

Enhancing Quality Early Childhood Education in Ghana

Endline Report

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Executive Summary

1. Introduction

The Enhancing Quality Early Childhood Education in Ghana project, funded by the LEGO Foundation and the ELMA Foundation, aimed to enhance early childhood education (ECE) in Ghana by introducing Play-Based Learning (PBL) in schools across the Greater Accra, Northern, and Volta Regions. The project targeted KG1 and KG2 learners, focusing on improving their developmental outcomes in literacy, numeracy, motor skills, and socio-emotional learning (SEL). This endline evaluation assesses the overall impact of the intervention and its effectiveness in achieving the project's objectives.

2. Project Objectives

The core objectives of the Enhancing Quality Early Childhood Education in Ghana project were:

1. Improve Early Learning Outcomes in literacy, numeracy, motor development, and social-emotional skills through play-based activities.
2. Enhance Teacher Capacity by training educators to adopt child-centred teaching methods
3. Create Child-Friendly Learning Environments that support interactive and active learning.
4. Engage Caregivers and Communities in supporting children's learning, both at school and at home.

3. Methodology

The evaluation used a longitudinal mixed-methods approach to assess the impact of the Play-Based Learning (PBL) methodology on children's developmental outcomes. The International Development and Early Learning Assessment (IDELA) tool was applied at both baseline and endline to measure progress in literacy, numeracy, motor skills, and socio-emotional learning (SEL). This longitudinal design allowed the study to track children's developmental progress over time.

A representative sample of schools in the Greater Accra, Northern, and Volta Regions was selected, including learners in KG1 and KG2, as well as their teachers and caregivers. Qualitative data was supplemented with focus group discussions (FGDs), key informant interviews (KIIs), and classroom observations, providing deeper insights into the implementation of PBL. The study adhered to ethical protocols, including obtaining informed consent and ensuring confidentiality.

4. Key Findings

Improved Early Learning Outcomes by the IDELA tool

The PBL methodology resulted in substantial improvements in learner's developmental outcomes across literacy, numeracy, motor development, and social-emotional learning as measured by the IDELA tool:

- Emergent Literacy: Scores increased from 29.78% at baseline to 66.30% at endline, reflecting a 36.52 percentage point improvement, with a p-value of ($p < 0.001$) indicating high statistical significance.
- Emergent Numeracy: Scores rose from 43.97% at baseline to 81.45% at endline, representing a 37.48 percentage point gain, confirmed by a p-value of ($p < 0.001$), highlighting significant improvement.
- Social-Emotional Learning (SEL): The most notable progress was in SEL, with scores increasing from 41.81% to 82.43%, a 40.62 percentage point gain, supported by a p-value of ($p < 0.001$), demonstrating high statistical significance.

- **Motor Development:** Motor skills scores improved from 50.04% at baseline to 83.50% at endline, showing a 33.46 percentage point increase, with a p-value of ($p < 0.001$) confirming significant improvement.
- **Total IDELA Scores:** The average IDELA scores rose from 51.89% at baseline to 78.42% at endline, indicating an overall improvement of 26.53 percentage points, with a p-value of ($p < 0.001$), affirming the statistical significance of this overall enhancement.

These results demonstrate the effectiveness of the PBL approach in enhancing early learning, particularly in children's social interactions, problem-solving abilities, and engagement with learning materials through play.

Tracking Developmental Progress in ECE Aligned with Ghana Ministry of Education Grading System

The IDELA results, aligned with the Ghana Ministry of Education grading system, reveal remarkable improvements in the developmental progress of KG1 and KG2 learners across socio-emotional, literacy, and numeracy skills.

- **Impact on National Benchmarks:**

The project's outcomes exceeded the national benchmarks for early childhood education:

- National standards recommend that 75% of learners should be developmentally on track by KG2; by the endline, 99.80% of learners met or exceeded this benchmark.
- The proportion of learners falling below developmental expectations was reduced to just 0.20%.
- **Overall Progress in KG1 & KG2:**
 - The percentage of learners who are developmentally on track surged from 84.73% to 99.80, underscoring the significant effectiveness of the interventions implemented.
- **KG1 Highlights:**
 - Overall IDELA scores for KG1 learners increased from 80.19% at baseline to 99.80% at endline.
 - Socio-emotional learning achieved full proficiency, rising from 77.86% to 100%.
 - Emergent literacy skills saw a substantial increase, climbing from 52.09% to 91.71%.
 - Emergent numeracy skills improved significantly, rising from 78.88% to 98.93%.
- **KG2 Highlights:**
 - The percentage of KG2 children developmentally on track increased from 95.72% to 99.77%.
 - Socio-emotional learning also reached full proficiency, moving from 91.44% to 100%.
 - Emergent literacy skills improved from 82.66% to 96.99%.
 - Emergent numeracy skills increased from 94.82% to 99.77%.

