

# Impact of Literacy Interventions on Reading Skills in Low- and Middle-Income Countries: A Meta-Analysis

eTale 2022



This study systematically reviewed literacy interventions in low- and middle-income countries, and estimated their effects on children's reading skills using a meta-analytic approach. The results revealed an overall effect of .30 across various literacy outcomes. The largest effects were identified for emergent literacy skills (.40) and the smallest effects for reading comprehension (.25) and oral language skills (.20).

**Authors: Young-Suk G. Kim, Hansol Lee, & Stephanie S. Zuilkowski**

Source: Kim, Y.-S. G., Lee, H., & Zuilkowski, S.S. (2020). Impact of Literacy Interventions on Reading Skills in Low- and Middle-Income Countries: A Meta-Analysis. *Child Development*, 91(2), 638-660, DOI: 10.1111/cdev.13204

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revealed an overall effect of .30 across various literacy outcomes. Largest effects were identified for emergent literacy skills (.40) and the smallest effects for reading comprehension (.25) and oral language skills (.20).

- Reading is one of the core foundational skills for academic achievement and careers in the modern information-driven society.
- Beyond individual growth and advancement, reading skills also have economic consequences at the societal level.
- Unfortunately, many children—particularly those in low- and middle-income countries (LMICs)—do not develop foundational reading skills even after years of instruction.
- It is estimated that 9 out of 10 children in Sub-Saharan Africa do not have basic reading skills. A similarly dire situation is also found in Central and Southern Asia.

### **Key areas of reading instruction**

- According to the National Reading Panel, the key areas of reading instruction are phonological awareness, phonics, reading fluency, vocabulary, and reading comprehension.
- Recent studies have revealed that oral language skills beyond vocabulary (such as grammatical knowledge and listening comprehension) as well as higher order cognitive skills (such as inference and perspective taking) are necessary for reading comprehension.



### **The study**

The goal of this study was to review the effects of reading interventions on reading and language outcomes in LMICs using a meta-analytic approach.

Research questions:

1. What is the impact of multicomponent literacy intervention in LMICs on language and reading outcomes?
2. Do the effects vary as a function of intervention features as well as contextual factors?

Overall, a total of 67 studies met all the inclusion criteria, with 129 independent samples representing 661 effect sizes from 32 countries (N = 213,464)

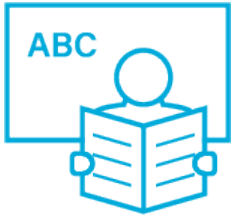
### **Factors affecting the effect size**

- Language in which reading is taught was an issue, as reading acquisition is easier in a child's most familiar language.
- In some interventions, teachers were provided with a one-off teacher training workshop, whereas in others ongoing support was provided, including regular classroom visits, feedback, and booster training sessions.
- The majority of interventions targeted instruction in the school context only, whereas some incorporated community involvement to encourage literacy-related activities in the children's homes and communities.
- Interventions also varied in terms of duration and target subjects.
- Results may also have been moderated as a function of contextual features such as urbanicity and region.



## Findings

- The effect sizes ranged from  $-.43$  to  $2.00$ .
- A majority (80%) of the effect sizes were positive.
- The overall average effect size was  $.30$ .
- The effect sizes were  $.40$  for emergent literacy skills,  $.32$  for word reading,  $.28$  for reading fluency,  $.25$  for reading comprehension, and  $.20$  for oral language.
- The effects of literacy intervention across the outcomes varied as a function of teacher training support, such that interventions with professional development (PD) with ongoing support had a larger average effect than those with one-off PD or no PD.
- For emergent literacy skills, there was larger effect from providing PD and ongoing support in interventions that included ICT that did not involve the community, and which were carried out in Latin America and the Caribbean region.
- For word reading, the average impact of the literacy intervention was greater in the Middle East and North Africa.
- For reading fluency, the effect size was larger with no community involvement in the Middle East and North Africa.
- For reading comprehension, effect sizes were larger if personal development was offered.
- For oral language, using the first language as the medium of literacy interventions was more effective than using a second language. In addition, interventions lasting 1–6 months were more effective than those conducted for  $<1$  month or 6–12 months.



## Implications

- Despite the impact of reading development on individual income, health, and empowerment, as well as the economic development of a country, reading has not been taught explicitly as a skill in many LMICs and the majority of children cannot read a single word even after years of instruction.
- The average effect size of .30 is quite impressive and promising.
- With explicit and systematic instruction, lower-level skills (such as emergent literacy skills) are easier to improve (relatively) than higher-order skills such as reading comprehension. Improving reading comprehension requires concerted and sustained efforts to a greater extent compared to constrained skills such as emergent literacy skills.
- One moderator that had a relatively consistent result was teacher training support. The average effect was larger when teachers were either provided with ongoing PD beyond a one-off workshop or had no training.

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# Impact of Teachers' Practices

# on Students' Reading Comprehension Growth in Guatemala

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This study discusses an educational intervention with a strong emphasis on reading development in a bilingual context in the Western Highlands (WH) of Guatemala. The majority of students speak a Mayan language as their mother tongue, although they are generally taught in Spanish. For this intervention, we report data for the first 3 years of implementation of a bilingual/intercultural education model that includes teacher training at the university level and the development of bilingual materials.

**Authors: Fernando Rubio, Leslie Rosales de Véliz, María Cristina Perdomo Mosquera, & Ventura Salanic López**

Source: Rubio, F., de Véliz, L. R., Perdoma Mosquera, M. C., & Salanic López, V. (2017). Impact of teachers' practices on students' reading comprehension growth in Guatemala. In A. Gove, A. Mora, & P. McCardle (Eds.), *Progress toward a literate world: Early reading interventions in low-income countries, New Directions for Child and Adolescent Development*, 155, 67–76.

