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English language acquisition in resource-constrained contexts: Evidence from Bangladeshi children

KEYA CHAKRABORTY[a]
SHAJADUL ALAM SWEET[a]
MD. NURUL KABIR EMON[a]

[a] *Department of English, University of Asia Pacific, Bangladesh*

Abstract

English language acquisition in resource-constrained contexts presents unique challenges for learners worldwide. This study examines how Bangladeshi children aged 8–14 acquire English across rural and low-income urban settings in four regions of Bangladesh: Dhaka, Chittagong, Rajshahi, and Sylhet. A sequential explanatory mixed-methods design was employed with 160 children, 60 parents, 32 teachers, and 32 community representatives. Quantitative data were collected through standardised English proficiency assessments (adapted Cambridge Young Learners English Tests), environmental assessments, and structured surveys. In contrast, qualitative data consisted of semi-structured interviews, classroom observations (320 hours), and focus group discussions. Significant disparities in English exposure emerged across contexts, with urban, higher-income children receiving 12.3 hours weekly compared to 3.7 hours for rural children. Despite these constraints, children developed adaptive strategies through peer learning networks, self-directed learning, and creative use of resources. Factor analysis revealed four primary clusters of environmental challenges: resource limitations, time constraints, linguistic barriers, and social factors. The findings support the development of the Challenging Environments Language Acquisition Model (CELAM), which identifies five interconnected components that facilitate language acquisition in resource-constrained settings, and suggest implications for differentiated curriculum design, community-based language support, and mobile technology integration in Bangladesh and other comparable low-resource educational contexts.

Keywords: English language acquisition, resource-constrained contexts, Bangladeshi children, learner resilience, second language acquisition

Introduction

Since Bangladesh gained independence in 1971, English has evolved from a colonial language to a key tool for academic and professional success (Rahman & Pandian, 2018). While Bengali remains the primary language, English is the most widely taught foreign language in schools (Hamid & Erling, 2016), and it is now considered vital for global recognition (Chowdhury & Kabir, 2014). The 2010 National Education Policy emphasises that English skills are crucial for school success and international connections (Ministry of Education, 2010). However, significant gaps exist in English teaching between urban and rural schools, as well as between public and private schools, with more affluent families receiving superior educational opportunities (Hamid & Honan, 2012; Chowdhury & Kabir, 2014).

English proficiency is increasingly required for employment in technology, textiles, and tourism sectors, as well as for higher education and knowledge-based occupations (Hamid, 2016). Although most children speak Bengali at home, urban children are more likely to be exposed to English through formal education, media, and family conversations. Rural children in Bangladesh typically hear almost no English outside the classroom environment (Bangladesh Bureau of Statistics, 2022; Chowdhury & Ha, 2008). Challenges in English language learning include inadequate school facilities, overcrowded classrooms, limited teaching resources, and a shortage of qualified teachers (Anwaruddin, 2016; Ali & Walker, 2014). Additionally, many schools in rural and economically disadvantaged areas prioritise grammar rules over communicative competence. External factors, such as household responsibilities, economic hardships, and health challenges, further complicate the learning process (Hamid, 2016).

Research on English learning in challenging educational contexts has been limited, with most studies focusing on linguistic structures rather than on the impact of environmental constraints on acquisition processes (Chowdhury & Kabir, 2014). This study addresses these gaps by examining both the obstacles and the adaptive strategies children employ to succeed despite significant challenges, thereby contributing to improved educational practices in Bangladesh and advancing theoretical understanding of language acquisition in resource-constrained environments.

Although this study is situated in Bangladesh, its findings also have broader relevance for English language education in other low-resource and unevenly resourced contexts, particularly where inequalities in access, exposure, and institutional support shape children's learning opportunities.

Literature Review

Theoretical Frameworks of Language Acquisition

Language acquisition theories offer diverse perspectives on how individuals develop proficiency in language. Chomsky's Universal Grammar theory proposes innate linguistic structures that facilitate language acquisition (Chomsky, 2006, 2016). This framework helps explain how children acquire their first language rapidly despite exposure to imperfect linguistic input. However, recent critical perspectives question its applicability across all language learning contexts, particularly in environments where children receive minimal exposure to the target language (Tribushinina & Gillis, 2017).

Social-interactionist theories emphasise the role of social interaction in facilitating language development. This perspective sheds light on how children learn in challenging settings with limited exposure to English. Vygotsky's sociocultural theory illustrates how cognitive development occurs through participation in cultural activities, positioning learners as active participants working collaboratively within social, historical, cultural, and political contexts.

Usage-based theories suggest that language acquisition occurs through the frequency and context of exposure and usage. This perspective emphasises the importance of authentic language input, which is often scarce in resource-limited educational settings (Ellis, 2002).

Translanguaging, increasingly recognised as a pedagogical resource rather than a language problem, offers dynamic possibilities for multilingual learners to draw from their full linguistic repertoires (Choi et al., 2020). This aligns with the ecological and sociocultural perspectives adopted in this study, which view language acquisition as a socially situated and scaffolded process.

