



## **Baseline Assessment of School Readiness: Exploring the Potential for a Play-Based Child-to-Child Approach in Low-Resource Contexts in Pakistan**

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### **Abstract**

Play-based learning (PBL) and Child-to-Child (C2C) approaches have been widely recognised for fostering literacy, numeracy, and socio-emotional development. However, discussion on C2C integration within low-resource educational contexts remains limited. In Pakistan, early childhood classrooms continue to be dominated by rote instruction, leaving foundational learning gaps insufficiently addressed. This study presents baseline findings from the Pakistan arm of a regional initiative evaluating a Play-Based Child-to-Child (PBC2C) model that integrates peer-led and guided play pedagogies.

Using a mixed-methods sequential cohort design, data were collected from pre-primary students (n=144), mothers (n=5), and teachers (n= 5) across urban (Karachi) and rural (Chitral) parts of the country. Baseline assessments revealed generally low literacy and numeracy outcomes. Overall, students in both rural and urban regions performed equally. However, subject-wise results revealed some variation. English literacy and numeracy showed significant differences across both regions, with the former subject having an edge in the rural setting while the latter scored higher in the urban context. Focus group discussions indicated that mothers valued foundational academic skills and expressed trust in schools, yet demonstrated hesitation toward play-based methods. Teachers were receptive to adopting a facilitator role within the PBC2C model but emphasised the need for additional support, sustained mentoring, and monitoring.

These findings underscore the urgency of addressing foundational learning deficits in Pakistan and highlight the potential of the PBC2C model as a scalable and contextually responsive innovation.

**Keywords:** *Child-to-Child Approach, Peer Learning, Foundational learning, Play-based learning*

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## **1. Introduction**

A child's first day in preschool marks the beginning of a lifelong educational journey, one profoundly shaped by early experiences. While this journey unfolds across formal and informal contexts, children's initial engagement with learning is most often mediated through play. Play-based learning (PBL) is globally recognised in early childhood education (ECE) as a developmentally appropriate approach that promotes cognitive, social, and emotional growth through child-centred activity (Mohammed et al., 2026; Taylor & Boyer, 2019). However, play is not a singular construct. It is frequently equated with free play, open-ended, self-directed activity in which children explore materials independently and without direct adult intervention (Weisberg et al., 2016; Yu, 2022).

Free play fosters creativity, autonomy, and exploratory thinking, particularly as children transition into structured schooling environments. Guided play, by contrast, involves intentional adult facilitation while preserving child agency. Although activities may originate in child-led exploration, meaningful learning outcomes often depend on strategic adult scaffolding. Fisher et al. (2010), drawing on Bellin and Singer (2006, as cited in Fisher et al., 2010), illustrate how adult-facilitated playful activities can enhance phonological awareness, vocabulary, and alphabet knowledge. Importantly, such activities maintain space for children's meaningful participation. Over time, children developed the confidence to independently construct narratives, such as the "Magic Car" story. Guided play thus encompasses two interrelated dimensions: first, adults intentionally design enriched environments aligned with learning goals (Berger, 2008, as cited in Fisher et al., 2010); second, teachers extend learning through co-play and co-construction, supporting inquiry while maintaining open-ended exploration (Ash & Wells, 2007, as cited in Fisher et al., 2010).

Despite robust evidence supporting PBL, implementation remains inconsistent in low-resource settings such as Pakistan, where early education continues to be characterised by rote memorisation and teacher-centred practices (Khan, 2023). According to ASER (2023), only 5% of rural Grade 3 students could read English, and merely 3% demonstrated basic arithmetic proficiency. These statistics reflect a deep foundational learning crisis and call for scalable, contextually grounded, innovative models. The Play-Based Child-to-Child (PBC2C) model offers one such approach. By integrating peer-led learning with guided play methodologies, the model seeks to strengthen foundational literacy, numeracy, and socio-emotional skills (Cheruiyot, 2024; Othman et al., 2025). While C2C approaches have shown global promise, their feasibility and contextual relevance within Pakistan's diverse educational settings remain underexplored. Positioned within a broader regional initiative, this study addresses both the local urgency of foundational learning gaps and the potential for cross-country knowledge exchange.

### **1.1 Objectives and Research Questions**

This paper is derived from a multi-country research project involving Pakistan, Sri Lanka, and the Maldives, aimed at strengthening school readiness and easing the transition from preschool to primary education through the Play-Based Child-to-Child (PBC2C) model. The present paper reports baseline findings from Pakistan before intervention implementation and addresses the following research questions:

1. What are the baseline levels of foundational literacy, numeracy, and socio-emotional learning among pre-primary children in urban (Karachi) and rural (Chitral) schools?
2. What do parents' demographics and their perspectives on education reveal about existing understandings and practices of children's learning in the context in which PBC2C will be implemented?
3. How do teachers perceive the feasibility and relevance of play-based, peer-led approaches to school readiness before the implementation of PBC2C?

