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# LRCP SYSTEMATIC REVIEW (1995–2016): SUMMARY OF UPDATED FINDINGS AND RECOMMENDATIONS

## I. CONTEXT

In the Latin America and Caribbean (LAC) region, there are critical gaps in understanding what works for successful literacy acquisition and effective reading interventions. Globally, research suggests it is essential to focus early grade instruction and assessment on reading subskills such as phonological awareness, vocabulary knowledge, and reading comprehension.<sup>1</sup> Factors such as time spent on reading tasks and access to print materials are also related to early reading development.<sup>2</sup> However, most findings are based on studies in the United States and Europe and focus on the English language. It is unclear, then, whether these findings can be extrapolated to the LAC region. Further, the existing evidence on early reading acquisition in LAC-relevant contexts is neither synthesized nor readily accessible. These factors limit the possibility of evidence-informed policymaking.

To address this gap, the USAID-funded LAC Reads Capacity Program (LRCP) led a systematic review of evidence on early grade literacy (EGL) specifically from the LAC region and covering the 25-year period from 1990 to 2015. The LRCP subsequently updated the review to include new evidence published in 2016. This report provides a combined summary of the findings and gaps from both reviews.

<sup>1</sup> Adams, 1990; Snow, Burns, & Griffin, 1998.

<sup>2</sup> Cipielewski & Stanovich, 1992; Cunningham & Stanovich, 1991.

It is difficult to speak in general terms of EGL in LAC because of the region’s geographic, economic, and linguistic diversity. The LAC region is composed of more than 40 countries and territories on two continents with five different official languages (English, Spanish, French, Dutch, and Portuguese) and many more regional languages. Across the region, student learning outcomes related to EGL also have varied. Between 2006 and 2013, most LAC region countries (especially the traditionally lower scoring nations) saw improvements in EGL outcomes (Ganimian, 2016). However, more progress is needed to ensure that all early grade children are learning to read well enough to read to learn. Therefore, it is critical to synthesize evidence on predictors of EGL outcomes across LAC region countries.

This report summarizes findings from the systematic review led by the LRCP in 2015 as well as an updated review completed in 2016. The reviews sought to synthesize evidence on improving EGL skills in the LAC region over the last 25 years. In addition, the LRCP organized, categorized, and appraised the quality of existing evidence to help users make more informed decisions based on available evidence. The team also identified gaps in the types and quality of research on EGL in LAC to inform audiences and encourage researchers to continue adding to the knowledge base on EGL practices. Please refer to the [full review report](#)<sup>3</sup> and the [2016 update](#)<sup>4</sup> for more detailed information, as this document focuses on summarizing the results.

## 2. METHODOLOGY

The objective of the systematic review was to synthesize high-quality quantitative and qualitative evidence on what works to improve EGL outcomes in the LAC region. To achieve this goal, we sought to answer the following research questions:

1. What is the impact of reading programs, practices, policies, and products aimed at improving the reading skills of children from birth through Grade 3 on reading outcomes in the LAC region?
2. What factors are associated with the reading outcomes of children from birth through Grade 3?
3. What factors contribute to improving the reading outcomes of children from birth through Grade 3?

We used quantitative studies of specific interventions to answer Q1, quantitative studies without an intervention (“nonintervention”) to answer Q2, and a combination of qualitative and quantitative non-intervention studies to answer Q3.