Critical Synthesis

Although each theoretical framework offers worthwhile concepts, none is sufficient to explain the highly differentiated realities of teaching and learning language in low-resource settings. The theory of Universal Grammar requires consistency in the input conditions, but this is not observed under challenging conditions. Social-interactionist theories place great emphasis on interaction, yet they do not consider the crowded English-speaking communities. Theories of usage focus on frequency and natural input, but that is precisely what poor resource environments often lack. This paper adopts an ecological research approach, drawing on insights from various theories while acknowledging that children growing up in strained conditions need to develop compensatory strategies to overcome conventional barriers to learning. The Challenging Environments Language Acquisition Model (CELAM) proposed in this study builds on existing theoretical premises and addresses shortcomings in resource-poor settings.

English Language Education in Bangladesh

There has been a significant change in English teaching in Bangladesh since 1971. Educational policy was initially predicated on the development of the Bengali language in the learning process; however, English increasingly became the language of instruction. The National Education Policy of 1995 also introduced English as a subject from Class 1 (the first year of primary schooling), and it became compulsory from Class 3 onward, when children are typically around 8–9 years old. Contemporary policies introduce English instruction in early grades to enhance students' global competitiveness (Hamid & Rahman, 2019).

The main challenge in the contemporary environment is the urban-rural disparity in education. There are more educational opportunities in urban centres, with some urban schools offering international curricula taught in English. In contrast, there are very few such institutions in rural areas. Educational inequality is reinforced not only by disparities in material resources and teacher qualifications but also by differences in access to authentic English input—such as interaction with proficient speakers, exposure to English-language media, and opportunities for communicative use of English in the classroom.

Another significant challenge is teacher preparation. In rural and underprivileged regions, many English teachers have limited English proficiency and inadequate pedagogical preparation (Ali & Walker, 2014). Although curricular developments have led to a movement towards communicative language teaching (CLT) in the classroom, holdovers in teaching methods persist, with more traditional grammar-translation approaches still being employed and a focus on memorising the language rather than developing communicative competence (Sweet et al., 2025). Recent mixed-methods research in Bangladesh further suggests that pedagogical innovation is most sustainable when evidence-based practices are culturally adapted to local expectations surrounding teacher authority, examination pressure, and family expectations (Chowdhury et al., 2026).

Recent research highlights the importance of utilising students' comprehensive linguistic repertoires in challenging educational contexts. Choi et al. (2020) argue that translanguaging approaches can be efficient in multilingual settings where traditional monolingual teaching methods fail to address learners' complex linguistic needs. Recent evidence also shows that corpus-informed instructional approaches can enhance vocabulary learning in Bangladeshi EFL contexts, even under resource constraints (Sweet et al., 2025). In a similar vein, Sangeetha and Sridhivya (2025) not only reinforce translanguaging as a language-learning strategy but also strengthen its theoretical legitimacy by addressing critical gaps across diverse multilingual learning environments. These insights resonate with the adaptive approach in Bangladeshi classrooms.

Environmental Challenges to Language Acquisition

Socioeconomic factors significantly limit the ability to learn English in Bangladesh, primarily due to inadequate access to quality education. Research shows that economic inequality leads to limited access to high-quality learning resources, which are essential for language development. Recent national data reveal stark contrasts in resource distribution. According to the Bangladesh Bureau of Statistics (2022), the average number of English books per student in rural schools is 1.2, compared to 3.7 in urban private schools. Additionally, only 17% of rural schools feature functional language laboratories, compared to 68% of urban private schools.

Low exposure to authentic English input, such as real-world spoken and written English beyond textbook examples, remains a significant barrier to acquisition. In many rural and indigenous communities, children have limited opportunities to interact with proficient English speakers or access credible English-language media (Hoque, 2016). Technological limitations in government and rural schools further restrict access to digital learning tools and online resources that could supplement classroom instruction. As a result, rural children receive approximately 3.7 hours of English exposure per week, compared to 12.3 hours among urban middle-class children, and most of this exposure occurs exclusively within classroom settings. Children in disadvantaged environments also face competing demands, including household duties, agricultural work, and income-generating activities, which reduce the time available for sustained language practice. Seasonal migration disrupts educational routines, which is particularly detrimental for language learning because consistent exposure and repetition are essential for development.

Language and cultural factors pose complex barriers to learning English in Bangladesh's multilingual context. In many indigenous communities, learners first acquire Bengali as an additional language before gaining substantial access to English instruction.

Resilience Factors in Language Learning

Personal differences in language aptitude can significantly shape what learners are capable of achieving in solving acquisition problems. Bangladesh studies also indicate that children may exhibit high proficiency in their first language, but their proficiency in English varies widely. Recent neurocognitive research also suggests that language aptitude is not inherently fixed but can be strengthened through targeted forms of training. Positive language learning is otherwise supported by the early development of metacognitive strategies, even when the learning materials are limited.

Motivation and agency are other success-driving forces in harsh environments. Psychological resilience is formed through pedagogical methods that foster positive attitudes, sustained interest, purposeful bonds, a sense of purpose, and a sense of competence. Children who are

well motivated in terms of instrumentation also tend to devise their own learning opportunities, such as organising study groups, watching English-language media, and seeking out English speakers to interact with. These self-organised measures help offset the deficiency in formal instruction.

The other protective factors in language acquisition are community and family support systems. Properly structured language programmes increase household involvement, which, in turn, enhances children's language development. It has also been found that multilingual and culturally responsive practices, such as the appreciation and effective integration of home languages, can improve learning outcomes and increase children's resilience in educational settings during disruptions.

