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Impact of Sindhi as Medium of Instruction on Early Grade Reading: an EGRA-Based Study in Sindh

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ABSTRACT

This study investigated the effect of using Sindhi as medium of instruction on early grade reading performance of the students of primary schools in Sindh, Pakistan. The method used in the study was quantitative design and students participating in the study were 115 students from Government Primary schools of which Sindhi was the medium of instruction in Grades 2 and 3. Schools were purposively selected and students within schools were purposively selected on the basis of grade level. The Early Grade Reading Assessment (EGRA) was used to assess reading skills, which included, among others, the ability to recognize letters, read familiar words, read orally and fluently, comprehend and comprehend orally, and to listen. A short structured questionnaire collected information from teachers about classroom language practices. The data were analysed with descriptive statistics, Pearson correlation and multiple regression. It was found that the overall level of reading achievement was low and that the mean ORF was 29.7 correct words per minute and the mean score for reading comprehension was less than half of the maximum available. The relationship of extent of Sindhi use in reading instruction with all EGRA subtasks was positive and significant and the extent of Sindhi use in reading instruction was a significant predictor of oral reading fluency as a result of controlling for the variables home language, grade, and gender. The differences among the students according to their home language were statistically significant and students from Sindhi home language had higher scores than other home language background students and gender difference was not significant. The study findings showed that teaching in Sindhi medium helped children develop early reading skills especially where the medium of instruction in the classroom matched the child's home language, but that the impact was limited by the availability of reading materials and the lack of support for children who are linguistically diverse. It recommended structured syllabus of Sindhi reading, graded reading material, teacher training on mother tongue based literacy and bridging support to children whose home language is not Sindhi.

Introduction

The Fluency and comprehension in reading is the basis for all future learning and is key in the early grades. Students who do not develop basic reading skills by the end of the 2nd or 3rd grade become increasingly left behind because the content changes from learning to read to reading to learn. The global figures indicate that a significant portion of children in low- and middle-income countries do not know how to read and understand a simple text by 10 years of age (learning poverty) and South Asia is one of the regions worst hit (World Bank, 2022). Repeatedly, in Pakistan, household-based assessments have revealed that a large number of children in primary grades are unable to read a short story either in their own language or in Urdu, and attainment of learning in rural areas is significantly lower than in urban areas (ASER Pakistan, 2024).

Sindh is in a unique situation in the language in education situation in Pakistan. In contrast to other provinces where Urdu or English is the medium of instruction, in Sindh there is long tradition of teaching in Sindhi language in Government Primary Schools, and the Provincial Education Sector Plan prioritises improvement of learning outcomes through foundational literacy (Government of Sindh, 2019). Despite this, the national discussion on the issue of language in education has been predominantly in Urdu and English without paying significant attention to include the role of regional languages in early education (Coleman, 2010; Mustafa, 2011). Research on language policy in Pakistan has highlighted a mismatch between language policy decisions and the situation of children's homes and communities, and the impact this can have on children who come to school speaking a language other than the language of instruction (LUI) (Manan et al., 2015).

The value of teaching children in a language they can understand has been consistently emphasised on the international evidence. UNESCO (2016) estimated that a significant number of children around the world are educated in a language that is not their mother tongue, and that this is a significant obstacle to children learning. Research has demonstrated that MTI in the early years can facilitate literacy development, involvement in classroom activities and further language learning (Ball, 2011). Theoretical knowledge of bilingual development indicates that the literacy skills acquired in the familiar language can be transferred to the second language, whereas the academic language skills acquired in the unfamiliar language is a much longer learning process (Cummins, 2008).

The Early Grade Reading Assessment (EGRA) has become one of the most popular instruments to evaluate essential reading abilities in developing settings. It is an individually administered, oral test of component skills—letter knowledge, word reading, oral reading fluency, comprehension—and can be modified to the orthography and structure of any language (RTI International, 2015). Since the development of EGRA, it has been used in a number of countries to diagnose reading difficulties, to inform policy, and to assess interventions (Gove & Wetterberg, 2011). EGRA data have been used in reviews of early grade literacy to demonstrate that reading achievement in many low-income settings is extremely poor and that the language of instruction has a significant impact on the achievement of reading (Kim et al., 2016; Nag et al., 2014).

