



Analysis of the Issues Pertaining to the Implementation of Early Childhood Care and Education: Evidence from Southern Khyber Pakhtunkhwa, Pakistan

¹Naila Gul

²Prof. Dr. Asif Jamil Ahmad

¹Ph.D. Scholar, Department of Teacher Education, Qurtuba University, DI.Khan

²Professor Department of Teacher Education, Qurtuba University, DI.Khan

Abstract

This study examines the challenges facing the implementation of Early Childhood Care and Education (ECCE) in public primary schools across southern Khyber Pakhtunkhwa, Pakistan, where provision remains limited especially in rural areas due to traditional child-rearing practices and socioeconomic barriers. The study explores ECCE-related planning, policies, and practices; assesses the adequacy of available facilities relative to actual needs; and examines stakeholders' perceptions of implementation on the ground. Using a quantitative design, data were collected through structured surveys of 300 teachers and head teachers, selected via L.R. Gay's formula from a population of 244 public primary schools and 1,177 teaching staff in the region. Questionnaire validity was confirmed by education experts and academics at Qurtuba University D.I. Khan, and reliability was tested using Cronbach's alpha, following a pilot study with 30 respondents. Findings reveal significant mismatches between policy and local implementation, with planning gaps having the strongest negative impact. Infrastructure adequacy emerged as a key positive factor, though many rural schools lack basic facilities. Stakeholder perceptions also shaped outcomes, with teachers and head teachers citing resource shortages and inadequate training as major barriers compounded by geographic disparities, cultural norms, poverty, and weak coordination between government departments. The study recommends aligning policies with local realities, prioritizing infrastructure investment in underserved areas, and strengthening stakeholder engagement through training and awareness programs offering evidence-based strategies to improve ECCE implementation in Pakistan and inform broader global discussions on equitable early childhood education.

Keywords: ECCE, Implementation challenges, Policy and practice gap, Access and equity, Infrastructure and resources, Government initiatives, Child development outcomes

Article Details:

Received on 12 Feb, 2026

Accepted on 28 Feb, 2026

Published on 01 March, 2026

Corresponding Authors*

Background of the Study

High-quality Early Childhood Care and Education (ECCE) is widely recognized as a global priority for human development. Beyond its role in individual growth, ECCE contributes to female labor participation, reduced gender inequality, and broader economic prosperity (Heckman, 2011). Yet despite increasing years of compulsory education worldwide, unequal distribution of educational resources continues to drive disparities in access and quality (Heckman, 2011; Abdurahman et al., 2023).

Effective ECCE delivery requires coordinated planning collaboration, shared monitoring, and an enabling policy environment that allows education ministries to identify priorities, strengthen system-wide integration, and mobilize funding (Mogale & Malatji, 2022; Raikes et al., 2020). In Pakistan, while some forward-looking initiatives such as technology integration in classrooms exist, there remains substantial room for developing curricula grounded in local needs (Khushik & Diemer, 2018; Rehman et al., 2023). The early years of life represent a period of rapid physical, cognitive, emotional, and social development. Various terms Early Childhood Development (ECD), Early Childhood Care and Education (ECCE), or Early Childhood Care and Development (ECCD), this field is united by the recognition that quality early intervention lays the foundation for lifelong learning and emotional maturity (Ang & Wong, 2015; Tahira et al., 2021). Researchers emphasize that a child's interactions with adults and peers build core competencies self-awareness, communication, and perceptual-motor skills that shape long-term academic and social outcomes (Essa, 2005).

ECCE in Pakistan: A Historical Overview

Pakistan had a structured approach to early education prior to the 1970s, when "Katchi" (pre-primary) classes were institutionalized within regular primary schools. Political shifts led to the informal discontinuation of this system in the 1980s, though these classes had once enrolled roughly one-third of government primary school students (Saif, Inam & Abiodullah, 2020). Katchi classes regained formal status following the 1992 education reforms, but implementation was weak: no dedicated learning materials, classrooms, or trained staff were introduced beyond basic textbooks. By 2000, only about 10% of children aged three to five were enrolled in any form of organized early education (Government of Pakistan, 2000b).

This gap persists today. Pakistan's roughly 8 million children in the ECCE age bracket remain underserved by insufficient funding, a shortage of qualified teachers, and weak planning, execution, and evaluation capacity at the provincial, district, and school levels (Ahmad, 2011). Because ECCE receives low financial priority, it is often staffed by the least experienced teachers (JUMA, 2004), while private-sector programs largely Montessori-based remain accessible mainly to elite and upper-middle-class families.

Rationale for the Study

Given that the early years are the most formative stage of human development, with lasting impact on cognitive, emotional, and social outcomes (Hunzai, 2009), robust ECCE provision is essential not only for individual well-being but for reducing dropout rates, improving literacy, and enabling social mobility (UNESCO, 2010). As UNESCO's former Director-General Irina Bokova noted at the 2010 World Conference on ECCE, early childhood investment is fundamental to "leveling the playing field" so that a child's life outcomes are shaped by ability and effort rather than circumstance.

It is against this backdrop persistent policy-practice gaps, resource shortages, and inconsistent implementation that this study examines the issues pertaining to ECCE implementation in southern Khyber Pakhtunkhwa, Pakistan.

Research Gap

Investment in early childhood development is critical not only for children's individual growth, but for poverty reduction, human development, and building a more productive future workforce (Asfahani et al., 2023; Abdurahman et al., 2023). Achieving this requires coordinated effort among government agencies, parents, caregivers, and communities to design integrated ECCE programs that combine education with health and nutrition, while strengthening the links between households, schools, and the broader education system (Asfahani et al., 2023).