Recent Developments in the Field

The study of language acquisition in complex contexts has increased following disturbances in most educational systems worldwide. Post-COVID surveys have shown that addressing educational deficiencies in low-income regions cannot be achieved without the effective use of technology. Digital tools have advanced rapidly in language teaching, with both advantages and drawbacks. Recent studies indicate the use of new technology-based methods in East Asia and South Asia, building on earlier inventions. These strategies have proven effective in regions with limited resources and inconsistent access to formal schooling.

New global research on learning resilience in multilingual settings contributes to understanding the success factors identified in this study. Recent studies have demonstrated the effectiveness of adaptive metacognitive strategies across various challenging contexts. These findings confirm the need for the proposed Challenging Environments Language Acquisition Model (CELAM), situate this work within contemporary discussions of language learning in resource-constrained contexts, and inform a nuanced understanding of how Bangladeshi children transform obstacles into opportunities.

Current Study

This research addresses a significant gap in the second-language acquisition literature by examining English-language learning in resource-constrained environments. While substantial research exists on language acquisition in optimal learning conditions, there has been limited empirical investigation into how learners succeed despite environmental constraints. The majority of existing studies in global South contexts emphasise structural and policy barriers rather than investigating learner agency and adaptive strategies.

The present study makes several contributions to the field. First, it provides empirical evidence for language acquisition processes in challenging environments through a comprehensive mixed-methods investigation. Second, it proposes the Challenging Environments Language Acquisition Model (CELAM), a theoretical framework specifically designed to explain acquisition processes when traditional input and interaction conditions are not met. Third, it offers practical implications for educators and policymakers working in resource-constrained settings globally.

The findings suggest several policy recommendations arising from this empirical investigation: differentiated curriculum guidelines that acknowledge diverse learning contexts; resource allocation strategies that prioritise schools with the greatest need; community-based language support initiatives; and mobile technology integration approaches suitable for resource-limited settings. By documenting both challenges and successful adaptation strategies, this research contributes to more equitable and effective language education practices in challenging environments.

Research Questions

To address the gaps identified in the literature, this study poses three primary research questions:

1. How do environmental challenges impact English language acquisition in Bangladeshi children aged 8–14 in rural and low-income urban settings?
2. What strategies do children employ to overcome these challenges, and how do these strategies vary across different socioeconomic and geographical contexts?
3. What support systems prove most effective in facilitating acquisition despite challenges, and how might these be strengthened through targeted interventions?

Methodology

Research Approach and Design

This study employed a sequential explanatory mixed-methods design to investigate how children in Bangladesh acquire English in challenging educational environments. Quantitative data were collected first to identify patterns and relationships, followed by qualitative data collection to understand the mechanisms underlying these patterns and relationships. This design follows the mixed-methods methodological principles outlined by Johnson et al. (2007). The quantitative component utilised standardised assessments and structured surveys to gather data on children's learning environments, English-language exposure, and acquisition outcomes. This enabled the identification of the relationship between environmental constraints and language learning (Riazi & Candlin, 2014; Creswell & Plano Clark, 2018). The qualitative approach was employed, involving classroom observations and semi-structured interviews to examine learning experiences, adaptation strategies, and support structures. This aligns with Dörnyei's (2007) recommendations for studying language acquisition in complex educational settings.

Sampling and Participants

This research employed stratified random sampling to provide a representation of major demographic groups across various geographical settings. The sample site encompassed urban, semi-urban, and rural areas in four regions of Bangladesh: Dhaka, Chittagong, Rajshahi, and Sylhet. These regions were selected to represent linguistic diversity, socioeconomic variation, and environmental conditions characteristic of Bangladesh's educational landscape. Dhaka represents the capital and largest metropolitan centre, with comparatively greater access to educational resources and English exposure. Chittagong represents a major commercial and port region with a mix of urban growth and surrounding underserved communities. Rajshahi represents a largely agrarian northwestern region, where educational access and material resources are often more limited outside urban centres. Sylhet represents a linguistically and socioeconomically distinctive northeastern region with both expanding urban areas and dispersed rural communities. Together, these four regions enabled comparison across differing educational, geographic, and socioeconomic contexts within Bangladesh. In each region, schools with various educational systems were identified, including government primary schools, registered non-government primary schools, and institutions run by NGOs, to participate in the study.

Statistical power analysis using G*Power software (version 3.1) determined that a minimum of 128 children was required to detect medium-sized effects ($f^2 = 0.15$) with 80% power at the $\alpha = 0.05$ level. The final sample consisted of 160 children (40 from each region), aged 8–14 years, with balanced representation across urban and rural areas and a gender-balanced distribution. The subjects were recruited from grades 3 to 6, corresponding broadly to the later primary and

early lower-secondary years in Bangladesh and typically covering children aged approximately 8–14 years. This is a particularly important stage for English learning because it is during these years that learners are expected to move beyond basic textbook exposure and begin developing more sustained reading, writing, and communicative skills in English. Other respondents included 60 parents, 32 teachers, and 32 representatives from the local community, each selected to provide diverse perspectives on acquisition problems and support systems. Sample demographics compared with national population benchmarks are presented in Table 1.

