study between 2011 and 2012. PIAAC builds on previous work but is much larger than prior international assessments of adults in terms of the number and variety of countries. Participants include 26 countries, including nearly all the advanced economies in the Organization for Economic Cooperation and Development (OECD).

One component of the PIAAC asks participants to report on the skills they use on the job. Although this is based on similar national work done in the United Kingdom and the United States, it is new to international assessments of adults and is being conducted in collaboration with the U.S. Department of Labor, as well as representatives of labor ministries internationally. PIAAC is administered on computers, except in cases in which respondents are not familiar enough with computers to use them or have literacy skills so limited that a paper-and-pencil assessment makes more sense for them. In addition, PIAAC includes an assessment of problem-solving in a technology-rich environment, which is also new to adult assessments. One of the benefits of administering PIAAC on computers is the opportunity to adapt assessment items to responses in real time, that is, to make the assessment easier or harder depending on the items each respondent is able to successfully complete.

NCES is also participating in the Teaching and Learning International Survey (TALIS), a comparative study of teaching and the teaching profession coordinated by the OECD that includes more than 30 countries. NCES administered the field test in 2012 and the main study in 2013. Results will be released in June 2014.

Other ongoing international studies include the Program for International Student Assessment (PISA), an assessment of mathematics literacy, reading literacy, and science literacy at age 15; TIMSS, an assessment of mathematics and science at grades 4 and 8; and the Progress in International Reading Literacy Study (PIRLS), an assessment of reading at grade 4. NCES administered the PISA 2012 field test in 2011 and main study in 2012. Results will be released in December 2013. NCES administered the TIMSS and PIRLS main studies in 2011 and released the results in December 2012.

Cross Sectional Data Collections

In addition to longitudinal studies, NAEP, and international assessments, NCES supports a wide range of data collections providing information on prekindergarten through adult education. During 2011 and 2012, NCES began to redesign its flagship study about the nation's teachers, the Schools and Staffing Survey (SASS), to take advantage of rich data available from administrative record systems and to decrease the time between collections. NCES will use extant record systems, primarily ED Facts and the Civil Rights Data Collection (CRDC) to

provide much of the data it previously collected directly from districts and school administrators through SASS. This change will reduce respondent burden and free existing survey time to ask teachers about new policy relevant issues as they arise. Beginning with the first full data collection during the 2015-16 school year, NCES will reduce the SASS data collection cycle from four years to two years.

NCES developed the Fast Response Survey (FRSS) and the Postsecondary Education Quick Information System (PEQIS) to provide policy makers information about schools and faculty not captured in some of its larger data collections. As their names imply, these surveys are designed to be flexible enough to collect data and provide information in a relatively short time period. During 2011 and 2012, NCES used data collected through these studies to address two congressional directives: providing updated information about arts education in elementary and secondary schools and about the physical conditions of the nation's public elementary and secondary schools. Reports from the arts studies were released in 2011 and 2012. Collection of data about the physical conditions of schools was initiated in 2012.

NCES relies on the National Household Education Surveys (NHES) to regularly collect data directly from families and individuals about educational issues that are difficult to address through its school-based collections. The NHES is the Department's primary source of data about experiences of families and young children in preschool education and care settings. For students in elementary and secondary school, NHES provides information about families' experiences interacting with their children's schools, their involvement with their children's education more broadly and planning for their children's postsecondary education, and information about students who are homeschooled. NCES completed its redesign of the study in 2011 and administered a full national data collection that focused on early childhood education and parent and family involvement in elementary and secondary education in 2012 with results to be released in 2013.

Building on NHES, NCES is also piloting a new household data collection to regularly capture data from adults about their education, training, and credentials for occupations. These data will complement NCES' postsecondary education data collections by capturing data about all adults, not just those in traditional postsecondary institutions. A particular focus of the study is collection of accurate information about industry-recognized certifications and licenses adults

obtain outside of traditional higher education settings. The new study is being guided by continued interagency effort to improve federal statistical data on the education, training, and credentials that out-of-school youth and adults need for employment. Staff from NCES chair and support this effort, the Interagency Working Group on Expanded Measures of Enrollment and Attainment (GEMEnA).

The Common Core of Data (CCD) has been a critical source of information about the country's public elementary and secondary schools, school districts, and state education agencies. The data are collected from all schools and school systems each year. During 2011-2012, NCES began work to integrate the CCD more closely with ED Facts in order to eliminate redundancies and to improve the data in both collections. Some of these improvements included modifications that allow more comprehensive and accurate information to be collected from the nation's charter schools, and to improve the timeliness and accuracy of CCD data more generally. In addition to improving the quality and timeliness of CCD data, NCES facilitated linking information from the CCD on schools to other data about the geographic areas around these schools. In 2011, NCES began to collect school boundary information for the 350 largest school districts in the U.S. Once the methodology is established, it will be applied to school service area boundaries. These mapping projects will allow information from sources like the American Community Survey (ACS) to be linked to CCD district- and school-level data.