Translating child-centered ECCE concepts into effective policy and practice remains a persistent challenge in Pakistan (Ministry of Education Pakistan, 2003; Tigabu, 2024). Although Katchi classes were formally incorporated into public education in the 1970s and reaffirmed through the National Education Policies of 1992 and 1998 and the National Plan of Action for EFA (2001–2015), implementation on the ground has consistently lagged behind policy commitments. Pakistan's failure to meet Education for All and MDG targets has been attributed to inadequate financial resources, political interference, and a persistent gap between policy formulation and execution (ASER, 2019; Malik & Asghar, 2021). Compounding challenges include a shortage of trained teachers, limited school capacity, poor accessibility, weak parental involvement, and insufficient institutional and financial commitment to ECCE. Despite a growing body of literature, empirical research on the systemic barriers to ECCE implementation remains limited particularly in southern Khyber Pakhtunkhwa. Existing studies tend to focus on urban centers or national-level trends, overlooking regional disparities in resource allocation, teacher training, and community engagement (Rasheed et al., 2021). Similarly, while the importance of parental involvement and infrastructure is well documented, few studies examine how socio-cultural factors interact with policy effectiveness in rural and semi-urban settings (Khan & Hussain, 2022). This regional gap particularly for southern Khyber Pakhtunkhwa forms the basis for the present study.

Problem Statement

Although ECCE is formally recognized as fundamental to Pakistan's education system and was identified as a priority area under the National Action Plan (Government of Pakistan, 2003), its implementation remains critically ineffective undermined by systemic failures, policy-practice gaps, and regional disparities. This matters because poor ECCE implementation directly harms childhood development, deepens educational inequality, and threatens Pakistan's progress toward SDG 4. Existing literature points to weak planning as a central obstacle, alongside a lack of geographic studies capable of informing policy after implementation (Arshad & Zamir, 2018).

The scale of the problem is stark: 61% of children aged 3–5 remain out of school (ASER, 2019), representing a critical missed opportunity during a formative developmental window. No policy to date has produced measurable positive outcomes (Nazir et al., 2022), and these failures disproportionately affect rural and semi-urban southern Khyber Pakhtunkhwa (Khattak et al., 2023) a gap compounded by limited localized research on how tribal norms and restricted access to female educators further constrain participation (Durrani & Khan, 2022).

On the ground, inadequate infrastructure, minimal budgetary allocation, and limited investment in curricula, facilities, and teacher training perpetuate a cycle of poor quality and low enrollment. In essence, ECCE in Pakistan suffers from a deep mismatch between policy, available facilities, and stakeholder perceptions an issue that continues to demand urgent attention from both federal and provincial governments.

Objectives of the Study

1. To investigate the mismatch between planning, Policies, & Practices concerning implementation of ECCE in KP southern region.
2. To investigate the extent of appropriate facilities available for ECCE corresponding to its requirements and its proper implementation in KP southern region.
3. To investigate perceptions of the stakeholders concerning practicability and implementation of ECCE in southern region of Khyber Pakhtunkhwa.
4. To investigate the demographic difference among study respondents regarding research variables.

1.5 Research Questions

1. Is there significant mismatch between planning, Policies, & Practices concerning implementation of ECCE?
2. To what extent are appropriate facilities available for ECCE corresponding to its requirements and its proper implementation?
3. What is the stakeholder's perception about practicability and true implementation of ECCE in southern region of Khyber Pakhtunkhwa?
4. What are the demographical differences among the study participants relating to research variables?

Research Hypotheses

- H₀₁:** There is no significant effect of mismatch between the policies, planning and practices concerning on the implementation of ECCE in southern region of Khyber Pakhtunkhwa.
- H₀₂:** There is no significant effect of appropriate facilities available for ECCE corresponding to its requirements on its proper implementation in southern region of Khyber Pakhtunkhwa.
- H₀₃:** There is no significant effect of perception of the stake holders concerning about practicability on the implementation of ECCE in southern region of Khyber Pakhtunkhwa.
- H₀₄:** There is no significant mean difference in responses due to demographics.

Significance of the Study

Successive Pakistani governments have introduced National Education Policies addressing ECCE, yet effective implementation remains a persistent concern. As a signatory to the UN Sustainable Development Goals, Pakistan is committed to ensuring quality early childhood education by 2030 making this an issue of both national and international significance. This study offers practical value to policymakers at the federal and provincial levels by providing evidence-based insights into the gaps between ECCE policy and practice, offering a foundation for more informed, locally grounded reforms in school planning and implementation. For stakeholders directly involved in ECCE delivery including teachers, head teachers, and administrators the findings may prompt a rethinking of current approaches to better address on-the-ground challenges.

More broadly, the study contributes to raising national awareness of ECCE's importance, helping bridge the gap between policy intent and ground realities. By generating empirical evidence on the long-term benefits of early childhood education for children, families, and society, this research aims to inform national education agendas, support Pakistan's progress toward SDG 4, and encourage further scholarship in the field.

Literature Review

Early Childhood Care and Education

High-quality early childhood education lays the foundation for successful primary schooling and long-term development, benefiting both children and families (Peisner-Feinberg, 2007; Atilas et al., 2021). ECCE programs represent significant public investments in building children's capacity for learning, emotional regulation, and social inclusion, with well-documented effects on lifelong social, health, and educational trajectories (García et al., 2021; Panthi et al., 2026). For children to thrive, classrooms must be secure, nurturing, and engaging yet Pakistan's traditional Katchi classes often fall short, lacking adequate resources, stimulating environments, and recognition of their importance (Government of Pakistan, 2009; Artman-Meeker et al., 2021).