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- The WH of Guatemala is representative of much of rural Guatemala; a multicultural, multilingual country where more than 20 languages—including Spanish—are spoken.
- The country has one of the highest inequality levels in the Americas.
- Teachers are poorly trained and few instructional materials exist, leading to more than one third of children in rural areas not completing first grade.

### **Lifelong Learning (LLL) project**

- The lifelong learning project has supported the development of bilingual instructional materials.
- The project provides undergraduate university training in-service programmes for teaching reading and writing in bilingual situations. It also provides graduate programmes in bilingual education administration for regional administrators that include coaching teachers.
- The programme supports reading awareness efforts in local communities.



### **The study**

This study presents the results for the first 3 years of implementation of the LLL project.

## Hypothesis:

- Students of teachers who employed project intervention components showed greater growth in reading than teachers who did not report using such interventions.

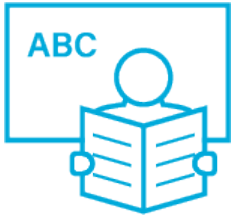
The sample consisted of 114 WH elementary schools. Data were collected over a 1-year period from 326 teachers serving approximately 6,000 students. Teachers' use of interventions was measured through a self-report questionnaire about specific intervention components. Student progress in reading comprehension was measured with the Ministry of Education National Reading Assessments for Elementary Grades at the beginning and end of the school year.



## Findings

- Most teachers (93%) taught in Spanish, although the majority (54.3%) stated that teaching literacy should be carried out in both Spanish and Mayan languages at the same time.
- Some 65% of teachers reported having a school library.
- There were 55.2% of teachers who reported receiving in-service teacher training at university level.
- There were 79% of teachers who reported receiving visits from coaching tutors.
- There were 69.2% of teachers who reported having support from parents, which promoted the students' growth in reading.
- Nearly all (95.2%) teachers reported using reading diagnostic assessments, which had positive effects on student growth.





## Implications

- This intervention programme was implemented on a region-wide basis.
- Initial results show that growth has been promising, although clearly this work must be ongoing to continue to have an impact.
- Teachers require training at university level, and training should be accompanied by ongoing support from coaches willing to help them improve their practice.
- Encouraging the Ministry of Education to develop and provide reading and assessment materials in different languages of instruction is beginning to have positive effects.
- Parents' participation in reading is beginning to affect growth.

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# Improving Early Grade Reading Outcomes: Aprender a Ler in Mozambique



The Government of Mozambique has long struggled to improve the low reading levels of children in early grades. A research-based reading intervention was developed and tested in two provinces. This article examines student reading performance from cohorts of second- and third-grade students before and after a 1-year intervention when compared to a control group. The study identifies factors required for successful scale-up of the intervention.

**Authors: Shirley Burchfield, Haiyan Hua, David Noyes, & Willem van de Waal**

Source: Burchfield, S., Hua, H., Noyes, D., & Van de Waal, W. (2017). Improving early grade reading outcomes: *Aprender a ler* in Mozambique. In A. Gove, A. Mora, & P. McCardle (Eds.), *Progress toward a literate world: Early reading interventions in low-income countries, New Directions for Child and Adolescent Development*. 155, 117–130.

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- In the 1990s (after the civil war), school attendance in Mozambique was difficult due to high poverty levels, impassable roads, and deteriorating or non-existent schools, despite a commitment to improve education.

- Enrolment was low (around 40%) and schools lacked books, supplies, and qualified teachers.
- Between 2003 and 2010, primary school enrolment increased from 3.3 million to 5.3 million.
- With an insufficient number of trained teachers and too few schools to meet the increased demand, most schools operated with double shifts.
- One study reported that only 41% of children at Grade 3 could read a single word, and only 6% could read 11 words or more per minute.

### **Aprender a Ler**

- The objective of this intervention is to improve reading outcomes for children at Grades 2 and 3 in Zambésia and Nampula provinces by enhancing quality, reducing absenteeism and tardiness, and increasing instructional time.
- In 2015, Grade 1 was included in the programme (except for the first 12 weeks of school) when the emphasis is on teaching vocabulary in Portuguese.
- The programme provides training, coaching, and technical assistance to strengthen basic education services, and was originally targeted at 120 schools.
- The medium treatment group received intensive professional development, culminating in an examination and a certificate.
- The full treatment group received school management training aimed at reducing absenteeism and tardiness in addition to training and support.



### **The study**

## Research questions:

1. To what extent have programme interventions improved reading outcomes for children in Nampula and Zambésia provinces?
2. What factors might assist or impede scale-up efforts?

Sampling included a priori random assignment of 180 schools to either a treatment or a control group in Zambésia and Nampula. Evaluators selected 10 children from each class (3,475 in total). The same schools were sampled at baseline and for midline 1 and midline 2 evaluation, although different students were assessed across the applications.

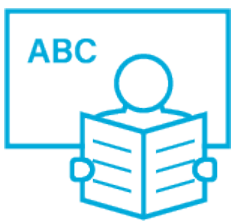
## Components of the intervention

- *Reading reinforcement programme*: provides training, coaching, and teaching materials in Portuguese to teachers in Grades 2 and 3 using a phonics-based scope and sequence.
- *School director training and coaching programme*: provides school directors with training in school leadership, effective communication, giving and receiving feedback, using practical school management tools for data-based decision making, and building community participation.
- *Institutional capacity building*: project staff work with the Provincial Directorate of Education and Culture and Teacher Training Institutes to prepare them to eventually take over programme initiatives.
- *Measuring impact for evidence-based decision making*: the project integrates a rigorous monitoring and evaluation process throughout the programme.



