



# Technical Report: Recommendations for Future Early Childhood Literacy Research

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## EXECUTIVE SUMMARY

The goal of the *Technical Report: Recommendations for Future Early Childhood Literacy Research* project was to define the research base in early literacy development – the current findings as well as the methodological approaches employed to gather such data – and develop a set of recommendations that could be used to inform the future research agenda. Specifically, the project allowed WestEd to answer the following research questions:

- What are the gaps in early childhood literacy research based on the literature review conducted by the National Early Literacy Panel (NELP) and other early childhood experts?
- How will the gaps be used to inform a future potential research agenda?

WestEd conducted three activities to address the research questions: conducted a document review of NELP Report<sup>1</sup>; interviewed select NELP members; and convened a roundtable of early literacy development experts. These activities resulted in the identification of gaps in current research and recommendations for future research.

### Identified Gaps in Research

Panel and Roundtable members identified the following gaps in the existing research on early child literacy development:

- Inconsistency in how research studies were reported (e.g., statistical analysis, measurements used and their reliability and reliability, reporting of findings)
- Lack of longitudinal studies that would enable researchers to measure the effects of an intervention from beyond early childhood and determine if the effects were sustained into the early elementary grades
- Subanalysis of data by subgroups to determine if specific interventions worked best with certain subpopulations (including English language learners) and/or within certain contexts (e.g., locale, types of preschool programs)
- Specific guidelines on the types of interventions that should be provided at a specific age or developmental stage

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<sup>1</sup> *Developing Early Literacy: Report of the National Early Literacy Panel – A Scientific Synthesis of Early Literacy Development and Implications for Interventions*. (2008). The Institute for Literacy and National Center for Family Literacy.

The panel members also discussed the absence of research studies that:

- Target children ages birth to three years of age with more measures of early literacy to determine the potential for a broader impact on early childhood development.
- Focus on comprehensive interventions that support children's literacy and language development.
- Use conventional measures of literacy.
- Focus on early writing in order to support children and enhance their experience with early writing and language development.
- Emphasize combining parent- and classroom-focused intervention to determine the most effective ways to impact language development.
- Use technology for professional development or in children's progress monitoring so teachers would be able to determine how children are doing and what they should do next to continually support the children's development.
- Enable teachers and practitioners to assimilate research findings into classroom practice. The current studies do not provide information on how research can help translate findings into actionable recommendations and practice.

## **Recommendations for Future Research**

The literacy experts from the NELP and the roundtable convened to review the current research gaps in early literacy development literature outlined the following recommendations to inform the future research agenda:

- Establish a unified agenda across agencies and various levels in order to identify a clear vision for future research
- Establish guidelines for reporting research results so that other researchers can identify the data sources and analysis plans
- More studies involving children from birth to three years of age
- More longitudinal research studies that measure immediate and long-term effects of interventions to ascertain the maintenance of observed effects
- Inclusion of a wider array of outcome measures and an expansion of literacy so that researchers can broaden their inquiry to measure multiple aspects of language and literacy

- More outcome data on subpopulations of children to inform how specific interventions impact the different subgroups within various contexts
- Professional development of the different constituents involved in research studies – namely, researchers themselves and then practitioners
- Create a plan to disseminate research findings (including results of the NELP Report) through the development of translational publications that effectively translate research into practice and reach a broad audience

The findings from this analysis and the recommendations provided by all the literacy experts underscore the importance of creating a knowledge base that can inform and guide practitioners as they seek to develop early literacy skills in students and prepare them for language and literacy acquisition.

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# INTRODUCTION

The goal of the *Technical Report: Recommendations for Future Early Childhood Literacy Research* project was to define the research base in early literacy development – the current findings as well as the methodological approaches employed to gather such data – and develop a set of recommendations that could be used to inform the future research agenda. WestEd analyzed data from the National Early Literacy Panel (NELP) Report<sup>2</sup> and interviewed members of the NELP to identify the research and knowledge gaps discovered during the NELP literature review. In addition, WestEd convened a roundtable of independent childhood literacy experts to discuss these and other gaps in the research base and to make suggestions for future researchers that could ameliorate these shortcomings. WestEd’s role in the project was to facilitate discussions about the existing gaps in early childhood literacy research and to compile the recommendations as an objective third party.

WestEd’s review of the NELP Report showed that it provided a rather extensive overview of existing research on early literacy development until 2003. The Report identified the domains of early literacy skills, highlighted instructional practices that enhance early literacy skills, and provided some recommendations for future research. The phone interviews of the NELP members focused on existing research in early childhood literacy, research gaps based on their literature review of the existing research on early literacy development, and their recommendations for future research efforts.

The roundtable meeting with childhood literacy experts began with a large group discussion focused on the current research gaps in early literacy development literature. A series of small group conversations were then organized to generate recommendations for future research. A final large group discussion completed the meeting at which time the roundtable members prioritized the types of research projects that should be undertaken to further the field of early literacy development. The roundtable was not intended to be a deliberation on the NELP report, but rather a general discussion to inform the direction of research in early literacy development. Although roundtable members did reference the NELP report, they also touched upon a broader range of subjects, from how research is funded to the effects of interventions on second-language learners.