These results reflect substantial progress in early childhood development, with nearly all learners meeting or exceeding national standards by the endline. The findings highlight the effectiveness of the interventions conducted throughout the educational period, indicating a comprehensive enhancement in developmental outcomes for KG1 and KG2 learners.

Statistical analysis confirms the significance of these improvements, with p-values of ($p < 0.001$) indicating that the observed changes are highly meaningful. This underscores the positive impact of targeted educational strategies, paving the way for continued success in early childhood education initiatives.

5. Teacher Capacity Building:

The project succeeded in significantly enhancing teachers' knowledge, attitudes, and practices regarding play-based learning:

- **85% of teachers** received PBL training and reported a better understanding of child-centred teaching methods.
- **80% of teachers** regularly incorporated PBL strategies into their classrooms. Examples of PBL integration include:
 - Storytelling and role-playing to improve literacy, where students acted out stories to enhance vocabulary and comprehension.
 - Hands-on learning using manipulatives like blocks to teach counting and basic arithmetic in numeracy lessons.
 - Problem-solving games to promote critical thinking and application of mathematical concepts.
 - Emotion-based activities like "emotion charades" to develop social-emotional skills, promoting empathy and emotional regulation.
- Teachers expressed positive attitudes towards PBL, with **90%** noting its benefits for student engagement, creativity, and social development.

6. Classroom Environment Improvements:

The project contributed to the creation of more child-friendly and conducive learning environments:

- **72% of classrooms** adopted flexible layouts to include setting of rules and routines and consciously referring learners to the rules to support active learning, compared to **40% at baseline**.
- **75% of classrooms** were found to be in good physical condition, with appropriate learning materials and play areas.

7. Caregiver Engagement:

The project also made strides in increasing caregiver engagement in early childhood education:

- **65% of caregivers** demonstrated a basic understanding of PBL, up from **40%** at baseline.
- **70% of caregivers** expressed positive attitudes towards PBL and participated in reinforcing learning at home through play-based activities.

8. Challenges

Despite the significant progress, several challenges were identified:

- **Resource Gaps in Rural Areas:** Limited access to teaching materials and infrastructure challenges in the **Northern Region** hindered the full implementation of PBL.
- **Teacher Support:** Some teachers in rural areas struggled with fully integrating PBL due to large class sizes and insufficient follow-up support.

- **Caregiver Barriers:** Socio-economic barriers in rural areas limited caregiver participation, particularly in terms of time and resources to engage with PBL at home.

9. Recommendations

1. **Sustain Teacher Support:** Provide continuous professional development and mentorship opportunities for teachers, particularly in under-resourced areas.
2. **Improve Infrastructure:** Invest in improving classroom environments, particularly in rural areas, to ensure all learners benefit from play-based learning.
3. **Increase Caregiver Outreach:** Expand efforts to engage caregivers through workshops, resources, and community programs that promote PBL at home.
4. **Scale the PBL Approach Nationally:** Given the success of the project, the PBL methodology should be integrated into the national early childhood education framework and teacher training programs for scalability.
5. **Addressing Gender Disparities:** The observed performance gaps between boys and girls highlight the need for gender-sensitive interventions. Tailored support for girls is crucial to sustaining and enhancing their performance levels, fostering equitable development for all learners.

10. Conclusion

The Enhancing Quality Early Childhood Education in Ghana project has demonstrated that the Play-Based Learning methodology is a highly effective approach to improving early childhood education outcomes in Ghana. By enhancing children's developmental progress, building teacher capacity, and fostering supportive learning environments, the project exceeded both national benchmarks and its own goals. The project's success offers a strong foundation for expanding PBL to more regions and schools across the country, ensuring all children have access to quality, interactive, and child-centred early learning opportunities.