Statewide Longitudinal Data Systems (SLDS)

Work also continued to improve the Statewide Longitudinal Data Systems (SLDS), including their extensions into early childhood, postsecondary education and the workforce (P-20W). During the reporting period, NCES focused on providing robust technical assistance in the areas of stakeholder engagement, data governance, sustainability, and data use so that state agencies can work together to exchange information in ways that protect privacy and confidentiality. SLDS' Education Data Technical Assistance Program (EDTAP) offers grantee and non-grantee states on-site technical assistance from the State Support Team (SST), which is composed of experts on data quality, use, and governance; remote support from SST members; topical monthly webinars; working groups; best practice guides; SLDS-related artifacts from other states; and state-to-state, regional, and national meetings. These activities and resources are designed to increase states' abilities to coordinate with a wide group of stakeholders; assist states

in the development of reports, tools, and training to promote the use of SLDS data; and ensure that states are instituting practices to support the long-term sustainability of SLDSs.

During FY 2012, NCES held a competition for additional grants to states for SLDS. Awards were made to XX states for grants to help them continue to develop their statewide data systems and to link preschool, K-12, postsecondary, and workforce data.

Improvements to Information and Data Access

During 2011 and 2012, NCES made several improvements to its postsecondary longitudinal data collections to improve access to the existing data. NCES developed an archive and search tool to help policy makers and the public search over 5,000 tables NCES has produced from the postsecondary longitudinal studies. For those who wanted to manipulate the data directly to generate tailored tables and analyses, NCES also expanded the number of postsecondary longitudinal data sets that could be accessed through on-line data analysis tools, particularly the PowerStats tool. NCES' efforts to expand access to its data were not limited to postsecondary longitudinal data, however. In 2012, it introduced the IPEDS Trend Generator, which allows users to analyze trends in postsecondary data more easily. During the reporting period, NCES also continued to update the IPEDS data that it uses to populate the College Navigator. The College Navigator is the Department's search engine designed to assist prospective postsecondary students and their families find appropriate institutions to attend. NCES also began planning to integrate data elements new to IPEDS about distance education and has plans in place to integrate other NCES data sets into PowerStats, including cross-sectional data sets, starting in 2013.

The NAEP Data Tools are core web-based analysis and reporting tools, including the NAEP Data Explorer (NDE), the State and District Profiles, the State Comparisons tool, and the NAEP Questions Tool (NQT). In any given month, the tools service more than 100,000 requests for NAEP information, and that number typically doubles when NAEP reports are released. Over the past 2 years, NCES improved the utility of the NAEP tools in a number of ways. It integrated NDE output into the initial release website at <http://nationsreportcard.gov> to allow users to delve more deeply into results. In 2011, NCES added a new map view that shows changes in states' scores over time, how specific student groups contribute to the demographic makeup of the state,

and whether or not the performance of those groups has changed compared to previous assessments. NCES made its statistical comparison charts more accessible by placing them in the statistical significance tab on the NDE and included data from the 2011 writing assessment in the NDE, which provides greater access to data related to student writing processes (or student actions) during an on-demand computer-based writing assessment. NCES is also developing the NQT/TryNAEP tool. This will be the next generation of the NQT and contains about 3,000 released NAEP items. The vision for the tool is threefold, including capabilities to (1) Search questions, (2) Take a Test, and (3) Make a Test.

NCES also launched the Elementary & Secondary Information System (ELSI) during the reporting period. This tool allows those interested in information about student, school, and school system information collected through the CCD and Private School Survey (PSS) to generate tailored data tables. NCES also improved related geographic and mapping tools by adding data elements to the online School District Demographic System mapping applications. To improve access to international study data, NCES moved data from earlier TIMSS, PISA, and PIRLS assessments into the International Data Explorer (IDE).

NCES also undertook a major redesign of its annual report to Congress, *The Condition of Education*. This redesign focused on increasing access to the report using a wide range of communication platforms including improved web site access, e-books, YouTube, and Twitter feeds. These efforts made it possible to reduce costs associated with dissemination of printed copies of the report. NCES also streamlined the *Condition* to focus more clearly on a repeating set of indicators of central importance to education in the United States, which will allow it to move from a static, once-a-year, product to one that will be updated continuously as new sources of data become available.

National Center for Education Evaluation and Regional Assistance (NCEE)

NCEE conducts three sets of activities to support the use of research evidence in education decision making by practitioners and policymakers.