There is also some evidence from experimental and quasi-experimental studies that the use of the mother language in teaching reading has a positive impact on reading performance. One study in Kenya reported positive results from using mother tongue literacy instruction with the use of appropriate materials and teacher training for improved reading outcomes (Piper, Zuilkowski, & Ong'ele, 2016). A natural experiment in Ethiopia revealed that pupils learning in their native language had better outcomes than those not learning in their native language (Seid, 2016). But the evidence available in Pakistan is still scarce, especially for Sindhi medium classrooms, and there are hardly any studies that have explored the correlation between using Sindhi in reading instruction in classrooms and children's reading performance through the lens of EGRA.

In order to fill the gap, the present study looked at the effect of the medium of instruction in Sindhi on the reading achievement of grade 2 and 3 students of Government Primary Schools of Sindh. Specifically, the study sought to determine students' performance on the subtasks of the EGRA, compare the performance of students who home language is Sindhi with those whose home language is not Sindhi, and establish the predictive power of the use of Sindhi in reading instruction for students' reading outcomes. The results are anticipated to feed into provincial policy on mother tongue based education; help in developing mother tongue-based reading materials, as well as teacher training; and be included in the broader research on language of instruction and early literacy in multilingual contexts.

Literature Review

The theoretical ground for mother-tongue based instruction is grounded mainly on the work of Cummins (2008) whose concepts and distinction between basic interpersonal communicative skills and cognitive academic language proficiency provide the theoretical basis for mother-tongue based instruction. With this model of language learning, children can become fluent in a second language in just a few years, whereas learning the academic language required for reading and learning in subject areas takes significantly longer. If a child is reading in a language on which he or she already knows how to read, then the focus can be on decoding and meaning rather than language learning, and the skills developed in the first language can be transferred to other languages. Ball (2011) further stated this in his review for UNESCO, claiming children from a variety of language backgrounds learn best when early schooling develops in their first language, and early immersion in a dominant language is detrimental to children's literacy and general learning. This was reinforced by UNESCO (2016) who stated that millions of children are being educated in a language that they do not understand, and this practice has a direct impact on low learning outcomes.

The available empirical evidence on the effects of language of instruction is some of the clearest that is available, coming from the African context. Laitin et al., (2019) investigated an experiment in Cameroon in which children learned in their local language in

the early grades and found that they learned more than kids who learned in the official colonial language. In Ethiopia, children were taught in their mother tongue because of a change in the policy and Seid (2016) conducted a natural experiment based on this change and concluded that mother tongue instruction had a positive effect on the likelihood of children learning basic literacy and numeracy. However, in South Africa, Taylor and von Fintel (2016) calculated using a school fixed-effects approach and found that early learning in the home language had a positive impact on learning English in later years, which is not the case in other countries. The findings of these studies indicate that the advantages of mother tongue teaching are not only for early reading but can also be for later achievement.

Studies conducted in Kenya have brought to light the circumstances that lead to the success of mother tongue instruction. Mother tongue literacy instruction was reported to have positive effects on reading outcomes in a medium scale randomized controlled trial by Piper, Zuilkowski and Ong'ele (2016), though teacher support and the provision of books and structured lesson plans was shown to influence its effectiveness. In another study, Piper, Schroeder and Trudell (2016) explored the relationship between oral reading fluency and comprehension in English, Kiswahili and the mother tongues and concluded that the fluency required for comprehension was different across the languages, thus the importance of developing language-specific benchmarks. Kim (2020) provided a more general cognitive theory of reading comprehension, which illustrated the dynamic and hierarchical relationship between word reading, listening comprehension, and language and cognitive skills. This type of labor suggests that in reading success, decoding and oral language ability in the language of instruction are important.