Table 1. *Sample demographics compared to the national population*

Characteristic	Sample (n = 160)	Sample (%)	National (%)
Urban	80	50.0	39.4
Rural	80	50.0	60.6
Male	78	48.8	50.2
Female	82	51.2	49.8
Low income	68	42.5	39.8
Middle income	60	37.5	40.5
High income	32	20.0	19.7
Bengali speakers	142	88.8	90.5
Indigenous languages	18	11.2	9.5

Note. National data from the Bangladesh Bureau of Statistics (2022). The sample was intentionally overrepresented with urban children to enable robust statistical comparisons between urban and rural contexts.

Data Collection Methods

This study used multiple validated data-collection instruments to ensure a comprehensive understanding of English acquisition processes among Bangladeshi children in challenging environments.

- **English Language Proficiency Assessment:** Language proficiency was assessed using an adapted version of the Cambridge Young Learners English Tests, administered to all 160 child participants. This instrument assesses proficiency across four domains: listening, speaking, reading, and writing. The assessment was selected for its established reliability in English-as-a-foreign-language contexts (Cronbach's $\alpha = 0.86$), with minor cultural adaptations to ensure appropriateness for the Bangladeshi context. Each assessment required approximately 90 minutes to complete. Proficiency levels were calibrated to the Common European Framework of Reference (Council of Europe, 2001), with participants scoring from Pre-A1 to B1 levels.
- **Classroom Observations:** Classroom interactions were systematically documented using a protocol adapted from the Communicative Orientation of Language Teaching (COLT) observation scheme (Spada & Fröhlich, 1995). Four trained researchers observed 32 classrooms across the four regions, totalling 320 hours (10 hours per classroom). Inter-rater reliability was established at 89% through independent coding of the same

observation sessions. The observation protocol documented interaction patterns, instructional approaches, resource utilisation, and student engagement behaviours.

- **Environmental Assessment:** Learning environments were evaluated using an adapted version of the Early Childhood Rating Scale (Mayer & Beckh, 2016), which assessed physical infrastructure, availability of learning materials, and instructional resources. This assessment was conducted in all 32 participating schools and provided quantitative measures of resource availability for statistical analysis.
- **Semi-structured Interviews:** Individual interviews were conducted with 120 children (75% of the sample), 45 parents (75% of parent participants), and all 32 teachers using validated protocols that had been pilot-tested with 20 non-participants. Interviews with children lasted 20–30 minutes and were conducted in Bengali to ensure comfort and authentic responses. Parent-teacher interviews lasted 45–60 minutes and were conducted in Bengali. Saturation was achieved after interviewing approximately 75% of participants in each group. All interviews were audio-recorded with consent, transcribed verbatim, and analysed using NVivo 12 software.
- **Focus Group Discussions:** Community focus groups were conducted in each of the four regions, following established facilitation protocols (Krueger & Casey, 2015). Each focus group included 8–10 community representatives and lasted approximately 90 minutes. These sessions examined community perceptions of English acquisition, the contextual challenges faced, and the support systems available to them.

Data Analysis

Quantitative Analysis Procedures

Quantitative data analysis employed multiple statistical approaches to understand relationships between environmental factors and English language acquisition outcomes. All analyses were conducted using SPSS version 28.0.

- **Correlation Analysis:** Pearson product-moment correlations were calculated to examine relationships between key variables and English proficiency scores. Variables included family income, parental education levels, English media exposure hours per week, school resource scores, and community attitude measures. Correlation coefficients were calculated for the full sample (n = 160) and for the urban/rural contexts.
- **Regression Analysis:** Multiple linear regression models were developed to identify predictors of language acquisition outcomes while controlling for cognitive abilities and prior language exposure. The dependent variable was the standardised English proficiency score (0–100 scale). Independent variables included socioeconomic status, geographical context, school type, weekly hours of English exposure, and resource availability scores.
- **Factor Analysis:** An exploratory factor analysis was conducted using principal component extraction with varimax rotation to identify underlying patterns in environmental challenges. The Kaiser-Meyer-Olkin measure of sampling adequacy (KMO = 0.847) and Bartlett's test of sphericity (χ^2 = 1,247.6, $p < 0.001$) confirmed the factorability of the data. Factors with eigenvalues greater than 1.0 were retained, explaining 72.4% of the total variance.
- **Group Comparisons:** Independent samples *t-tests were used to compare English proficiency scores between urban and rural contexts, while a* one-way ANOVA examined differences across income quartiles. Effect sizes were calculated using Cohen's d and eta-squared (η^2), respectively.

Qualitative Analysis Procedures

Qualitative data analysis employed a systematic thematic approach to examine how children experience language-learning challenges and develop adaptive solutions. Interview transcripts and observation notes were analysed using NVivo 12 software.

- **Coding Framework Development:** Three researchers collaboratively developed a coding framework through iterative analysis of a subset of transcripts. Initial codes were generated inductively from the data and then organised into broader categories. Inter-coder reliability was established at 84% through independent coding of 25% of transcripts.
- **Thematic Analysis:** Four primary themes emerged from the analysis: (1) contextual constraints affecting learning opportunities; (2) compensatory learning strategies developed by children; (3) supportive relationships facilitating acquisition; and (4) motivational factors sustaining learning despite challenges.
- **Case Study Analysis:** Sixteen children who demonstrated successful English acquisition despite significant environmental challenges were selected for detailed case analysis. These cases illustrated three primary adaptation patterns: resource-maximising strategies (5 cases), community-leverage approaches (6 cases), and metacognitive compensation techniques (5 cases).

