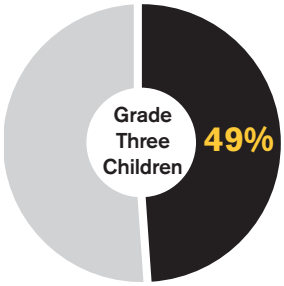
RESEARCH BRIEF

Improving Reading Skills of Early Grade Children in Pakistan

Multiple national level reading assessments, such as the early grade reading assessment (EGRA 2013) and the Annual Status of Education Report (ASER), show that too many students in Pakistan are not learning to read in primary school. According to the 2013 ASER, 49% of grade three children could not read sentences in their language of instruction (Urdu, Pashto and Sindhi); and 45% of grade five children could not read a grade 2 story in the language of school instruction. An analysis of the 2013 EGRA revealed that only 7% of grade three students and 14% of grade five students read a grade-level text; and 48% of grade three students and 28% if grade five students are struggling readers. These low literacy outcomes are particularly concerning because research shows that if children struggle with basic reading skills in the early grades, they are significantly more likely to have trouble in the future as well.[1] Acquiring foundational reading skills in the early grades is essential for children to succeed as their education progresses.



could NOT read sentences in their language

"Those who are unable to learn from books for the first two or three grades may never attain the same achievement as children who learn to read early on."[2]

[1] Abadzi, H., Crouch, L. Echegaray, M., Pasco, C., Sampe, J. (2005). Monitoring basic skills acquisition through rapid learning assessments: A case study from Peru. *Prospects: Quarterly Review of Comparative Education*, 35 (2), 137-156.

[2] Ibid.

THE PAKISTAN READING PROJECT

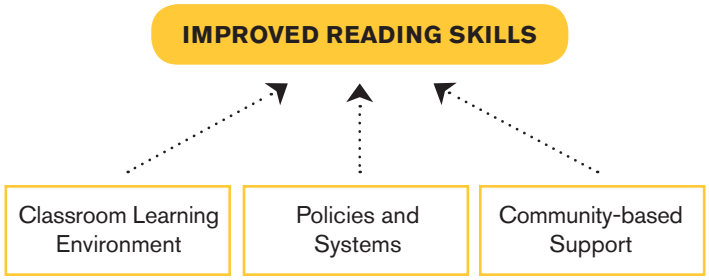
The Pakistan Reading Project (PRP) was created by USAID and the Government of Pakistan (GOP) to address the reading deficit in Pakistani schools. The program aims to improve students' Urdu and Sindhi reading skills in grades 1 and 2 and through pilot interventions improve reading in Pashto. During the seven years of program implementation, approximately **1.3 million students** are being targeted for reading skills improvement in the provinces of Azad Jammu and Kashmir (AJK), Balochistan, Gilgit Baltistan (GB), Khyber Pakhtunkhwa (KP), Sindh, and Islamabad Capital Territory (ICT) and Federally Administered Tribal Areas (FATA).

PRP´s theory of change posits that in order to improve students' reading skills in Pakistan, it is necessary to

1) improve classroom learning environment for reading,

2) improve policies and systems for reading, and

3) improved community-based support for reading.



This policy brief focuses on the impact of #1, improving the classroom learning environment for reading, through two strategies:

- **Provision of Reading Learning Material (RLM)**: PRP designed a research-based package of RLMs in Urdu, Sindhi and Pashto for grade one and two students. Unlike the Pakistan primary school curriculum that emphasizes language, the PRP RLMs focus on the component skills of reading (e.g., phonological awareness, vocabulary development, fluency, comprehension). Packages include scripted lesson plans for teachers, student work books; Big Books for shared reading activities, flash cards for sight word practice, and vowel buddy charts for practicing syllable sounds. Two innovations characterize PRP's RLMs: in grade one, the vowel buddy charts provide students with oral practice identifying and decoding syllables with long and short vowels in Urdu before identifying them in written syllables. In grade two, leveled readers help students increase comprehension and fluency while building their reading confidence.
- **Continuous Professional Development (CPD) Model for teachers**: Teachers in Pakistan have fewer opportunities for continuous professional development (CPD) in the absence of a structured system. PRP has developed and implemented, a comprehensive CPD model. This two-year model has three salient features including face to face training, monthly teacher inquiry group (TIG) meetings and a mechanism for school-based support to teachers through mentors and project staff. PRP provides training and support to head teachers, academic supervisors and other education stakeholders. The model for teachers combines face-to-face training for short term skill development with Teacher Inquiry Groups (TIGs) for long term teacher development whereby teachers meet monthly to build a community of practice where they reflect on their teaching. TIGs are guided by highly structured modules that deepen understanding of how to effectively use the RLMs, and encourage TIG members to take responsibility for individual and group learning. Finally, teachers receive school support visits from PRP trained mentors and school support personnel who provide teachers with feedback on their classroom instruction.

COST ANALYSIS

A costing study PRP conducted in the Nowshera district estimated that the overall cost of establishing and operating the program in one district was approximately US$650,000 with an estimated cost of US$38 dollars per student for the full intervention of two academic years.[3] With regard to the different ingredients of the intervention, the study estimated that providing reading learning materials came at a cost of US$2 per child, providing face to face trainings for teachers and government officials costed US$6 per child. Similarly, TIG meetings costed US$6 per child and School Support Visits costed US$6 per child. Note that costs are highly sensitive to scale because 45% of the total cost per district are fixed costs. The cost per school or per child in other districts is dependent on the number of schools or students in that district. The more schools and students served by the same fixed district-level management apparatus, the lower the cost per school or student will become. In Nowshera, the number of students were 16000 in 208 schools with an average two teachers/school.

[3] These estimations are highly sensitive to scale because they include district level fixed costs, as well as the direct costs of Face-to-Face Training, TIGs, Materials, and School Support Visits.

RESEARCH, EVALUATION AND LEARNING: AN EVALUATION OF IMPACT

The IRC used a quasi-experimental design to compare the reading outcomes of two cohorts of students in Urdu-medium schools who received the PRP intervention (Cohort 1 and 2) with the outcomes of a comparison group that had not participated in the program at the time of data collection (Cohort 3). A cross-sectional sample was used to assess students' reading performance and teachers' instructional practices at baseline and endline to answer the following research questions:

- What is the effect of PRP on first and second grade students' reading skills?
- How does the effect vary by subgroups according to students' gender and Province?
- What is the effect of PRP on teachers' instructional practices?

> Participants

Schools, teachers and students were not randomly assigned to treatment and control groups because participants were assigned to their conditions in ways that facilitated the roll out of the implementation. The research sample included 192 schools (132 treatment, 60 control), 344 teachers (233 treatment, 111 in control) and 5523 students (3767 treatment, 1756 in control). At baseline, we randomly selected 12 schools from each participant province and cohort to participate in the study. Within the chosen schools, we randomly selected 15 students who had passed first grade and 15 students who had passed second grade. At endline, we collected data from the same schools that were selected at baseline, and randomly sampled fifteen students who had passed first grade and fifteen who had passed second grade. Seven schools dropped out of the program due to security and other concerns such as transfers of teachers to other non-PRP intervention schools and unavailability of students on the day of the test. Analysis of baseline characteristics showed that schools in the treatment group were not equal in expectation to schools in the control group, with small differences that gave advantages to the treatment group.[4]

> Instruments

1. **EGRA**: Six subscales to assess students' orientation to print, letter name identification, phonemic awareness, familiar word fluency, oral reading fluency, and reading comprehension skills.
2. **Classroom observation**: tool was used to observe teachers while they conducted a lesson to capture their teaching competencies: 1) Teacher demonstrates lesson preparation and lesson plan objectives; 2) Teacher uses teaching methods/techniques and resources appropriately and effectively, 3) Teacher ensures that all students participate and that their well-being is supported, 4) Teacher uses formative and summative assessments to gauge student learning; give meaningful feedback to students and families; and keep assessment records, 5) Teacher teaches reading and writing effectively.
3. **Interview protocols**: These instruments assessed teachers' qualifications, in service and pre-service reading training, and students' home language, reading activities at home, the community and in the classroom.