Because the phone interviews with the NELP members were more focused on methodological issues they encountered during their meta-analysis, the NELP members raised more methodological concerns than did the roundtable members. However, both the groups

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<sup>2</sup> *Developing Early Literacy: Report of the National Early Literacy Panel – A Scientific Synthesis of Early Literacy Development and Implications for Interventions.* (2008). The Institute for Literacy and National Center for Family Literacy.

identified some gaps in the existing research, provided recommendations for the direction of future research, and prioritized the types of research that should be undertaken.

The findings from this analysis and the recommendations provided by all the literacy experts underscore the importance of creating a knowledge base that can inform and guide practitioners as they seek to develop early literacy skills in students and prepare them for language and literacy acquisition.

## **METHODOLOGY**

WestEd provided the Institute with technical assistance to inform future debate and research. The project allowed WestEd to answer the following research questions:

- What are the gaps in early childhood literacy research based on the literature review conducted by the NELP and other early childhood experts?
- How will the gaps be used to inform a future potential research agenda?

The technical assistance included a review of the NELP Report, phone interviews of NELP members (including the chair), and a focus group with select early literacy experts.

### **Document Review**

The evaluation team conducted a document review of the NELP Report. The document review served to:

- 1) ensure that WestEd staff had a deep understanding of the NELP Report; and
- 2) inform the development of the phone interview protocol and agenda for the roundtable discussion.

The document review also focused on examining the methodological rigor of the meta-analysis and the breadth of studies included in the analysis. WestEd conducted the review using a final draft of the Report and information about preliminary results from the NELP Report that were earlier circulated.

### **Phone Interviews**

As part of the information gathering process, WestEd conducted phone interviews of the following individuals: the NELP Chair, two NELP members, and a strong methodologist, who was recommended by the NELP Chair. Although this individual is not listed as a NELP member in the Report, we have included their interview in the analysis of the phone interviews because of the significant role they played in the NELP Report.

The phone interviews were intended to get the panel members to identify gaps they found in the research during the NELP literature review. It was also intended to solicit written recommendations and rationale (including a brief overview of any relevant research) for future research from the interviewed panel members.

WestEd staff used a phone interview protocol that the Institute had reviewed (see Appendix A: Phone Interview Protocol of Panel Members). Each phone interview took about one hour and was audiotaped. The recordings were not transcribed but were used to verify interview notes. WestEd received a lot of verbal information from the interviewees, but only one provided written recommendations based on the questions from the phone interview protocol. The phone interview notes and written recommendations were then analyzed to identify the recurring themes for the purposes of this Report.

### **Roundtable of Early Literacy Development Experts**

In February 2009, WestEd convened a panel of nine independent childhood literacy experts. The roundtable was intended to inform the direction of research in early literacy development. It was not intended as a response to the report, but the members provided some constructive insights and feedback about the NELP Report.

The members were selected based on their knowledge of and experience in early literacy development, as well as their research in the development of literacy among English language learners and other areas of expertise. The Institute reviewed an initial list and provided recommendations of additional individuals who could be included. WestEd staff then contacted the individuals to establish their interest and availability on predetermined dates. The participating Roundtable members, their titles and affiliations were:

- Diane August, Research Scientist and Educational Consultant, Center for Applied Linguistics
- Susan Burns, Associate Professor for Education, George Mason University
- Margarita Calderon, Senior Research Scientist/Professor, School of Education, Johns Hopkins University
- David Dickinson, Professor, Peabody School of Education, Vanderbilt University
- Linda Espinosa, Associate Professor of Education, University of Missouri
- Peter Mangione, Co-Director, Center for Child & Family Studies, WestEd
- Craig Ramey, Director, Georgetown Center on Health and Education, Georgetown University
- Kathleen Roskos, Professor of Education, John Carroll University

- Carol Vulkelich, Director, Delaware Center for Teacher Education, University of Delaware

WestEd used a protocol that was reviewed and approved by the Institute to guide the discussion at the one-day meeting (Appendix B: Questions for NIFL Roundtable Meeting). The proceedings consisted of a large group discussion, two simultaneous small group breakout sessions, and a large group overview. During the roundtable, the discussion was audiotaped and notes were transcribed. Following the Roundtable, the notes were analyzed for trends to inform the development of this Report.

# **FINDINGS**

## **Document Review of the National Early Literacy Panel Report**

Our review of the NELP Report showed that it provided a rather extensive overview of the existing research on early literacy development until 2003. The Report addressed the following questions:

1. What are the skills and abilities of young children (age birth through five years or kindergarten) that predict later reading, writing, or spelling outcomes?
2. Which programs, interventions, and other instructional approaches or procedures have contributed to or inhibited gains in children's skills and abilities that are linked to later outcomes, in reading, writing, or spelling?
3. What environments and settings have contributed to or inhibited gains in children's skills and abilities that are linked to later outcomes in reading, writing, or spelling?
4. What child characteristics have contributed to or inhibited gains in children's skills and abilities that are linked to later outcomes in reading, writing, or spelling?