- First, NCEE **produces research evidence** through its evaluations of federal initiatives and programs that are eligible for federal funding. It also supports locally prioritized research and evaluation through the Regional Educational Laboratories (RELs).
- Through the What Works Clearinghouse, NCEE **summarizes research evidence**, providing practitioners, policymakers, and researchers with impartial assessments of the amount and quality of evidence on the effectiveness of specific programs, policies, or practices in education.
- Finally, the Center **supports access to and use of research evidence** through the technical assistance and research dissemination activities of the RELs; access to bibliographic references and full text of research articles through the Education Resources Information Center (ERIC); and the curatorial and information search activities of the National Library of Education (NLE).

Producing Research Evidence: National Evaluations

NCEE carries out an active program of research and evaluation on the impact and implementation of federal education initiatives. NCEE also conducts studies of interventions and policy approaches that are eligible for federal funding. During fiscal years 2011 and 2012, NCEE released 10 large evaluation reports, 3 shorter evaluation briefs, and 3 papers describing empirical investigations of evaluation methodologies or measurement.

NCEE conducts and reports on its evaluations in a manner that assures scientific rigor, credibility, and relevance to the needs of the Department and the broader field of education research and practice. When developing studies, NCEE solicits feedback from Department program offices about issues on which good evidence is most urgently needed. Each evaluation project is advised by a Technical Working Group comprised of recognized experts in the content areas and/or methodology relevant to that particular evaluation. All evaluation reports are peer-reviewed by scholars in the field through a process coordinated by IES's Standards and Review Office.

In 2011, NCEE released two final reports from large-scale studies of the effectiveness of interventions related to improving student achievement in mathematics. In the area of

elementary school mathematics, NCEE released a study comparing the effects of four popular textbook series on student achievement in first and second grade

(<http://ies.ed.gov/pubsearch/pubsinfo.asp?pubid=NCEE20114001>). The study used a random assignment design to compare how much students learned when taught with one of four curricula: Investigations, Math Expressions, Saxon Math, or Scott Foresman-Addison Wesley (SFAW). The study was intended to provide evidence for educators to use in textbook selection decisions. Adopting a new textbook series is a costly undertaking, and because schools typically use a textbook series over multiple years and grades, the choice affects many cohorts of students.

The study found that there were differences in student achievement between curricula. The average math achievement of first graders in schools using Math Expressions was higher than in schools using Investigations and SFAW but neither higher nor lower than in schools using Saxon. The average math achievement for second graders in schools using Math Expressions and in schools using Saxon was higher than in schools using SFAW but neither higher nor lower than in schools using Investigations.

In the area of **middle school mathematics**, NCEE reported on the impact of a professional development program for seventh grade mathematics teachers. The program, which offered a summer institute as well as seminars and coaching during the school year, sought to increase teachers' knowledge of rational number topics and to add to their ability to provide quality instruction on these topics. The study was motivated by the paucity of rigorous evidence regarding the effectiveness of professional development in mathematics, despite the large annual investments that districts and states make in training for their teachers. The focus on teaching rational numbers—fractions, decimals, percent, ratio, and proportion—was selected because these topics are challenging for many seventh-grade students and are considered an essential foundation for algebra.

The study found that this particular professional development program did not have an impact on teachers' knowledge or student achievement. Building on these results, NCEE began planning for a study of a math professional development program that provides a more intensive focus on the mathematics content and a somewhat less intensive focus on methods for teaching the content. This new study of professional development, which began at the end of 2012, extends

NCEE's research into which types of professional development programs – if any – result in increases in student achievement.

In addition to conducting studies of impact, NCEE also examines how federal policies, initiatives, and programs are implemented. During fiscal years 2011 and 2012, NCEE reported its findings from several implementation studies, including a study of the distribution of education funding under the American Recovery and Reinvestment Act (ARRA); a study of the implementation of incentives for effective teachers to transfer to low-performing schools; an evaluation of technical assistance to states provided by the Comprehensive Centers; and an assessment of the inclusion of students with disabilities in state accountability systems.

NCEE commissioned the study of students with disabilities and accountability systems as part of its Congressional mandate to assess how well the Individuals with Disabilities Education Act (IDEA) is meeting its intended outcomes. Using EDFacts data on about 40 states for four school years beginning in 2005-2006, the study examined the percentage of schools that were accountable for students with disabilities as a result of subgroup size and state rules for school accountability. It also examined the percentage of schools that moved in or out of accountability during the study years, and the percentage of schools that missed making their adequate yearly progress target because of the performance of the students with disabilities subgroup (<http://ies.ed.gov/ncee/pubs/20124056/pdf/20124056.pdf>).