> Data Collection

Enumerators attended a 5-day training at baseline and endline to administer the questionnaires, tests and classroom observations. They visited schools in April-May 2015 to collect baseline data, and then again in April-May 2017 to collect endline data, using Tangerine, a mobile assessment platform developed by RTI.

> Analytic Strategy

To identify the degree to which the intervention has succeeded in improving student reading scores, we estimated: 1) the increase/decrease in the percent of students obtaining zero scores in the EGRA subtask from baseline to endline, 2) the increase/decrease from baseline to endline in the percent of students who are able to meet national standards, and 3) the difference-in-differences estimates and corresponding effect sizes showing the learning gains observed in students in the treatment (Cohorts 1 and 2) and control (Cohort 3) groups, from baseline to endline, that can be attributed to PRP.

[4] Difference-in-difference analysis conducted by researchers accounted for baseline differences among groups.

RESULTS

1. What are the effects of PRP on students' reading skills?

When compared to students in the control group, we observe that students in the treatment group have improved their reading skills in positive and statistically significant ways. We observe larger decreases in the percent of students in the treatment group with zero scores and larger increases in the percent of students in the treatment group meeting national standards. Using DID analysis, we estimate that PRP is having small, positive and statistically significant effects in the orientation to print and familiar word fluency of first grade students who have benefited from one year of PRP, and positive, moderate-to-large and statistically significant effects in all reading skills of second graders who have benefited two years from the intervention (See Figure 1).

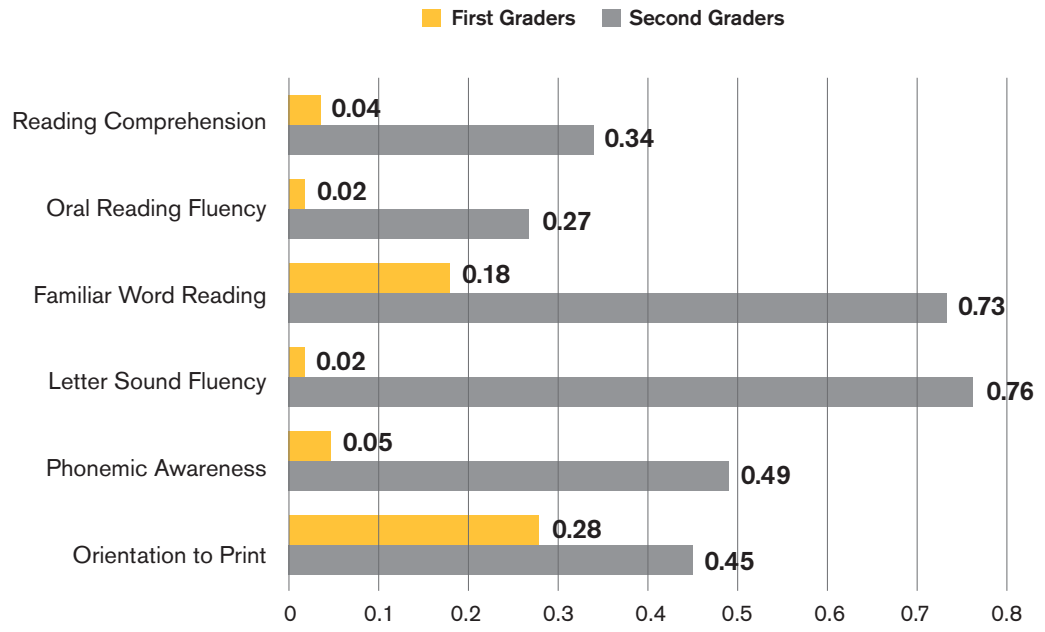
With regard to oral reading fluency, we observe that when compared to students in our comparison group, PRP has led second grade students to read, on average, 8.43 more correct words per minute than students in the control group. These learning gains are statistically significant and equivalent to a small effect size of approximately .27 standard deviations. To put this finding in perspective, the improvement made in Oral Reading Fluency by students in PRP is equivalent to 1/3 of the learning students gain during a full academic year.