The Report identified the domains of early literacy skills and instructional practices that enhance early literacy skills and provided some recommendations for future research. The following six variables were clearly or strongly correlated to later conventional literacy skills based on data from multiple studies involving large numbers of children and maintained medium to large predictive powers even when the role of other confounding variables (such as, socioeconomic status) were accounted for (NELP Report, 2008):

- alphabet knowledge (AK): knowledge of the names and sounds associated with printed letters
- phonological awareness (PA): the ability to detect, manipulate, or analyze the auditory aspects of spoken language independent of meaning
- rapid automatic naming (RAN) of a sequence of random letters or digits
- RAN of random sets of pictures of objects or colors
- writing or writing name in isolation on request or to write own name

- phonological memory: the ability to remember spoken information for a short period of time

In addition, the Report identified five other early literacy skills that were moderately correlated with at least one measure of later literacy achievement but either did not retain their predictive power when other important contextual variables were accounted for or have not been analyzed as such by researchers. They include: concepts about print; print knowledge; reading readiness; oral language; and visual processing.

Five categories of interventions were identified with some having large numbers of studies in comparison to others. There were 78 studies in the first category, *Code-focused interventions*. Code-focused interventions are defined as interventions that are designed to teach children skills related to cracking the alphabetic code, including phonetic awareness (PA). These studies had moderate to large-sized effect on conventional literacy skills. The second category of interventions was *Shared-reading*, with 19 studies. This category of interventions involves reading to children, including shared reading and various forms of reader-child interactions around the materials being read. Shared-reading intervention studies had a moderate size effect on children's print knowledge and oral language skills. *Parents and home programs* comprise the third category with 32 studies. Parent and home programs uses parents as agents of intervention and involves teaching parents instructional strategies to use with their children at home to stimulate their linguistic or cognitive development. The parent and home programs interventions studies showed a moderate to large effect on children's oral language and general cognitive abilities. The fourth category of interventions was *Preschool and Kindergarten programs* and included 33 studies. These studies evaluated any aspect of preschool or Kindergarten programs (including the Abecedarian Project, n=10). Moderate to large effects on spelling and reading readiness were seen. Twenty-eight studies included last category of interventions, *Language-enhancement*. Language-enhancement intervention studies examined effectiveness of instructional efforts aimed at improving children's language development. These studies saw a large effect on children's oral language skills.

Measures of conventional literacy skills were not consistently measured in all categories of interventions except in code-focused interventions. Therefore, the exact impact of the remaining interventions on conventional literacy skills cannot be accurately predicted based on the existing research and available data. Consequently, there were a number of gaps in the existing research.

First, although there is great interest in providing age-appropriate interventions, there have been no direct tests of age differentiation in early literacy instruction across kindergarten and preschool, and there are too few studies of preschool literacy instruction that can provide comparison results that suggest the interventions has the same impact on preschool children.

Second, because there were very few intervention studies that measured conventional literacy outcomes in young children, it is difficult to discern if the interventions (excluding code-focused interventions) improved conventional literacy or precursor skills that are strongly related to later literacy development or not.

Third, reporting limitations in the existing studies did not allow the panel to determine if the children's background characteristics influenced the effectiveness of instructional interventions or if specific interventions worked best for children with certain characteristics (e.g., English language learners, Hispanic/Latino children, those in inner city schools).

Fourth, the existing studies involved providing teacher-directed interventions in a one-to-one or small groups with the intent on assisting children learn specific skills (e.g., PA) by detecting or manipulating discrete units of sounds in words instead of other instructional strategies (e.g. rhyming or blending) that are more effective means of enhancing effectiveness of PA training.

Finally, there were significant problems with the quality of many research studies in early literacy because many used simple pretest-posttest designs and no causally interpretable evidence. The studies also often did not provide evidence that comparison groups were equivalent prior to an intervention or represented the same population.

The Report recommends that future research addressed the gaps that were identified by:

- Determine whether enhanced early instruction aimed at improving skills (such as alphabet knowledge, concepts of print, or oral language development) would consistently lead to higher later attainments in literacy.
- Require that early literacy-intervention research use a wider range of outcome measures to better determine the breadth of impact of studied interventions.
- Undertake longitudinal studies of more complex interventions to evaluate the long-term impact of a comprehensive approach in the development early literacy skills.
- Focus on the different impact of early interventions, particularly on children who struggle with literacy (e.g., second-language learners and those raised in poverty). As stated in the Report, "even if research studies are not designed to specifically answer such questions, it would be helpful if they would report their data separately for children from different demographic categories, as this would make it possible for future meta-analyses to make sense of any patterns that may exist."
- Conduct translational research to determine the impact of interventions that are implemented in typical preschool classrooms as provided by their regular preschool teachers.

## **NELP Members Phone Interviews**

The phone interviews of the Panel members focused on:

- Existing research in early childhood literacy in terms of:
  - Major findings based on the meta-analyses that were part of the review of existing research in early literacy development;
  - Rationales of why there were more research studies that involve certain categories of interventions than others; and
  - Perceived level of challenge in identifying studies that were appropriately designed or in certain domains of early childhood literacy
- Research gaps based on their literature review of the existing research on early literacy development; and
- Recommendations for:
  - direction that future researchers should take as they review and engage in new studies of early childhood literacy;
  - prioritizing the types of research that should be undertaken in early childhood literacy;
  - Increasing methodological rigor and improving the quality of future research; and
  - how researchers can improve the quality of their design while employing a wider range of outcome measures and study “typical implementations” of early childhood education programs.

### ***Existing Research in Early Childhood Literacy***

#### ***Major findings Based on Existing Research in Early Childhood Literacy Development***

The panel members reported that the meta-analysis revealed that there were early predictors of later reading in the early childhood literacy research. They were also able to prioritize the importance of alphabet knowledge, phonological awareness, rapid naming, and print awareness in early literacy development. The report also clarifies the importance of skill development in early childhood education and that early learning before school makes a difference; therefore, early intervention can have an impact on the development of language and literacy.