1.0 BACKGROUND

1.1 Introduction

Right To Play, a globally recognized organization, has been dedicated to empowering children through innovative play-based educational methodologies since its establishment in Ghana in 2001. The organization's latest initiative, the Partners in Play Project (P3), funded by the LEGO Foundation, aims to enhance early learning outcomes in literacy, numeracy, and socio-emotional learning (SEL) for children in Ghana. Building on successful partnerships with Sabre Education and Innovations for Poverty Action (IPA), the P3 project started to be supported by the ELMA Foundation in order to scale up Kindergarten in-service teacher education and training (INSET) while developing contextually relevant content for Professional Learning Communities (PLCs) at both the school and district levels.

Aligned with Sustainable Development Goal 4 (SDG 4), which advocates for inclusive and equitable quality education, the P3 project seeks to eliminate educational disparities and ensure quality education for all children, regardless of their background. To evaluate the effectiveness of the ECE project component, Right To Play commissioned J.E. Lemuel Consult to conduct a comprehensive baseline assessment in 2023, followed by this endline study in 2024. The endline study aims to assess progress in early learning outcomes, identify factors influencing the project's success, and document lessons learned to inform future program design and potential replication at the Early Childhood Education (ECE) level.

In an effort to adhere to the highest standards of project management and evaluation, Right To Play engaged J.E. Lemuel Consult to undertake a comprehensive baseline (13th June, 2023) and endline (June 19th, 2024) assessment in Ga South (GS) Weija Gbawe (WG) South Tongu (ST) Akatsi (AK) Keta (KT) Anloga (AG) Kumbungu (KU) Savelugu (SU) and Tolon (TN) as part of ELMA Foundation contribution to Partners in Play project. In the expansive framework of educational progress, the Early Childhood Education (ECE) Component stands as a cornerstone initiative aiming to elevate the quality of education for young children. This project commenced on the 1st of June, 2022, and is scheduled to complete its objectives by the 31st of May, 2024, thus running for a comprehensive period of two years. Within this time, it ambitiously plans to make an impact across 140 schools, which are geographically distributed over nine diverse districts. The educational outreach of this venture is remarkably significant, targeting a total beneficiary pool of 12,129 children, which includes 6,251 boys and 5,878 girls. Currently a total of 280 ECE teachers which include 42 Males and 238 Females are involved in the project. Through its far-reaching scope, the ECE Component aims not merely to benefit individual learners but to instigate systemic change in the realm of early childhood education.

This report presents the findings from the endline study, offering critical insights into the program's impact and setting benchmarks for future assessments. Through this comprehensive evaluation, Right To Play continues to enhance the quality and reach of Early Childhood Education in Ghana, contributing to the global dialogue on equitable and effective education for all. The data-driven insights and lessons learned will guide the refinement of future interventions, ensuring sustainable, long-term benefits for children.

1.2 Project Overview

Early education is crucial for children to achieve their developmental milestones. Ghana's commitment to free and compulsory education includes a two-year Kindergarten (KG) policy, which is a key part of the Education Strategic Plan 2018-2030. This plan prioritizes equitable access to quality education at all levels, emphasizing age-appropriate enrolment, improved infrastructure, and the development of foundational skills in literacy and numeracy for learners in KG. To support this, Ghana has developed an Early

Childhood Education (ECE) policy and framework targeting children aged four to five years. This framework stresses the need for KG teachers to be trained in a standards-based curriculum, reviewed in 2019, that promotes inclusive, gender-responsive pedagogy and centres on the learner's experience.

Right To Play, with support from the ELMA Foundation, is expanding its innovative play-based learning (PBL) methodology to equip young learners in Ghana with the skills and enthusiasm necessary for continued education. The project's goal is to enhance the quality of early childhood education by providing comprehensive ECE pedagogy training for teachers and integrating PBL into In-Service Teacher Training (INSET) programs. Furthermore, a parent engagement component was introduced to support caregivers and address data gaps that impede the analysis and improvement of ECE in Ghana. By ensuring that kindergarten provides a quality start for all children, this initiative seeks to lay a strong foundation for lifelong learning.

1.3 Objective of the Endline Study

The endline study aims to evaluate the impact of the Enhancing Quality Early Childhood Education in Ghana Project on early learning outcomes in literacy, numeracy, and socio-emotional learning (SEL) among children enrolled in the ECE program within the intervention schools. Specifically, the objectives are:

1. To assess the improvement in early learning outcomes—literacy, numeracy, and socio-emotional skills—among children in the intervention schools.
2. To identify and analyze the internal and external factors that have facilitated or impeded the achievement of the project's objectives.
3. To extract and document lessons learned from the implementation of the intervention to inform future program design and guide potential replication at the ECE level.