Early Brain Development

The early years are critical for brain development, with roughly 85% of a child's brain maturing by age five (Mustard, 2002; Rolnick, 2004, as cited in Fargas-Malet et al., 2010). Factors such as early exposure to infection, environmental contaminants, difficult births, and insufficient stimulation can impair this process (Arnold et al., 2006). Home and community environments significantly shape not only cognitive development but also emotional resilience, social skills, and overall psychological well-being (Britto et al., 2017; WHO, 2020), underscoring that the foundation for lifelong learning is established between birth and age eight (Tahira et al., 2021; Khan et al., 2017).

Pakistan's Scenario: From Katchi to ECCE

Pakistan's early education system originated with informal "Katchi" classes established shortly after independence, formalized as a distinct educational stage in the 1970s for children aged three to six. Government interest waned in the 1980s before Katchi classes were again recognized nationally in 1992. The National Education Policy (NEP-2009) formally established preschool education within public schools, followed by the introduction of the National ECCE Curriculum in 2017. The 18th Constitutional Amendment further elevated ECCE as a provincial priority, prompting Sindh (2015), Punjab (2017), and subsequently Khyber Pakhtunkhwa to develop their own ECCE policies (Arshad & Zamir, 2018; ASER, 2019).

Despite these policy milestones, Pakistan's enrollment figures remain troubling. UNESCO (2003) reported an ECCE enrollment rate of just 8%, among the lowest of the E-9 nations, compared to 76% in Mexico. More recent data indicate that of the 4.8 million children enrolled in ECCE by 2015–16, only 2.1 million came from low-income or regionally disadvantaged backgrounds (Tomlinson et al., 2023), pointing to persistent access gaps.

National Plan of Action and Social Action Program

In line with the World Declaration on the Rights of the Child, Pakistan introduced a National Plan of Action (NPA) and Social Action Program (SAP) to advance early education goals, structured in three phases access (Phase I), followed by quality and provision (Phases II and III) (Ministry of Education Pakistan, 2003b). Despite these frameworks, implementation has lagged behind stated commitments across much of the country.

Facilitation of ECCE in Pakistan

Effective ECCE delivery depends on accessible programming, trained teachers, adequate resources, and strong home-school partnerships (Ministry of Education, 2003). In practice, many government-run Katchi classrooms suffer from overcrowding, inadequate furniture, poor lighting and ventilation, unsafe drinking water, and unsanitary facilities (Hunzai, 2009; Ghumman & Khalid, 2016). Teaching often remains rote and chalkboard-based, with limited attention to individual developmental needs (Essa, 2005). Various organizations including

UNICEF, the Aga Khan Foundation, Save the Children, and Plan International have supported ECCE initiatives, such as the Aga Khan Foundation's USAID-funded program in Sindh and Balochistan, though coverage remains limited relative to national need.

Situation of ECCE in Khyber Pakhtunkhwa

KP has expanded access by enrolling children aged four and above in public primary, middle, and high schools offering Katchi classes, alongside measures such as free textbooks, story books, and a ban on corporal punishment (Ahmad, 2011). Teacher training initiatives including short courses for roughly 500 ECCE instructors and district-level funding for classroom construction and caregiver appointments have been introduced (Khan et al., 2017). However, these efforts remain inconsistent and insufficient relative to demand across the province.

Mismatch Between Planning, Policy, and Practice

International best practice affirms every child's right to equitable early learning opportunities regardless of socioeconomic background (Elliot, 2006; Banks, 2006), yet ECCE delivery in Pakistan varies considerably due to cultural, political, and economic factors (Essa, 2003). Policy documents have repeatedly specified requirements teacher training, curriculum development, dedicated funding that provinces have struggled to implement. A review of the National Education Policy (2009) found only partial implementation, with ECCE classes established where feasible but without accompanying infrastructure, funding, or specialized teacher training. Pakistan's broader failure to meet Education for All and MDG targets has been attributed to limited financial resources, political interference, and weak federal-provincial coordination (Kyrönlampi-Kylmänen & Määttä, 2013).

Researchers consistently identify a common set of barriers: geographic isolation, socioeconomic disadvantage, parental illiteracy, teacher absenteeism, inadequate facilities, and delays in policy execution (Malik et al., 2014; Hussain & Hanif, 2012). Additional constraints long distances between home and school, lack of transport, and insufficient residential facilities for female teachers in rural areas further depress enrollment and retention, particularly for girls (UNESCO, 2010). Collectively, this body of literature indicates that Pakistan's ECCE challenges are not primarily a matter of absent policy, but of a persistent and multidimensional gap between policy design and ground-level implementation the central concern this study seeks to investigate in southern Khyber Pakhtunkhwa.

Planning and Practices

The National Education Policy (2017) frames Early Childhood Education (ECE) as covering the period from birth to puberty, while Early Childhood Development (ECD) encompasses the broader physical, mental, behavioral, and physiological growth of children from birth to age eight. A growing body of research affirms ECD's centrality to long-term achievement, noting that inadequate early education and healthcare can contribute to developmental stunting (McCoy, Waldman & Fink, 2018; Peet et al., 2015; Black et al., 2017).