In addition to releasing these reports, NCEE continued its other multi-year evaluations, including a study of the effectiveness of highly selective alternative routes to teaching certification; studies of the implementation and impact of alternative teacher compensation systems; implementation studies of Race to the Top and School Improvement Grants; and implementation and impact studies of SOAR (the DC school voucher program).

Producing and Supporting Use of Research Evidence: The Regional Educational Laboratories (RELs)

Fiscal years 2011 and 2012 were years of substantial research productivity and transition for the Regional Educational Laboratory (REL) program. The RELs, which are charged with conducting applied research, providing technical assistance to states and districts in the use of research and

data, and disseminating research findings, operate under contract to the Department. The Department awarded the 10 REL contracts approximately concurrently to enable the program to operate with a unified approach, emphasis, and learning agenda that is shared across the REL regions.

The REL contracts that began in spring 2006 ended in December 2011. The 2006-2011 RELs had a major focus on conducting large scale, randomized controlled trials of the effectiveness of interventions to improve student outcomes. The interventions tested by the RELs included mathematics, literacy, and social studies curricula, as well as approaches to teacher professional development and formative assessments. The RELs released final reports with findings from 17 rigorous studies of effectiveness during 2011 or 2012, bringing to 22 the total number of completed effectiveness studies they conducted during this contract cycle. In addition, the RELs released 61 fast-response studies (descriptive or correlational analyses) during the reporting period.

The 2012-2017 RELs emphasize researcher-practitioner partnerships. A new set of five-year REL contracts began in January 2012. For this contract cycle, NCEE took a new approach to serving the regions by organizing REL work around research alliances, which are groups of education practitioners, policymakers, and other stakeholders who work over time with REL researchers to use data and research to better understand and address a specific education concern.

NCEE defined research alliances broadly so that each REL and its stakeholders could craft its alliances to respond to the region's unique needs and opportunities. Some RELs developed cross-state, role-alike research alliances (for example, a research alliance specifically for state-level research directors). Other RELs concluded that the best opportunities in their regions were research alliances comprised of school districts facing similar challenges within a state or across state lines. Some research alliance configurations also include state and district staff from within a single state, with the goal of addressing a statewide concern at multiple levels of the education system. In total, the current RELs are working with approximately 70 research alliances.

An example of a research alliance is the Virtual Education Research Alliance (VERA), which is working with REL Midwest at American Institutes for Research. This alliance is comprised of

representatives from two states—Wisconsin and Iowa—where there is interest in using data to track progress and improve implementation of virtual education. Virtual education describes a range of instructional formats in which at least some instruction is carried out remotely, particularly through video or the Internet. Working with REL Midwest, research alliance members have conducted an inventory of their SLDS to identify data elements that they would need in order to track enrollment and progress in virtual courses. The research alliance offered a webinar on implications of virtual education state data systems, attended by representatives from SEAs and LEAs across the country.

With the 2012-2017 REL contracts, NCEE has also emphasized the provision of high quality technical assistance on the use of data and research. The RELs’ technical assistance takes a variety of forms, from large-group trainings to small group and individual consultation. Technical assistance also can involve the creation of training materials, data inventories, how-to guides, and tools that facilitate analysis and presentation of data. A particular focus of the RELs’ technical assistance has been helping LEAs and SEAs to better understand, use, and apply information from their administrative data systems.

The RELs have expanded their reach into their regions—and beyond—by using technology to provide better access to technical assistance. Webinars and virtual meetings with stakeholders have become a common low-cost strategy for maximizing reach and strengthening communication across the miles, which is particularly important for providing technical assistance to educators in rural and remote areas. RELs have opened up their webinars for national participation in order to maximize the impact of the program. Several RELs use social media to communicate with their constituents. RELs using Twitter are able to amplify each other’s work by “re-tweeting” messages, including information about REL-sponsored opportunities for online professional development.

The current REL program has a renewed emphasis on producing materials that are prepared thoughtfully and intentionally for a practitioner and policymaker audience.

NCEE expects REL research reports to be to-the-point, clear, and engaging. To support the RELs in this work, NCEE engaged a communications firm to develop guidelines for written reports for practitioners and policymakers; created annotated exemplars of clear and accessible writing for a

non-researcher audience; and designed an attractive new report template that is optimized for Internet readability.

All REL products intended for public distribution are formally peer reviewed for technical quality, as well as for readability (for reports), usefulness (for tools, such as Power Points and videos), and relevance to practitioner needs (all products). A new feature of the peer review process for REL products is the review of research proposals and draft products by a current or former staff member from a state department of education (SEA) or school district (LEA). These SEA or LEA representatives provide specific feedback on a product's practical usefulness to educators, including suggestions for improvements to be made before the product is released.