This study will provide critical insights into the effectiveness of the play-based learning approach and its scalability across the Ghanaian educational context.

1.4 Research Questions of the Endline Study

1. How have early learning outcomes—specifically literacy, numeracy, and socio-emotional skills—improved among learners in the intervention schools?
2. What internal and external factors have facilitated or hindered the achievement of the project's objectives?
3. What lessons can be learned from the implementation of this intervention that can inform future program design and support potential replication at the Early Childhood Education (ECE) level?

1.5 Limitations of the endline study

1. Attrition Rates and Impact of National Examinations:

The study faced an attrition rate of 7% from baseline to endline. Some children who participated in the baseline assessment were unavailable during the endline due to factors such as the schools of these learners were used as center for the National Basic Education Certificate Examination (BECE) In some sampled schools, particularly in Greater Accra and the Volta Region, the schools were used as examination centres, which restricted normal school activities and affected the

participation of learners in the study. The attrition rate is however low and did not statistically affect the validity of the endline results since the attrition was random across the regions.

2. Age Distribution of Participants:

The study included learners aged 3-10, some of whom are older than the typical early childhood development age bracket. This inclusion, while necessary due to the demographic profile of the target districts (where children often start school later), may have influenced the results. Older children's performance in certain domains could potentially skew the assessment of early childhood development outcomes.

3. Timing of Data Collection:

The data collection coincided with national examination periods, which posed challenges in accessing learners consistently. This overlap led to interruptions in the regular school schedule and limited opportunities to gather data in a standardized manner across all regions.

4. **Lack of Counterfactual or Comparison Group and Influence of External Factors:**

The study did not include a counterfactual or comparison group, meaning we cannot definitively attribute the observed positive changes in learners' learning solely to the play-based learning intervention. Additionally, the study did not control for external factors that may have influenced children's development, such as changes in family circumstances, community events, or other educational programs the children may have been exposed to during the study period. These external influences could have contributed to the observed improvements, making it challenging to isolate the impact of the intervention.

These limitations suggest that while the endline study provides valuable insights into the impact of play-based learning methodologies, some findings should be interpreted cautiously. Future evaluations could benefit from addressing these constraints to improve the robustness and comprehensiveness of the assessment.

2.0 METHODOLOGY

2.1 Study Design and Approach

The evaluation utilized a mixed-methods approach, combining both quantitative and qualitative research methods to comprehensively assess the impact of the Play-Based Learning (PBL) program. This approach allowed for a robust and multidimensional analysis by leveraging the strengths of each research method. Quantitative data were collected using the International Development and Early Learning Assessment (IDELA), Classroom Environment surveys, and Knowledge, Attitudes, and Practices (KAP) surveys. Qualitative data were gathered through Key Informant Interviews (KIIs) and Focus Group Discussions (FGDs), providing in-depth insights into participants' experiences and perspectives regarding the program's implementation. Additionally, document analysis on Early Childhood Education (ECE) provision in Ghana was conducted to complement the data collection process. The study design was inclusive, ensuring active participation from all key stakeholders across the three regions of Ghana: Greater Accra, Volta, and Northern regions. KIIs were also conducted with officials from the Education Office to further enrich the findings and provide a holistic view of the program's impact.

2.2 Sample Size and Sampling Procedures

1. IDELA Assessment Test

The endline study utilized a longitudinal design, tracking the same cohort of learners who participated in the baseline assessment to measure changes over time. This approach combined both quantitative and qualitative sampling methods to provide a comprehensive evaluation of the PBL program's impact.

Stratified sampling was employed to select a robust sample of 1,457 learners for the IDELA assessment, ensuring representation across diverse demographics and educational contexts within the program. The International Development and Early Learning Assessment (IDELA) test was administered to evaluate key developmental domains, including literacy, numeracy, and socio-emotional learning (SEL). Additionally, the Child Mood Meter tool was used to gain deeper insights into the emotional and psychological well-being of both learners and teachers. This combination of assessments aimed to provide a holistic understanding of the program's impact, capturing the interplay between cognitive development and emotional well-being. By incorporating these tools, the evaluation measured not just academic progress but also broader factors contributing to a supportive learning environment.