Adequate Resources and Facilities

Access to age-appropriate materials and well-designed indoor and outdoor play spaces is fundamental to effective ECCE delivery (Akinrotimi & Olowe, 2016; Whitebread et al., 2015). Suitable resources not only support instructors in implementing curricula but also make learning more concrete and engaging for children (Attaske & Kassaw, 2017; Chowdhury & Choudhury, 2002). In Pakistani government schools, however, Katchi classrooms frequently lack basic infrastructure proper seating, sanitation, and dedicated space despite growing enrollment demand (Hussain, Malik & Ali, 2020; Nawaz, Ashraf & Siddique, 2021). Most classrooms rely solely on chalkboards, with government-provided textbooks as the primary instructional resource, while storage and safety remain persistent concerns (Hunzai, 2007).

Scholars broadly agree that classroom space and instructional tools directly shape program quality (Higgins et al., 2005; Standa, 1980, as cited in Chepkorir et al., 2014), and that physical infrastructure ranges widely from well-equipped classrooms to open-air settings depending on whether facilities are community, government, private, or religiously managed (Khan & Iqbal, 2012; Chepkonga, 2017). Positive infrastructure correlates with better enrollment and academic performance, reinforcing the importance of regular maintenance (Bowers & Burkett, 1989).

Funding

Adequate funding underpins nearly every aspect of ECCE quality from teacher and caregiver training to monitoring, supervision, and resource provision (Alabi & Ijaiya, 2014; Ijaiya, 2001). In Pakistan, low caregiver compensation stemming from insufficient funding continues to undermine program delivery (Haider, Shahzadi & Hussain, 2025). Scholars note that Pakistan still lacks a national ECE framework to guide development, implementation, and evaluation, and that meaningful transformation of traditional Katchi classes into structured ECE programs requires dedicated financial investment (UNESCO, 2006; Khan, 2018).

Infrastructure

Beyond the home a child's primary developmental environment ECE centers play a critical secondary role in fostering independence, social engagement, and self-sufficiency (Susanti, 2018; Wiyani, 2021). Well-designed learning environments provide constructive stimulation appropriate to children's developmental needs and are positively received by parents, teachers, and students alike (Mariyana et al., 2010). Conversely, cluttered, poorly lit, or inadequately designed classrooms limit children's ability to engage and explore (Mania et al., 2018; Wikaningtyas & Asiah, 2023). Effective ECE infrastructure must be safe, age-appropriate, and tailored to local cultural and socioeconomic contexts (Tahun, 2015), encompassing not just classrooms but broader institutional facilities such as libraries, sanitation, and recreational spaces (Tahun, 2014).

Stakeholder Perceptions

Pakistan's commitment to early education dates to the 1990 World Conference on Education for All and the 2000 Dakar Framework, which prioritized equitable access to quality ECCE (Ministry of Education, 2003). Yet despite these commitments, ECCE continues to receive limited funding and low institutional priority, with underqualified teachers frequently assigned to the youngest learners and single teachers often managing multiple grade levels simultaneously (UNESCO, 2006).

Stakeholder attitudes toward ECCE remain fragmented. Many rural parents view early education as a luxury rather than a necessity, prioritizing primary schooling due to economic constraints and limited awareness of ECCE's long-term benefits (UNESCO, 2018). Teachers often regard ECCE as less important than higher grades, resulting in minimal specialized training for Katchi-class instructors (Government of Pakistan, 2020). While policymakers acknowledge ECCE's role in national development, funding remains a low priority relative to competing educational demands, and private providers who treat ECCE largely as a business opportunity remain inaccessible to low-income families. Collectively, these divergent perceptions contribute to inconsistent implementation nationwide.

Teacher Perceptions: Early experiences shape children's cognitive, emotional, and social development (Britto et al., 2017; WHO, 2020; Shonkoff et al., 2021), yet teachers report significant barriers to effective ECCE delivery including inadequate training, insufficient resources, and developmentally inappropriate curricula (Artman-Meeker et al., 2021; Travers, 2018; Fantahun, 2016). Scholars link the field's limited professional advancement to low status,

low pay, and difficult working conditions (Kim, 2004; Miller & Paige-Smith, 2004; Pardhan, 2011).

Head Teacher Perceptions: Despite Pakistan's 2001 education sector reforms aimed at meeting international commitments, preschool programs continue to receive minimal policy and budgetary attention (Shakoor & Arshad, 2025). Overcrowding, resource shortages, and harsh "chalk and talk" teaching methods remain common (Pardhan, 2011), while parental hesitancy particularly toward enrolling girls persists due to limited awareness of ECCE's importance. Research consistently emphasizes that stakeholder engagement, alongside qualified and motivated educators, is as critical to successful implementation as policy itself (McCoy & Wolf, 2018; Morrison, 2008).

Perceived Barriers To Implementation: Persistent challenges include a shortage of trained ECE teachers, unequal access across socioeconomic and gender lines, and a widening gap between policy and practice (Malik et al., 2021; Bukhari et al., 2025; Rashid et al., 2025). Emerging responses include integrating technology to reach underserved areas, establishing community-based ECE centers, and forming public-private partnerships to expand resource mobilization though continued investment, advocacy, and awareness-building remain necessary (UNICEF, 2023).

Broader obstacles to national policy implementation include limited stakeholder understanding of ECE's importance, inadequate government funding, insufficient teacher training infrastructure, weak provincial and district-level implementation capacity, and a lack of adequate school facilities (Alam et al., 2022; Khalid & Tadesse, 2022; Qayyum et al., 2024). Compounding these issues is poor coordination among government departments, service providers, and NGOs, alongside limited data and documentation to inform planning (UNICEF, 2023).