Summarizing Research Evidence: The What Works Clearinghouse

2012 was the ten-year anniversary of NCEE's What Works Clearinghouse (WWC). In the decade since its inception, the WWC has established itself as a trusted, central resource for education practitioners, policymakers, and researchers seeking impartial assessments of research claims about education effectiveness. The WWC does not conduct original studies; rather, it assesses and summarizes the evidence presented by researchers in their articles and reports on study findings. The WWC's products are Intervention Reports (summaries of research findings on a specific program, policy, or practice); Practice Guides (research-based recommendations for instruction and school organization, designed for an educator audience); Quick Reviews (abbreviated reviews of studies that have received significant media mention); and Single Study Reviews (assessments of individual studies).

During the WWC's first ten years, NCEE established the basic processes for conducting reviews, including written review standards, development of product lines and distribution channels (website and email lists), and certification training for reviewers to conduct WWC reviews. In 2011 and 2012, the WWC built on this foundation by adding more content to the database, improving its website search function, increasing the timeliness of its products, branching out into new topic areas, and training additional reviewers. During 2011 and 2012, the WWC released 32 new Intervention Reports; 2 Practice Guides; 24 Quick Reviews; and 14 Single Study Reviews. In total, at the end of 2012, the WWC offered 525 Intervention Reports; 16 Practice Guides; and 88 Quick Reviews or Single Study Reviews.

In 2011, WWC improved the search function on its website, making its content more accessible. The “Find What Works” feature allows visitors to search quickly for reviews by subject area, grade level, subgroups, evidence of effectiveness, and other criteria of interest. Visitors can produce customized reports or download information into an Excel file. The WWC also streamlined its website to reduce visual clutter and allow visitors to navigate more efficiently. Like the RELs, the WWC now uses social media—including Facebook and Twitter—to communicate its work to a wide audience.

During 2012, NCEE substantially shortened the time-to-publication of WWC Quick Reviews. Quick Reviews –which are triggered by media mentions of a study that makes claims about education effectiveness, or that the media describes as making such claims – now take approximately two weeks from start to finish, compared to three to four months before NCEE re-engineered the production process.

In 2012, NCEE expanded the WWC’s coverage of policy-relevant topic areas by awarding a new small business contract for conducting WWC reviews of research on improving postsecondary outcomes. Previously, the WWC had reviewed only interventions intended to improve student outcomes in the prekindergarten to Grade 12 span.

The WWC standards have become an established and respected benchmark for education researchers. As a result, there has been substantial demand among researchers for training in conducting WWC reviews. In response, NCEE expanded training for WWC reviewers during 2011 and 2012. In previous years, WWC reviewer certification had been limited to those doing direct work on the WWC contract. Beginning in 2011, NCEE opened the day-and-a-half-long certification course to other ED contractors, government staff from ED and other agencies, IES pre-doctoral and post-doctoral fellows, and the broader field of practicing researchers. In 2011 and 2012, 265 individuals attended a WWC group design training course, and 127 were certified as WWC reviewers. In addition, 37 individuals participated in a single case design training course, and 32 were certified as WWC single case design reviewers.

Providing Support to Department Evidence-Building through Research Reviews

The Department's Investing in Innovation (i3) grant program has won acclaim for using research evidence as a deciding factor in its awards. During the reporting period, staff at NCEE provided essential support for i3 grant competitions by critically reviewing research studies put forward by i3 applicants in support of their proposals. In addition, NCEE staff have conducted evidence reviews for several other Department competitions that require applicants to present evidence of promise.

Providing Access to Research Evidence: The National Library of Education and the Education Resources Information Clearinghouse (ERIC)

The National Library of Education, located on the basement level of the Lyndon Baines Johnson federal building, serves the Department's information needs and provides critical information discovery services to NCEE. The library works with WWC contractors and with NCEE evaluation contractors to conduct systematic searches of the literature on education interventions, compile abstracts of articles and research reports identified through the search, and retrieve the full text of items that meet screening criteria for inclusion in a systematic review.

In 2012, the library began a massive project to streamline and refocus its collection to better support evidence-building work at the Department. Approximately 30,000 items that were outdated, duplicative, and/or out-of-scope were removed from the collection, creating an opportunity for a more focused and up-to-date set of resources.

During 2011-2012, ERIC – the Institute's online database of research references and full-text documents – embarked on a new project to add a flag for each bibliographic entry indicating whether it had been peer reviewed. Although the quality of peer review varies substantially from one journal to another, this flag serves as a rough indicator of quality for the undergraduate and master-level students who make up a substantial part of ERIC's user group. ERIC had received feedback from higher education institutions that student assignments were more often incorporating a requirement that references be from peer-reviewed sources.