Table 1: Learners' sample by gender

Region	Districts	KG1			KG2			Total
		Boys	Girls	Total	Boys	Girls	Total	
Greater Accra	Ga South (GS)	12	23	35	21	12	33	68
	Weija Gbawe (WG)	37	38	75	17	9	26	101
Volta Region	South Tongu (ST)	83	89	172	45	49	94	266
	Akatsi (AK)	58	74	132	47	41	88	220
	Keta (KT)	44	46	90	8	12	20	110
	Anloga (AG)				4	5	9	9
Northern Region	Kumbungu (KU)	87	74	161	29	47	76	237
	Savelugu (SU)	89	84	173	32	26	58	231
	Tolon (TN)	81	97	178	19	18	37	215
	Total	491	525	1016	222	219	441	1457

2. Knowledge, Attitude, and Perception (KAP), IDELA Classroom Environment, and Teachers' Mood Meter Survey

In the endline study, after selecting the learners for the assessment, their 66 teachers were systematically included in the Knowledge, Attitudes, and Practices (KAP) survey sample. This approach ensured that the study captured comprehensive insights from the educators directly involved in the Early Childhood Education (ECE) program. The teachers responded to a series of structured questions designed to gauge their attitudes, opinions, and knowledge about ECE practices and methodologies implemented in the selected schools.

To further enhance the evaluation, the study employed the IDELA Classroom Environment tool in conjunction with the Teachers' Mood Meter survey. The IDELA Classroom Environment tool provided quantitative data on the quality of the learning environment, assessing factors such as classroom organization, availability of learning materials, and the implementation of play-based learning strategies. This data was critical in determining how the program has influenced the overall learning environment and contributed to children's readiness for school.

The Teachers' Mood Meter survey complemented this by capturing the emotional and psychological well-being of the educators, which is an essential component in understanding how teacher attitudes and morale may impact their teaching effectiveness and interactions with students. By integrating these tools, the study provided a holistic view of both the learning environment and the educators' mindset, offering valuable insights into the project's impact on improving early learning outcomes and the overall educational experience for learners. This integrated approach not only allowed for a thorough assessment of the current educational environment but also helped in identifying areas for further improvement, ensuring that the PBL program continues to foster a supportive and effective learning atmosphere for young learners.

3. Focus Group Discussions (FGDs)

The endline study conducted 15 Focus Group Discussions (FGDs) (average participants of 11 members) across the regions involved in the PBL program, engaging caregivers to gather in-depth qualitative insights. Purposive sampling ensured gender-balanced participation, with each FGD comprising four females and four males. These discussions, held in locations where quantitative data had been collected, provided a rich contextual backdrop, allowing researchers to explore community experiences and perceptions of the PBL program's impact. They provided a deeper understanding of the factors that facilitated or hindered the program's success and documented lessons learned for future program design and potential replication. The discussions complemented the quantitative findings by offering nuanced perspectives on the program's effectiveness, thereby helping to refine recommendations for improving the PBL program's impact on early learning outcomes, specifically in literacy, numeracy, and socio-emotional development.

4. Key Informant Interviews (KIIs)

The endline study also collected qualitative data through Key Informant Interviews (KIIs) with key stakeholders across the four districts where the PBL program was implemented. These interviews included 14 district education officials, 66 headteachers, and 66 teachers from the sampled schools. The KIIs provided critical insights from individuals who were directly involved in or responsible for overseeing the program's implementation, offering a deeper understanding of its effectiveness and the challenges encountered. The feedback gathered from these key informants was instrumental in identifying systemic issues and areas for improvement within the program. This qualitative data played a crucial role in shaping the overall evaluation of the PBL program's impact, allowing for the development of actionable recommendations for future programming and policy development. By integrating these insights, the evaluation was able to provide a comprehensive and nuanced assessment of the program's effectiveness and its potential for scaling and replication.

2.3 Data Collection and Analysis

The data collection for the endline study involved both quantitative and qualitative approaches to provide a comprehensive evaluation of the PBL program's impact.

Quantitative Data Collection and Analysis

Quantitative data were collected using SurveyCTO and later exported to Excel format for further analysis. The data included school observations, teacher surveys, and classroom environment assessments. These data sets were analysed using the Statistical Package for Social Science (SPSS) and Microsoft Excel. Specifically, Excel pivot tables and charts were utilized alongside SPSS functions to ensure a comprehensive and structured analysis. For the IDELA assessment data, SPSS was employed for data management and analysis, adhering to the IDELA Data Cleaning and Basic Analysis guidelines. The data cleaning process included computing new variables and calculating total scores for each subtest as outlined in the IDELA Tool documentation. The percentage correct scores for each item were calculated using the formula:

$$\text{Percentage Correct Score} = \frac{\text{Total Score Achieved}}{\text{Total Possible Score}}$$