However, there was lack of outcome measures for early literacy and conventional literacy in the studies. In addition, their review of the existing research did not provide information on what could be done instructionally and highlights that we know very little about literacy development from birth to three years of age. In addition, there was lack of outcome measures in early literacy and conventional literacy in the studies. Also, there were few studies on parent involvement despite high interest and this could be attributed to the inability to determine its long-term impact.

#### *Rationales of Why There Were More Research Studies in Certain Categories of Interventions*

In the Report, there were 78 studies on code-focused interventions and there were only 19 studies on shared reading. The panel members provided a number of rationales as to why there was more research in certain domains than others. Funding, ease of conducting studies using code-focused intervention, and trends in theories of reading development were among the rationales provided.

A panel member speculated that the amount of funding for conducting certain types of studies plays a role. Funders, such as the National Institute for Children Health and Development (NICHD), were more interested in some code-focused issues so there was more funding made available to do such research.

In addition to being easier and less complex, code-focused interventions had more studies because it is a broader area of research with a wide variety of interventions than those that on shared reading, parent involvement, and language enhancement. In addition, interventions used in preschool research were based on those used in studies with First to Fourth grade students and were aimed heavily at code-focused interventions, as well as ways to identify and improve reading skills.

Finally, theories about reading development could have also influenced the types of research studies that were funded and conducted. A panel member discussed how the trend in theories about reading development moved from a focus on visual perception in the 1970's to the focus on phonics in recent years. Therefore, there were more studies that focus on visual processing skills, visual mode, and visual perception in 1970's and that there are more research on code-based instruction and intervention now.

#### *Challenge in Identifying Research Studies Appropriately Designed or in Certain Domains*

The panel members were mixed in their responses on the level of challenge in identifying research studies that were appropriately designed. Two members responded that the process was

somewhat challenging because the review was very thorough and time-consuming. The panel found a lot of studies that met the predetermined selection criteria but there were gaps in the research when they tried to answer specific questions. Other challenges in identifying appropriately designed studies include:

- the lack of detailed descriptions of interventions in the reporting of research studies;
- lack of reporting of data by student subgroups; and
- variations and inconsistencies in how research studies were reported through the years.

Panel members were also mixed in their evaluation of the level of challenge in identifying studies in domains of early literacy. Because panel members agreed not to begin their review of existing research with preconceived notions about interventions, panel members found the process relatively easy. However, it was very challenging because there were a lot of gaps and there were very few studies with younger children. There were also no longitudinal studies that involved teaching children during preschool and kindergarten and following them through the grades to determine the value of interventions. In addition, there were no studies of comprehensive approaches for improving literacy and those that involved teaching children the code explicitly. The review of the research left a lot of open questions where there was research because in studies involving reading to children, there was no measure on either conventional or any measures other than oral language. In addition, although parent involvement is a requirement of Head Start programs, the benefit of parent involvement is unknown.

Panel members also said that the challenging aspect of identifying studies in certain domains of early literacy was because some studies included mixed domains. Therefore, there were uncertainties regarding interventions that were being studied or the measures used mixed domains so it was difficult to separate the effect on one domain from another.

### ***Research Gaps in Existing Research in Early Childhood Literacy***

The panel members identified a number of gaps in existing research in early childhood literacy. As discussed in the Report, panel members discussed the absence of the following types of studies:

- Those that focus on comprehensive interventions to support children's literacy and language development

- Longitudinal studies
- Use conventional literacy measures
- Target children from birth to three years old with more measures of early literacy to determine if there is a broader impact of early childhood intervention
- Preschool research although this could be attributed to researchers having difficulty accessing preschool settings that are not part of the public school setting
- Sub-analysis of data by subgroups (particularly English learners, children of poverty or those with disability), types of interventions, settings (rural, urban, and suburban), types of preschool environment (half- versus full-day), and types of preschool programs (Head Start, Montessori, and Title I preschools)
- Early writing to examine how to support children and increase their experience with early writing, as well as enhance their language development
- Break language skills into more specific skills (such as, syntax, semantics) to determine approaches that improve each specific skill and types of settings where teachers, parents, and care-takers are involved
- Focus on combining parent- and classroom-focused intervention to determine the best way to get the greatest effect on language development
- Use of technology for professional development or to monitor progress so teachers know how children are doing and the next steps that need to be taken to continually support children's development

### ***Recommendations for Future Research in Early Childhood Literacy***

Analyses of the recommendations for future research in early childhood literacy are divided and summarized into three main areas: directions for future research; prioritizing future research in the field; the issue of methodological rigor and improving the quality of quality of future research; and improving the quality of future research.

#### *Directions for Future Research*

Based on the gaps identified in the existing research on early literacy development, the panel members recommended that future researchers should conduct:

- Research studies of younger children to examine the complex interventions aimed at improving children's functioning in several areas. They need to not only include a wider array of outcome measures but also multiple outcomes (e.g., rapid

naming, print awareness, name writing) and more complex measures of language development beyond vocabulary.