## **2. Literature Review**

Emerging scholarship affirms that play-based learning (PBL) is both developmentally appropriate and empirically effective (Moore et al., 2014). Beyond enhancing literacy and numeracy, structured play environments, particularly those incorporating guided interaction, support vocabulary acquisition, number sense, spatial reasoning, emotional regulation, and collaborative skills (Lee et al., 2020; Pyle et al., 2017; Skene et al., 2022).

However, most empirical evidence on PBL originates from high-income contexts. In low- and middle-income countries (LMICs), implementation remains uneven. For instance, across South Asia, rigid curricula, limited teacher preparation, and prevailing perceptions of play as "non-academic" constrain classroom adoption (Bautista et al., 2021; Bubikova-Moan et al., 2019; J. Y. Lee et al., 2023). In Pakistan, although research increasingly demonstrates that play-based strategies enhance attention, language development, and collaboration (Abbasi et al., 2025; Sohail & Aziz, 2024), many interventions remain adult-directed and insufficiently adapted to under-resourced public schools. Consequently, questions of scalability, sustainability, and child agency persist.

The Child-to-Child (C2C) approach, grounded in sociocultural learning theory and Vygotsky's (1978) concept of learning through more capable peers, emphasises children's capacity to facilitate one another's development. Unlike conventional peer learning models, C2C intentionally positions children as knowledge mediators. Although historically applied in health and life-skills education across countries such as Zambia, India, and Sierra Leone (Johnsunderraj et al., 2023; Pradhan, 2007; Serpell & Adamson-Holley, 2017), emerging evidence suggests relevance within Pakistan. For instance, Bhutta and Sylva (2015), in one of the few classroom-based investigations, examined C2C health education pedagogy across 67 primary schools in Sindh using a 32-item observation tool and structured questionnaires. These rural classrooms were found to be more participatory than urban ones, and teacher motivation, frequency of implementation, and quality of training significantly influenced effectiveness. Importantly, the authors emphasised the balance between "active teaching and active learning," underscoring the necessity of pedagogical preparation and curricular integration.

Global evidence further suggests that C2C strengthens content retention while promoting agency, empathy, and cooperation (Chen et al., 2020; Tenenbaum et al., 2020; Van Ryzin & Roseth, 2019). Nevertheless, its application to foundational academic domains, particularly literacy and numeracy, remains limited and is rarely integrated with play-based pedagogy. This represents a missed opportunity. Conceptually integrating guided play with peer-led learning may amplify both academic achievement and child agency, especially in low-resource classrooms. Taken together, prior research indicates that both guided play and peer-

led approaches enhance engagement and learning. Yet their integration for foundational literacy and numeracy in under-resourced Pakistani public schools remains underexamined. The present study addresses this gap by reporting baseline findings from the Pakistan component of a regional PBC2C initiative.

### **3. Research Method**

#### **3.1 Research Design**

In this study, a mixed-methods, sequential cohort research design (Ivankova, 2014) was employed. One cohort of pre-primary students served as the control group, while the intervention was implemented in the subsequent cohort in the same schools. Participants' literacy, numeracy, and socio-emotional learning (SEL) were tested to assess their school readiness. This paper draws on the control group's (baseline) data.

#### **3.2 Sampling and Participants**

The study purposively selected both rural and urban schools to ensure representation from both contexts in the intervention and to capture contextual variations. Two government schools from Karachi city in Sindh district and from the Chitral region of KPK district ( $n = 4$ ) were selected based on their accessibility to the research team and the schools' willingness to participate. The participants included 144 pre-primary students. Since the nature of the intervention required it to be administered at the classroom level, all students present in the class were invited to participate. Karachi has a larger population, and its classrooms are more populated. This led to a higher number of participants in Karachi ( $n = 102$ ) compared to Chitral ( $n = 42$ ). Along with students, their home teachers ( $n=5$ ) and mothers ( $n=25$ ) also participated in the study.

#### **3.3 Data Collection Procedures**

Student assessments measured Urdu literacy, English literacy, numeracy, and socio-emotional learning. Literacy and numeracy instruments were adapted from Maldivian tools, while the Urdu literacy and SEL measures were locally developed and piloted to ensure cultural appropriateness. Parent perspectives were collected through two FGDs in Karachi ( $n = 10$ ;  $n = 15$ ; 10–15 minutes each), supplemented by demographic surveys capturing education, employment, household size, and income. Mothers provided both maternal and paternal demographic information, as fathers were largely unavailable due to employment obligations. Teacher perspectives were gathered through five semi-structured interviews (10–15 minutes each), audio-recorded and transcribed with consent.