Teacher Preparation and Training

Internationally, ECE teacher preparation has trended toward longer, more rigorous academic programs integrated with broader primary-teacher training pathways (Moss, 2001; OECD, 2001). France, Sweden, and Italy each illustrate distinct models ranging from specialized degree tracks to multidisciplinary curricula that balance theoretical grounding with practical field experience (Moreau, 2007; Karlsson-Lomander, 2007; Nigris, 2007). Common challenges across these systems include funding advanced training, retaining early childhood specialization within broader teacher education, and maintaining strong connections between educators and the communities they serve. Effective teacher training and consistent disciplinary practices are similarly linked to improved child behavior and program quality (Sugai & Horner, 2002).

Policy Implementation Theory

Policy planning on education and available resources need to be in line with educational practices. Despite the rise in focus on governance structures as influencing outcomes there still remains a gap in understanding how governance at both structure and process levels influences policy implementation. Policy Implementation Theory (Van Meter & Van Horn, 1975) contends that gap between what is expected to happen and what happens is related to lack of resources, poor communication and mismatched goals from sub-national levels, capacity, and resources. Misalignments between the national policy's objectives and local practices can result in inefficient implementation, as local actors may not have the necessary resources or training to adhere to prescribed policies (Gornitzka, 2006).

Research Methodology

This study is grounded in a positivist research philosophy, which holds that reliable knowledge is derived through the empirical testing of observable and measurable phenomena rather than subjective interpretation (Popper, 1959). In keeping with this philosophy, the study adopted a deductive, quantitative research design, using a structured survey to test the stated hypotheses and generalize the sample findings to the broader population of ECCE stakeholders in southern Khyber Pakhtunkhwa.

The population of the study consisted of key ECCE stakeholders education department officials, head teachers, and teachers across six districts of southern KP: Karak, Bannu, Lakki Marwat, Dera Ismail Khan, Tank, and Waziristan. According to the Annual School Census Report of the Government of Khyber Pakhtunkhwa, the region comprised 244 public primary schools (130 male, 114 female) with a combined teaching staff of 1,177 (607 male and 570 female). Dera Ismail Khan accounted for the largest share of staff at 41%, while Tank district showed a notable female majority of 63.5%, reflecting broader disparities in teacher deployment across the region; comparable data for Waziristan were not available in official records.

Given this population, a stratified sampling technique was employed, with each district treated as a separate stratum. The sample size was determined using L.R. Gay's (1982) formula, which recommends a 20% sample for populations under 2,000. Applied to the total teaching staff population of 1,177, this produced a target sample of 300 respondents, proportionally distributed across all 244 schools in the six districts—155 male and 145 female participants in total. Data were collected using a structured, self-developed questionnaire built around a five-point Likert scale, ranging from "Strongly Disagree" (1) to "Strongly Agree" (5). Items were organized from broad to specific questions to enhance clarity, with each item mapped to a key study variable in line with the research objectives. The questionnaire's content validity was established through review by education department experts and academics from Qurtuba University and Gomal University's Institute of Education and Research; based on their feedback, the instrument was refined to a final set of 80 items. Reliability was subsequently assessed using Cronbach's Alpha in SPSS 22.0, which returned a coefficient of 0.969 across 85 items—well above the conventional threshold of 0.7—indicating strong internal consistency.

Before full-scale administration, the instrument was piloted with 30 respondents (10% of the sample) drawn from three primary schools in District Dera Ismail Khan. Feedback from this pilot phase was used to refine the language and format of the questionnaire, ensuring it was clear and easily understood by respondents. Data collection formally began in September 2021, with the researcher personally visiting sampled schools across five districts of southern KP; strong cooperation from school staff resulted in a 100% response rate. Primary data gathered through the survey were supplemented by secondary data drawn from relevant literature and prior research studies.

The collected data were analyzed using SPSS 23.0, combining descriptive statistics covering data normality and reliability with inferential techniques including regression analysis, ANOVA, and tests of significance, in order to examine relationships among variables and test the study's hypotheses. The study's key variables included demographic factors (gender, designation, qualification, experience, and district); the dependent variable of ECCE implementation, defined as the holistic development of children from birth to eight years across cognitive, social, and physical domains; and a set of independent variables capturing mismatches in planning, policy, and practice, the adequacy of infrastructure and funding, and

the perceptions of head teachers and classroom teachers regarding ECCE implementation on the ground.

Data Analysis

Data Analysis and Interpretation

This chapter presents the results of descriptive and inferential statistical analyses conducted on data collected from 300 teachers and head teachers across six districts of southern Khyber Pakhtunkhwa, achieving a 100% response rate (155 male, 145 female respondents).

Demographic Profile

Respondents were fairly evenly split by gender (51.7% male, 48.3% female). In terms of qualification, 70% held an M.A./M.Sc., 26.7% an M.Phil, and 3.3% a Ph.D. Most respondents (75%) had 1–10 years of teaching experience, followed by 16.7% with 10–20 years and 8.3% with over 20 years. District-wise representation was led by Dera Ismail Khan (40.7%), followed by Lakki Marwat (20%), Bannu (19.7%), Karak (11.7%), and Tank (8%); data from Waziristan were unavailable.

Descriptive Findings

Responses across the study's core constructs revealed a clear contrast between perceptions of *policy and planning* and perceptions of *ground-level resources and stakeholder performance*.

Mismatch in Planning, Policy, and Practice: Respondents generally agreed that adequate policies and planning frameworks exist for ECCE (mean scores ranging from 3.60–4.00 across items). Agreement was highest regarding the presence of government policies and regulations (82% agreement) and policies addressing curriculum age-appropriateness (80–85% agreement across items). Agreement was comparatively lower regarding initiatives addressing children's cultural and linguistic diversity (62%) and coordination mechanisms for age-related placement (63.7–70%), suggesting these remain relative weak points in current planning and policy design.