Ethical Considerations

This research adhered to rigorous ethical standards throughout all phases, particularly in its engagement with children and marginalised populations. International guidelines for research involving children were implemented (Dockett et al., 2009). Parents received comprehensive consent forms in Bengali, and children received developmentally appropriate pictorial consent materials in their preferred language. Local advisory committees reviewed all research instruments for cultural appropriateness. The research team included Bengali-speaking researchers familiar with local cultural contexts to ensure cultural sensitivity. Pseudonyms and anonymisation procedures protected the identities of all participants, schools, and communities in research documentation.

Results

Patterns of Language Acquisition

The research revealed distinct patterns in how Bangladeshi children acquire English across different environmental contexts. Socioeconomic status emerged as a strong predictor of English proficiency, with three key factors mediating this relationship: access to learning materials, opportunities for authentic language exposure, and parental education levels. Acquisition patterns across the three contextual groups are presented in Table 2.

Correlation Matrix of Environmental Factors and English Proficiency

The correlations among key environmental variables and English proficiency are reported in Table 3.

Striking differences emerged in the patterns of skill development across various contexts. While receptive skills (listening and reading) developed relatively evenly across all environments, productive skills (speaking and writing) exhibited significantly greater variation between privileged and disadvantaged settings. The findings indicate that children who succeeded despite challenging conditions employed specific metacognitive strategies, including

Table 2. *English language acquisition patterns across different Bangladeshi contexts*

Acquisition aspect	Urban higher-income (n = 32)	Urban lower-income (n = 48)	Rural contexts (n = 80)
Receptive Skills (Listening/Reading)	CEFR A2–B1 levels, based on standardised test subscores	CEFR A1–A2 levels	CEFR A1 level
Productive Skills (Speaking/Writing)	CEFR A2 proficiency	CEFR A1 proficiency	Pre-A1 proficiency
Primary Input Sources	Classroom instruction, English-language media, family support, peer interaction	Classroom instruction, limited media exposure	Classroom instruction only
Weekly English Exposure (hours)	10–12 hours (self-report and observation data)	5–7 hours	2–4 hours
Metacognitive Strategy Use	Frequent use of planning, monitoring, and self-correction strategies	Emerging but inconsistent use	Basic survival-oriented strategies
Estimated Annual Vocabulary Growth	Approximately 250 words	Approximately 150 words	Approximately 80 words
Mean Standardised Test Score (0–100)	76.4 (SD = 8.2)	52.8 (SD = 11.7)	31.7 (SD = 13.2)
Grammar Accuracy (% correct)	72.3 (SD = 9.1)	48.6 (SD = 12.3)	29.2 (SD = 10.5)

Note. Receptive and productive skill levels are based on CEFR-aligned subscores from the adapted Cambridge Young Learners English Tests. Weekly exposure hours are derived from student self-reports, triangulated with classroom observation data. Estimates of annual vocabulary growth are based on aggregated test performance, classroom observations, and interview data. All between-group comparisons were statistically significant ($p < .001$).

Table 3. *Correlation matrix for key environmental and proficiency variables*

Variable	1	2	3	4	5	6
1. English Proficiency Score	—					
2. Family Income	.63**	—				
3. Parental Education	.58**	.71**	—			
4. English Media Exposure	.71**	.54**	.49**	—		
5. School Resources	.67**	.68**	.52**	.61**	—	
6. Community Attitudes	.34**	.28**	.31**	.42**	.39**	—

Note. Values marked ** are statistically significant at $p < .001$. All tests are two-tailed.

heightened awareness of language patterns, creative use of resources, and systematic problem-solving to address knowledge gaps.

Resilience Mechanisms and Adaptation Strategies

The analysis identified several key factors that enable children to acquire English despite challenging environments:

Personal characteristics, including self-confidence, problem-solving ability, and persistence, were strongly predictive of successful language acquisition in resource-constrained settings ($r = 0.52$, $p < 0.001$).

Peer Support Networks: Children who formed study groups with peers showed significantly better outcomes than those who studied independently ($M = 47.3$ vs $M = 35.1$, $t(158) = 4.73$, $p < 0.001$). These peer networks served multiple functions:

- Vocabulary exchange (mentioned by 78% of participants)
- Homework assistance (67%)
- Pronunciation practice (54%)
- Confidence building (49%)
- Resource sharing (82%)

The effects of different adaptation strategies on English proficiency improvement are illustrated in Figure 1.