With regard to Reading Comprehension, we find that PRP has not had an effect on the reading comprehension of first grade students, but it had a positive, small and statistically significant impact on the reading comprehension skills of second grade students. Specifically, the program led students in the treatment group to answer an additional 11% reading comprehension questions correctly than students in the control group. These learning gains are statistically significant ($p<.01$) and equivalent to a small-to-moderate effect size of .34 standard deviations.

2. How does the effect of PRP vary by subgroups according to students' gender?

Girls in first and second grade are exhibiting higher performance than boys. While in first grade girls are reaping larger benefits from PRP than boys, in second grade results are mixed with boys obtaining larger learning gains in key reading outcomes such as oral reading fluency and reading comprehension.

Figure 1. Effect Sizes Reflecting the Impact of PRP on First and Second Grade Students' Reading Outcomes



Note: Positive effect sizes indicate that students in the treatment group made more progress than students in the control group. Effect sizes of 0.2 are considered small, 0.5 are considered medium and 0.8 are considered large.

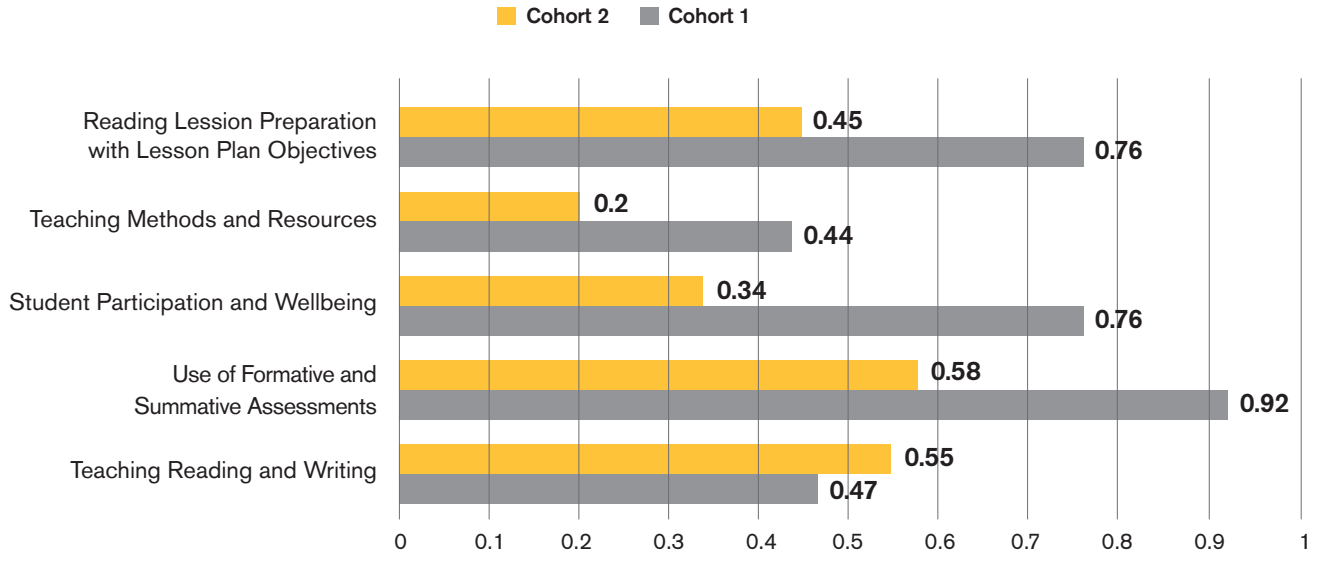
3. What are the effects of PRP on teachers' instructional practices?