National Center for Special Education Research (NCSER)

Over the last two years NCSER made considerable investments in several areas: Early Intervention and Early Learning in Special Education; Social and Behavioral Outcomes to Support Learning; and research and development centers. Between 2011 and 2012, NCSER funded research and development centers that focus on critical issues for children and youth with disabilities: assessment and accountability, developing interventions to improve literacy skills of deaf or hard of hearing students, and testing comprehensive interventions for secondary school students with autism. NCSER also increased the number of projects devoted to assessing the efficacy of interventions and programs that lead to evidence-based practices. Prior to 2011, NCSER funded approximately 6 projects per year that tested for efficacy; from 2011 through 2012, this figure was 15 projects per year. This increase indicates a positive trajectory for support of rigorous research that may improve educational practice and outcomes for children and youth with disabilities. Also, in 2011, NCSER added two new topics to its special education research grant competitions to focus attention on families of children with disabilities and educational technology in special education.

Making a Difference

Researchers funded by NCSER have made important strides in advancing knowledge of teaching and learning as it affects children and youth with disabilities. The following sections highlight areas of investigation from the last two years that hold great promise for advancing NCSER's mission.

Autism

NCSER's investment in autism intervention research has led to exciting findings. Philip Strain and his colleagues at the University of Colorado, Denver completed a randomized controlled trial of *LEAP* (Learning Experiences: An Alternative Program for Preschoolers and Parents), a comprehensive intervention for preschool children with autism that can be embedded within existing preschool models and curricula. The intervention relies on teaching typically developing children to facilitate interaction with their peers with autism, naturally occurring incidental teaching by preschool teachers, and parent skills training. The researchers found that the program

resulted in more positive child outcomes (gains in cognition and language, reduction in symptom severity, growth in social skills, and reduction in problem behavior) compared to the control condition (Strain and Bovey, 2011). The investigators are currently conducting a follow-up study to examine whether these gains persist three years after the intervention ends.

NCSER is investing in autism research with children spanning a wide age range, including the nation's youngest children. For example, Linda Watson from the University of North Carolina at Chapel Hill is assessing the efficacy of an early intervention program called *Adaptive Responsive Teaching* with infants most at risk for autism spectrum disorder. The intervention is intended to improve developmental outcomes, ameliorate symptom severity, and preempt more serious consequences. Bonnie McBride from the University of Oklahoma Health Sciences Center is conducting a randomized trial of an intervention model for toddlers with ASD. The research team aims to determine whether the intervention leads to greater child gains in cognitive functioning, language, social relatedness, and adaptive behavior, and parental gains in recommended parenting strategies and decreased stress.

NCSER is also investing in research that focuses on the unique challenges faced by youth with autism during middle and high school. NCSER awarded a national research and development center grant to create the Center on Secondary Education for Students with ASD, led by Samuel Odom of the University of North Carolina at Chapel Hill, a large-scale, multi-site effort to develop and evaluate a comprehensive school-based intervention for secondary students with ASD aimed at improving cognitive, communicative, academic, social, behavioral, functional, and transition outcomes. Through a NCSER grant, Peter Mundy of the University of California at Davis is using new virtual reality technology to create visual and auditory settings that emulate the complex social environments of classrooms to explore social attention in children and adolescents with autism ages 8 to 18 years. Mundy is examining the relationship between social attention and cognitive skills involved in learning and academic achievement and whether students with autism can improve their social attention skills through practice.

Literacy and Mathematics

Students with disabilities do not attain the same performance thresholds as their peers on a range of literacy and mathematics outcome measures. To address the substantial gap in reading and

mathematics achievement between students with and without disabilities, NCSER is supporting a wide range of projects that develop and evaluate interventions and assessments to improve literacy and mathematics outcomes for students with or at risk for disabilities from kindergarten through 12th grade.

Deborah Simmons of Texas A&M University and her colleagues conducted a randomized controlled trial to investigate the efficacy of *Early Reading Intervention* compared to typical school instruction. They found that children who participated in the intervention improved their foundational reading skills (i.e., alphabetic, phonemic, and untimed decoding skills) that are critical for becoming a successful reader (Simmons et al., 2011). In a subsequent study (Coyne et al., in press), the researchers compared the standard version with one in which teachers adjusted instruction approximately every four weeks based on student performance. Children who received the new version had better literacy outcomes. Follow-up analyses at the end of first grade revealed a continued advantage for students who had received the experimental version of the *Early Reading Intervention*.