#### **3.4 Data Analysis**

Quantitative data were analysed using SPSS. To begin, data were entered and cleaned by running frequencies. New variables for test scores were computed for each subject, and the total marks scored. Specifically, mean percent score was computed for test scores. Categorical data were treated differently. For example, variables with two categories were coded accordingly (e.g., Rural = 0; Urban=1). All missing values were treated as 999. To analyse the differences between rural and urban contexts, the normality of the data was assessed at alpha value  $p<0.5$ . As shown in Table 1, all other subjects' data except

mathematics were skewed. Therefore, the Mann-Whitney non-parametric test was used to examine the differences in scores between rural and urban contexts. The magnitude of difference was calculated using the formula ( $r = \frac{z}{\sqrt{n}}$ ) (Field, 2024). The threshold for magnitude of effect is 0.10 (small), 0.30 (medium), and 0.50 (large).

**Table 1**  
*Normal distribution*

| Subjects                 | Rural    | Urban          | Comments              |
|--------------------------|----------|----------------|-----------------------|
|                          | Skewness |                |                       |
| Total marks              | 0.14     | 0.52           | Skewed in Urban group |
| Literacy English         | 1.07     | 0.96           | Skewed in both groups |
| Numeracy                 | 0.27     | -0.02          | Normal in both groups |
| Socio-emotional Learning | -2.02    | -0.68          | Skewed in both groups |
| Literacy Urdu            | 0.02     | 0.55           | Skewed in Urban group |
| Normal $p<0.5$           |          | Skewed $p>0.5$ |                       |

Qualitative data were analysed thematically using Braun and Clarke's (2006) six-phase framework. Initial coding was conducted by the first author and cross-validated by research team members to enhance credibility and analytic rigour.

### 3.5 Ethical Considerations

The research was approved by the Ethical Review Committee of the Aga Khan University, ERC Approval # 010-ERC\_SSHA-24. Permission was obtained from the District Education Office and participating school principals. Written consent was obtained from principals and teachers. Due to literacy constraints, parents provided verbal consent, documented through audio recordings and field notes. Participants were assured confidentiality, anonymity, and the right to withdraw at any time. School names are withheld to protect institutional anonymity.

### 4. Results and Discussion

This mixed-methods study generated complementary quantitative and qualitative evidence to address the research questions. Findings are presented in three parts: (

- (1) parental demographic and socio-economic characteristics; (2) baseline student outcomes in literacy, numeracy, and socio-emotional learning (SEL), including regional comparisons; and (3) teacher and parent perspectives on the feasibility of play-based, peer-led approaches. Throughout, findings are interpreted in relation to the local context and relevant literature.

#### **4.1. Participant Demographics and Socio-Economic Context**

Parental data revealed significant socio-economic vulnerability. Among mothers, 41.7% reported no formal education. Fathers' education levels varied from primary to bachelor's, with a quarter of fathers (28%) not having attended formal school. Household income patterns indicated low economic status. 41.7% of families reported no fixed monthly income, relying instead on daily wages (PKR 400–1,500 per day). Only 8.3% reported earnings above PKR 40,000 per month, whereas almost half of families (46%) had earnings of less than 40,000 per month.

#### **4.2. Baseline Learning Outcomes**

Table 2 presents an overview of students' performance across all subjects in the baseline group. The findings indicate that students scored moderately (42%) on the test. The scores of students ranged from 10 to 81%, indicating that there were students who could answer only 10% of the entire test questions correctly. That said, some students scored as high as 81%. The highest score of 81 reveals that none of the students attempted the entire test correctly. More specifically, students performed relatively better in SEL (78%), followed by Mathematics (56%). Whereas within literacy, students scored lower in both Urdu (42%) and English (22%).

**Table 2 :Total and subject-wise scores of students in baseline group**

| Target subjects          | n   | Minimum | Maximum | Mean (%) | Std. Deviation |
|--------------------------|-----|---------|---------|----------|----------------|
| Total marks              | 144 | 10      | 81      | 42       | 12             |
| Literacy English         | 144 | .00     | 86      | 22       | 16             |
| Numeracy                 | 144 | .00     | 100     | 56       | 22             |
| Socio-emotional Learning | 144 | .00     | 100     | 78       | 22             |
| Literacy Urdu            | 144 | .00     | 95      | 42       | 17             |

A scan of variation patterns revealed more scattered scores in Numeracy and Socio-emotional learning. Moreover, the minimum score of zero revealed that there were students who could not answer one question correctly in each subject. Nevertheless, the highest scores of 86(English), 95 (Urdu), and 100 (Numeracy and socio-emotional learning) indicate the presence of some outperforming students in each subject.

#### **4.2. Comparison by Region in Baseline Learning Outcomes**

The inferential analysis was undertaken to understand the patterns and differences in students' performance across subjects in target regions. The results are presented in table 3. The results show that students performed moderately and equally in both rural (43%) and urban (42%) settings. The difference was not significant ( $p>0.05$ ). The variance suggests a greater dispersion in the scores of rural context students. Nevertheless, the evidence suggests that students from both regions stand at the same performance level in the baseline group. What follows next is the subject-wise comparison across regions.