## Findings

- After the first year of project implementation, students in both the medium and full treatment groups performed significantly better on all early grade reading assessment subtasks (oral comprehension, concepts about print, letter recognition, familiar word reading, oral reading fluency, and reading comprehension) than students in the control group.
- Students in full treatment schools scored significantly higher than students in medium treatment schools for most measures.
- The treatment group showed the greatest improvement in letter recognition, familiar word reading, and reading fluency.



## Implications

- Four factors were most likely to have contributed to the results: availability of materials, student and teacher attendance, training and supervision, and language of instruction.
- Each teacher in the *Aprender a Ler* treatment schools received two copies of each of 18 titles of read-aloud books and one copy per child of each of 18 decodable books. In control schools, only 10% of children had any

reading books.

- One impediment to programme scale-up is high student and teacher absenteeism: 52% in full treatment schools and 62% in control schools for students, and 31% in treatment schools and 34% in control schools for teachers.
- The programme selects the strongest and most committed reading coaches and school directors to join a core group of trainers. The success of the scale-up depends on the strength of each district education office.
- Inability to understand the language of instruction is an impediment to scaling up the programme. The project has developed teaching and learning materials in three Bantu languages. The purpose is to teach vocabulary and comprehension in Portuguese by using a cross-linguistic transfer model. This new component will likely significantly improve children's ability to learn to read and enhance their overall academic performance.

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# The Influence of Instructional Practices on Reading Motivation in Finland

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Interest in reading contributes to reading activity and to the amount of reading, which in turn promotes students' reading performance. Teachers (and their instruction) provide an important supporting environment for children's learning and motivation. Child-centred teaching practices that are sensitive to the development of children's autonomy, competence beliefs, and social interactions with peers support interest in reading.

**Author: Marja-Kristiina Lerkkanen**

Source: Lerkkanen, M-K. (2018). The influence of instructional practices on reading motivation in Finland. In Orellana García P. & Baldwin Lind P. (eds.). *Reading Achievement and Motivation in Boys and Girls, Literacy Studies 15*, 65-78. Doi: 10.1007/978-3-319-75948-7\_4

Interest in reading contributes to reading activity and to the amount of reading, which in turn promotes students' reading performance. Teachers (and their instruction) provide an important supporting environment for children's learning and motivation. Child-centred teaching practices that are sensitive to the development of children's autonomy, competence beliefs, and social interactions with peers support interest in reading.

- Differences between individuals in terms of development of reading skills and interest in reading start before entering school.
- Educational contexts that promote children's autonomy to initiate tasks and complete them, without applying strict performance criteria, have been shown to strengthen children's interest in reading.
- Motivation combined with effort is the key to success at school.
- While intrinsic motivation involves students' thoughts, ability, beliefs, and emotions in learning situations, extrinsic motivation often works only while external

reward is available.

- The value aspect of achievement motivation includes three components: attainment value, utility value, and intrinsic (or interest) value.
- Students' interest in reading is typically high at the beginning of school but often decreases during the elementary school years.

### **Defining intrinsic motivation**

- This is motivation that comes from within the individual, and relates to engaging in interesting, challenging, and joyful activities that provide internal satisfaction.

### **Defining extrinsic motivation**

- Extrinsic motivation is derived from external sources (such as a reward system in the classroom) that is unrelated to the learning of the skill itself.

### **Gender differences**

- Girls typically demonstrate higher levels of interest and a stronger self-concept of ability concerning reading. They also typically outperform boys in most literacy tasks at school.
- There is greater variance within groups of boys and within groups of girls than there are differences between genders.

### **Child-centred practices**

- Based on the work of Piaget and Vygotsky, child-centred practices recognise children as active knowledge constructors.



- Teachers assist and facilitate children's learning by providing them with both guidance and opportunities to direct their own exploration of objects and academic topics; thus, teaching is like a partnership between the teacher and the children.
- Child-centred classrooms are characterised by a shared responsibility for management and learning, active teacher support for children's learning efforts and social skills, and teaching practices that are sensitive to children's needs and interests.



## **The study**

The findings of a large-scale First Steps study on how Finnish teachers' instructional practices are associated with children's interest in reading are summarised in this study.

Research question:

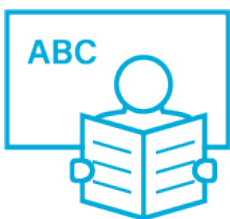
- How do teaching practices and the quality of teacher-child interactions observed in classrooms influence children's motivation in reading, particularly among boys and at-risk children in the early school years?

Participants in the First Steps study were originally approximately 2000 children and their parents and teachers from 4 municipalities in Finland. The study includes several yearly assessments of students' academic performance, motivation, social skills, and wellbeing.



## Findings

- Reading interest declined from kindergarten to Grade 4.
- Girls were more interested in literacy learning than boys.
- Poor readers had lower reading interest.
- Children at risk of reading difficulties had poorer pre-reading skills, reading achievement and motivation. Moreover, parental expectations and beliefs about their abilities were lower, and they received less parental support for reading at home.
- In kindergarten classrooms (where teachers predominantly applied child-centred teaching practices), children showed more interest in reading than in classrooms characterised by predominantly teacher-directed teaching practices.
- The higher the quality of classroom organisation, the greater the children's motivation in that particular classroom.
- The quality of emotional and instructional support from the teacher related to children's motivation, which was related to phonological skills.
- The more stress a teacher reported, the lower the children's motivation.



