

Domain-Specific School Readiness among Sri Lanka Preschool Children: Evidence from the National ECDA

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Abstract— *School readiness is a multidimensional construct encompassing physical, social–emotional, cognitive, and language and early literacy development. Although overall readiness classifications are commonly used, they may mask domain-specific developmental vulnerabilities that influence children’s transition to formal schooling. This study examined patterns of school readiness among 360 Sri Lankan preschool children using the Early Childhood Development Assessment (ECDA), a standardized national tool assessing 22 indicators across four developmental domains. A quantitative descriptive cross-sectional design was employed, and descriptive statistical analysis (frequencies and percentages) was used to examine overall readiness levels and domain-specific developmental patterns. Results showed that 65.6% of children were classified as Level 1 (Good), while 34.4% required additional or intensive support (Levels 2 and 3). The most significant developmental vulnerabilities were observed in social–emotional development, early numeracy, spatial reasoning, and language and early literacy skills, particularly phonological awareness and information processing. Children in Level 3 exhibited substantial difficulties across all developmental domains. These findings highlight the importance of domain-sensitive assessment and targeted early interventions to address developmental gaps and support smoother transitions from preschool to primary education in Sri Lanka.*

Keywords— School Readiness; Preschool Education; Domain-Specific Development; ECDA; Sri Lanka; School Transition

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1. Introduction

The transition from preschool to formal schooling represents a critical period in a child’s educational trajectory. Successful adaptation to school requires not only emerging academic skills but also well-developed social–emotional competencies, cognitive abilities, language and early literacy skills, and physical development. Collectively, these capacities constitute school readiness, a multidimensional construct widely recognized as a strong predictor of later academic achievement, socio-emotional adjustment, and long-term educational success [1]–[3].

Children’s readiness for formal education is shaped by multiple, interrelated factors, including physical, cognitive, social, emotional, and environmental influences. These factors determine children’s ability to engage meaningfully in structured learning environments and to benefit from early schooling experiences. School readiness therefore plays a pivotal role not only in individual development but also in the effectiveness and equity of education systems more broadly. A strong foundation in the early years supports positive learning trajectories, social participation, and lifelong learning, underscoring the importance of holistic approaches to early childhood education [4], [5].

International evidence consistently highlights school readiness as a key strategy for reducing early learning gaps and promoting long-term educational success. Children who attend quality preschool programmes typically enter primary school with stronger social skills, richer vocabularies, improved early numeracy, and greater motivation to learn [6]. Moreover, supportive and developmentally appropriate preschool experiences have been shown to positively influence later academic achievement and social competence [7]–[10]. Neurodevelopmental research further underscores the urgency of early investment, indicating that approximately 90% of brain development occurs by the age of five, with more than a million neural connections formed every second during early childhood [11]. For these connections to develop optimally, children require stimulating and responsive environments; conversely, inadequate early experiences may constrain cognitive, social, and emotional readiness for school.

Accordingly, this study aims to examine overall and domain-specific patterns of school readiness among Sri Lankan preschool children using ECDA data, with a particular focus on identifying hidden vulnerabilities across developmental domains.

In Sri Lanka, participation in early childhood education (ECE) programmes is a strong predictor of school readiness [6], [12]. The National Policy on Early Childhood Care and Development emphasizes the importance of quality, centre-based ECE programmes in promoting children's physical, social, emotional, and cognitive development and in supporting smooth transitions to primary school through developmentally appropriate practices [13]. Similarly, the National Child Development Standards aim to ensure that children are adequately prepared for formal schooling [14]. Despite these policy commitments, systematic and evidence-based approaches to identifying and addressing school readiness gaps remain limited, and the needs of children at risk of poor transitions are often insufficiently addressed.