As part of the NCSER-funded Research and Development Center for Improving Learning of Fractions, Robert Siegler and his colleagues analyzed two nationally representative data sets, one from the U.S. and one from the United Kingdom and found that fifth graders' understanding of fractions and division uniquely predicted high school students' knowledge of algebra and overall math achievement, even after statistically controlling for a wide range of demographic and outcome variables. The findings suggest the importance of improving teaching and learning of fractions and division. Also as part of this research and development center, Lynn Fuchs and her colleagues at Vanderbilt University developed an instructional intervention focused on the teaching of fractions to students with or at risk for math disabilities. The third grade students who received the intervention experienced statistically and practically significant improvement on all fractions outcomes, including standardized measures compared to children who received typical classroom instruction.

NCSER is also investing in interventions to be used with students with low incidence disabilities such as intellectual disabilities or sensory impairments and who typically struggle acquiring basic literacy and mathematics skills. For example, Christopher Lemons of the University of Pittsburgh is developing a reading intervention that incorporates critical components of early

reading and also addresses the challenges with memory, expressive language, and motivation often exhibited by children with Down syndrome. Kimberly Wolbers of the University of Tennessee and her colleagues are adapting an intervention that has shown promise for improving writing outcomes for older deaf students for use with deaf students in grades 3 to 5. Researchers at the Educational Testing Service are developing *ClearSpeak*, an accessible mathematical markup language (MathML) that can be integrated with existing screen reader software to enhance the accessibility of mathematics content for visually-impaired students.

Social and Behavioral Outcomes

There is growing interest in, and recognition of, the link between children's social-emotional functioning and academic outcomes. Research sponsored by NCSER adds to this knowledge base. *First Step to Success* is an early intervention for students in kindergarten through third grade who exhibit antisocial or aggressive behavior. Results from a large-scale effectiveness trial conducted by SRI International indicated that students who attended intervention schools significantly improved their social skills and reduced their problem behaviors compared to students in comparison schools who did not receive the intervention. Although the intervention targeted student behavior, students in *First Step* schools also significantly improved their oral reading fluency skills compared to students in comparison schools (Sumi et al., 2012).

In addition, Stephen Smith and his colleagues at the University of Florida tested the efficacy of their *Tools For Getting Along* (TFGA) curriculum for 4th and 5th grade classrooms. TFGA is designed to ameliorate emotional/behavioral problems by teaching social problem solving. Results of the randomized clinical trial indicate that students in TFGA classrooms improved their cognitive and emotional self-regulation, increased their pro-social choices, and had a more positive approach to problem solving than their peers in classrooms where they were not taught TFGA (Daunic, et al., 2012).

NCSER is currently supporting several research projects on Positive Behavioral Interventions and Support (PBIS), a framework or approach for assisting school personnel in adopting and organizing evidence-based behavioral interventions into an integrated continuum that enhances academic and social behavior outcomes for all students. For example, K. Brigid Flannery at the University of Oregon developed a model to guide implementation of PBIS in high schools.

Robert Horner at the University of Oregon developed *Team-Initiated Problem Solving* (TIPS), a training and coaching model for teaching PBIS school teams to use behavioral and academic progress-monitoring data to better define and solve student problems. He is now testing his model to determine (a) the extent to which the TIPS procedures implemented by PBIS teams improves the team's problem solving and (b) the resulting impact on student academic and behavioral outcomes.

Other NCSER research grants in progress focus on the early identification and prevention of behavior problems. Jane Squires at the University of Oregon has developed the *Social-Emotional Assessment Measure* to help child care workers or parents accurately identify behavioral strengths and problem areas in infants and toddlers. Christine DiStefano at the University of South Carolina is developing an assessment for wide-scale use in preschools to identify early those who are at risk for social-emotional disorders.

Early Intervention and Early Learning in Special Education

Through its Early Intervention and Early Learning research program, NCSER supports a broad array of research activities designed to improve the developmental and school readiness outcomes for infants, toddlers, and young children with or at risk for disabilities.

For example, services are often disrupted when children transition out of early intervention services and into special education services in K-12 environments. Preliminary results of an efficacy study of the *Kids in Transition to School* (KITS) program conducted by Katherine Pears and her colleagues at the Oregon Social Learning Center suggest that an intervention provided during the summer before kindergarten and the first 8 weeks of kindergarten improves student and parent outcomes for children who receive early intervention and have behavioral and social problems. Specifically, early literacy and social-emotional skills improved for those who received the intervention relative to a control group, and, importantly, participation was associated with a reduction in the number of special services these children needed. KITS also was associated with improved parenting skills, which led to increased parental involvement in kindergarten. A second example of the breadth of the Early Intervention research program is the work of Charles Greenwood and his colleagues at the University of Kansas, who developed and validated a universal screening and progress monitoring measure that can help identify

communication delays before the start of preschool, when they have typically been diagnosed. In addition to increasing accurate identification of children with communication problems earlier than in the past, the measure is sensitive to children's growth in communication skills, which helps practitioners assess intervention needs and monitor individual children's progress.