## Implications

Teaching practices that are sensitive to the development of children's autonomy, self-efficacy, and social interactions with peers can support their interest in reading.

Raising children's curiosity (by giving them choices and supporting their autonomy to make choices themselves) can support students to sustain their interest in a task or activity.

Teacher's positive verbal reinforcement toward a child's (deserved) effort rather than toward their intelligence may increase intrinsic motivation.

Mistakes and misunderstandings should be considered learning opportunities.

Teachers need to support children's connection with others in the classroom. High-quality classroom interactions should be emotionally supportive, caring, and respectful.

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# Lifewide Learning for Early Reading Development

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Using the longitudinal reading scores of 6,874 students from

424 schools at 12 sites across Africa and Asia, results showed there was 1) a modest but consistent relationship between students' home literacy environments and reading scores, and 2) a strong relationship between reading gains and participation in community reading activities, suggesting that interventions should consider both home and community learning environments and their differential influences on interventions across different low-resource settings.

**Authors: Amy Jo Dowd, Elliott Friedlander, Christine Jonason, Jane Leer, Lisa Zook Sorensen, Jarrett Guajardo, Nikhit D'Sa, Clara Pava, & Lauren Pisani**

Source: Dowd, A. J., Friedlander, E., Jonason, C., Leer, J., Sorensen, L. Z., Guajardo, J., D'Sa, N., Pava, C., & Pisani, L. (2017). Lifewide learning for early reading development. In A. Gove, A. Mora, & P. McCardle (Eds.), *Progress toward a literate world: Early reading interventions in low-income countries, New Directions for Child and Adolescent Development*, 155, 31–49.

This study examined the relationships between children's reading abilities and the enabling environment for learning in the context of Save the Children's Literacy Boost programme. Using the longitudinal reading scores of 6,874 students from 424 schools at 12 sites across Africa and Asia, results suggested there was 1) a modest but consistent relationship between students' home literacy environments and reading scores, and 2) a strong relationship between reading gains and participation in community reading activities, suggesting that interventions should consider both home and community learning environments and their differential influences on interventions across different low-resource settings.

- Repeated attempts to affect student learning exclusively through schools have largely failed.
- Learning is influenced by the enabling environment outside school, whether captured as materials, being

surrounded by readers, good reading habits, or reading together.

### **Defining Literacy Boost**

- This aims to improve classroom reading pedagogy and to engage students, families, and communities in reading activities outside of school.
- The programme focuses on lifewide learning: children's engagement in enjoyable, cognitively demanding, literacy-related activities not only in school but also in their homes and communities.
- The programme provides child-friendly reading materials and encourages caregivers to undertake literacy-supporting activities (such as reading and talking with their children).
- The programme provides opportunities to participate in community activities, such as reading in groups or pairs or borrowing materials from a local mini-library.
- The programme reaches over 1.5 million children in 32 countries and has two intervention components: teacher training and community action.



### **The study**

This study investigated how home- and community-enabling environments contribute to children's learning. This was achieved using longitudinal data from 12 sites across Bangladesh, Burundi, Ethiopia, Indonesia, Malawi, the Philippines, and Rwanda.

Research hypotheses:

H1: At baseline, the enabling environment of the home (specifically reading materials and literacy habits) will be positively associated with students' reading achievement, controlling for demographic and school characteristics.

H2: At endline, the enabling environment of the community (specifically the amount of community reading activities in which a student participates) will be positively associated with how much the student learned, regardless of starting achievement level, baseline home learning environment, demographic, and school characteristics.

The sample was drawn from 12 sites (each of which had between 25 and 85 schools). In each school, 20 students (10 boys and 10 girls) were randomly selected to participate in the study. Datasets include between 338 and 827 students in Grades 1–4.

## **Measures**

### *Reading Assessment*

- Untimed letter identification
- Fluency
- Comprehension

### *Home Enabling Environment*

- The reading materials index sums the different reading material types at home, with child-friendly materials (×3).
- The reading habits index sums the number of times in the past week household members a) were seen reading, b) read to the student, c) helped or encouraged the student to study, and d) told the student a story.

### *Community Enabling Environment*

- This refers to the degree of participation in Literacy Boost community reading activities during past week, as follows: a) meeting with a reading buddy, b) borrowing

books from a book bank, c) attending a reading camp, d) participating in a 'make-and-take' activity to create reading materials to take home, and e) participating in a read-a-thon.



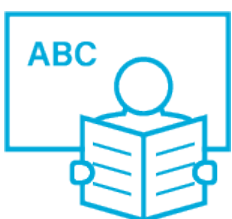
## Findings

### Hypothesis 1

- It was found that 5 of the 12 sites featured a statistically significant but small positive relationship between reading habits and baseline skills, whereas one site showed a negative relationship.
- It was found that 3 sites featured a small statistically significant positive relationship between reading materials and baseline skills, and one site featured a small statistically significant negative relationship.

### Hypothesis 2

- In 7 out of 12 sites, participation in community reading activities was significantly and positively related to reading gains across skills with effect sizes that range from small to quite large.



## Implications

Home environment influences reading skills, even taking other background characteristics into account. Reading habits significantly predict achievement more often than reading materials. Participation in community reading activities is typically positively related to students' reading gains, and the magnitude of the effect is greater for advanced skills.