The creation of the Early Grade Reading Assessment has been a major influence in the creation of comparable evidence of early literacy. RTI International (2015) established the procedures for adapting and administering EGRA, with a focus on the need to build subtasks for each language based on its specific orthography and linguistic features, not translating the items. The use of EGRA in several countries and its findings had been reported by Gove and Wetterberg (2011), and how results of the EGRA was used to increase policy awareness, and design reading intervention. Based on the results of many EGRA-based studies, Kim et al. (2016) synthesized the evidence and found that a large percentage of children in the early grades of schooling were unable to read any words in connected text and that the outcomes were strongly linked to language, instructional time, and materials. Nag et al., (2014) examined studies of literacy and foundation learning in the developing world, and concluded that children learning to read in their familiar language and with a transparent orthographic system tended to make faster progress than those with other reading languages, but that the quality of instruction continued to be the key variable.

The language and education issue has been continuously discussed in Pakistan. Coleman (2010) studied the term 'languages and education in Pakistan' and concluded that the preeminence of English and Urdu in educational processes had negatively affected the children who were from the background of regional languages leading towards inequality in learning. Mustafa (2011) also suggested that the use of an unfamiliar medium of instruction was at the core of the country's poor learning outcomes and that mother tongues should be used more in early learning. Manan et al., (2015) conducted analysis of the English-medium policy in Pakistan, and concluded that there was a mismatch between the English-medium policy and the sociocultural ecology of children's lives, as many children were learning a language that was not spoken by their families or the teachers and was not fully mastered by the teachers. These studies collectively indicate that the use of the home language and the language of instruction is a key yet under-attended aspect of education in Pakistan.

Sindh is significant in this national picture because ever since the inception of the government schools, Sindhi has been used as a medium of instruction in the schools. Poor learning outcomes in early grades was identified as a major challenge in the provincial education sector plan and it was recommended to improve learning outcomes in reading at the early stage and increase the capacity of teachers and improvement of learning materials (Government of Sindh, 2019). Despite this, household-based evaluations have revealed that the literacy levels among children in rural areas of the province of Sindh are low and many children in primary grades are not able to read a simple story in Sindhi or Urdu (ASER Pakistan, 2024). While Sindhi is officially recognised in school education, there are few empirical studies that explore the correlation between the use of Sindhi in reading instruction and the performance of children on standardised assessments of early reading acquisition, and how children from backgrounds other than Sindhi perform in Sindhi-medium schools. The present study aimed to fill this gap by investigating the effect of EGRA on the relationship between using Sindhi as a medium of instruction and early grade reading outcome.

Methodology

Research Design and Approach

The study was quantitatively based to explore the effect of Sindhi as the medium of instruction on the early grade reading skills of primary school students of Sindh, Pakistan. A quantitative approach was found to be appropriate because the study aimed to assess

the students reading performance objectively and to explore the statistical relationships between the use of Sindhi in reading instruction and the reading outcomes.

Population and Sampling

The study's population consisted of the students of Grade II and III of government primary schools of Sindh where medium of instruction is Sindhi. Schools were identified using a purposive sampling method and those schools that were willing agreed to participate. In the chosen schools, the students were chosen according to their grade level. 115 students (57 in Grade 2 and 58 in Grade 3) were included in the final sample. Samples consisted of 60 boys and 55 girls. In addition, the 12 teachers who taught reading to the sampled classes participated in the teacher questionnaire.

Research Instruments

The data was collected by using two instruments. The first one was the Early Grade Reading Assessment (EGRA) which was translated into Sindhi. There were five subtasks tested: letter recognition (correct letters per minute); familiar word reading (correct words per minute); oral reading fluency (correct words per minute for a short grade level text); reading comprehension (five questions answered about a passage read to the assessor); and listening comprehension (five questions answered about a passage read to the assessor). The second instrument was a short structured questionnaire for teachers which sought information on classroom language practices, extent of Sindhi use in classroom reading, use of other languages in classroom, availability of Sindhi reading materials. The items relating to the use of Sindhi were combined into a Sindhi-use index for the classroom on a 5-point scale and each pupil was assigned to an index score based on his or her reading teacher.