**Table 3 :Students' scores in Subjects across regions**

| Subject                                        | Rural<br>(mean and<br>SD) | Urban<br>(mean and<br>SD) | Difference                           | r                |
|------------------------------------------------|---------------------------|---------------------------|--------------------------------------|------------------|
| <b>Total marks</b>                             | 43 (17)                   | 42 (10)                   | U= 1957.000; z= -0.813;<br>p=0.416   | Na               |
| Literacy English                               | 31 (19)                   | 18 (12)                   | U= 1203.500; z= -4.137;<br>p<0.001   | Medium<br>(0.34) |
| Numeracy                                       | 41 (25)                   | 62 (17)                   | U= 3204.000; z= 4.674;<br>p<0.001    | Medium<br>(0.38) |
| Socio-emotional<br>Learning                    | 82 (21)                   | 76 (22)                   | U= 1786.000; z= -<br>1.1593; p=0.111 | Na               |
| Literacy Urdu                                  | 43 (20)                   | 42 (15)                   | U= 2014.500; z= -0.563;<br>p=0.574   | Na               |
| <i>SD Standard deviation    r= effect size</i> |                           |                           | <i>Na= not applicable</i>            |                  |

#### 4.2.1. Urdu Literacy

Table 3 shows that on average Urdu literacy scores were broadly comparable across rural (43%) and urban (42%) contexts. The difference was also not significant ( $p>0.5$ ). The similarity in mean percent scores can be due to relatively consistent exposure to the national curriculum. Tang (2025) and Monteza (2025) state that standardised curriculum frameworks prove supportive in reducing urban–rural disparities in the national language. Although students scored equally in both regions, the dispersion of Urdu scores in Chitral hints at the variation in students' Urdu proficiency in different parts of the country. For many students living in mountainous parts of Pakistan, such as Chitral, Urdu is the second language, whereas for students living in metropolitan areas such as Karachi, Urdu is the predominant first language of the majority of students.

#### 4.2.2. English Literacy

Table 3 shows that students in the rural context (31%) outperformed their urban counterparts (18%) in English literacy. The difference was significant with a medium effect size ( $p<0.001$ ;  $r=0.34$ ). Similar to higher performance, students in the rural context exhibited greater spread in English scores. The higher scores in Chitral can be explained by the value attached to

English as a pathway to social mobilization in remote communities (Rahman, 2008). At the same time, the significant variation in regional scores may be attributed to instructional inconsistency in instructional quality (Shamim, 2011). Hence, it can be speculated that symbolic association with uplifting social mobility leads to improved instructional quality in rural contexts. These findings highlight the importance of structured yet context-sensitive English literacy support within early grades.

#### **4.2.3. Social and Emotional Learning (SEL)**

The region-wise comparison revealed that, similar to Literacy English, students in the rural setting demonstrated relatively higher scores in SEL (82%) than their counterparts in the urban setting (76%). Albeit difference was not big enough to be significant ( $p > 0.05$ ). These findings suggest that rural children may enter school with comparatively stronger socio-emotional competencies, potentially reflecting close-knit community structures and participatory social practices (Bhutta & Sylva, 2015). Having said that, evidence also suggests that SEL does not progress uniformly in the absence of intentional pedagogical design (CASEL, 2020). Without structured integration into classroom practice, socio-emotional competencies may remain context-dependent rather than systematically reinforced. Thus, the forthcoming PBC2C intervention will intentionally embed explicit SEL scaffolding within peer-led play activities.

#### **4.2.3. Numeracy**

Unlike English literacy, urban students scored higher (62%) in numeracy compared to rural students (41%). The difference was significant with a medium effect size ( $p < 0.001$ ;  $r = 0.38$ ). There was a higher variation in Chitrali students' scores, indicating that students not only scored lower but were also more dispersed in comparison to those of students from the urban setting. This urban advantage can likely be due to better school resources, teacher qualifications, and exposure to structured learning materials (Nshimyumuremyi & Andala, 2023; Piper et al., 2018; Rawlings et al., 2024). The substantial dispersion in Chitral further suggests that foundational numeracy exposure may be inconsistent in rural settings. Miller and Votruba-Drzal (2013) suggest that children from rural India entered kindergarten with lower early academic skills, including numeracy, largely due to differences in home learning environments and access to market and exposure to more economic activities. Given that numeracy often relies on cumulative conceptual understanding, these baseline gaps underscore the need for targeted scaffolding during the intervention stage in the rural setting.

#### **4.3. Teacher Perspectives on the C2C Model**

Inductive thematic analysis (Braun & Clarke, 2006) generated the following interrelated themes.

##### **a. Limited Formal Exposure to C2C**

Most teachers lacked formal training in the C2C model, though some were aware of peer-to-peer learning strategies and had informally practised it in their classrooms. One participant stated, "During my training, I did something similar, what we called peer-to-peer... We used to invite older children from their classrooms to help teach younger ones." (Teacher A). Another participant shared that C2C is something she is "hearing about for the first time" (Teacher B). These accounts suggest that while the underlying principle of children teaching children was not entirely new to the teachers, they were unfamiliar with PBC2C use in a



classroom setting. Such conceptual proximity to C2C with limited familiarity with its use shows a lack of attention paid to this teaching model at the primary level despite studies showing its effectiveness in other settings and higher education levels (Nshimyumuremyi & Andala, 2023; Piper et al., 2018; Rawlings et al., 2024).