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# Literacy Programs Efficacy for Developing Children's Early Reading Skills in Familiar Language in Zambia

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In this study, the comparative efficacy of a phonics-based reading programme and a language experience approach-based literacy programme to develop reading skills among Zambian early childhood school learners were investigated. The learners (N = 1986) took either the phonics-based reading programme (n = 1593) or the alternative language experience approach-based programme (n = 393). Results suggest that learners in the phonics-based literacy programme demonstrated significantly better results in letter-sound knowledge and in



reading skills.

**Authors: Francis K. Sampa, Emma Ojanen, Jari Westerholm, Ritva Ketonen, & Heikki Lyytinen**

Source: Sampa, F.K., Ojanen, E., Westerholm, J., Ketonen, R., & Lyytinen, H. (2018) Literacy programs efficacy for developing children's early reading skills in familiar language in Zambia, *Journal of Psychology in Africa*, 28(2), 128-135, DOI: 10.1080/14330237.2018.1435050

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- Use of the familiar language for early literacy acquisition is an international standard and especially well-founded among readers whose familial language is transparent.
- Zambia has adopted the Primary Reading Programme (PRP) and the Primary Literacy Programme (PLP) for literacy instruction in the early grades using seven familiar indigenous languages: Cinyanja, Icibemba, Chitonga, Kiikaonde, Silozi, Lunda, and Luvale.

### **Defining the Primary Reading Programme**

- This programme is a language experience programme in which learners acquire literacy for reading and writing by building on the oral language that they have already acquired.
- Familiar language was used for learning to read for one

year in Grade 1 and English was used from Grade 2.

### **Defining the Primary Literacy Programme**

- This is a phonics-based reading programme in which learners are meant to acquire literacy by learning letter-sound connections in a familiar language.
- The programme focuses on a decoding process where learners are taught to break down written language into small and simple components by identifying and storing sounds of the letters and assembling the sounds according to the sequences of letters.
- Familiar language was used for learning to read from Grade 1 to the end of Grade 2, and only oral English was introduced in Grade 2.

### **The Language Experience Approach**

- This approach promotes reading and writing through the use of personal experiences and oral language.
- Learners do not breakdown sounds individually, but take words at face value and associate them with prior knowledge.



### **The study**

The purpose of this study was to compare the relative efficacy of a phonics-based approach and language experience-based approach to teaching early literacy to Zambian early-grade learners.

Research question:

- What is the comparative efficacy of a phonics-based programme and a language experience-based programme in teaching reading to Zambian early childhood learners with linguistic diversity?

**Participants** were 1986 early childhood school learners who were randomly selected from 200 schools in 16 Zambian school districts. Samples for the PRP comprised 393 learners from 40 schools. Samples for PLP comprised 1593 learners from 160 schools.



## Findings

- Learners in the PLP obtained higher mean rank scores on at least some of the reading skill tests, although the effects sizes were small.
- Overall, the results could be interpreted as supporting PLP efficacy in teaching reading to children in Cinyanja, Icibemba, Kiikaonde, and Silozi.
- Learners who used Cinyanja or Icibemba as their home language for reading instruction obtained higher mean rank scores in the PLP compared to the PRP in several reading skill tests.
- Learners who used Kiikaonde or Silozi as their home language for reading instruction obtained higher mean rank scores in the PLP compared to the PRP in letters-sound knowledge only.

## Summary

Early childhood learners taking the PLP performed relatively better in reading skills acquisition compared to those taking

the PRP. This may be because Zambian languages contain grapheme-phoneme correspondences that behave consistently. All African languages are relatively new and are transparent orthographies, which makes initial literacy learning much easier than in English, where each of the vowels may represent different phonemes. Orthographic consistency facilitates more rapid development of phonemic awareness and consequently the basic reading skill. The most appropriate instruction methods focus on teaching connections between spoken and written language at the level of phonemes and graphemes. A fluent reading skill of a familiar language facilitates learning of more complicated orthographies such as English.



## **Implications**

- There was a large number of learners with a zero score in reading skill tests revealing that the implementation of both programmes was far from attaining a satisfactory level.
  - Overall, the results from this study may be interpreted as being favourable toward the PLP, which has placed much emphasis on teaching the basic key components of learning to read (phonemic awareness, phonics, fluency, vocabulary, and reading comprehension), and has also placed much emphasis on the phonics approach for teaching reading.
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# The Role of Reading Disability Risk and Environmental Protective Factors in Students' Reading Fluency in Grade 4

eTale 2022



This study explored the role of reading disability risk in kindergarten and environmental factors in Grades 1–3 on reading fluency in Grade 4. Evidence was found that environmental protective factors predicted students' improved reading fluency and reading disability risk predicted fewer protective environmental factors, which partially mediated the effect of reading disability risk on reading fluency.

**Authors: Noona Kiuru, Marja-Kristiina Lerkkanen, Pekka Niemi, Elisa Poskiparta, Timo Ahonen, Anna-Maija Poikkeus, & Jari-Erik Nurmi**

Source: Kiuru, N., Lerkkanen, M.-K., Niemi, P., Poskiparta, E., Ahonen, T., Poikkeus, A.-M., & Nurmi, J.-E. (2013). The role of reading disability risk and environmental protective factors in students reading fluency in Grade 4. *Reading Research Quarterly*, 48(4) pp. 349–368 | doi:10.1002/rrq.53

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reading fluency in Grade 4. Evidence was found that environmental protective factors predicted students' improved reading fluency and reading disability risk predicted fewer protective environmental factors, which partially mediated the effect of reading disability risk on reading fluency.