### A. SYSTEMATIC REVIEW PHASES

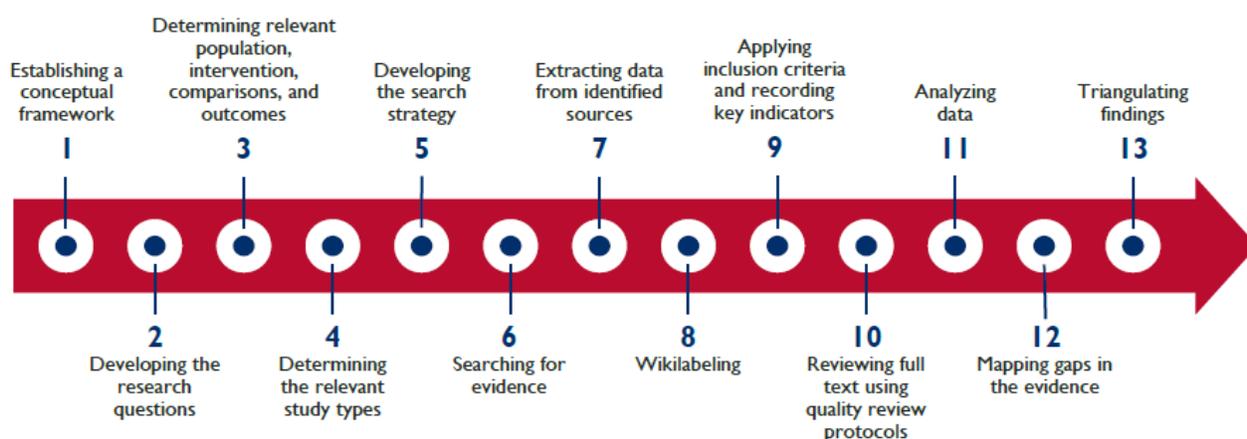
Exhibit I illustrates the phases of both the initial systematic review and the update. The [full systematic review report](#) provides additional details for each phase, including descriptions of search strings, inclusion criteria, quality review protocols, synthesis and triangulation methodology, and procedures.

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<sup>3</sup> LAC READS Capacity Program. (2016). *Early grade reading in Latin America and the Caribbean: A systematic review*. Washington, DC: United States Agency for International Development.

<sup>4</sup> Stone, R., De Hoop, T., Coombes, A., Goett, M., Morey, M., & Kamto, K. (2016). *What works to improve early grade literacy in Latin America and the Caribbean: 2016 update of a systematic review*. Washington, DC: United States Agency for International Development.

## Exhibit I. Systematic Review Phases<sup>5</sup>



### B. SELECTION CRITERIA

The initial systematic review and 2016 update included studies that were relevant to EGL in the LAC region. We considered studies that met each of the following criteria:

- **Year of publication:** From 1990 through 2016
- **Relevance to the region:** Studies were required to be from or on the LAC region.
- **Relevance to the population:** Studies were required to focus on boys and girls from birth through Grade 3.
- **Relevance to the topic:** Studies were required to focus at least in part on reading and writing, even if they addressed multiple topics.
- **Is the study research?** Studies were required to have a research question or objective and a methodology that matched that objective.

The review included four study types:

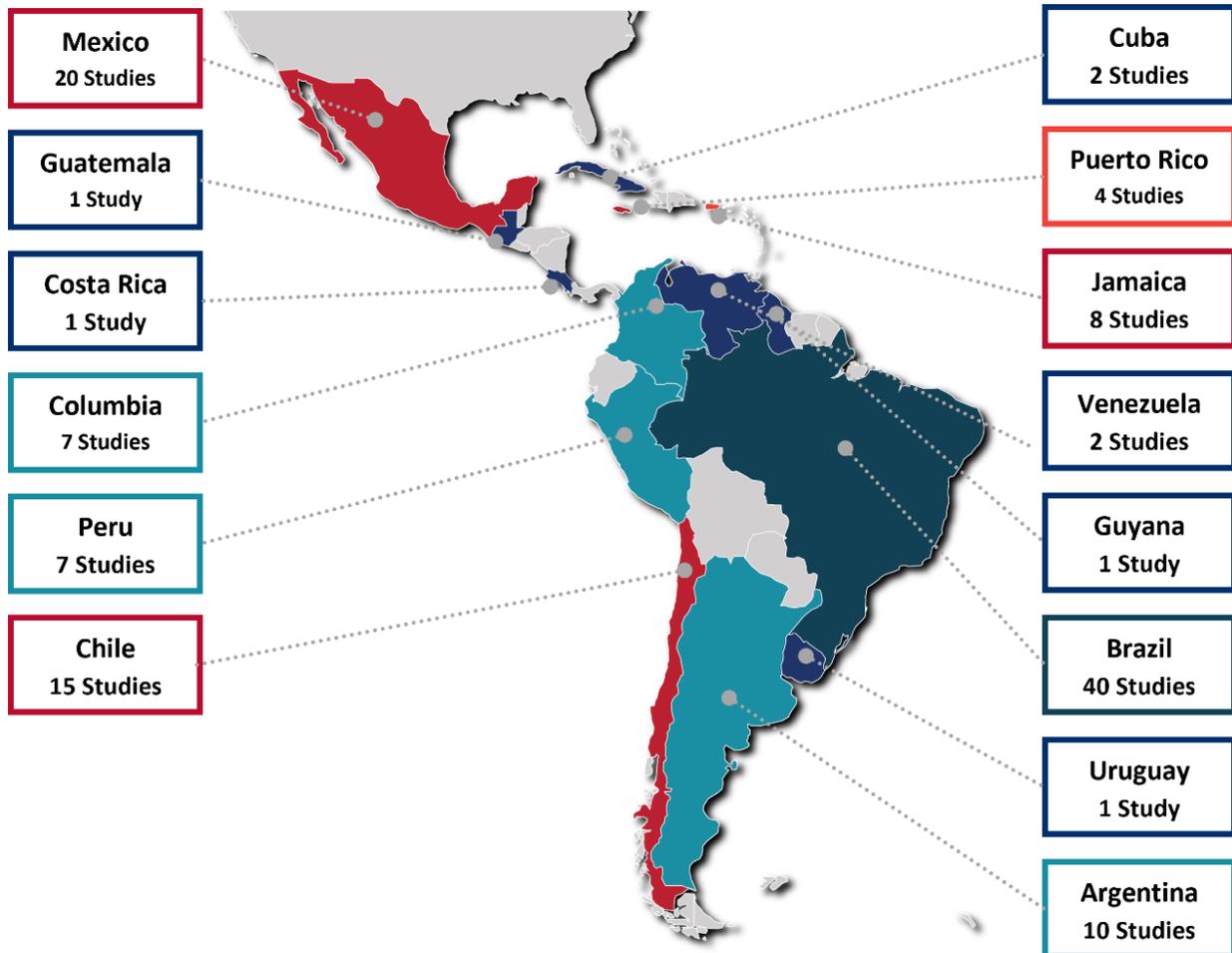
1. **Quantitative intervention studies:** Experimental and multivariate nonexperimental studies that had a control or comparison group. We included these studies to determine the impact of specific programs on EGL outcomes.
2. **Quantitative nonintervention studies:** Studies that emphasized the predictors of reading outcomes but did not focus on the effects of a specific program. We included these studies to help answer the second research question, which was primarily focused on factors that are associated with reading outcomes.
3. **Qualitative intervention studies:** Studies that typically emphasized the process of program implementation or the experiences of beneficiaries in relation to the program.
4. **Qualitative nonintervention studies:** Studies that discussed literacy in the LAC region but did not include primary analysis of a specific program.

<sup>5</sup> We applied *Wikipedia*-based labelling and classification techniques to the abstract data to categorize and screen articles to increase the relevance of retrieved results using the well-known online encyclopedia, *Wikipedia* (Egozi, Markovitch, & Gabrilovich, 2011; Gabrilovich & Markovitch, 2006).

### 3. CHARACTERISTICS OF INCLUDED STUDIES

The studies included in the final systematic review and 2016 update were from 14 countries in the LAC region. The reviews included dissertations, journal articles, technical reports, and working papers that met the inclusion criteria. The identified and included studies are hosted within the [program's database](#). Exhibit 2 illustrates the geographic coverage of the included studies.

**Exhibit 2: Geographic Distribution of Included Studies**



#### A. QUANTITATIVE INTERVENTION STUDIES

The initial systematic review included 22 experimental and quasi-experimental studies that focused on determining the effects of development programs on EGL outcomes in the LAC region. We identified eight additional experimental and quasi-experimental studies to include in the 2016 update, bringing the total number of quantitative intervention studies to 30. Exhibit 3 summarizes the type of program evaluated and outcomes measured for these 30 quantitative intervention studies.