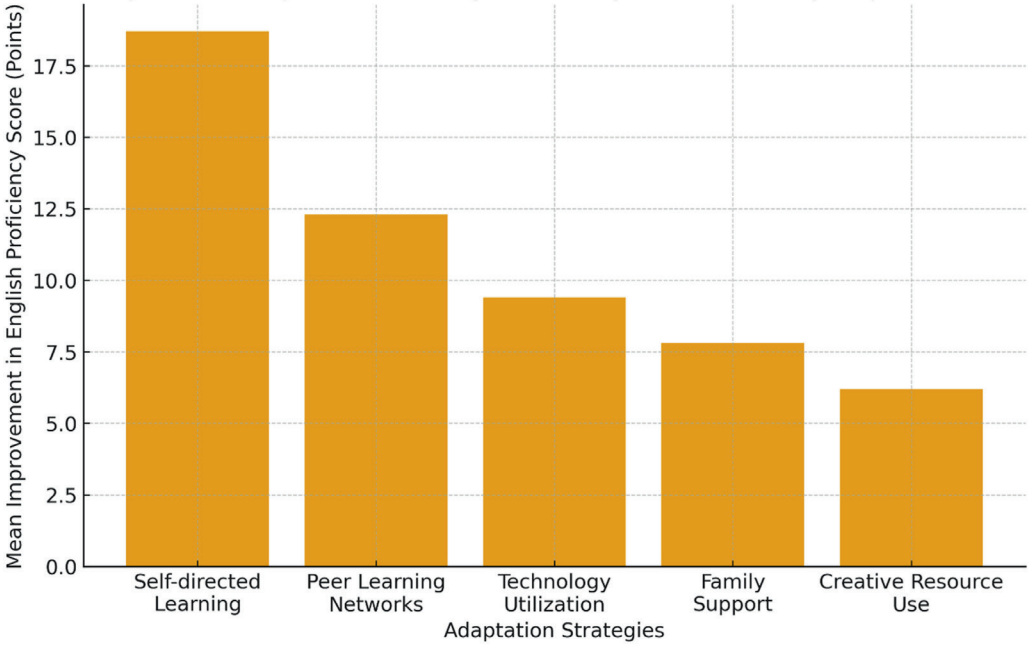

Figure 1. *Impact of adaptation strategies on english proficiency improvement*

Note. Self-directed learning yields the greatest improvement in test scores, particularly in rural contexts where traditional instruction is most limited. All strategy effects were statistically significant ($p < 0.05$), supporting the compensatory mechanisms described in the CELAM model.

Technology Access: Even limited access to technology substantially improved language outcomes. Mobile phones proved particularly important, enabling children to access audio content, practice exercises, and occasionally authentic English media (effect size $d = 0.74$).

Teacher Adaptability: Teachers who modified their instructional approaches to accommodate resource limitations achieved better student outcomes. Key teacher qualities included creativity, adaptability, and strong relationships with students ($r = 0.43$, $p < 0.001$).

A comparative overview of the primary challenges, adaptation strategies, support mechanisms, and evidence of effectiveness across educational settings is presented in Table 4.

Table 4. *Comparative challenges and adaptation strategies across educational settings*

Setting	Primary challenges	Key adaptation strategies	Support mechanisms	Evidence of effectiveness
Urban Higher-income ($n = 32$)	Limited authentic communication practice	Media consumption, private tutoring	Family educational resources, technological access	82% report regular English media exposure; strong correlation with outcomes ($r = 0.63$)
Urban Lower-income ($n = 48$)	Resource limitations, competing time demands	Peer learning networks, creative material use	Community study groups, school-based activities	67% participate in peer learning, improving scores by a mean of 12.3 points
Rural ($n = 80$)	Minimal exposure (2–4 hours weekly), inadequate teaching resources, and economic pressures	Self-directed learning, material repurposing, and metacognitive compensation	Extended family support, community language circles, and mobile technology	Self-directed learners score 18.7 points higher despite similar socioeconomic status

Note. Effect sizes calculated using Cohen's *d*. All between-group differences were statistically significant ($p < 0.001$).

Factor Analysis of Environmental Challenges

Exploratory factor analysis revealed four distinct clusters of challenges that children face in acquiring English:

Factor 1: Resource Limitations (32.1% of variance)

- Loading variables: lack of textbooks (.78), absence of technology (.74), insufficient classroom materials (.69)

Factor 2: Time Constraints (18.7% of variance)

- Loading variables: household responsibilities (.81), work obligations (.76), long commute times (.62)

Factor 3: Linguistic Barriers (12.4% of variance)
- Loading variables: limited English exposure (.84), lack of speaking opportunities (.79), absence of English speakers (.71)

Factor 4: Social Factors (9.2% of variance)
- Loading variables: community attitudes (.73), family support levels (.68), peer influences (.59)

These factors interact in complex ways, creating unique learning environments that require different adaptation strategies.

Pedagogical Implications

The research identified effective teaching strategies for resource-constrained environments. Interactive approaches, which require minimal materials, such as role-plays, debates, and language games, significantly outperformed traditional methods in developing communicative competence (Cohen's d = 1.23). This effect size was derived from between-group comparisons of proficiency outcomes between classrooms in which interactive, low-resource communicative practices were consistently observed and those in which predominantly traditional, teacher-fronted methods were observed.

Student interviews revealed the positive impact of adapted approaches. As one rural student explained:

> *Before, English was memorising words from the book. Now we play games where we must speak English to win. Even without computers, our teacher creates activities that help us use English with our friends. I remember more words this way.* (Rashid, 13, Rajshahi)

Traditional teaching approaches required significant adaptation to prove effective in the Bangladeshi context, particularly given large class sizes (M = 47.3 students), limited materials, and diverse classroom populations.

These strategies were identified through triangulation across classroom observation data, teacher interviews, student interviews, and comparative patterns in proficiency outcomes across sites. Claims of effectiveness are therefore based not on a single source of evidence, but on converging evidence from observed classroom practices, stakeholder accounts, and associated differences in learner performance across contexts. In this section, "effective" refers to strategies that were repeatedly associated with stronger engagement, greater communicative participation, and comparatively better language outcomes in the sampled classrooms.