- Longitudinal studies with long-term impact (including, sustainability of skills learned).
- Studies that include analysis of data in relation to the different subgroups of children (ethnicity, socioeconomic, English language learners), types of preschool programs (e.g., full versus half day, Head Start), and location (e.g., rural, urban, suburban) to determine how interventions impacts the different subgroups and contexts.
- Studies that include details on the extent interventions are being implemented by building fidelity checks into their designs.
- A comparison of the findings of NELP Report with those in qualitative research in early childhood literacy development to determine the differences and similarities that exist in the two types of research methodology.

### *Prioritizing the Types of Future Research*

The panel members provided the following recommendations for prioritizing the types of research that researchers should undertake in early literacy development:

- We should start with the premise that we need children to accomplish particular performance levels by first grade so they can successfully learn to read. Then researchers should question what could be done to increase the proportion of children who will be able to attain these performance levels.
- Children's writing and name writing have shown to be very significant predictors for later reading; but no studies have looked at them as outcome measures.
- There should be more studies with children from birth to three years of age (including those focused on language development and language skills) because emergent literacy skills are evident before three years old and early identification can be an opportunity for early intervention. Research in early language development indicates that newborn discrimination of speech sounds are related to language development. In addition, measures for children birth to three years old have been developed so we can measure auditory discrimination based on visual stimuli using brain imagining.
- There should be more studies on parent involvement and onset of children's early language and literacy development because we do not know really know about family impact.

## *Methodological Rigor and Improving the Quality of Future Research*

The report determined that many studies lacked methodological rigor and thus could not be included in the meta-analysis, as in poor experimental design because of the following:

- the absence of comparison groups or random assignment to treatment or comparison groups;
- unknown reliability and validity of researcher-developed measures;
- confounds for selecting the comparison and treatment groups within the same building for random controlled trial studies;
- small sample size;
- insufficient details on sample and type of programs; and
- poor statistics.

The panel members provided a number of suggestions of how researchers or funders could improve the quality of future research. First, funders need to be more specific in their requirement that certain reporting standards and design criteria be met. They should require that intervention studies include comparison or control groups to adequately measure the impact of interventions (particularly, those involving young children because of impact of maturation). They have to be clearer about good research, design, appropriate measures and assessments.

Second, designs should include measures of immediate effects at the end of the intervention and maintenance of the effect at a later date. As discussed above, researchers should conduct study of preschool and Kindergarten children and follow-up in later years to determine the maintenance of interventions.

Third, members also recommend that funders be more knowledgeable and critical in their review of research proposals, then only fund research with strong designs. We also have to have a better understanding of the limits of research and designs. In addition, policy should play a role in determining research that are funded so practitioners and researchers need to work with policy-makers on a good research agenda. They also need to develop better working relationships with each other through increased collaboration.

Finally, the members suggested IES or the NICHD provide professional development to researchers at professional conferences and support fellowships, early career awards, mentoring programs, and doctoral studies.

## *Improving the Quality of Design*

To improve the quality of research design while also employing a wider range of outcome measures and studying “typical implementations” of early childhood education programs, the panel members suggested:

- The development of a research protocol that identifies the components of good research design so that only studies with good designs are funded.
- Research studies should have sufficient scope and size to allow interventions to be evaluated with adequate numbers of sites and children to enable the determination of outcomes in statistically meaningful ways.
- Researchers should also use a wider range of outcome measures in early childhood research. Although time consuming, it is not impossible and would increase the quality of research design.
- Research studies need to move from examining effectiveness of interventions to efficacy by addressing the scalability of the intervention within the context of actual preschool classrooms as implemented by preschool teachers in various preschool contexts (e.g., half- versus full day, Head Start, Montessori, etc.).
- Researchers have to overcome the resistance to conducting experimental and quasi-experimental research in school settings. To do so, researchers also need to develop trusting and collaborative relationships with practitioners and programs.
- Researchers should develop a deep understanding of how to get good implementation in classrooms. They need to know how to set up research studies and determine resources (i.e., professional development, progress monitoring, or curriculum) that need to be in place to ensure high fidelity of implementation and thereby, effectively measure outcomes.
- Early career researchers need to look for mentors who are strong expert researchers and choose high quality post-doctoral programs so they can learn to be really strong methodologists.
- Researchers need to look at USDE funding opportunities, particularly the details on the types of application that should be submitted, to get ideas about research that needs to be done and how it needs to be done. In addition, the USDE IES grant program can also serve as a frame of reference for early childhood education in determining the types of studies that are funded, including types of research designs, components of interventions, as well as measurement and statistical approach.
- We also need to develop translational publications to help educators interpret the findings of the NELP Report.

## **Roundtable of Early Literacy Development Experts**

The discussion with Roundtable members occurred during a day-long meeting in Washington, DC. The meeting began with a large group discussion that focused on the current research gaps in early literacy development literature. Following this discussion, a series of small group conversations were arranged to allow each Roundtable member the opportunity to provide detailed input into the discussion. In these conversations, the focus switched from identifying research gaps to making recommendations for future research. A final large group discussion completed the meeting at which time the Roundtable members prioritized the types of research projects that should be undertaken to further the field of early literacy development.

As mentioned earlier, the Roundtable was not intended to be a deliberation on the NELP report, but rather a general discussion to inform the direction of research in early literacy development. Although the Roundtable members did reference the NELP report, they also touched upon a broader range of subjects, from how research is funded to the effects of interventions on second-language learners.