***b. Perceived Pedagogical and Logistical Benefits***

Teachers discussed the pedagogical support of the C2C model and anticipated that it may help reduce learner anxiety, improve participation, reinforce older students' knowledge, and support classroom management. They considered the model particularly suitable for overcrowded classrooms and learners' socio-emotional growth. Teacher B anticipated that the PBC2C approach would provide comfort to the learners while learning. She stated, "They'll be more comfortable and friendly... They may ask questions...." (Teacher B). Teachers also opined that children can better understand each other than a teacher can.

Teachers also believed the model would benefit the facilitating peer, as evident in Teacher E's views. "It (can) reinforce the older children's learning" (Teacher E). It was believed to teach children to become more responsible, as evident in this quote: "Older children learned responsibility... they behaved better (Teacher D). These perceptions align with research demonstrating that peer-peer models benefit both peers, creating psychologically safer learning environments for them (Topping, 2005).

Teachers' discussion also revealed their positive perception about the approach. They believed it would be useful in carrying out their administrative tasks. Teacher E maintained that her classroom discipline would be maintained in her absence, while Teacher B foresaw opportunities for additional time through peer teaching. These teachers' perceptions of the potential benefits of the PBC2C approach align with findings from different contexts (Anton & Van Ryzin, 2024; Markowski et al., 2021), which show that it can alleviate teacher workload in resource-constrained classrooms. However, it also calls for greater attention to the potential risk of misuse of the model, discussed later.

***c. Anticipated Challenges***

Teachers were also concerned about the challenges the model may create. These included discipline management, misuse of authority by older children, time constraints, and parental scepticism. Teacher D warned about the possibility of mistreatment of the younger peers. "Older kids can be bossy... might even hit the younger ones", she cautioned. These anticipated risks are consistent with literature and emphasise the necessity of clear role definition and teachers' monitoring and engagement in peer-led models (Mermelshtine, 2017; Topping, 2005). These concerns were not a reflection of teachers' resistance to innovation. They rather show teachers' awareness of contextual realities that can constrain the C2C models' application to their full potential. These anticipated challenges also provide contextual information that the research team will use in taking preventive measures.

***d. Reframing the Teacher's Role***

Teachers conceptualised themselves as facilitators, guiding and monitoring rather than directly instructing. This perspective reflects Vygotskian notions of scaffolding (Dabbagh, 2003; Puntambekar, 2021; Vygotsky, 1978) and aligns with learner-centred pedagogy. However, teachers emphasised the dual responsibility of enabling peer agency while

maintaining classroom order. This positions teachers as “learning brokers” (Topping, 2005), mediating between structure and autonomy.

However, one teacher’s perceptions of peer teaching also revealed a possible misconception attached to it. Her comment “I could use that time to check notebooks” reflects her positive view of the peer teaching approach. It simultaneously alludes to the misconception about teachers’ role in the C2C model and the risks associated with such misconceptions. If shared more broadly, such an understanding could lead to misuse of the model, such as teachers shifting their teaching responsibilities to students.

#### **4.4. Parent Perspectives**

Parents’ perspectives on play-based learning showed a strong concern for what they believed learning was. Their views were largely shaped by their aspirations for their children’s success and their own understandings of how such success can be achieved. Mothers valued foundational literacy, often linking aspirations to their own limited educational opportunities. But many believed memorisation and the ability to reproduce taught content are evidence of effective learning. For example, one mother praised her daughter for her accurate recall of everything her teacher teaches her, despite not being able to recognise the letter in written form. This reveals the conventional and limited societal understanding of education in which learners are expected to memorise and reproduce. Such a perception of education also explains parents’ emphasis on their children “getting good marks”, which often comes at the expense of holistic development.

These perceptions of education also form parents’ attitudes toward play-based and peer learning, which were cautiously optimistic. While some mothers recognised the benefits of playful strategies, others questioned whether play might distract their children from learning. One mother, acknowledging the importance of play, shared, “Playing is good for children. They feel happy and always want to play. But they need to study also”. Whereas this mother’s comment shows the distinction she draws between play and learning as two separate aspects of children’s lives, another’s explicit preference for teacher-led classrooms shows limited confidence in the ability of peer teachers to support learning. She argued that “it’s not fair. Teachers teach better than children and she must teach”. Her comment positions the teacher as a more legitimate source of knowledge and questions the peer facilitators’ capacity to take on the “teachers’ role”. Such absence of confidence in the PBC2C learning model reflects broader perceptions of play being less valuable than “serious” instruction in South Asia (Bautista et al., 2021; Bubikova-Moan et al., 2019; J. Y. Lee et al., 2023).

Such parental perceptions may also create pressure on the teachers’ classroom practices, particularly their willingness to use a play-based approach in their teaching. Studies from other contexts show that societal pressures restricted teachers from using constructivist approaches to teaching young learners (McLean et al., 2023).