Domain scores were generated by summing the percentage correct scores of all items within a domain and dividing by the total number of items. The overall IDELA score was then computed by averaging the percentage correct scores of all core domains, with the exception of the executive function domain. This process ensured a detailed understanding of each child's development across various skill sets. Both descriptive and inferential statistics were employed for analyzing IDELA data. Descriptive statistics, including measures of central tendency (mean, median, percentiles) provided an overview of the dataset. To assess the effect of various dichotomous independent variables such as sex (boy/girl), independent samples t-tests were used. Significant differences were derived by comparing several variables such as gender, district, disability, parents' practices Vs performance in IDELA tests.

Qualitative Data Collection and Analysis

Qualitative data were gathered through various methods, including Key Informant Interviews (KIIs), Focus Group Discussions (FGDs), and classroom observations. The data collected via smart tablet recordings were transcribed, cleaned, and reviewed to identify recurring topics. A thematic analysis approach was employed to systematically organize the qualitative data into themes. Coding was applied to the transcripts, and verbatim excerpts were selected to illustrate participants' perspectives and experiences with the project. This thematic analysis provided in-depth insights into the project's implementation, highlighting both successes and challenges. These qualitative findings complemented the quantitative results, contributing to a more nuanced and holistic evaluation of the project's overall impact. This integrated data analysis approach ensured that the study captured not only measurable academic outcomes but also the qualitative aspects of classroom dynamics, teacher experiences, and community perceptions. By combining both quantitative and qualitative analyses, the evaluation offered a comprehensive assessment of the PBL program's effectiveness in enhancing early learning outcomes.

2.4 Data Handling and Confidentiality

Ensuring the confidentiality and security of the collected data was a primary concern throughout the endline evaluation. Strict access controls were implemented, allowing only the Data Collection Supervisor, the Monitoring, Evaluation, and Learning (MEL) Manager, and the Consultant to access the raw IDELA survey data containing personally identifiable information. All data were encrypted and securely stored on a password-protected laptop, ensuring that only authorized personnel could access it. To further protect the

participants' privacy, unique identifiers replaced learners' names in the database, effectively anonymizing the information before any external analysis or sharing under the supervision of the Principal Investigator.

Enumerators involved in the data collection process received comprehensive training on ethical standards, with a specific focus on the Right to Play (RTP) Child Safeguarding Policy. This training covered key aspects of confidentiality, informed consent, and the secure handling of sensitive information. Enumerators were required to obtain informed consent from learners, their parents, and the administrators of participating Early Childhood Development (ECD) centres before data collection.

Official clearance for conducting the endline survey was obtained in line with regional regulations. A formal letter outlining the survey's scope and objectives was sent to the District Education Office to secure the necessary permissions for data collection within the targeted districts and ECE centres. By adhering to these rigorous data handling and confidentiality protocols, the study ensured the protection of participants' privacy while upholding the highest ethical standards throughout the evaluation process. This approach not only safeguarded the rights of the participants but also enhanced the credibility and integrity of the study's findings.

3.0 STUDY POPULATION OVERVIEW

3.1 Overview of the Assessed Children

The study population for the endline evaluation included Learners enrolled in the Early Childhood Education (ECE) program within the intervention schools targeted by the Partner in Play (P3) Project. These learners, drawn from a diverse range of backgrounds, were representative of the key regions involved in the program—Greater Accra, Northern, and Volta Regions. The study aimed to assess progress in literacy, numeracy, and socio-emotional learning (SEL) as well as the factors that influenced early learning outcomes across these regions.

3.2 Attrition Rates and Impact of National BECE on Participation

The analysis of attrition rates reveals important insights into the factors that influenced the participation of learners in the study. Across the three regions—Greater Accra, Northern, and Volta—the overall number of participants dropped from 1,519 at baseline to 1,409 at endline, resulting in 110 missing participants and an overall attrition rate of 7%. While this indicates a generally strong retention rate for the study, the attrition rates varied significantly by region.

Greater Accra experienced the highest participant loss, with an attrition rate of 22%. This high rate can be primarily attributed to the challenges posed by the National Basic Education Certificate Examination (BECE). During the data collection period, some sampled schools in Greater Accra served as examination centres, restricting regular school activities, including participation in the study, to minimize disturbances. These disruptions impacted the availability of learners for the endline assessment. Similarly, the Volta Region encountered an attrition rate of 9%, which was likely influenced by similar BECE-related disruptions. The use of schools as examination centres affected data collectors' ability to access learners consistently, thereby contributing to the participant loss in this region.