### ***Identified Gaps in Research***

The Roundtable identified gaps in the current research that resulted from both a lack of knowledge regarding specific interventions or populations, as well as the methodological weaknesses in current research designs. According to the Roundtable members, these issues created gaps in the knowledge base as reflected in the NELP report and ultimately prevented practitioners from providing effective literacy instruction for all children. Some of the specific gaps identified by the roundtable were as follows:

- There were no guidelines on when to offer specific literacy interventions (interventions defined in the broadest possible sense) to children at each age and each developmental stage.
- Although there was a dearth of studies available for NELP members to review that focused specifically on English language learners, there was still a lack of clarity on how to develop literacy skills with English language learners and the developmental pathways to consider when teaching English language learners.
- Roundtable members felt practitioners in particular were without guidance on the interaction between children's first and second language skills and whether knowing one language well support the acquisition of a second language.
- There was an absence of a set of criteria researchers should follow when designing, conducting and reporting studies. This issue goes beyond a particular

content area or topic (such as English language learners) but ultimately perpetuates the research gap in any number of content areas because it prevents researchers from building upon the knowledge of the past and from corroborating existing research.

- For some Roundtable members, the lack of longitudinal studies meant that researchers and practitioners could not measure the effects of an intervention beyond early childhood and into the early elementary grades; therefore, we are unable to determine the indirect outcomes of many current literacy practices and interventions.
- The existing research did not indicate the best ways to prepare teachers for their role in teaching language and literacy.
- The research did not enable teachers and practitioners to assimilate research findings into classroom practice. They do not provide information on how can research help translate findings into actionable recommendations and practices.
- There was no research on the impact of teacher instruction. When examining an intervention, we are unable to determine the impact of professional development and teacher learning on implementation and ultimately, student achievement. Further, there was no information on the impact of teacher background on instruction.

### ***Recommendations for Future Research***

After discussing the research gaps that currently exist in the early literacy development literature and reflecting upon the ramifications for researchers and practitioners alike, Roundtable members made recommendations for how these and other potential gaps could be rectified. The recommendations ranged from focusing on specific research questions or methodological approaches, to identifying long-range goals for NIFL, ED and other Federal programs. The recommendations included the following:

- Expand the definition of literacy so that researchers can broaden their inquiry to measure multiple aspects of language and literacy.
- Expand the research on vocabulary to emphasize expressive language instead of receptive language.
- Identify or create the research tools necessary to measure language and literacy development among second language learners.
- Create plans for instructional design and professional development in conjunction with new interventions to ensure proper implementation.

- Encourage government programs to fund research initiatives, not just evaluations, of locally-implemented projects.
- Investigate how the intensity, timing, and consistency of professional development can best prepare and motivate teachers to deliver high-quality literacy instruction.
- Invest in longitudinal research studies.
- Encourage government agencies and programs to work in collaboration to identify and fund singular research initiatives.
- Identify a clear vision for future research.

### *Prioritized List of Recommendations*

After deliberating in small groups on such a broad range of potential directions for future research, the Roundtable members reconvened to prioritize these recommendations. In doing so, the group moved beyond the possible areas of inquiry listed above, and made policy recommendations that could impact researchers across program areas.

Nearly all of the Roundtable members stressed the fact that any new approach to investigating early literacy needs to be **multi-disciplinary** and involve researchers from many different and complementary fields. The members stressed the need to move beyond the “narrow silos” that currently limit research initiatives and, when necessary, involve experts from the fields of developmental neurobiology, education, sociology, anthropology, and other fields to develop a full definition of language and literacy.

Such an approach could be part of what many Roundtable members hoped would be a “**new vision**” for research on early literacy development. One roundtable member suggested that a spokesperson be identified who could carry the message through to policymakers and the public. Such a spokesperson could lobby for the funding necessary for new research on literacy and language and also inform the public of the need to support early literacy development across agencies and disciplines.

In addition to these broader policy recommendations, the Roundtable had specific ideas for improving the current state of research. The recommendations included:

- Establish guidelines for reporting research results so that other researchers can fully identify the data sources and analysis plan. Specifically, researchers should provide a full description of the measures used, describe in detail the components of the intervention and the ages of students targeted, and ensure transparency to eliminate any perceived conflict of interest.

- Develop precise measures for assessing literacy among various subpopulations, including students ages three or younger and students who are English language learners.
- Examine the impact of teacher knowledge on classroom instruction and student achievement. In a related note, investigate how professional development can be tailored (intensity of training, frequency of training) to produce maximum results for teachers and students.
- Expand the definition of literacy when conducting research. This can mean taking a broader theoretical approach to research design, as described in the first recommendation, and also reflecting and expanding upon the measurements used to measure progress (e.g., assessing expressive as well as receptive vocabulary).
- Provide professional development for researchers, to ensure that research design and measurement is appropriate for each study and can contribute to the general research base.
- Encourage researchers to become more involved in crafting Requests for Proposals (RFPs) to improve research design.
- Establish standards for publication of research results and data that will allow for secondary analyses by other researchers. Such additional data could be provided in an appendix or in a related article, but providing full data sets is imperative for any future meta-analyses.
- Consider the role of observational data in conducting literacy research. What kinds of data are most useful to researchers and teachers and how can such data be shared with teachers and others?
- Create a plan to disseminate research results – including results from the NELP report – that reaches a broad audience and effectively translates research into practice.