### **5. Conclusions and Implications**

This study provided an account of student performance and stakeholder perspectives from data collected before the implementation of the PBC2C intervention. Foundational literacy and numeracy outcomes were generally low. This calls on the research team to pay attention to numeracy and literacy. The school authorities and ECD teachers should also work on these

learning domains from the early years. Rural–urban variations were domain-specific. Teachers' concerns about challenges in discipline, time, and academic rigour suggest Teachers' professional development. The training should focus on teaching classroom management skills during the PB activities through peer learning. It should also support teachers in integrating PBC2C model into existing classroom time. Along with these local adaptations of PBC2C, the findings also contribute to comparative regional analysis of the PBC2C model in diverse low- and middle-income contexts.

## **6. Way Forward**

Moving forward, several priorities emerge:

1. **Teacher Training:** Professional development for teachers must be arranged on PBC2C, where peer and teacher roles, scaffolding strategies, and classroom management protocols must be defined to mitigate anticipated risks.
2. **Parental Engagement:** Orientation sessions and demonstration lessons for parents will help address misconceptions about play and reinforce the academic purpose of guided peer activities.
3. **Targeted Numeracy Support in Rural Settings:** Given baseline disparities, rural numeracy scaffolding should be prioritised within early PBC2C cycles.
4. **Integrated SEL Design:** While baseline SEL was relatively strong, structured embedding within academic tasks can ensure consistency and transferability.
5. **Ongoing Monitoring and Cross-Country Learning:** As part of the KIX–IDRC initiative, iterative evaluation and cross-site comparison will be critical to refining scalability and contextual responsiveness.

By situating peer-led guided play within existing socio-cultural structures, the PBC2C model holds promise as a low-cost, contextually grounded approach to strengthening foundational learning in under-resourced settings.

## **7. Limitations**

This paper should be read in light of some limitations. As the findings are from the baseline data, they provide information about participants' characteristics and pre-existing differences only. Moreover, the findings are not transferable as these schools are not representative of the diversity of schools within rural and urban settings. The qualitative findings are limited to the urban setting.

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## References

- Abbasi, E. A., Khurshid, R., & Zia, A. (2025). Effectiveness of play intervention on pre-school students' social-emotional development as viewed from teachers' perspective in private sector schools of AJK. *ACADEMIA International Journal for Social Sciences*, 4(1), 305–317. <https://doi.org/10.63056/ACAD.004.01.0073>
- Anton, J., & Van Ryzin, M. J. (2024). Reducing teacher stress and burnout and enhancing self-efficacy through technology-supported small-group instruction. *Social and Emotional Learning: Research, Practice, and Policy*, 4, 100053. <https://doi.org/10.1016/j.sel.2024.100053>
- ASER. (2023). *Annual Status of Education Report: Pakistan 2023*. South Asian Forum for Education Development. <http://aserpakistan.org>
- Bautista, A., Yu, J., Lee, K., & Sun, J. (2021). Play in Asian preschools? Mapping a landscape of hindering factors. *Contemporary Issues in Early Childhood*, 22(4), 312–327. <https://doi.org/10.1177/14639491211058035>
- Bhutta, S. M., & Sylva, K. (2015). Health education classroom practices in primary schools: An observational study from Pakistan. *Global Journal of Health Education and Promotion*, 16(2), 74–101.
- Bowman-Perrott, L., Davis, H., Vannest, K., Williams, L., Greenwood, C., & Parker, R. (2013). Academic benefits of peer tutoring: A meta-analytic review of single-case research. *School Psychology Review*, 42(1), 39–55. <https://doi.org/10.1080/02796015.2013.12087490>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101.
- Bubikova-Moan, J., Hjetland, H. N., & Wollscheid, S. (2019). ECE teachers' views on play-based learning: A systematic review. *European Early Childhood Education Research Journal*, 27(6), 776–800. <https://doi.org/10.1080/1350293x.2019.1678717>
- CASEL. (2020). *CASEL's SEL framework: What are the core competence areas and where are they promoted?* <https://casel.org/casel-sel-framework-11-2020/>
- Chen, H., Park, H. W., & Breazeal, C. (2020). Teaching and learning with children: Impact of reciprocal peer learning with a social robot on children's learning and emotive engagement. *Computers & Education*, 150, 103836. <https://doi.org/10.1016/j.compedu.2020.103836>
- Cheruiyot, B. (2024). Effectiveness of Play-Based Learning Method in promotion of early literacy skills among early Childhood Development Education children. *East African Journal of Education Studies*, 7(3), 479–488. <https://doi.org/10.37284/eajes.7.3.2178>
- Dabbagh, N. (2003). Scaffolding: An important teacher competency in online learning. *TechTrends*, 47(2), 39–44. <https://doi.org/10.1007/bf02763424>
- Field, A. (2024). *Discovering statistics using IBM SPSS Statistics* (6th ed.). SAGE Publications.
- Fisher, K. R., Hirsh-Pasek, K., Golinkoff, R. M., Singer, D. G., & Berk, L. E. (2010). Playing around in school: Implications for learning and educational policy. In A. D. Pellegrini (Ed.), *The Oxford handbook of the development of play* (pp. 341–360). Oxford University Press.
- Hidayat, R., & Saad, M. R. M. (2025). A Meta-analysis of the effect of peer tutoring in Science, Technology, Engineering and Mathematics (STEM) subjects. *International*