Validity and Pilot Testing

All the EGRA subtasks were examined by subject experts and experienced primary teachers to assure that the items are suitable for the levels of grades and orthography of Sindhi. A pilot test was administered with another small sample that did not form part of the primary sample with some minor changes in wording and administration instructions. Before giving the teacher questionnaire was reviewed for clarity and relevance.

Data Collection Procedure

The EGRA was given to students one at a time in a quiet room in the school by trained assessors. This was conducted in line with the standard EGRA protocol with timed subtasks given for one minute each. Each student's home language, gender and grade level were documented at the time of assessment. The teacher questionnaire was given face-to-face on the same school visits.

Data Analysis

Descriptive and inferential statistics were used for analyzing the collected data. The sample was described using frequencies and percentages, and the performance on each of the EGRA subtasks was summarised by means and standard deviations, as was the comparison of the groups by grade, gender and home language. Pearson correlation was used to examine the relationships between the classroom Sindhi-use index and the EGRA subtasks. The extent to which oral reading fluency was predicted by the index of usage of Sindhi while controlling for home language and grade level and gender was determined by multiple regression analysis.

Ethical Considerations

Ethical issues were adhered to in the study. Data collection was conducted with the permission of the appropriate school officials and with informed consent from the parents/guardians of all students involved. Students were told that it wouldn't be compulsory and they could withdraw at any time. All teachers volunteered to take part, and codes were used instead of names and results were reported only in total.

Data Analysis

This section gives the findings of the analysis of students' EGRA scores and teachers' responses to the questionnaire.

Table 1;Demographic Profile of Participating Students (N = 115)

Variable	Category	f	%
Grade	Grade 2	57	49.6
	Grade 3	58	50.4
Gender	Boys	60	52.2
	Girls	55	47.8
Home language	Sindhi	89	77.4
	Urdu	11	9.6
	Saraiki	9	7.8
	Other	6	5.2

Table 1 shows that the sample was almost evenly divided between Grade 2 and Grade 3 students and between boys and girls. A large majority of students (77.4%) spoke Sindhi at home, while 22.6% came from other home language backgrounds, mainly Urdu and Saraiki.

Table 2;Descriptive Statistics of Students' Performance on EGRA Subtasks (N = 115)

EGRA subtask	Unit of measurement	M	SD	Zero scores f (%)
Letter recognition	Correct letters per minute	38.6	14.2	3 (2.6)
Familiar word reading	Correct words per minute	24.3	11.8	9 (7.8)
Oral reading fluency	Correct words per minute	29.7	15.4	13 (11.3)
Reading comprehension	Score out of 5	2.31	1.21	18 (15.7)
Listening comprehension	Score out of 5	3.12	1.08	4 (3.5)

Table 2 shows that students' performance in the broad area of reading was low. The average oral reading fluency score was 29.7 correct words per minute and the average reading comprehension score was 2.31 out of 5, or less than half. Approximately 11.3% of students could not read 1 word of the text correctly and 15.7% could not answer any question of the reading comprehension. Students' listening comprehension was higher than reading comprehension (M = 3.12) indicating that students' oral understanding of Sindhi was more than their written understanding.

Table 3;Mean Oral Reading Fluency and Reading Comprehension Scores by Grade, Gender, and Home Language

Variable	Group	n	Oral reading fluency M (SD)	Reading comprehension M (SD)
Grade	Grade 2	57	23.1 (12.6)	1.86 (1.10)
	Grade 3	58	36.2 (15.3)	2.75 (1.17)
Gender	Boys	60	29.1 (15.6)	2.27 (1.22)
	Girls	55	30.4 (15.3)	2.35 (1.21)
Home language	Sindhi	89	32.4 (15.1)	2.52 (1.18)
	Other than Sindhi	26	20.4 (13.0)	1.59 (1.05)

Table 3 indicates that Grade 3 students read significantly more fluently than Grade 2 students (36.2 versus 23.1 correct words per minute), and scored higher on comprehension. There were few differences between boys and girls with slightly higher scores for girls on both measures. The greatest differences after grade level were with home language, with students whose home language was Sindhi reading 12.0 more correct words per minute and correctly answering an additional nearly one comprehension question than students whose home language was not Sindhi.