### Exhibit 3: Quantitative Intervention Studies

Type of Program Evaluated	Number of Studies	Outcomes measured
Teacher Training	5	<ul style="list-style-type: none"> <li>Vocabulary acquisition</li> <li>Time spent by teachers on literacy instruction, vocabulary support and other topic instruction</li> <li>Child language and literacy</li> <li>Letter naming, word reading, vocabulary, phonemic segmentation, fluency</li> </ul>
School Feeding and Other Nutrition Interventions	4	<ul style="list-style-type: none"> <li>Language test scores</li> <li>English language test scores</li> <li>Reading test scores</li> <li>Grades completed</li> <li>Spelling and reading</li> </ul>
Technology in Education	4	<ul style="list-style-type: none"> <li>Time spent reading</li> <li>Language test scores</li> <li>Reading</li> <li>Language test scores</li> </ul>
Preschool	3	<ul style="list-style-type: none"> <li>National Literacy examination test scores</li> <li>Literacy scores</li> <li>Teachers' speech characteristics and read-aloud strategies</li> </ul>
Specific Teacher Practices	3	<ul style="list-style-type: none"> <li>Children's word density and diversity of vocabulary</li> <li>Passage comprehension</li> <li>Reading comprehension, reading speed, effective reading</li> </ul>
Read-Alouds	3	<ul style="list-style-type: none"> <li>Vocabulary acquisition</li> <li>Language comprehension</li> <li>Expressive language</li> </ul>
Phonological Training	2	<ul style="list-style-type: none"> <li>Letter sound learning</li> <li>Decoding</li> </ul>
Shared Book Reading	2	<ul style="list-style-type: none"> <li>Vocabulary acquisition</li> </ul>
Parental Involvement	2	<ul style="list-style-type: none"> <li>Reading comprehension and fluency</li> <li>Literacy practices in mothers</li> </ul>
Deworming	1	<ul style="list-style-type: none"> <li>Spelling</li> <li>Reading</li> </ul>
Provision of Support to Schools	1	<ul style="list-style-type: none"> <li>National literacy and language school-level performance data</li> </ul>

Exhibit 3 shows that the majority of the quantitative intervention studies focused on teacher training, school feeding and nutrition, and technology in education interventions. In addition, several studies focused on preschool, specific teacher practices, and read-alouds, although not enough of each type of these studies with a sufficient sample size to include in the meta-analysis. It is important to note that the majority of the quantitative intervention studies came from middle- and high-income countries, meaning the findings cannot necessarily be extrapolated to low-income countries given contextual differences.

#### B. QUANTITATIVE NONINTERVENTION STUDIES

Typical systematic reviews often exclude quantitative studies that are not based on a single, specific intervention. Our team included this category of studies, however, because they are useful for examining reading acquisition mechanisms and trajectories. These studies also help uncover the factors associated with reading success, which in turn can help structure more effective pedagogical strategies and activities that are likely to improve reading outcomes. The key finding from these studies was that phonemic awareness skills, fluency, and comprehension skills, as well as phonics-based teaching techniques, are significantly associated with reading outcomes.

Quantitative nonintervention studies comprised the largest number of studies in the original systematic review and the 2016 update. The original review included 62 articles, while the 2016 update included 19 articles. Both reviews covered the following countries and territories: Argentina, Brazil, Chile, Colombia, Costa Rica, Cuba, Guatemala, Mexico, Peru, and Puerto Rico. Exhibit 4 below summarizes the characteristics of the quantitative nonintervention studies.

**Exhibit 4 : Geographic Distribution of Quantitative Nonintervention Studies**

TOPICS	ARGENTINA	BRAZIL	CHILE	COLOMBIA	COSTA RICA	CUBA	GUATEMALA	MEXICO	PERU	PUERTO RICO
ASSESSMENT										
CHILD NUTRITION										
CURRICULUM										
DISABILITIES										
PEDAGOGICAL APPROACHES										
INFORMATION & COMMUNICATION TECHNOLOGY (ICT)										
ORAL LANGUAGE DEVELOPMENT										
PARENTAL/COMMUNITY PARTICIPATION										
PRELITERACY/ EMERGENT LITERACY										
POVERTY										
PRESCHOOL										
READING IN MULTILINGUAL CONTEXTS.										
READING SKILLS										
SMOKE EXPOSURE										
TEACHING PRACTICES FOR READING										
TEACHER QUALITY/TRAINING										
WRITING										

### C. QUALITATIVE STUDIES

The initial systematic review included eight qualitative studies of specific interventions. Of these eight studies, we included only the four that were rated as high quality in the synthesis of findings. These four articles focused on bilingual/multilingual education in Peru, curriculum in Jamaica, parental and

community participation in Argentina, and general pedagogical strategies in Colombia. The 2016 update included two additional qualitative intervention studies from Jamaica and Guatemala.