- Journal of Educational Research Open*, 8, 100446.  
<https://doi.org/10.1016/j.ijedro.2025.100446>
- Ivankova, N. V. (2014). *Mixed methods applications in action research: From methods to community action*. SAGE Publications.
- Johnsunderraj, S. E., Francis, F., & Prabhakaran, H. (2023). Child-to-child approach in disseminating the importance of health among children –A modified systematic review. *Journal of Education and Health Promotion*, 12(1), 116.  
[https://doi.org/10.4103/jehp.jehp\\_8\\_23](https://doi.org/10.4103/jehp.jehp_8_23)
- Khan, M. (2023). *Design-based research to inform the creation of an early childhood education framework for Pakistan* [Doctoral thesis, University of Tasmania].  
<https://doi.org/10.25959/23250098>
- Lee, J. Y., Wright, C. A., Golinkoff, R. M., & Hirsh-Pasek, K. (2023). Another case of the theory to practice gap: South Korean early childhood education and care. *Early Childhood Research Quarterly*, 65, 385–395.  
<https://doi.org/10.1016/j.ecresq.2023.07.008>
- Lee, R. L. T., Lane, S., Brown, G., Leung, C., Kwok, S. W. H., & Chan, S. W. C. (2020). Systematic review of the impact of unstructured play interventions to improve young children's physical, social, and emotional wellbeing. *Nursing and Health Sciences*, 22(2), 184–196. <https://doi.org/10.1111/nhs.12732>
- Lin, P., Zhou, Q., Ma, J., Wang, X., & Wu, J. (2025). Peer tutoring in higher education: power from pedagogical training. *Humanities and Social Sciences Communications*, 12(1).  
<https://doi.org/10.1057/s41599-025-04860-6>
- Markowski, M., Bower, H., Essex, R., & Yearley, C. (2021). Peer learning and collaborative placement models in health care: a systematic review and qualitative synthesis of the literature. *Journal of Clinical Nursing*, 30(11–12), 1519–1541.  
<https://doi.org/10.1111/jocn.15661>
- McLean, K., Lake, G., Wild, M., Licandro, U., & Evangelou, M. (2023). Perspectives of play and play-based learning: What do adults think play is? *Australasian Journal of Early Childhood*, 48(1), 5–17. <https://doi.org/10.1177/18369391221130790>
- Mermelshtine, R. (2017). Parent–child learning interactions: A review of the literature on scaffolding. *British Journal of Educational Psychology*, 87(2), 241–254.  
<https://doi.org/10.1111/bjep.12147>
- Miller, P., & Votruba-Drzal, E. (2013). Early academic skills and childhood experiences across the urban–rural continuum. *Early Childhood Research Quarterly*, 28(2), 234–248.
- Mohammed, A. H., Nigussie, B., Schellens, T., & Rotsaert, T. (2026). Play-Based Learning in Early Childhood Education: A scoping review. *Early Childhood Education Journal*, 54(5), 3929–3975. <https://doi.org/10.1007/s10643-026-02127-6>
- Monteza, A. M. (2025). The integration of English into Myanmar's national curriculum: A critical review. *SMART: Journal of Multidisciplinary Educational*, 3(2), 69–79].  
<https://doi.org/10.61677/smart.v3i2.611>
- Moore, D., Edwards, S., Cutter-Mackenzie, A., & Boyd, W. (2014). Play-based learning in early childhood education. In A. Cutter-Mackenzie, S. Edwards, D. Moore, & W. Boyd, *Young children's play and environmental education in early childhood education* (pp. 9–24). Springer International Publishing. [https://doi.org/10.1007/978-3-319-03740-0\\_2](https://doi.org/10.1007/978-3-319-03740-0_2)