Globally, structured school readiness initiatives have been implemented to respond to domain-specific developmental needs. For example, Early Start Australia provides individualized interventions targeting social, language, and motor development; the Early Years Foundation Stage (EYFS) framework in the United Kingdom includes early assessment and profiling to support smooth transitions into formal schooling; and School Readiness Funding in Victoria, Australia, seeks to promote equity in access to quality preschool education. In Sri Lanka, tools such as the Early Childhood Development Assessment (ECDA) and the "Identification of the Child Programme" introduced by the National Institute of Education offer mechanisms to assess children's developmental status prior to school entry. However, empirical evidence remains limited regarding how effectively such assessment data are used to identify specific developmental gaps and to inform targeted early interventions.

Research indicates that children who enter school without adequate readiness are at increased risk of experiencing academic, social, and behavioural difficulties, as well as longer-term outcomes such as school disengagement, early school leaving, unemployment, and dependence on social welfare systems [15], [16]. In many education systems, school readiness is commonly summarized using overall scores or broad classifications such as "ready" or "not ready." While such categories are useful for monitoring and policy reporting, they risk obscuring important domain-specific vulnerabilities. A child classified as "ready" may still experience difficulties in language comprehension, social interaction, or self-regulation, whereas a child labeled as "not ready" may display uneven development with relative strengths in certain areas.

Recognizing these nuances is essential for designing effective early childhood curricula, targeted interventions, and differentiated instructional support. Against this backdrop, the present study examines overall and domain-specific patterns of school readiness among Sri Lankan preschool children using data from a national assessment (ECDA). By moving beyond global readiness classifications and focusing on developmental domains, the study provides a more detailed understanding of children's readiness profiles and the specific areas in which developmental gaps occur.

The findings are expected to contribute to evidence-based decision making in early childhood education policy and practice in Sri Lanka. In particular, identifying domain-specific vulnerabilities can support policymakers and education authorities in strengthening preschool curricula, improving teacher preparation, and enhancing early screening and intervention programmes. Such evidence may also assist national initiatives aimed at improving the quality and equity of early childhood education and ensuring smoother transitions from preschool to primary education. By highlighting developmental areas requiring additional attention, the study offers insights that can inform policy planning, programme design, and resource allocation within Sri Lanka's early childhood education system.

2. Method

Research Design

This study employed a quantitative, descriptive cross-sectional research design to examine overall and domain-specific patterns of school readiness among Sri Lankan preschool children. The analysis was based on secondary data derived from a nationally administered school readiness assessment conducted prior to children's entry into Grade 1.

A cross-sectional design is appropriate for this study because it allows the examination of children's developmental status and readiness levels at a single point in time, immediately prior to school entry. Such designs are widely used in early childhood research to identify patterns of developmental strengths and vulnerabilities across populations without requiring longitudinal follow-up. This approach therefore enables systematic description of readiness levels and comparison of children's performance across key developmental domains and indicators.

Participants and Sampling

The study sample comprised 360 preschool children aged between 4 years 9 months and 5 years 3 months, assessed immediately before transition to formal schooling. Participants were drawn from preschools representing diverse socio-educational contexts, ensuring variability in children's learning environments and early educational experiences.

The sample was obtained using a cluster-based sampling approach, where children were selected from preschool centres participating in the national Early Childhood Development Assessment programme. This approach enabled the inclusion of children from different preschool settings while maintaining feasibility for national-level assessment administration.

Based on assessment outcomes, children were classified into three predefined school readiness levels:

- Level 1: Good
- Level 2: Needs Improvement
- Level 3: Needs Special Attention

These categories were used to describe overall readiness distribution and to examine domain-specific performance patterns. The sample size was considered adequate for descriptive analysis and for meaningful comparison across readiness levels.