The teacher questionnaire revealed that out of 12 teachers, 10 teachers (83.3%) used Sindhi only for reading and the remaining two used Sindhi and Urdu mix frequently. Eight teachers (66.7%) indicated that they used to switch to Urdu or other languages while reading to children whose parents did not speak Sindhi at home while providing reading assignments, while nine teachers

(75.0%) reported that they lacked enough graded reading Sindhi books. The mean classroom Sindhi-use index among teachers was 3.84 (SD = 0.80) out of a 5 point scale.

Table 4;Pearson Correlations Between the Classroom Sindhi-Use Index and EGRA Subtasks (N = 115)

Variable	1	2	3	4	5	6
1. Sindhi-use index	—					
2. Letter recognition	.34**	—				
3. Familiar word reading	.39**	.71**	—			
4. Oral reading fluency	.42**	.68**	.84**	—		
5. Reading comprehension	.37**	.52**	.61**	.66**	—	
6. Listening comprehension	.29**	.31**	.34**	.38**	.49**	—

Note. ** p < .01 (two-tailed).

Table 4 shows that all the five subtasks in EGRA were positively and significantly correlated with the classroom Sindhi-use index. Oral reading fluency (r = .42), familiar word reading (r = .39), and reading comprehension (r = .37) were the most closely related skills. The subtasks of the EGRA were also highly correlated, with the most significant correlation between familiar word reading and oral reading fluency (r = .84), and oral reading fluency and reading comprehension (r = .66).

Table 5;Multiple Regression Predicting Oral Reading Fluency (N = 115)

Predictor	B	SE	β	t	p
Constant	-7.51	6.12		-1.23	.222
Sindhi-use index	5.97	1.46	.31	4.09	< .001
Home language (Sindhi = 1)	9.74	2.83	.26	3.44	.001
Grade (Grade 3 = 1)	12.41	2.36	.40	5.26	< .001
Gender (Girl = 1)	1.05	2.31	.03	0.45	.651

Note. R = .66, R^2 = .43, Adjusted R^2 = .41, F(4, 110) = 20.74, p < .001.

Table 5 As seen in Table 5, the model was statistically significant, F(4, 110) = 20.74, p < .001, and accounted for 43% of the variance in oral reading fluency. The classroom Sindhi-use index was a significant positive predictor (β = .31, p < .001), indicating that each one-point increase in the index was associated with an increase of about six correct words per minute, holding other factors constant. Speaking Sindhi at home was also a significant predictor (β = .26, p = .001), as was grade level (β = .40, p < .001), whereas gender was not a significant predictor (β = .03, p = .651).

Discussion

This study was conducted to find out the effect of use of Sindhi as a medium of instruction on early reading skills of government primary schools of Sindh. The first big surprise was that the students' overall performance in reading was not significantly higher despite the language they were using to learn to read was the language most students spoke at home. Many students in Grade 2 and 3 were not reading at a level that allows them to read fluently and comprehend what they read as evidenced by a mean oral reading fluency rate of below 30 correct words per minute and a reading comprehension score of less than 50% of possible marks. This result aligns with the household-based assessments conducted by ASER Pakistan (2024) in which Sindh was found to have weak reading skills of primary school students at the level of connected text, and with the international reviews that found that in low-income settings, large numbers of children in early grades of school struggle with connected text (Kim et al., 2016). The message is also broadly conveyed in relation to the learning poverty in South Asia (World Bank, 2022).

The second significant finding was that the amount of Sindhi used in reading instruction correlated positively with all of the subtasks of EGRA and was a significant predictor of grade 2 oral reading fluency after controlling for home language, grade, and gender. It reflects the theory that reading instruction is more effective when taught in a language known to the child, as children can concentrate on decoding, meaning, and not on learning the language itself (Cummins, 2008). The findings are consistent with experimental and quasi-experimental studies in Cameroon (Laitin et al., 2019), Ethiopia (Piper, Zuilkowski, & Ong'ele, 2016), and Kenya (Seid, 2016) which showed positive effects of mother tongue instruction in early learning. It also provides support for arguments put forward in a Pakistani context that the use of familiar languages in the early schooling could be an effective way of enhancing the learning outcome (Coleman, 2010; Mustafa, 2011).