Facilities (Infrastructure and Funding): In sharp contrast, respondents were largely critical of on-the-ground infrastructure and funding, with overall mean scores falling below the midpoint (Infrastructure $M = 2.70$; Funds $M = 2.50$). Only 20–38% of respondents agreed that facilities met basic requirements for space, safety, sanitation, accessibility, ventilation, and noise control, with disagreement exceeding 50–61% on several items—most notably accessibility for children with disabilities (58.3% disagreement) and acoustic/noise control (61% disagreement). Similarly, only 19–25% of respondents agreed that ECCE funding was adequate, timely, or transparently utilized, with over 60% disagreement on most funding-related items, including scholarship or fee-reduction support for underprivileged families (65% disagreement).

Stakeholder Perceptions (Head Teachers and Teachers): Perceptions of head teacher and teacher competency were similarly low (Head Teacher $M = 2.46$; Teacher $M = 2.38$). A majority of respondents disagreed that head teachers possessed adequate ECCE-specific qualifications (63.6% disagreement), demonstrated strong leadership in managing ECCE programs (67.4%), or maintained effective stakeholder communication (68.6%). Teacher-related items followed a similar pattern, with strong disagreement regarding adequate training in play-based methodologies (68.6%), use of formal/informal assessment (71.6%), and application of child development theories in lesson planning (69%).

ECCE Implementation Outcomes: Despite these resource and capacity gaps, respondents were relatively positive about ECCE program outcomes where implemented, with strong agreement that ECCE supports children's readiness for primary school (85.4%), improves cognitive skills (84%), and provides adequate support for children with special needs (83.6%).



However, respondents did not perceive funding shortages, regional quality variation, or parental awareness as major hindrances to enrollment (70–74% disagreement on these items)—an interesting contrast to the infrastructure and funding data reported above.

Data Normality and Reliability

Skewness and kurtosis values for all major constructs fell within the acceptable range of ± 3.29 for a sample size of 300 (Field, 2013), confirming that the data met the assumption of normality required for parametric testing.

Reliability analysis using Cronbach's Alpha confirmed strong internal consistency across all constructs, well above the 0.70 acceptability threshold:

Construct	Cronbach's Alpha
Mismatch – Planning (IRP)	0.858
Mismatch – Policy (IRPOL)	0.843
Mismatch – Practice (IRPRA)	0.831
Infrastructure	0.935
Funds	0.936
Head Teacher Perception	0.951
Teacher Perception	0.961

Regression Analysis and Hypothesis Testing

Simple linear regression was used to test the study's hypotheses regarding the effects of policy-practice mismatch, facility adequacy, and stakeholder perception on ECCE implementation.

Hypothesis	Predictor	R ²	Standardized Beta	Sig.	Result
H ₀₁	Mismatch Planning	.698	–0.836	<.001	Rejected
	Mismatch – Policy	.653	–0.808	<.001	Rejected
	Mismatch Practice	.453	–0.673	<.001	Rejected
H ₀₂	Infrastructure	.771	+0.878	<.001	Rejected
	Funds	.582	+0.763	<.001	Rejected
H ₀₃	Head Teacher Perception	.579	+0.761	<.001	Rejected
	Teacher Perception	.577	+0.759	<.001	Rejected

All three null hypotheses (H₀₁–H₀₃) were rejected, confirming that mismatches in planning, policy, and practice exert a statistically significant *negative* effect on ECCE implementation, while the adequacy of infrastructure, funding, and positive stakeholder perceptions each exert a statistically significant *positive* effect. Among the mismatch variables, planning gaps showed the strongest negative influence ($\beta = -0.836$), while among facility variables, infrastructure emerged as the strongest positive predictor ($\beta = 0.878$), explaining over 77% of the variance in ECCE implementation outcomes—the single strongest relationship observed in the study.

Test of Significance: Demographic Differences

To test H_{04} (no significant mean difference in responses due to demographics), one-sample t-tests and one-way ANOVA were conducted across gender, designation, qualification, experience, and locality.

Results showed no statistically significant differences in responses based on qualification or years of experience ($p > .05$ across all constructs), indicating that perceptions of ECCE implementation were consistent regardless of respondents' academic background or tenure. However, locality (district) produced statistically significant differences across every construct tested ($p < .001$), confirming substantial geographic variation in how mismatch, facilities, and stakeholder perceptions were experienced across the six districts. Gender and designation likewise showed statistically significant mean differences from zero, though these results reflect general response patterns rather than group comparisons.

Taken together, these findings indicate that H_{04} is partially rejected: demographic factors such as qualification and experience do not meaningfully influence perceptions of ECCE implementation, but geographic location does reinforcing the study's broader finding that regional disparities are a central driver of inconsistent ECCE outcomes in southern Khyber Pakhtunkhwa.

Findings

This study examined the issues affecting the implementation of Early Childhood Care and Education (ECCE) in southern Khyber Pakhtunkhwa, drawing on responses from 300 teachers and head teachers (51.7% male, 48.3% female) across five districts, with Dera Ismail Khan (40.7%) most heavily represented, followed by Lakki Marwat (20%), Bannu (19.7%), Karak (11.7%), and Tank (8%).

Findings addressing the study's first objective showed that mismatches between planning, policy, and practice significantly undermine ECCE implementation. Sixty-eight percent of respondents agreed that planning mismatches affect implementation, with slightly lower agreement for policy (65%) and practice (62%) mismatches; male respondents consistently expressed higher agreement than females across all three areas. Regression analysis confirmed these effects were statistically significant, with mismatches in planning explaining the largest share of variance in implementation outcomes ($R^2 = .698$), followed by policy ($R^2 = .653$) and practice ($R^2 = .453$) mismatches indicating that misalignment between stated goals and ground-level execution remains the most consequential barrier to effective ECCE delivery.