The initial review also included 16 articles that used qualitative research to observe elements of EGL that were not specific to an intervention. Of these 16 articles, we included the 13 that were considered high quality in the summary of findings. The 2016 update included five additional qualitative nonintervention studies. Exhibit 5 summarizes the geographic characteristics and content areas of the qualitative studies.

**Exhibit 5: Geographic Distribution of Qualitative Studies**

TOPICS	ARGENTINA	BRAZIL	COLOMBIA	GUATEMALA	JAMAICA	MEXICO	PERU	PUERTO RICO	U.S. VIRGIN ISLANDS	VENEZUELA	MULTIPLE
ASSESSMENT											
CHILD NUTRITION											
CURRICULUM											
DISABILITIES											
GENERAL PEDAGOGICAL APPROACHES											
INFORMATION & COMMUNICATION TECHNOLOGY											
PARENTAL AND COMMUNITY PARTICIPATION											
POVERTY											
PRELITERACY/EMERGENT LITERACY											
PRESCHOOL											
READING IN BILINGUAL/MULTILINGUAL CONTEXTS											
READING SKILLS											
SCHOOL GOVERNANCE											
TEACHING PRACTICES FOR READING											
TEACHER TRAINING											
WRITING											

■ = Qualitative intervention studies ■ = Qualitative nonintervention

## 4. FINDINGS

Here we present our findings on the impact of the three types of programs that had enough studies to conduct a meta-analysis: teacher training programs, school feeding and nutrition programs, and technology in education programs. We then present aggregated results for other types of programs for which we identified studies, including the effectiveness of preschools, school governance, specific teacher practices, and parental involvement. In each of these categories, we first present findings on impact from quantitative intervention studies, followed by findings from quantitative non-intervention studies, and lastly qualitative insights from both intervention and non-intervention studies.

### A. IMPACT OF TEACHER TRAINING PROGRAMS

On average, a meta-analysis of quantitative intervention studies did not find statistically significant effects of various teacher training programs on EGL outcomes. However, the results suggested that teacher training programs combined with coaching could be effective at improving EGL outcomes. Caution must be exercised when interpreting these findings, however, because the results were based on studies in Chile only. Teacher training programs could have different effects on EGL outcomes in low-income or middle-income countries.

Teacher training programs may achieve these positive effects on EGL outcomes through improvements in the quality of preschool. Quantitative nonintervention studies showed that the quality of preschool was positively associated with EGL outcomes

Qualitative evidence suggested that incorporating games into the learning process can increase student motivation to learn. However, more rigorous mixed-methods research is needed to determine the causal mechanisms underlying these relationships.

### B. IMPACT OF SCHOOL FEEDING AND OTHER NUTRITION PROGRAMS

On average, we did not find statistically significant effects of school feeding and other nutrition programs on EGL outcomes. However, we found some evidence that nutrition programs had positive effects on EGL outcomes in contexts where stunting and wasting were high, such as Guatemala. It is important to exercise caution in the interpretation of these results, however, because they were based on only a few studies, including only one study from a low-income country.<sup>6</sup> These types of programs have shown impact in other LMICs.

Both the quantitative intervention and nonintervention research suggested that poverty and associated factors such as malnutrition and child labor were negatively associated with EGL outcomes. However, the evidence was less clear on the direction of these effects.

### C. IMPACT OF TECHNOLOGY IN EDUCATION PROGRAMS

While the use of technology is varied and relatively understudied as related to EGL outcomes in the LAC region, on average, we did not find evidence for statistically significant effects of technology in education programs on EGL outcomes. The results also showed that laptop distribution had adverse

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<sup>6</sup> Maluccio et al., 2009.

effects on EGL outcomes; for example, two studies from Peru showed the nationwide one-laptop-per-child program had adverse effects on reading habits.<sup>7</sup>

#### **D. IMPACTS OF OTHER EDUCATION PROGRAMS**

There are very few rigorous quantitative studies on the effectiveness of preschools, school governance, specific teacher practices, and parental involvement. As such, this section discusses outcomes across varying types of programs on specific reading constructs, including phonological awareness and read-alouds.