- Naviwala, N. (2016). *Pakistan's education crisis: The real story*. Wilson Center. <https://www.wilsoncenter.org/publication/pakistans-education-crisis-the-real-story-report>
- Nshimyumuremyi, E. R., & Andala, H. O. (2023). Effect of teacher competence on performance of learners in numeracy and literacy in Rwanda: A case study of public primary grade one of Bugesera District. *Journal of Education*, 6(4), 73–84. <https://doi.org/10.53819/81018102t2229>
- Othman, N., Azri, S. N. F., Omar, R., & Mohamad, I. (2025). A Scoping Review of Play-Based Learning Methods in relation to Children Literacy Development. *Kristu Jayanti Journal of Management Sciences (KJMS)*, 1–24. <https://doi.org/10.59176/kjms.v4i1.2439>
- Piper, B., Zuilkowski, S. S., Dubeck, M., Jepkemei, E., & King, S. J. (2018). Identifying the essential ingredients to literacy and numeracy improvement: Teacher professional development and coaching, student textbooks, and structured teachers' guides. *World Development*, 106, 324–336. <https://doi.org/10.1016/j.worlddev.2018.01.018>
- Pradhan, U. (2007). The Child-to-Child Approach to community and Health Development in South Asia. *Children Youth and Environments*, 17(1), 257–268. <https://doi.org/10.1353/cye.2007.0119>
- Puntambekar, S. (2022). Distributed scaffolding: Scaffolding students in classroom environments. *Educational Psychology Review*, 34(1), 451–472. <https://doi.org/10.1007/s10648-021-09636-3>
- Pyle, A., DeLuca, C., & Danniels, E. (2017). A scoping review of play-based pedagogies in kindergarten education. *Review of Education*, 5(3), 311–351.
- Rahman, T. (2008). Language policy and education in Pakistan. In N. H. Hornberger & S. May (Eds.), *Encyclopedia of language and education* (2nd ed., pp. 383–392). Springer.
- Rawlings, B. S., Davis, H. E., Anum, A., Burger, O., Chen, L., Morales, J. C. C., Dutra, N., Dzabatou, A., Dzokoto, V., Erut, A., Fong, F. T. K., Ghelardi, S., Goldwater, M., Ingram, G., Messer, E., Kingsford, J., Lew-Levy, S., Mendez, K., Newhouse, M., . . . Legare, C. H. (2024). Quantifying quality: The impact of measures of school quality on children's academic achievement across diverse societies. *Developmental Science*, 27(5), e13434. <https://doi.org/10.1111/desc.13434>
- Serpell, R., & Adamson-Holley, D. (2017). African socialization values and nonformal educational practices: Child development, parental beliefs, and educational innovation in rural Zambia. In T. Abebe & J. Waters (Eds.), *Laboring and learning: Geographies of children and young people* (Vol. 10, pp. 19–43). Springer. [https://doi.org/10.1007/978-981-287-032-2\\_22](https://doi.org/10.1007/978-981-287-032-2_22)
- Shamim, F. (2011). English as the language for development in Pakistan: Issues, challenges, and possible solutions. In H. Coleman (Ed.), *Dreams and realities: Developing countries and the English language* (pp. 291–309). British Council.
- Skene, K., O'Farrelly, C. M., Byrne, E. M., Kirby, N., Stevens, E. C., & Ramchandani, P. G. (2022). Can guidance during play enhance children's learning and development in educational contexts? A systematic review and meta-analysis. *Child Development*, 93(4), 1162–1180. <https://doi.org/10.1111/cdev.13730>
- Sohail, M. F., & Aziz, Z. (2024). The integral role of play in early childhood education of Pakistan: A fresh perspective. *International Journal of Academic Research in Progressive Education and Development*, 13(1), 67–82. <https://doi.org/10.6007/ijarped/v13-i1/19736>

- Tang, J. (2025). A Policy and practice review of English education in Chinese primary and secondary schools. *Pacific International Journal*, 8(4), 142–149. <https://doi.org/10.55014/pij.v8i4.861>
- Taylor, M. E., & Boyer, W. (2019). Play-Based Learning: Evidence-Based research to improve children's learning experiences in the kindergarten classroom. *Early Childhood Education Journal*, 48(2), 127–133. <https://doi.org/10.1007/s10643-019-00989-7>
- Tenenbaum, H. R., Winstone, N. E., Leman, P. J., & Avery, R. E. (2020). How effective is peer interaction in facilitating learning? A meta-analysis. *Journal of Educational Psychology*, 112(7), 1303–1319. <https://doi.org/10.1037/edu0000436>
- Topping, K. J. (2005). Trends in peer learning. *Educational Psychology*, 25(6), 631–645. [10.1080/01443410500345172](https://doi.org/10.1080/01443410500345172)
- UNESCO. (2021). *When schools shut: Gendered impacts of COVID-19 school closures*. <https://unesdoc.unesco.org/ark:/48223/pf0000379270>
- Van Ryzin, M. J., & Roeth, C. J. (2019). Effects of cooperative learning on peer relations, empathy, and bullying in middle school. *Aggressive Behavior*, 45(6), 643–651. <https://doi.org/10.1002/ab.21858>
- Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Harvard University Press.
- Weisberg, D. S., Hirsh-Pasek, K., Golinkoff, R. M., Kittredge, A. K., & Klahr, D. (2016). Guided play. *Current Directions in Psychological Science*, 25(3), 177–182. <https://doi.org/10.1177/0963721416645512>
- Yu, Y. (2022). Using guided play to facilitate young children's exploratory learning. In *Empowering teaching and learning through policies and practice* (pp. 189–215). [https://doi.org/10.1007/978-981-16-7405-1\\_10](https://doi.org/10.1007/978-981-16-7405-1_10)