Regarding the second objective, infrastructure and funding emerged as strong positive predictors of successful implementation. While 66% of respondents affirmed the importance of adequate infrastructure and 64% affirmed the importance of funding, descriptive scores for both constructs were low-to-moderate, reflecting widespread dissatisfaction with current conditions. Infrastructure proved to be the single strongest predictor in the entire study, explaining 77.1% of the variance in implementation outcomes ($R^2 = .771$), with funding explaining a further 58.2% ($R^2 = .582$)—underscoring that physical facilities and financial resources are foundational to program success.

On the third objective, stakeholder perceptions particularly those of head teachers and teachers were also found to significantly shape implementation, with head teacher perceptions explaining 57.9% of variance ($R^2 = .579$) and teacher perceptions explaining 57.7% ($R^2 = .577$). Sixty-three percent of respondents agreed that head teacher attitudes positively influence implementation, and 61% said the same of teacher attitudes, with male respondents again showing higher agreement than females across both groups.

Demographic analysis revealed that qualification and years of experience had no statistically significant effect on respondents' perceptions ($p > .05$ across all variables), whereas locality produced highly significant differences across every construct measured ($p < .001$) confirming that geographic disparities, rather than individual educator background, are the primary driver of inconsistent ECCE experiences across the region.

Discussion

These findings align with prior research linking inadequate training, inconsistent teaching practices, and departures from established standards to weakened ECCE outcomes (Khattak, 2016; Khan, 2018; Gupta, 2018; Bailey et al., 2017). Physical infrastructure emerged as the most influential single factor in this study, echoing earlier work emphasizing that safe, well-ventilated, and accessible learning environments are foundational to early childhood development (Asfahani et al., 2023; Arshad & Zamir, 2018). Similarly, adequate and consistent funding was found to underpin nearly every other dimension of program quality from teacher compensation and training to instructional materials and facility maintenance (Ardiyanti et al., 2021; ASER, 2019; Abdurahman et al., 2023).

The strong influence of head teacher and teacher perceptions further reinforces existing literature on the pivotal role school leadership plays in translating policy into practice (Bailey et al., 2017; Black et al., 2017; Gokce, 2021). Head teachers who value ECCE are more likely to proactively support teachers and mobilize resources, while teachers with positive attitudes tend to be more engaged, motivated, and effective in the classroom. Collectively, these findings suggest that meaningful improvement in ECCE requires not only stronger policy coherence but sustained investment in both infrastructure and the people responsible for day-to-day implementation.

Conclusion

This study set out to examine the issues surrounding ECCE implementation in southern Khyber Pakhtunkhwa, focusing on the mismatch between planning, policy, and practice; the adequacy of infrastructure and funding; and the perceptions of key stakeholders. Using a quantitative survey design, the study found statistically significant negative associations between policy-practice mismatches and implementation outcomes, alongside significant positive associations for infrastructure, funding, and stakeholder perceptions.

The results point to a persistent gap between national and provincial ECCE policy and its execution at the school level, driven by weak coordination among government and educational bodies and a failure to translate policy intent into practical strategy. They further confirm that poor infrastructure overcrowded, poorly equipped classrooms lacking basic learning resources remains a major obstacle to quality provision, while positive stakeholder engagement, particularly from head teachers and teachers, is essential to sustaining effective implementation. Demographic analysis indicated that these challenges are shaped more by geographic location than by individual educators' qualifications or experience, pointing to systemic, region-specific barriers rather than gaps in individual capacity.

Taken together, the findings suggest that strengthening ECCE in southern KP will require a coordinated approach one that aligns policy with local realities, invests meaningfully in physical infrastructure, and actively cultivates positive stakeholder buy-in. Addressing these three interrelated dimensions is essential not only for improving early learning outcomes in the region but for advancing Pakistan's broader educational and developmental goals.

Recommendations

Based on these findings, the study recommends: (1) establishing a unified, coordinated framework for ECCE policymaking and implementation, supported by periodic policy review

and regular stakeholder consultation to narrow the gap between intent and classroom practice; (2) prioritizing investment in child-friendly infrastructure and learning materials—particularly in under-resourced and rural areas—supported by regular facility audits; (3) expanding professional development and training opportunities for head teachers and teachers to strengthen their understanding of and commitment to ECCE; and (4) incorporating demographic and regional considerations into future planning to ensure interventions are responsive to local context.

Implications

Practically, these findings suggest that federal and provincial governments should establish coordinated working groups to develop ECCE policies grounded in local realities, supported by ongoing monitoring mechanisms such as district-level education committees. Given infrastructure's outsized influence on implementation outcomes, targeted investment potentially through public-private partnerships—in classrooms, sanitation, and instructional materials is warranted, especially in remote areas. Professional development for head teachers and teachers, alongside community awareness campaigns, can help shift attitudes and practices, while decentralized, context-specific delivery models such as mobile classrooms or community-managed centers may improve access in underserved regions. Finally, dedicating a guaranteed share of education funding to pre-primary education could help insulate ECCE from broader budgetary pressures.

Theoretically, the findings resonate with several established frameworks. They support Policy Implementation Theory (Van Meter & Van Horn, 1975) by demonstrating how gaps between policy formulation and execution obstruct service delivery, and Ecological Systems Theory (Bronfenbrenner, 1979) by confirming that the immediate physical environment substantially shapes developmental and educational outcomes. The strong role of head teacher and teacher perceptions lends support to Stakeholder Theory (Freeman, 1984), suggesting that bottom-up engagement with frontline educators can meaningfully improve implementation. Finally, the pronounced influence of geography independent of individual qualifications or experience aligns with Critical Pedagogy's (Freire, 1970) emphasis on structural, rather than individual-level, drivers of educational inequality.