Instrument: Early Childhood Development Assessment (ECDA)

School readiness was assessed using the Early Childhood Development Assessment (ECDA), a standardized tool developed by the Ministry of Women and Child Development, Sri Lanka [17]. The ECDA is designed to evaluate children's preparedness for formal schooling across four developmental domains:

- Physical Development, including healthy habits and gross and fine motor skills;
- Social and Emotional Development, including interaction with adults and peers, empathy, and responsibility;
- Cognitive Development, including spatial awareness, number concepts, and environmental knowledge;
- Language and Early Literacy Development, including receptive and expressive language, pre-reading, and pre-writing skills.

The instrument comprises 22 indicators distributed across these domains. Each indicator is rated on a three-point scale, with higher scores reflecting stronger developmental performance. Total scores are interpreted using nationally defined cut-off points, classifying children into one of the three school readiness levels.

The ECDA has been developed and validated by national early childhood education specialists and is used as an official school readiness assessment tool within Sri Lanka's early childhood development framework. The instrument has undergone expert review and field testing to ensure content validity and suitability for assessing preschool children's developmental competencies prior to school entry.

Assessments were administered by trained assessors in accordance with the national ECDA protocol to ensure standardized administration and consistency.

Data Analysis

Data were analyzed using descriptive statistical techniques with IBM SPSS (Statistical Package for the Social Sciences). Frequencies and percentages were first calculated to describe the overall distribution of children across the three school readiness levels. Frequencies and percentages were first calculated to describe the overall distribution of children across the three school readiness levels.

Subsequently, domain- and indicator-level analyses were conducted by calculating the percentage of children not meeting expected performance criteria for each ECDA indicator within each readiness level. These analyses were organized across the four developmental domains to identify patterns of strengths and vulnerabilities. Findings are presented in tabular form to facilitate comparison of readiness profiles and to highlight domain-specific gaps that may influence children's transition to formal schooling.

Ethical Considerations

Ethical approval for the study was obtained from the ethical review board of The Open University of Sri Lanka. Permission to use secondary data was secured from relevant authorities. All data were anonymized and de-identified prior to analysis, and confidentiality was maintained throughout the research process in accordance with accepted ethical research standards.

3. Result and Discussion

3.1 Overall School Readiness

The school readiness of 360 preschool children was assessed using ECDA. Based on total ECDA scores, children were classified into three levels: Level 1 (Good), Level 2 (Needs Improvement), and Level 3 (Needs Special Attention). Table 1 summarizes the overall distribution.

Table 1. Overall Readiness Distribution

Readiness Level	Description	Frequency (n)	Percentage (%)
Level 1	Good	236	65.6
Level 2	Needs Improvement	68	18.9
Level 3	Needs Special Attention	56	15.5
Total		360	100

Note. Classification based on ECDA cut-off scores.

As shown in Table 1, 65.6% of children demonstrated readiness for formal schooling, indicating that the majority of preschool children have achieved the expected developmental competencies prior to school entry. However, 34.4% of children fell into Levels 2 and 3, indicating varying degrees of developmental vulnerability.

These findings are consistent with international research indicating that a considerable proportion of children enter school with developmental gaps across key readiness domains [1], [2], [3]. Large-scale studies on early childhood development similarly show that disparities in early learning experiences and preschool quality can result in uneven school readiness outcomes among children [6], [9], [10]. Evidence from global early childhood assessments further suggests that variations in home learning environments, preschool access, and socioeconomic conditions can influence children's readiness for formal schooling [26], [27].

The presence of children requiring improvement or special attention highlights the importance of early identification and targeted developmental support during preschool education. Early childhood programs that provide stimulating learning environments and structured developmental support have been shown to significantly improve children's readiness for school and later academic performance [19], [26]. Therefore, systematic readiness assessment tools such as ECDA can play an important role in identifying developmental gaps before children transition to primary education.

3.2 Domain-Specific Patterns of Readiness

While overall readiness scores provide a general picture of children's preparedness for school, they may mask domain-specific developmental differences. Children with similar overall scores may demonstrate different strengths and weaknesses across developmental areas. Previous research emphasizes that school readiness should be understood as a multidimensional construct involving physical, socio-emotional, cognitive, and language development rather than a single global score [1], [3].