The third key discovery was with regard to home language. Overall, the students whose home language was Sindhi performed significantly better than the students whose home language was other than Sindhi, and home language was still a strong predictor of fluency in the regression model. This suggests that Sindhi-medium instruction was effectively mother-tongue instruction only for those children in whose homes the language was Sindhi. Urdu, Saraiki and other languages were spoken by the children in their homes, and Sindhi was essentially a second language for the children, which resulted in similar problems than mother tongue advocates describe for children learning in a second language (Ball, 2011; UNESCO, 2016). Two-thirds of teachers reported that they changed languages to ensure that these children could be provided with support in these languages, showing the linguistic diversity found in classrooms, and highlighting the mismatch between the child's sociocultural ecology and language policy in previous research in Pakistan (Manan et al., 2015).

Higher scores in listening comprehension than in reading comprehension indicate that a large proportion of the students were able to comprehend the spoken word in Sindhi reasonably well but had not yet acquired sufficient decoding fluency to comprehend written language in Sindhi. This is consistent with models that have suggested that reading comprehension is dependent on both word reading and oral language comprehension (Kim, 2020), and the strong correlations between reading fluency and reading comprehension observed in this study. It also demonstrates the need for there to be evidence for how well different languages are fluent enough in order to understand, and the need for benchmarks that can be language-specific to interpret the results of EGRA (Piper, Schroeder, & Trudell, 2016; RTI International, 2015).

Illustrating the effects of more schooling, the large difference between the performance of Grade 2 and Grade 3 pupils indicated that reading skills increased as a function of higher grade level, but at the modest performance levels of Grade 3, little improvement was achieved in grade gain. One possible reason is suggested by teachers' reports of a lack of suitable graded reading materials. Studies have proved that mother tongue teaching is best supported by appropriate books, lessons that provide structure, and teacher support (Nag et al., 2014; Piper, Zuilkowski, & Ong'ele, 2016). This small difference between boys and girls is heartening, and indicates that generally speaking, boys and girls received similar opportunities to learn to read in these schools.

Conclusion and Recommendations

The study revealed that the use of Sindhi as the medium of instruction in the government primary schools of the area had a positive contribution towards early grade reading of government primary schools in Sindh. The higher the level of using Sindhi in reading instruction, the higher the EGRA scores were for all the subtasks, and the higher the oral reading fluency scores were, regardless of grade, gender, or home language. Children's home language were found to influence their reading fluency and comprehension of what they read, with the greatest advantages for those with home language Sindhi. The overall reading levels were however, found to be still low, and the difference between listening and reading comprehension levels indicated that many children were able to comprehend spoken Sindhi but were lacking in the decoding fluency to comprehend written text. The study, therefore, concluded that the medium of instruction is not the only factor that would determine students' reading achievement, but rather it would depend on the quality of reading instruction, availability of reading materials, and similarity of the home language/medium of instruction and school language/medium of instruction.

In view of these results, it is recommended that the School Education and Literacy Department of Sindh improves early grade reading programme of Sindhi-medium education by introducing letter-sound knowledge, decoding, fluency and comprehension skills in a systematic manner. The issue of teachers' access to sufficient numbers of graded Sindhi reading books and decodable texts should be addressed and provided in primary schools of the government. A practical preparation in mother tongue based literacy instruction and in the use of the EGRA type classroom assessments to track students' progress should be incorporated in pre-service and in-service teacher training. Many children do not speak home language Sindhi, so there is a need for schools to offer structured bridging in both oral language activities and planned use of home language activities of children, to ensure that children do not lag behind in achieving Sindhi literacy. It is further suggested that Sindhi specific fluency and comprehension benchmarks for EGRA should be developed to help inform policy and classroom use. Larger and random samples from the various districts have to be used in future studies, and classroom observations of language use and practices are to be incorporated into studies, as are longitudinal studies of the impact of early Sindhi literacy on later learning in Urdu and English.

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