- Fluent reading is a necessary skill for academic success as well as gathering information from printed and electronic sources.
- The risk of reading disability may result in poor reading skills.
- Not all children at risk end up with poor literacy skills. Protective factors, such as positive relationships with adults and peers, may affect development of fluent reading despite the reading disability risk.

### **Defining fluent reading**

Fluent reading is the ability to read with accuracy, speed, and proper expression and comprehension. It refers to the whole reading process from word decoding to word meaning and the construction of phrase- and passage-level meaning.

### **Defining reading disability**

Reading disability is a difficulty in word decoding or slow, dysfluent, and inaccurate reading.

The risk of reading disability is thought to be 17%–20% of children, and is more common among boys, children of parents with low education, and children with low general ability.

Learning to read in Finnish is relatively easy, because Finnish has highly regular orthography and simple syllabic structure. However, reading disability is still present in Finland.

### **Defining peer acceptance**

Peer acceptance is defined as experiences of being liked or accepted by the members of one's peer group, companionship, and having a sense of connection to the larger peer group.

### **Defining good teacher-student relationships**

Good teacher-student relationships are characterised by high degrees of warmth, support, and sensitivity, and provide a safe context for the development of academic competences.

### **Defining good home-school collaboration**

This is a genuine partnership, including mutual respect, trust, and two-way communication, between parent and teacher with shared values and expectations about how to support the child.



### **The study**

Protective environmental factors such as peer acceptance, good teacher-student relationships, and good home-school collaboration may promote the development of good reading fluency among children with a risk for reading disability.

Research questions:

1. To what extent do environmental protective factors predict students' reading fluency in Grade 4?
2. To what extent does the risk of reading disability measured in kindergarten predict protective factors in students' interpersonal environment during Grades 1–3?
3. To what extent does the risk of reading disability measured in kindergarten predict students' reading

fluency in Grade 4?

4. To what extent is the effect of reading disability risk on subsequent reading fluency mediated via protective factors from students' interpersonal environment?

**Participants** were 538 students and their parents and teachers from 3 medium-sized towns and one municipality in Finland.

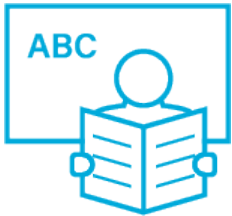


## Findings

- Children with a risk of reading disability in kindergarten had lower reading fluency in Grade 4 compared to children who did not have reading disability risk in kindergarten.
- Children with a risk of reading disability were less accepted in their peer group, and their teacher showed less positive affect toward them, the quality of the partnership between their parents and teachers was lower, and they had fewer environmental protective factors.
- Peer acceptance, teachers' positive affect for the student, and higher cumulative environmental support were related to better reading fluency in Grade 4.
- The effect of reading disability risk in kindergarten on subsequent reading fluency was partially mediated through teachers' positive affect for the student during Grades 1–3.
- The effect of reading disability risk in kindergarten on subsequent reading fluency was partially mediated through cumulative environmental support during Grades 1–3.
- The effects of environmental protective factors on



subsequent reading fluency did not significantly differ between the students with or without reading disability risk.



## Implications

- We can predict children's reading fluency in Grade 4 already in kindergarten by testing their reading disability risk (although the association is moderate). Therefore, other factors are considered important.
  - The risk of reading disability in kindergarten predicts poorer peer acceptance, less sensitive teacher attitude, and reduced cooperation between teacher and parents.
  - Less sensitive teacher attitude and cumulative environmental factors partly explain the association between reading disability risk in kindergarten and reading fluency in Grade 4; however, reading disability risk in kindergarten is also independently associated with reading fluency in Grade 4.
  - It is important that students receive support in their learning from the beginning of school, that the teacher is sensitive toward the student, and that students are accepted by their peers.
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# The Role of Teaching Practices in the Development of Children's Interest in Reading and Mathematics in Kindergarten

eTale 2022



This study explored the extent to which teaching practices observed in kindergarten classrooms predict children's interest in reading and mathematics. In classrooms where the teachers placed greater emphasis on child-centred teaching practices than on teacher-directed practices, the children showed more interest in reading and mathematics.

**Authors: Marja-Kristiina Lerkkanen, Noona Kiuru, Eija Pakarinen, Jaana Viljaranta, Anna-Maija Poikkeus, Helena Rasku-Puttonen, Martti Siekkinen, & Jari-Erik Nurmi**

Source: Lerkkanen, M-K., Kiuru, N., Pakarinen, E., Viljaranta, J., Poikkeus, A.-M., Rasku-Puttonen, H., Siekkinen, M. & Nurmi, J.-E. (2012). The role of teaching practices in the development of children's interest in reading and mathematics in kindergarten. *Contemporary Educational Psychology*, 37, 266-279.

This study explored the extent to which teaching practices observed in kindergarten classrooms predict children's

interest in reading and mathematics. In classrooms where the teachers placed greater emphasis on child-centred teaching practices than on teacher-directed practices, the children showed more interest in reading and mathematics.

- Teachers' instruction and classroom practices have been shown to contribute to children's learning and academic outcomes.
- Less is known about the effects on children's motivation toward academic subjects.

### **Defining interest in academic subjects**

Motivation directs students' behaviour and effort in learning situations.

Student interest in various school subjects and academic topics is of interest, as well as how much they like and enjoy doing tasks related to these topics.

Interest, intrinsic motivation, preference, and task motivation are concepts referring to this kind of interest.

### **Defining Achievement Goal Theory**

Achievement goal theory refers to different kinds of goals and behaviour (such as mastery, performance-approach or performance-avoidance) that direct students' engagement in achievement tasks.