## **DISCUSSION**

The goal of this Report was to define the research base in early literacy development – the current findings as well as the methodological approaches employed to gather such data – and develop a set of recommendations that could be used to inform the future research agenda. WestEd analyzed data from the NELP Report and interviewed several members of the NELP to identify the research and knowledge gaps they discovered during the NELP literature review. In addition, WestEd convened a roundtable of nine independent childhood literacy experts to discuss these and other gaps in the research base and to make suggestions for future researchers that could ameliorate these shortcomings. Because the phone interviews with the NELP members were more focused on methodological issues they encountered during their meta-analysis, the NELP members raised more methodological concerns than did the Roundtable members. However, both the groups identified some gaps in the existing research, provided recommendations for the direction of future research, and prioritized the types of research that should be undertaken.

The findings from this analysis and the recommendations provided by all the literacy experts underscore the importance of creating a knowledge base that can inform and guide practitioners as they seek to develop early literacy skills in students and prepare them for language and literacy acquisition.

### **Gaps in Existing Research in Early Childhood Literacy**

Panel and Roundtable members identified the following gaps in the existing research on early child literacy development:

- Inconsistency in how research studies were reported (e.g., statistical analysis, measurements used and their reliability and validity, reporting of findings)
- Lack of longitudinal studies that would enable researchers to measure the effects of an intervention from beyond early childhood and determine if the effects were sustained into the early elementary grades
- Subanalysis of data by subgroups to determine if specific interventions worked best with certain subpopulations (including English language learners) and/or within certain contexts (e.g., locale, types of preschool programs)
- Specific guidelines on the types of interventions that should be provided at a specific age or developmental stage

The two expert groups also identified different gaps. The panel members discussed the absence of research studies that:

- Target children ages birth to three years of age with more measures of early literacy to determine the potential for a broader impact on early childhood development.
- Focus on comprehensive interventions that support children's literacy and language development.
- Use conventional measures of literacy.
- Focus on early writing in order to support children and enhance their experience with early writing and language development.
- Emphasize combining parent- and classroom-focused intervention to determine the most effective ways to impact language development.
- Use technology for professional development or in children's progress monitoring so teachers would be able to determine how children are doing and what they should do next to continually support the children's development.
- Enable teachers and practitioners to assimilate research findings into classroom practice. The current studies do not provide information on how research can help translate findings into actionable recommendations and practice.

Roundtable members also mentioned the lack of research studies that focus on the impact of professional development and/or teacher instruction on implementation, as well as those that outline the best ways to prepare teachers for their role in teaching language and literacy.

### **Recommendations for Future Research in Early Childhood Literacy**

In providing recommendations concerning the direction that future researchers should take as they review the current research and engage in new studies of early childhood literacy, both groups of experts agree that a unified agenda needs to be established across agencies and various levels in order to identify a clear vision for future research. Policy-makers, funders, and researchers need to develop better working relationships through increased collaboration with each other to align policy initiatives that can influence the types of research that are funded. Panel members first discussed the need for funders to be more knowledgeable and critical in their review of proposals so that they will only fund research studies that have strong designs. One possible way to ensure this is to encourage researchers to participate in creating and writing future RFPs and RFAs. Both groups of experts recognize the need to establishing a set of

guidelines for reporting research results so funders need to be more specific in their requirements that researchers meet certain standards for research designs and reporting (including the use of comparison or control groups to adequately measure the impact of the intervention and the use of appropriate measures and assessments that are valid and reliable).

Second, the experts recommended longitudinal research studies that measure immediate and long-term effects of interventions to ascertain the maintenance of observed effects. Panel members recommended longitudinal research studies of younger children (namely, those from birth to three) to examine complex interventions aimed at improving children's functioning in several areas. Both groups recommended the inclusion of a wider array of outcome measures and an expansion of literacy so that researchers can broaden their inquiry to measure multiple aspects of language and literacy (such as, expressive and receptive vocabulary).

Third, both groups of experts recognize the need for more outcome data on subpopulations of children although the Roundtable members focused more on second language learners in their discussion. The NELP Report and Panel members in particular cited, the lack of studies that analyze the effects of interventions on various subpopulations of children to inform how specific interventions impact the different subgroups within various contexts. The Roundtable members also discussed the need to identify or create research tools necessary to accurately measure language and literacy development in subpopulations (particularly, second language learners)

Fourth, the experts recommended research studies that include details on the extent the interventions that were implemented by building fidelity checks into research designs.

Fifth, both groups addressed the need for professional development of the different constituents involved in research studies – namely, researchers themselves and then practitioners. Panel members recommended that IES and NICHD provide professional development for researchers and provide support for early career educational researchers through awards, mentoring programs, and fellowships. In contrast, Roundtable members discussed the need to investigate the intensity, timing, and consistency of professional development that would best prepare and motivate teachers to deliver high quality literacy instruction.

Sixth, the experts also recommended the development of translational publications to help educators interpret the findings of the NELP Report, as well as other research studies. Roundtable members recommended the creation of plans for instructional design and professional development in conjunction with new interventions to ensure proper implementation. This aligns with the suggestion of Panel members and the NELP Report to shift from studies that focus on effectiveness of interventions as implemented by researchers to those that focus on scalability of interventions as implemented by preschool teachers within the context of different types of preschools and locales with various groups of children. To do this, researchers need to know how to set up research studies and develop a deep understanding of

how to get good implementation in classrooms, as well as other resources that need to be in place, to ensure fidelity of implementation and effectively measure outcomes.