Five particularly effective teaching strategies emerged:

1. **Resource-conscious Communication Tasks:** Activities requiring minimal materials but maximising student interaction improved vocabulary retention by 34% compared to traditional methods.
2. **Localised Content Adaptation:** Teachers who adapted textbook content to reflect local contexts reported 37% higher student engagement rates.
3. **Strategic First Language Support:** Systematic use of Bengali during complex grammatical instruction, followed by a gradual transition to English, resulted in an 18.3-point improvement in comprehension compared to English-only instruction in rural settings.

4. **Peer Teaching Structures:** Formalised peer teaching arrangements benefited both advanced students (knowledge reinforcement) and struggling learners (targeted support).
5. **Mobile-enhanced Learning:** Teachers who integrated basic mobile technology demonstrated significant improvements in student motivation and vocabulary retention.

Discussion and Implications

Theoretical Contributions: The CELAM Model

Based on the empirical findings, this study supports the applicability and relevance of the Challenging Environments Language Acquisition Model (CELAM) for understanding how children acquire English in Bangladesh, despite resource constraints, and potentially in similar contexts globally. This model explains how multiple conditions interact to facilitate language learning, even under suboptimal conditions. The structure of the Challenging Environments Language Acquisition Model (CELAM) is presented in Figure 2.

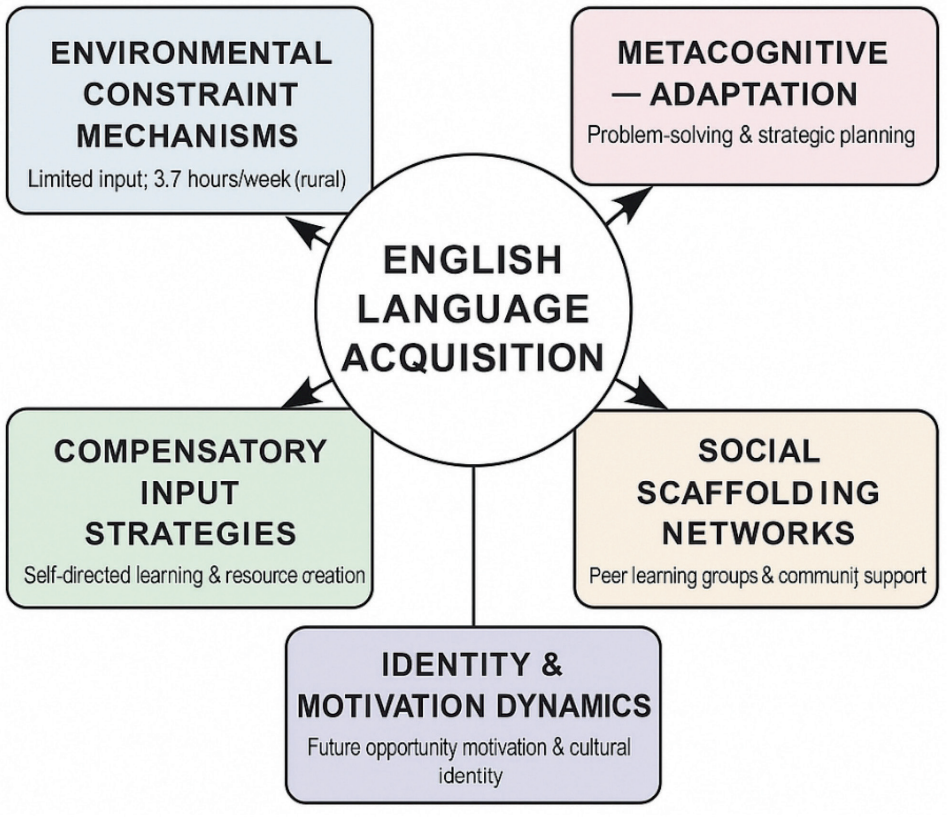

Figure 2. *The Challenging Environments Language Acquisition Model (CELAM)*
The CELAM model illustrates how five key components interact to facilitate English acquisition among Bangladeshi children in a resource-constrained environment. Environmental constraints trigger compensatory mechanisms, and social scaffolding and metacognitive adaptation can serve as pathways to acquisition. The dynamics of identity and motivation keep one engaged despite challenges.

The five parts of the CELAM model are:

1. **Environmental Constraint Mechanisms:** This component captures the structural constraints that shape children's opportunities for English learning, including resource scarcity, restricted language exposure, and competing demands on time and attention. Its empirical basis is reflected in the quantitative findings, particularly the factor analysis, which identified four interrelated clusters of challenge: resource limitations, time constraints, linguistic barriers, and social factors. These findings indicate that environmental pressures are not incidental but foundational in shaping language-learning opportunities across contexts.
2. **Compensatory Input Strategies:** This component refers to the alternative pathways children use when classroom instruction and formal resources are insufficient. The qualitative data showed that learners compensated by self-directed study, creative reuse of available materials, peer-supported practice, and, where possible, mobile-assisted exposure. These strategies were especially evident in lower-resource contexts, where learners had to generate opportunities for input beyond the classroom.
3. **Social Scaffolding Networks:** This component reflects the enabling role of peers, family members, teachers, and community structures in supporting English acquisition. Across the interviews and observations, children's progress was repeatedly linked to relational support rather than individual effort alone. As one student explained: "My friends and I meet after school to practice English together. We correct each other's mistakes and share whatever books we have" (Fatima, 12, Chittagong). This suggests that social support functions as a distributed scaffold for learning under constrained conditions.
4. **Metacognitive Adaptation:** This component refers to learners' strategic awareness and self-regulatory adjustment in response to limited opportunities. The data indicated that many children developed ways to monitor progress, notice language patterns, draw on prior linguistic knowledge, and adapt their learning behaviour to maximise limited exposure. These metacognitive behaviours were particularly important where formal instructional support was inconsistent or minimal.
5. **Identity and Motivation Dynamics:** This component captures the role of future orientation, self-belief, and persistence in sustaining language learning despite obstacles. Interview data showed that children who associated English with future education, employment, or social mobility were more likely to persist through difficulties and seek additional practice. In this sense, motivation was not simply an internal trait, but a socially shaped force that helped learners remain engaged despite uneven access to resources and support.