To examine these differences more closely, a detailed indicator-level analysis was conducted using the ECDA domains: physical development, social and emotional development, cognitive development, and language and early literacy development.

Table 2 summarizes the percentage of children within each readiness level who did not meet expectations for each indicator.

Table 2. Domain-Specific Readiness of Preschool Children (N = 360)

No.	Indicator	Level 1 Not Ready (%)	Level 2 Not Ready (%)	Level 3 Not Ready (%)	Key Insight
Physical Development					
1	Follows good manners at meals	4.7	25.0	48.2	Self-care gap in Level 3
21	Spatial awareness in fine motor	19.7	39.7	89.3	Major fine motor difficulty
22	Controls gross motor skills	16.9	33.8	48.2	Moderate concern even Level 1
Social & Emotional Development					
2	Interacts freely with familiar adults	14.0	48.5	76.7	Social engagement weak in Level 3
3	Recognizes needs of others	12.7	39.7	69.6	Social awareness gap
4	Comforts friends	17.8	52.9	71.4	Empathy low in Level 3
5	Expresses empathy	18.6	50.0	76.8	Emotional understanding limited
6	Accepts age-appropriate responsibilities	8.9	48.5	80.4	Responsibility-taking limited
Cognitive Development					
7	Identifies & compares shapes	14.8	42.6	85.7	Math concepts weak in Level 3
8	Shows spatial awareness	15.3	38.2	69.6	Spatial skills low
9	Uses spatial language	22.5	50.0	91.1	Difficulty verbalizing space
10	Identifies number symbols	11.4	35.3	80.4	Numeracy weak in Level 3
11	Identifies animal characteristics	16.1	47.1	89.3	Knowledge gap
12	Identifies plant characteristics	37.7	69.1	100	Universal difficulty in Level 3
13	Interest in non-living things	14.8	47.1	89.3	Limited curiosity in Level 3
14	Awareness of people who help us	17.4	39.7	89.3	Social-cognitive awareness weak
Language & Early Literacy					
15	Repeats simple sentences	11.0	36.8	78.6	Oral language limited
16	Understands body language	16.5	50.0	85.7	Non-verbal comprehension low
17	Relates information	20.8	48.5	82.1	Connecting ideas weak
18	Identifies similarities/differences	14.4	38.2	92.9	Analytical skills poor
19	Identifies beginning letter sound	13.9	61.8	83.9	Phonemic awareness weak
20	Identifies simple words	11.9	57.4	85.7	Basic literacy underdeveloped

Note. Percentages represent the proportion of children who did not meet the expected developmental standard.

The domain-level analysis reveals clear differences in developmental patterns across readiness levels. Children classified in Level 1 generally demonstrated satisfactory competencies across most indicators, although minor weaknesses were observed in selected areas such as spatial reasoning, fine motor coordination, and early literacy skills. Similar findings have been reported in early childhood research indicating that even children classified as school ready may exhibit uneven development across specific domains [2], [23].

Children in Level 2 displayed more pronounced developmental gaps, particularly in cognitive and language-related indicators. These patterns suggest partial readiness, where children demonstrate competence in routine behaviours and basic motor skills but experience difficulties in more complex cognitive and linguistic tasks. Studies indicate that children with such uneven developmental profiles often benefit from targeted early interventions that strengthen language exposure, problem-solving skills, and exploratory learning experiences [19], [23].

In contrast, children classified in Level 3 exhibited consistently high levels of difficulty across multiple developmental domains, suggesting a greater risk of challenges during the transition to primary education. Research has shown that children entering school with significant readiness gaps are more likely to encounter difficulties in classroom participation, academic learning, and social adjustment during the early years of schooling [15], [16].

3.3 Interpretation

The findings reveal a clear developmental gradient across the three readiness levels, highlighting the importance of examining domain-specific competencies rather than relying solely on overall readiness classifications.