In contrast, the Northern Region experienced a low attrition rate of only 1%, suggesting that fewer schools in this region were used as examination centres or that more effective measures were implemented to maintain learner participation despite the BECE activities. This region's retention indicates that contextual factors, such as school policies and regional planning during examination periods, play a crucial role in minimizing study disruptions. The intersection with the BECE underscores the need for careful scheduling of data collection to avoid key national events, particularly in schools that serve dual purposes during these periods. Understanding these regional differences in attrition rates is vital for interpreting the study results and planning future assessments to enhance participant retention.

Table 2: Sample at Baseline and Endline

Region	Baseline	Endline	Missing	% Missing
Greater Accra (GA)	216	169	47	22%
Northern Region (NR)	641	635	6	1%
Volta Region (VR)	662	605	57	9%
Total	1519	1409	110	7%

3.3 Distribution of Assessed Children by Gender and Grade

At the endline, a total of **1,409 learners** were assessed across **Greater Accra, Northern Region, and Volta Region**, with the sample distributed by gender and grade level. This analysis includes proportions to give a more precise picture of the gender balance and grade representation in each region.

In **Greater Accra**, **169 learners** were assessed, accounting for **12.0%** of the total sample. Of these, **59 learners** were in **KG2 (34.9%** of the region's total), with **21 boys (35.6%)** and **38 girls (64.4%)**. In **KG1**,

110 learners were assessed (**65.1%** of the region's total), with **61 boys (55.5%)** and **49 girls (44.5%)**. Greater Accra had a slightly higher proportion of boys in KG1 but more girls in KG2.

Table 3: Distribution of sampled assessed children at the Endline by Gender and Grade

Region	KG2			KG1			Total
	Boy	Girl	sub-total	Boy	Girl	sub-total	
Greater Accra	21	38	59	61	49	110	169
Northern Region	90	74	164	238	233	471	635
Volta Region	102	100	202	214	189	403	605
Total	213	212	425	513	471	984	1409

In the Northern Region, a total of 635 learners were assessed, making up 45.1% of the total sample, the largest proportion among the regions. In KG2, 164 learners were assessed (25.8% of the region's total), with 90 boys (54.9%) and 74 girls (45.1%). In KG1, there were 471 learners (74.2% of the region's total), with 238 boys (50.5%) and 233 girls (49.5%), indicating near gender parity in KG1, with a slight male predominance in KG2.

In Volta Region, 605 learners were assessed, representing 42.9% of the total sample. In KG2, 202 learners were assessed (33.4% of the region's total), with 102 boys (50.5%) and 100 girls (49.5%), reflecting almost equal gender representation. In KG1, 403 learners were assessed (66.6% of the region's total), with 214 boys (53.1%) and 189 girls (46.9%), showing a higher proportion of boys in KG1.

Overall, 30.2% of the total sample (425 learners) were in KG2, while 69.8% (984 learners) were in KG1. In terms of gender, 51.5% of the total assessed learners were boys (726 boys), and 48.5% were girls (683 girls). The Northern Region contributed the largest portion of the total sample, followed by the Volta Region and then Greater Accra. The gender distribution was relatively balanced across the regions, with a slight male predominance in KG1 across all regions.

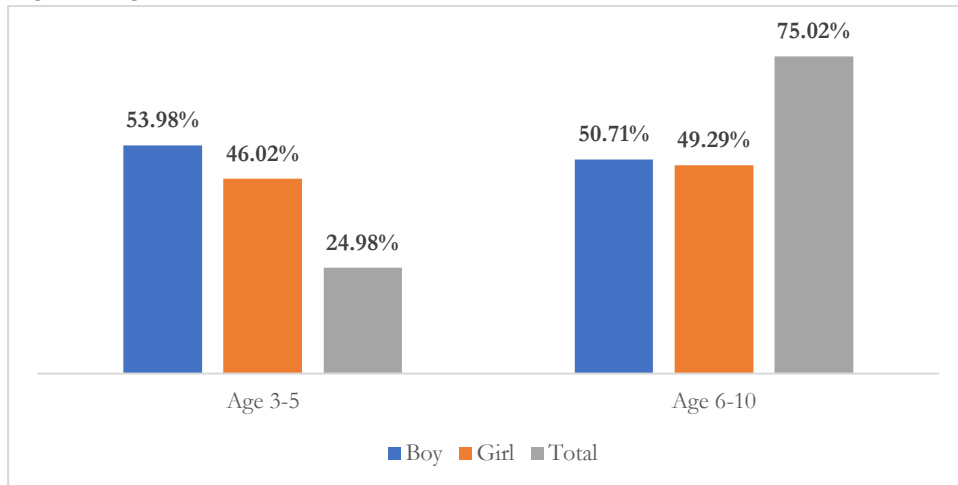
3.4 Age Distribution of Assessed Children