Taken together, the model extends established second-language acquisition perspectives that have typically emphasised relatively favourable conditions for input, interaction, and instructional support. In contrast, CELAM foregrounds how language learning also develops under constraint by incorporating environmental limitations, compensatory strategies, and socially distributed forms of support. In this way, the model broadens current understandings of language acquisition by accounting for how children learn in unevenly resourced settings, including contexts that are often underrepresented in mainstream SLA research.

Practical Applications

The findings have significant implications for Bangladesh's language education policies. Current policies aim high by making "English a compulsory subject from Classes 1 to 12 in the

national curriculum" but often overlook substantial disparities in learning environments. Policy revisions should aim to ensure more equitable access to high-quality English instruction while acknowledging the socioeconomic and cultural realities families face.

These recommendations are grounded in three recurring findings from the study: first, that unequal access to instructional resources, authentic English exposure, and qualified teaching significantly shaped proficiency outcomes across contexts; second, that peer, family, and community support functioned as important scaffolds for learning under constrained conditions; and third, that adaptable low-resource pedagogies, including interactive tasks, first-language support, peer teaching, and basic mobile-assisted learning, were repeatedly associated with stronger learner engagement and better language outcomes. The practical applications outlined below, therefore, derive directly from the empirical patterns reported in the Results and the adaptive mechanisms synthesised in the CELAM framework.

The research findings suggest several specific policy directions prioritised by implementation feasibility and potential impact:

Immediate Implementation (0–12 months):

- Resource allocation algorithms prioritising schools with the greatest demonstrated need
- Mobile language learning technology initiatives leveraging increasing mobile phone penetration

Medium-term Implementation (1–3 years):

- Differentiated curriculum guidelines acknowledging diverse learning contexts
- Teacher incentive programs to encourage qualified teachers to work in challenging environments
- Community language resource centres to provide supplementary language exposure opportunities

The research reveals gaps in teacher preparation for instruction in resource-poor settings. Training programs should provide teachers with practical strategies for overcoming challenges, including context-specific pedagogical methods, workshops on resource creation, training in multilingual instructional approaches, techniques for managing diverse student needs, and approaches to building learner resilience.

The study highlights the crucial role of community support in facilitating language acquisition in challenging environments. Structured community engagement programs should educate parents and community leaders on the importance of English language acquisition and provide practical strategies to support children's learning.

Limitations and Future Research Directions

This study faced several methodological challenges that warrant acknowledgement. While the mixed-methods approach provided comprehensive data, the cross-sectional design limits the ability to track developmental trajectories over time. Despite careful sampling, the heterogeneity of "challenging environments" means findings may not generalise to all resource-constrained contexts globally. Several important variables remain unexplored, including the specific role of digital technology in overcoming environmental constraints, the influence of particular teaching methodologies on acquisition outcomes, the differential effects of various environmental

challenges on specific aspects of language proficiency, and the intersections of gender, religious practices, and language learning in conservative rural communities.

Future research should address these gaps through:

- Longitudinal studies tracking learner cohorts over extended periods to identify critical developmental windows and assess lasting impacts of early environmental challenges
- Intervention studies implementing and evaluating the effectiveness of recommendations proposed here
- Comparative analyses of adaptation strategies to determine which prove most effective in mitigating learning constraints
- Technology integration studies examining optimal deployment of digital tools in resource-constrained environments

Conclusion

This study examined English language learning among Bangladeshi children across a spectrum of resource-constrained educational contexts, focusing on both the obstacles they encounter and the adaptive strategies they employ to overcome them. Complex relationships were identified among socioeconomic factors, educational resources, community support, and individual characteristics in determining language-learning outcomes. While environmental challenges significantly constrained learning opportunities, the study also identified clear evidence of adaptive persistence and resilience among learners and teachers, particularly through peer support, self-directed learning, and context-sensitive instructional adjustment.

This research contributes to language acquisition theory by testing established frameworks in challenging multilingual settings and demonstrating their limitations in non-optimal conditions. The findings support the relevance of the Challenging Environments Language Acquisition Model (CELAM), which highlights how children transform obstacles into opportunities through adaptive strategies, community support systems, and personal motivation.

Despite the study's limitations, the findings indicate that children can develop meaningful proficiency in English in challenging settings when adaptive strategies, social support, and context-sensitive teaching are in place. Effective language education in resource-poor environments can be strengthened through strategic adaptation, careful use of available resources, and greater recognition of how learners and teachers respond to significant constraints.

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