Across the four types of research, many of the programs focused on strategies to develop phonological awareness, such as using read-alouds. For example, findings from a study in Jamaica showed that read-alouds with informational texts could help children make connections with their realities, increase their content knowledge, and expand their vocabulary.<sup>8</sup> Read-alouds were also used effectively in bilingual settings to support vocabulary acquisition in the second language.<sup>9</sup> However, the quantitative intervention research indicated that studies with an emphasis on read-alouds had a high risk of selection and publication bias.<sup>10</sup> Thus, we may have an incomplete picture of the influence of read-aloud strategies on EGL outcomes.

Quantitative nonintervention studies and qualitative intervention studies also provided evidence for a positive association between teaching phonemics, fluency, and reading comprehension and improved reading outcomes. However, it was unclear whether the relationship was causal: quantitative intervention studies did not show rigorous evidence for the positive effects of teaching these skills on EGL comprehension.

### **5. RECOMMENDATIONS**

The research included in this study suggests some promising hypotheses on what types of programs may be effective in improving EGL outcomes, despite a lack of rigorous evidence that enables assessment of impact. Exhibit 6 presents our recommendations that are directly supported by the research findings we included in this study. We provide the first two sets of recommendations specifically for practitioners or ministries, funders, and NGOs; the third set of recommendations suggests areas for further research.

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<sup>7</sup> Beuermann et al., 2015; Cristia et al., 2012.

<sup>8</sup> Webster, 2009.

<sup>9</sup> Neugebauer & Currie-Rubin, 2009.

<sup>10</sup> **Selection bias** is associated with lack of equivalence in observable or unobservable characteristics across treatment and control/comparison groups which may result from self-selection into the program. **Publication bias** occurs when the outcome of a research study influences decisions regarding the study's publication and distribution.

**Exhibit 6: Recommendations**

<p><b>FOR MINISTRIES OF EDUCATION, INTERNATIONAL FUNDERS, AND NON-GOVERNMENTAL ORGANIZATIONS</b></p>	<ul style="list-style-type: none"> <li>• Allocate more resources to enhancing preschool quality through training high-quality teachers and providing ongoing coaching in higher middle-income and high-income countries.</li> <li>• Invest in nutrition programs in contexts with high rates of early childhood stunting and wasting to improve EGL outcomes.</li> </ul>
<p><b>FOR PRACTITIONERS</b></p>	<ul style="list-style-type: none"> <li>• Focus pedagogical approaches on building the predictors of reading skills, such as phonemic awareness, decoding, vocabulary, fluency, and comprehension, which will likely contribute to improved reading outcomes.</li> <li>• Make reading activities more exciting and contextually relevant by incorporating game-based learning as well as students' ideas about potential activities and reading materials into lessons.</li> </ul>
<p><b>FOR FURTHER RESEARCH</b></p>	<ul style="list-style-type: none"> <li>• Ensure that language assessments include multiple reading skills, and differentiate between those skills.</li> <li>• Develop interdisciplinary mixed-methods research on EGL that includes more than one reading construct and a large sample size.</li> <li>• Include several EGL constructs in administrative data to enable high-quality research on the mechanisms underlying EGL using large sample sizes.</li> <li>• Fund long-term mixed-methods experimental or quasi-experimental research on the effects of preschool and early childhood education on EGL outcomes.</li> <li>• Document ongoing research to minimize publication bias and ensure that unpublished research is available to policymakers.</li> <li>• Register ongoing research on EGL in a central, publicly available location so all stakeholders can track and seek to add to the evidence.</li> <li>• Fund rigorous research that allows for an examination of the causal effects of development programs on EGL outcomes.</li> <li>• Conduct more research on EGL strategies for students with disabilities.</li> <li>• Conduct more research on EGL in indigenous languages.</li> <li>• Conduct more research on the linkages between the development of prewriting and writing skills and EGL outcomes.</li> </ul>

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