- **Physical Development:** Results indicated notable weaknesses in fine motor coordination and spatial awareness, particularly among Level 3 children. Fine motor skills are essential for early classroom tasks such as writing, drawing, and manipulating learning materials. Previous studies have demonstrated that motor competence and physical activity are strongly associated with cognitive development and classroom engagement among preschool children [20], [21]. Children with stronger motor skills tend

to display improved self-regulation and greater participation in classroom activities.

- **Social and Emotional Development:** Indicators related to empathy, responsibility-taking, and social interaction revealed substantial developmental gaps among children in Levels 2 and 3. Social-emotional competencies are widely recognized as fundamental for successful adaptation to school environments, including the ability to cooperate with peers, follow classroom routines, and respond appropriately to teacher guidance. Research indicates that early social and emotional skills contribute significantly to positive peer relationships, classroom engagement, and long-term academic success [22]. Insufficient development in these competencies may therefore hinder children's ability to adapt effectively to collaborative learning environments.
- **Cognitive Development:** The analysis highlighted weaknesses in early numeracy, spatial reasoning, and environmental knowledge, particularly among Level 3 children. These findings may reflect limited exposure to exploratory and inquiry-based learning experiences during preschool years. Cognitive readiness in early childhood is strongly influenced by the development of executive functions such as working memory, attention control, and problem-solving skills. Studies suggest that children who demonstrate strong approaches to learning and executive functioning abilities are more likely to achieve higher academic outcomes in later schooling [23], [26].
- **Language and Early Literacy:** Language-related indicators revealed vulnerabilities in phonemic awareness, sentence repetition, comprehension of non-verbal cues, and information processing, particularly among children in Levels 2 and 3. These competencies form the foundation for reading and writing development during the early grades of primary education. Research consistently shows that early literacy experiences and rich language interactions significantly predict children's later academic performance and reading development [24], [25]. Preschool environments that provide opportunities for storytelling, conversation, and early literacy activities therefore, play an important role in strengthening school readiness.

Overall, the findings confirm that school readiness is multidimensional and unevenly distributed among preschool children. Relying solely on overall readiness classifications may obscure important developmental differences across domains. Domain-sensitive assessment tools such as ECDA provide valuable insights into children's specific developmental needs and can support educators and policymakers in designing targeted interventions.

Strengthening preschool curricula, promoting language-rich learning environments, and enhancing socio-emotional learning opportunities may significantly improve children's readiness for formal schooling. These findings also highlight the importance of improving early childhood education quality in Sri Lanka, particularly for children identified in Levels 2 and 3, to ensure smoother and more equitable transitions into primary education.

4. Conclusion

The study examined school readiness among 360 Sri Lankan preschool children using the Early Childhood Development Assessment (ECDA), with attention to both overall readiness levels and domain-specific developmental patterns. Although most children (65.6%) were classified as Level 1 (Good), over one-third of the sample required additional or intensive support (Levels 2 and 3), indicating that school readiness is unevenly achieved even among preschool attendees.

The results highlight that school readiness is multidimensional, with children demonstrating different strengths and weaknesses across developmental domains. Domain-level analysis revealed vulnerabilities in fine and gross motor coordination, socio-emotional competencies (empathy and peer interaction), early numeracy and spatial reasoning, environmental knowledge, and language and early literacy skills, particularly phonemic awareness and information processing. These gaps may affect children's ability to transition successfully to Grade 1.

The findings underscore the importance of domain-sensitive assessment and targeted early interventions rather than relying solely on overall readiness classifications. Strengthening preschool curricula, early screening practices, and teacher preparation to address developmental needs across physical, cognitive, social-emotional, and language domains can help reduce early learning gaps and support smoother school transitions.

Future research should further examine how domain-specific readiness profiles influence children's adjustment and academic progress in the early years of primary education in Sri Lanka.

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