In 2011, NCSER awarded a grant to Dana Suskind and her colleagues at the University of Chicago, who are developing and testing a curriculum to guide parents in low-income households to support their children who are deaf or hard-of-hearing through rehabilitation following the provision of cochlear implants or digital hearing aids. The intervention is intended to improve listening and language, and ultimately the educational success, of these children who are at high risk for poor academic outcomes. Under a 2012 NCSER grant award,, a research team headed by Paul Morgan at Pennsylvania State University is conducting analyses to better understand the extent to which vocabulary knowledge acquired during at-risk children's early years contributes to their academic and behavioral readiness by kindergarten entry, and the roles played by parenting, child care quality, and specific early intervention services in these learning and behavioral processes. Evidence indicates that vocabulary knowledge in young children is important for early literacy and school readiness, but there is little known about these connections in children with or at risk for disabilities.

Transition for Secondary Students

The transition from high school to post-school life is difficult for any student let alone a student with disability. NCSER funds a number of studies that address both the academic and transitional needs of high school students with disabilities. Greg Roberts and his colleagues at the University of Texas at Austin are evaluating the efficacy of interventions designed to improve reading achievement and persistence in high school for students with severe reading difficulties. The interventions include intensive reading instruction, dropout prevention activities, or a combination of these two approaches. Importantly, students received two years of intervention and are being followed for two additional years to determine which intervention is most effective for enhancing literacy outcomes and reducing dropout for students with severe reading difficulties.

Jay Rojewski and his team from University of Georgia conducted secondary analyses of data from the National Education Longitudinal Study of 1988 (NELS: 88) that investigated the longitudinal development of career and educational aspirations and expectations of students before and after high school. They found that students with high incidence disabilities have an aspiration trajectory similar to peers without disabilities but their career aspirations were lower in prestige (Rojewski, Lee, Gregg, and Gemici, 2012). The team's findings suggest that the lower prestige of career aspirations is a self-imposed restriction that appears in eighth grade and may restrict students' postsecondary employment and education options.

While at the University of Wisconsin, Erik Carter led a team that developed an intervention to promote the summer employment and community involvement of adolescents and young adults with emotional disturbance or significant cognitive disabilities. The researchers reported students with severe disabilities receiving the intervention were 3.5 times more likely to have community-based work experiences during the summer and worked more hours per week, compared with youth from the same schools who did not receive the intervention.

Technology and Small Business Innovation Research

NCSER-funded researchers continue to make important contributions in the area of technology for students with disabilities. For example, Thad Starner and his colleagues at the Georgia Institute of Technology are developing and conducting an initial evaluation of SMARTSign, an intervention to help hearing parents of deaf children learn sign language through the video delivery of signing on mobile phones. A research project at the University of Georgia is developing iSkills, a video repository of life skills tutorials for students with intellectual disabilities and autism that is designed to be delivered via handheld electronic devices. iSkills is intended to assist with direct instruction and self-instruction across several domains including independent living, employment, leisure, community involvement, and community navigation.

Through IES's Small Business Innovation Research Program, NCSER has funded promising technology-based interventions for students with disabilities. For example, researchers at HandHold Adaptive, LLC are developing iPrompts, a mobile application for handheld devices to assist students with autism spectrum disorders. The application includes picture schedules, visual countdown timers, and choice prompts designed to help teachers set expectations, ease

transitions between activities, increase students' attention to tasks, and develop social skills. In another SBIR project, researchers at ThoughtCycle, Inc. will develop an integrated learning and assessment gaming system, NumberShire, to assess and teach whole number concepts to students in first grade with or at risk for mathematics disabilities.

Capacity Building

Increasing the supply of scientists in education who are prepared to conduct rigorous and relevant special education research is an explicit function of IES. NCSER supports postdoctoral research training programs in which university faculty members mentor postdoctoral fellows in research on children with or at risk for disabilities. Within these programs, 38 postdoctoral fellows have been or are currently being trained. Of the 20 fellows who have completed their program, 16 are currently serving in research positions.

For the past two summers, NCSER has also supported capacity-building through the Summer Research Training Institute focused on Single-Case Intervention Research Design and Analysis. The Training Institute is designed to increase the knowledge and skills of researchers who wish to apply the method to their research with children with disabilities. Since single-case design is often the only experimental method applicable for tests of the efficacy of interventions for children with disabilities, it is imperative to increase the number of investigators skilled in its use. Through 2012, NCSER has trained 75 scientists through the Training Institute.

Going Forward

In 2012, NCSER collaborated with the National Institute for Disability and Rehabilitation Research and the Office of Special Education Programs to bring together practitioners, researchers, and methodologists to further the Department's thinking on how best to address the challenges faced by adolescents with disabilities.