Other concepts used to describe motivational patterns in academic environments are achievement beliefs, expectancies, and motivational strategies.

### **Defining child-centred practices**

Children are recognised as active knowledge constructors. Teachers assist and facilitate children's learning by providing them with guidance and opportunities to direct their

own exploration of objects and academic topics, making teaching akin to a partnership between the teacher and the children. Practices include shared responsibility for management and learning, active teacher support for children's learning efforts and social skills, and teaching practices that are sensitive to children's needs and interests.

### **Defining teacher-directed practices**

In this didactically-oriented kind of teaching, teachers emphasise the provision of information and employ structured, drill-and-practice group lessons that are fast-paced, teach discrete skills in small steps, and include praise when predetermined goals are reached. Teacher-controlled classrooms where the acquisition of 'basic' academic skills through oral recitation and worksheets are given considerable weight, whereas children's interests and social skill development receive little attention and peer interaction is not applied.



### **The study**

Teachers differ widely in their teaching practices and classroom instruction. The present study examined the extent to which teaching practices observed in kindergarten classrooms would predict children's interest in reading and mathematics. We expected that child-centred teaching practices (being sensitive to children's needs and interests) would increase children's autonomy in initiating tasks and completing them, and by doing so, strengthen children's interest in reading and mathematics.

Research questions:

1. To what extent do kindergarten classrooms differ with respect to children's interest in reading and mathematics?
2. To what extent do observed teaching practices predict classroom differences identified in children's interest in reading and mathematics, after controlling for classroom differences in pre-skills in reading and maths?

**Participants** were 515 kindergarten-aged children and their 49 teachers from 3 municipalities in Finland. Children's pre-skills in reading and mathematics were investigated during the autumn and their interests were investigated during spring. Teachers were observed using the Early Childhood Classroom Observation Measure (ECCOM).

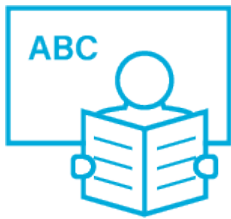


## Findings

- It was found that 12% of the total variation in interest in reading and 4% of the interest in math was due to differences between kindergarten classrooms.
- The more child-centred and the less teacher-directed the observed teaching practices, the higher the reading motivation and interest in maths were among children in the particular classroom.
- The components 'climate' and 'instruction' relating to child-centred teaching practices were found to have the highest positive correlation with children's interest.
- Climate included support for communication skills, interpersonal skills, student engagement, and individualisation of learning activities, while instruction included learning standards, coherence of

instructional activities, teaching concepts, and instructional conversation.

- The associations between the observed teaching practices and interest were somewhat stronger in reading than in maths.



## **Implications**

- Using child-centred practices in teaching, such as allowing children a lot of freedom to choose tasks and complete them without the pressure of getting the right answer, increases children's motivation to study, which may lead to better academic achievements.

## **Examples of child-centred teaching practices**

- Children are allowed to take responsibility to the degree they are able.
- There is a mixture of the teacher and children making choices.
- The teacher encourages children to engage in conversation and elaborate on their thoughts.
- The teacher provides opportunities for cooperative, small-group activities that promote peer interaction.
- The teacher is attentive to children's individual skill level and adapts tasks accordingly.
- Attention is given to connections occurring between/within academic lessons.
- Tasks and lessons are designed to teach identifiable concepts and to develop comprehension.

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# Working Toward a More Literate World: Reading Intervention Commentary

eTale 2022



This issue of *New Directions for Child and Adolescent Development* summarises recent and ongoing work to establish evidence-based practices in early reading instruction and intervention, and to improve access to and quality of literacy programmes in low- and middle-income countries. In this article, I present my own thoughts on the importance and implications of the reviewed articles.

**Author: Maureen W. Lovett**

Source: Lovett, M. W. (2017). Working toward a more literate world: Reading intervention commentary. In A. Gove, A. Mora, & P. McCardle (Eds.), *Progress toward a literate world: Early reading interventions in low-income countries, New Directions for Child and Adolescent Development*, 155, 131–141.

This issue of *New Directions for Child and Adolescent Development* summarises recent and ongoing work to establish evidence-based practices in early reading instruction and intervention, and to improve access to and quality of literacy programmes in low- and middle-income countries. In this

article, I present my own thoughts on the importance and implications of the reviewed articles.

- Projects of varying sizes and goals conducted at multiple sites in several countries in Africa, the Middle East, Asia, and Latin America are described in this review.
- There is a commitment to documenting the efficacy and effectiveness of these programmes using the methodological standards of intervention science and education research whenever possible; that is, controlled evaluations, cluster random assignment, objective measurement, and longitudinal designs.
- Data from these projects have informed plans for future programming in countries worldwide, and results from large scale-ups have provided insight into the most important factors necessary for scale-up and sustainability.
- Access to early education has improved substantially in many countries; however, access and quality are two quite different factors.



## **The study**

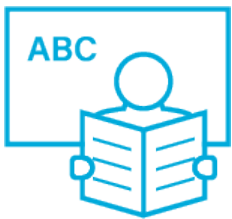
Review of the articles of this issue of *New Directions for Child and Adolescent Development* and some thoughts on their importance and implications are presented in this study.





## Factors important to implementation success

- Extent of implementation and intervention (including intensity and frequency of the intervention and the fidelity of its implementation)
- Duration (longer is better)
- The extent to which the environment is enabling and facilitative.