When compared to teachers who did not receive the intervention, teachers in PRP exhibited positive, moderate to large and statistically significant changes in their instructional practices. Note that, with the exception of teaching reading and writing, we observe larger effects sizes in the teaching competencies of Cohort 1 teachers who received a larger dosage of professional development support from PRP than Cohort 2 teachers (See Figure 2).

4. What teacher competencies are associated with students' oral reading fluency?

Correlational data shows that all teacher competencies show positive and statistically significant associations with students' oral reading fluency, but once we look at the relationship of each teaching competency after including others as controls, we find that **teachers' ability to promote students' participation and well-being is the only variable that continues to have a strong association with students' oral reading fluency.** Specifically, we find that for every additional unit in the "Promotion of Students' Participation and Wellbeing" scale, students' exhibit the ability to read an additional 2 words read correctly per minute.

Figure 2. Effect Sizes for DID analysis of the teaching competencies of teachers in the Treatment (Cohorts 1 and 2) and Control (Cohort 3) Groups



LIMITATIONS

Threats to the internal validity of the study include the lack of random assignment and differences among groups at baseline. The results of the study cannot be generalized to Pakistan, as the research sample was not representative of the population.

SUMMARY OF KEY FINDINGS

- PRP's had positive and statistically significant effects on students' reading outcomes and teachers' instructional skills at a cost of approximately $39 dollars per student.
- Students in first grade who received one year of intervention showed small non-significant gains on their reading skills, but second graders who received two years of intervention showed significant moderate-to-large learning gain, reflecting the accumulated effect of the program on students' reading skills.
- Girls exhibited higher baseline performance in all reading outcomes than boys. While first grade girls are reaping greater benefits from PRP than boys, in second grade results are mixed with boys obtaining larger gains in key reading outcomes such as oral reading fluency and reading comprehension.
- PRP had positive, moderate-to-large and statistically significant effect on teachers' instructional practices, which increase with higher dosages: The effect of PRP on teachers' instructional practices are moderate for Cohort 2 teachers who received one year of CPD and large for Cohort 1 teachers who received two years of CPD.
- Teachers' ability to promote students' participation and well-being in the classroom exhibits a high correlation with students' oral reading fluency. When teachers focus on teaching reading at the expense of students' participation and well-being, oral reading fluency scores decrease.

RECOMMENDATIONS

- Invest in multiyear funding for education programming and research.
  - The fact that first graders who had received one year of PRP treatment showed no significant learning gains, but second graders who had benefited from two years of PRP showed large learning gains, underscores the importance of multi-year funding for programming and research to meaningfully learn what works.
- Support teacher trainings that build teachers' ability to promote students' well-being and participation in the classroom.
  - The promotion of students' participation and well-being appears to be a highly promising teaching competency to improve students' reading skills that can be reinforced through CPD.
- Include implementation research and cost analysis as part of research design for education programs.
  - Research that disentangles the effects of different ingredients of the intervention (materials, face to face training and continuous professional development) on students' reading skills and evaluates their cost-effectiveness, and analysis on how effects vary by implementation factors, yield important insights for programming and policy.
- Ensure research applies a gender approach to identify the effects of the intervention on girls and boys, and have in place feedback loops in order to communicate the results in a timely manner to adequately close equity gaps.
  - PRP uses a dashboard to track student progress on key learning outcomes by gender and region, which the team uses to improve implementation and course correct different components. Groups that are being left behind then receive the support they need to make adequate progress, such as through providing gender sensitive materials and helping teachers adopt gender-sensitive pedagogies in the classroom.