Suggestions for Future Research

Future studies should examine the long-term impact of policy-practice alignment, infrastructure quality, and stakeholder perceptions on children's developmental outcomes, alongside the influence of socio-economic and cultural factors on ECCE access and delivery. Further research is also needed on the role of teacher training in program effectiveness, the potential of technology-enabled and community-based delivery models, and gender-based barriers to ECCE participation. Comparative and longitudinal research designs would be particularly valuable in tracking how these factors evolve over time and in identifying transferable practices across similar resource-constrained contexts.

References

- Abdurahman, A., Asfahani, A., Sudarwati, N., Warwer, F., & Asrijal, A. (2023). The influence of problem-based learning model on students' learning outcomes. *International Journal of Trends in Mathematics Education Research*, 6(3).
- Arshad, M., & Zamir, S. (2018). Situational analysis of early childhood education in Pakistan: Challenges and solutions. *Journal of Early Childhood Care and Education*, 2(1), 135–149.
- Asfahani, A., El-Farra, S. A., & Iqbal, K. (2023). International benchmarking of teacher training programs: Lessons learned from diverse education systems. *EDUJAVARE: International Journal of Educational Research*, 1(2), 141–152.

- Asian Development Bank. (2000). *Develop a child* [Theme paper no. 9].
- Atilas, J. T., Almodóvar, M., Chavarría Vargas, A., Dias, M. J., & Zúñiga León, I. M. (2021). International responses to COVID-19: Challenges faced by early childhood professionals. *European Early Childhood Education Research Journal*, 29(1), 66–78.
- Black, M. M., Walker, S. P., Fernald, L. C. H., Andersen, C. T., DiGirolamo, A. M., Lu, C., & Lancet Early Childhood Development Series Steering Committee. (2017). Early childhood development coming of age: Science through the life course. *The Lancet*, 389(10064), 77–90.
- Chepkonga, M. C. (2017). Influence of learning facilities on provision of quality education in early childhood development centres in Kenya. *International Journal of Education and Research*, 5(6), 15–26.
- Essa, E. L. (2005). *Introduction to early childhood education* (4th ed.). Delmar Learning.
- Government of Pakistan. (2003). *National Plan of Action for Education for All 2001–2015*. Ministry of Education.
- Hunzai, Z. N. (2009). Teacher education in Pakistan: Analysis of planning issues in early childhood education. *Journal of Early Childhood Teacher Education*, 30(3), 285–297.
- Khattak, K. (2016). *Understanding Pakistan's early childhood education crisis: A case study of Punjab Province*. <https://www.datastories.pk/understanding-pakistans-early-childhood-education-crisis/>
- Malik, S. S., Asghar, M. Z., & Khalid, L. (2021). Perspectives of Headteachers, Teachers, Parents and Caregivers about Early Childhood Education Program in Punjab: A Qualitative Study. *Sir Syed Journal of Education & Social Research (SJESR)*, 4(2), 309. [https://doi.org/10.36902/sjesr-vol4-iss2-2021\(309-316\)](https://doi.org/10.36902/sjesr-vol4-iss2-2021(309-316))
- McCoy, D. C., & Wolf, S. (2018). Changes in classroom quality predict Ghanaian preschoolers' gains in academic and social-emotional skills. *Developmental Psychology*, 54(8), 1582–1599. <https://doi.org/10.1037/dev0000541>
- Ministry of Education Pakistan. (2003). *Financing of education in Pakistan: An estimation of required and available resources to achieve EFA goals*. www.moe.gov.pk/study.pdf
- Mustard, J. F. (2002). *Best investment for the future: Experiences-based brain development—The effects on health, learning and behaviour* [Keynote address]. Aga Khan University National Health Sciences Symposium.
- Nasional, D. P. (2005). *Peraturan pemerintah nomor 19 tahun 2005 tentang Standar Nasional Pendidikan* [Government Regulation No. 19 of 2005 concerning National Education Standards].
- NICHD Early Child Care Research Network. (2002). Early child care and children's development prior to school entry: Results from the NICHD Study of Early Child Care. *American Educational Research Journal*, 39(1), 133–164.
- Panthi, N., Thorpe, K., Houen, S., Casey, C., & Staton, S. (2026). The challenges of challenging behaviour: early childhood educators' understandings of child behaviour and impact on occupational wellbeing. *Teachers and Teaching*, 32(1), 162–176. <https://doi.org/10.1080/13540602.2025.2463018>
- Tahira, S. S., Ali, M. S., Latif, T., Iqbal, S., & Jalal, H. (2021). Practices of early childhood education and development: Challenges and issues in Pakistan. *Ilkogretim Online*, 20(3), 2210–2219.
- UNESCO. (2003). **Early childhood care and education in E-9 countries: Status and outlook**. <http://unesdoc.unesco.org/images/0013/001354/135471e.pdf>

- Wikaningtyas, A., & Asiah, S. N. (2023). Learning environment design in early childhood education facilities and infrastructure management. In *International Conference of Early Childhood Education in Multiperspectives* (pp. 134–141).
- World Bank. (2006). *World Development Report: Equity and development*.
- World Health Organization. (2004). *The importance of caregiver-child interactions for the survival and healthy development of young children: A review*. Department of Child and Adolescent Health and Development.