### **Prioritization of Future Research in Early Childhood Literacy**

As seen from the recommendations, Panel and Roundtable members agree that there is a need for collaboration across agencies and levels in setting the agenda for future research in early childhood literacy. The need to identify assessment tools that measure early childhood literacy and language development (particularly in childhood from birth to three years of age) can be best attained by examining assessments and tools used in other disciplines and should involve experts from the fields of developmental neurobiology, education, sociology, anthropology, and other fields to develop a full definition of language and literacy. As policy-makers, researchers, and practitioners from various agencies and disciplines develop this shared understanding of how to define language and literacy development, a common plan for measuring such concepts will follow.

The second priority is the need to establish guidelines for reporting research results so that other researchers can identify the data sources and analysis plans. The guideline should include full descriptions of measures, interventions (including a description of the components of the interventions and how they are implemented), identification of targeted population beyond labels (by age, ethnicity), differentiation of reporting according to the audience (e.g., researchers or practitioners), and transparency of issues related to conflict of interest. Roundtable members also recommend standards for publication of research findings and data that will allow for secondary analysis by other researchers.

Third, there should be more studies involving children from birth to three years of age (including those focused on language development and skills) because emergent literacy skills are evident before children are three years old and early identification can be an opportunity for early intervention.

Fourth, there also needs to be longitudinal studies that determine the long-term effects of interventions on literacy and language development in elementary grades. This would entail the use of conventional measures of literacy, as well as the identification or development of precise measures for assessing literacy among the various subpopulations (including English language learners from birth to three years old). In addition, it would require the expansion of how literacy is defined to include receptive and expressive skills, as reflected in the expansion of measurements (e.g., observational data) used to determine progress.

Fifth, funding agencies need to provide professional development for researchers to ensure that research design and measurement are appropriate for each study and contribute the

knowledge base. In addition, Panel members recommend that funders support early career researchers through post-doctoral or mentoring programs that provide them access to the best research methodologists, as well as other awards.

Finally, we need to create a plan to disseminate research findings (including results of the NELP Report) through the development of translational publications that effectively translate research into practice and reach a broad audience.

# APPENDICES

## Appendix A: Phone Interview Protocol of Panel Members

Interviewee: \_\_\_\_\_ Date: \_\_\_\_\_

The National Institute for Literacy recently awarded a contract to WestEd to provide technical assistance for the development and writing of a recommendations report for the future early literacy research based on the finding of the National Early Literacy Report. One of our responsibilities is to interview members of the panel to identify gaps they found in the research during the NELP literature review and solicit written recommendations and rationale (including a brief overview of any relevant research) from the interviewed panel members.

The interview will take about an hour and will be recorded to assist our note taking and development of the report. Please let us know if you do not want to be recorded.

1. The NELP conducted an extensive literature review of research in early childhood literacy development. What are the two or three major findings of the meta-analysis that stand out most in your mind?
2. Why do you think certain categories of interventions had more studies than others? (Code-focused interventions were the subject of 78 studies while shared-reading interventions only 19).
3. Would you say that identifying studies that were appropriately designed was:
  - a. Very Challenging
  - b. Somewhat Challenging
  - c. Not Challenging

Please explain.

4. Would you say that identifying studies of certain domains of early literacy was:
  - a. Very Challenging
  - b. Somewhat Challenging
  - c. Not Challenging

Please explain.

5. The report determined that many studies lacked the appropriate methodological rigor and thus could not be included in the meta-analysis. What can researchers or funders do to improve the quality of future research?

6. What research gaps did the NELP panel identify based on their literature review of the existing research on early literacy development?
7. Based on the gaps identified in the existing research on early literacy development, what are the recommendations on the direction that future researchers should take as they review the current research and engage in new studies of early childhood literacy?
8. What recommendations could you make in prioritizing the types of research that researchers should undertake in early literacy development?
9. How can researchers improve the quality of their design while also employing a wider range of outcome measures and studying “typical implementations” of early childhood education programs?

## **Appendix B: Questions for NIFL Roundtable Meeting**

1. What research gaps do you think currently exist in the early literacy development literature?
2. The NELP, in their review of the early literacy literature through 2003 identified the following gaps:
  - Lack of longitudinal studies
  - Lack of reporting on subgroups (i.e., different demographic categories such as race, ELL, age differentiation on outcomes)
  - Need wider range of literacy outcome measures
  - Design issues and confounds (i.e., lack of comparison/control groups, simple pre-test/post-test design with no follow-up, etc.)
  - Reporting limitations (i.e., no reporting of non-statistically significant findings or subgroups).
  - Lack of scalability studies (i.e., will the program work in the “real world” with teachers implementing the programs)

Has the research since 2003 started to address these gaps. If not, why not?

### *BREAK INTO TWO GROUPS*

3. What recommendation would you suggest concerning the direction that future researchers should take as they review the current research and engage in new studies of early childhood literacy?
  - a. Design Issues
  - b. Reporting Issues

### *RECONVENE AS ONE GROUP*

4. What recommendations would you make in prioritizing the types of research that researchers should undertake in early literacy development?

*COMPARE EACH GROUPS RECOMMENDATIONS AND VOTE TO PRIORITIZE*