## Possibilities in lowest resourced countries

- Reading is a system that relies on written language skills and requires (and draws upon) speech and oral language development.
- Inability to understand the language of instruction is a major barrier in schools; thus, teaching to read in the mother tongue first may be important.
- It is important to integrate oral language, phonics, and authentic writing in multilingual and multicultural environments to attain better results.
- Teacher and student attendance is important; absenteeism and tardiness are considerable detractors from instructional time.
- Availability of reading materials is important when trying to learn to read.
- Learning to read fluently requires thousands of hours of practice and the development of a complex, consolidated system of linguistic skills.
- The importance of parental (especially maternal) literacy attainment to children's early reading progress has been long recognised. This helps parents to navigate

and access health and educational services for their children and alters how they interact with their young children.

- Even the most promising evidence-based instructional programme will fail to deliver positive outcomes if not implemented with skill and intensity by teachers who understand the program, its goals, and how to teach with fidelity.
- Even when partnerships are successful and scale-up commitments strong, there often remain huge needs around teacher training and support. Such training takes time; thus, it is recommended to carefully calibrate time expectations for scale-up.
- Technology offers more possibilities for support to the teachers, and also to students who do not have access to school.

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# Reading Comprehension: Core Components and Processes

eTale 2022



Reading comprehension is multidimensional and complex. In this article, the theoretical and empirical literature on the construction of meaning during reading comprehension is

reviewed, from which implications for research, practice, and policy related to instruction and assessment are derived. It is focused specifically on the inferential processes that extract meaning from text and the sources of knowledge that facilitate the extraction and construction of meaning.

**Authors: Panayiota Kendeou, Kristen L. McMaster, & Theodore J. Christ**

Source: Kendeou, P., McMaster, K.L., & Christ, T.J. (2016). Reading comprehension: Core components and processes. *Behavioral and Brain Sciences*, 3(1), 62-69. DOI: 10.1177/2372732215624707

Reading comprehension is multidimensional and complex. In this article, the theoretical and empirical literature on the construction of meaning during reading comprehension is reviewed, from which implications for research, practice, and policy related to instruction and assessment are derived. It is focused specifically on the inferential processes that extract meaning from text and the sources of knowledge that facilitate the extraction and construction of meaning.

- Despite efforts to improve reading performance among children in the United States, 44% of fourth-grade and 46% of eight-grade children failed to meet the standards for reading proficiency.
- Proficient reading in fourth grade requires students to make simple inferences, draw conclusions, and make evaluations about the texts they read.
- Proficient reading in eighth grade requires students to make simple inferences, connect parts of the text, and substantiate judgments about text content.
- Students who do not meet these standards fail to derive and use the overall meaning of the text: they fail to perform the fundamental inferential processes that construct meaning while reading.
- Students who experience such difficulties are likely to

struggle throughout both education and employment.

### **Component skills behind reading comprehension**

- Word decoding
- Reading fluency
- Vocabulary knowledge
- Language comprehension
- Prior knowledge
- Comprehension monitoring
- Working memory

### **Demands of reading comprehension**

- To understand a sentence, it is necessary to visually process the words; identify their phonological, orthographic, and semantic representations; and connect the words using rules of syntax to understand the underlying meaning of the sentence.
- It is necessary to integrate meaning across sentences, make use of relevant background knowledge, generate inferences, identify the text structure, and take into consideration the authors' goals and motives.

### **Simple View of Reading**

- Decoding includes processes needed to decipher written code such as phonological processing, orthographic processing, and word recognition.
- Language comprehension includes processes (such as vocabulary and inference making) needed to build a coherent mental representation.

### **Construction–Integration model**

- This model describes reading comprehension as the activation and integration of text information and

relevant background knowledge into a coherent mental representation.

### **Inferences as a basis for reading comprehension**

- Inference refers to information retrieved from memory or generated during reading to fill in information that is not in a text.
- Inference capability is one of the unique, significant predictors of reading comprehension.
- The development of inference skills begins well before formal reading instruction starts. For example, 2-year-olds can generate causal inferences between sequential events.
- The ability to draw inferences is a general skill.

### **How to improve inference making**

- Pre-teaching activities are designed to activate background knowledge and direct students' attention to important parts of text.
- Systematic questioning can be used about key parts of text, with feedback.
- Teachers can apply specific strategies, such as looking for clues and thinking aloud.
- Readers can apply self-questioning.
- Graphic models can be used to fill in gaps in text.
- Preventative instruction can be applied to focus on language comprehension in young children, including inference-making as a general language skill. This may serve to circumvent later reading comprehension difficulties.

### **Assessment of inference processes**

- Engaging in inference making to construct a mental representation of what the text is about is the process

of reading comprehension, whereas the mental representation itself is the product of reading comprehension.

- *Summative evaluation* is used to discern the state of achievement, which summarises performance at a particular point in time.
- *Formative evaluation* is used to discern the needs of a student with respect to instruction and curriculum and is used to improve achievement.
- The assessment of the reading product might be of interest for summative evaluation; however, reading processes might be of more interest for formative evaluation.
- Some measures for reading include Comprehension Efficiency (COMPreading), The Reading Strategies Assessment Tool (RSAT), the Multiple-Choice, Open-Ended, Cloze, Comprehension Assessment (MOCCA), and the Bridging Inferences Test (Bridge-IT).

### **Knowledge as the necessary source for reading comprehension**

- At various levels of the reading comprehension process, the reader draws on different sources of knowledge: linguistic knowledge about phonology, syntax, and morphology; orthographic knowledge about the orthographic system; and general knowledge about text structure and the world.
- General knowledge can both facilitate and disrupt reading comprehension: high levels of accurate knowledge can facilitate reading comprehension, but inaccurate knowledge can severely disrupt reading comprehension.