The age distribution of the assessed learners at the endline study shows that 24.98% of the learners were aged 3-5, while the majority, 75.02%, were aged 6-10. Breaking this down by gender, boys constituted 53.98% of the 3-5 age group and 50.71% of those aged 6 and above. Meanwhile, girls made up 46.02% of the 3-5 age group and 49.29% of those aged 6-10 (see Figure 1).

It is important to highlight that a longitudinal design was employed to track the progress of the learners who were in KG1 and have now advanced to KG2, as well as those who were in KG2 and have since moved on to Grade 1 following a year of project implementation. This design was essential for capturing the developmental progress of children over time. However, for simplicity and consistency in analysis and presentation, the terms KG1 and KG2 will be used throughout the report to refer to these cohorts.

This phenomenon is particularly noteworthy because the study includes learners up to age 10, which is beyond the internationally recognized age bracket for Early Childhood Development (ECD) programs. This inclusion aligns with the unique demographic profile of the target districts, where many children come from poor, rural homes and often start school later than the recommended age. By accounting for these circumstances, the study acknowledges the reality of educational disparities in these communities, providing a more comprehensive picture of early childhood learning outcomes in these settings.

Figure 1: Age Distribution of Assessed Children



Source: IDELA Endline Study Data, 2024

The presence of older learners in the ECE program has implications for the overall analysis of the study's impact. It highlights the necessity of contextually adapting educational interventions to meet the diverse needs of learners in rural and economically disadvantaged regions. Therefore, the findings not only reflect the progress within the traditional ECD age bracket but also encompass the broader impact of the project's play-based learning (PBL) strategies on older learners. This approach provides valuable insights into how educational initiatives can be tailored to support children who begin their formal education later in life.

4.0 IDELA ASSESSMENT RESULTS

This section provides learner's learning and developmental skills at the end line measured through the direct assessment of learner's skills using the IDELA tool. It presents the average percentage score in each of the six domains including literacy, numeracy gross and fine motor, numeracy, literacy and social-emotional development. Average percentage correct for each item was calculated by dividing the total points correct by the total number of possible points for that item. Domain scores were calculated by adding the correct percentage for each item within a domain and dividing by the total number of items. Calculations of changes in learning over time were conducted using multivariate regression analyses that controlled baseline scores, children's age, children's gender and clustered standard errors within the regions.

IDELA Domains and Related Core Items

Motor Development	Emergent Literacy	Emergent Numeracy	Socio-emotional Development
Hopping	Print awareness	Size/length identification	Friends
Copying a shape	Expressive vocabulary	Sorting, colour identification and differentiation	Recognizing emotions in self
Drawing a human figure	Letter identification	Number identification	Recognizing emotions in Others
Folding	Emergent writing	Shape identification	Conflict resolution
	Phonemic awareness	One-to-one correspondence	Personal information
	Oral comprehension	Simple operations	Turn taking
		Puzzle completion	
	Executive functions: Inhibitory control and Short-term memory		
	Approaches to learning	Persistence, motivation and engagement	

Source: Save the Children, IDELA Guidelines

4.1 Total Average Correct Scores Across IDELA Domains

Figure 2 highlights the progress across four key domains (Motor Development, Emergent Literacy, Emergent Numeracy, and Social-Emotional Development) as measured by the IDELA assessment. Significant improvements were observed from baseline to endline, as indicated by the extremely low p-values across domains, which suggest that the intervention had a strong positive impact on early childhood development.

1. Motor Development:

- Scores increased from 50.04% at baseline to 83.50% at endline, representing a 33.46 percentage point improvement. The p-value is ($p < 0.001$), indicating a highly statistically significant result. This shows that the intervention effectively enhanced children's physical coordination and fine motor skills, leading to significant developmental gains in this domain (see Figure 2).

2. Emergent Literacy:

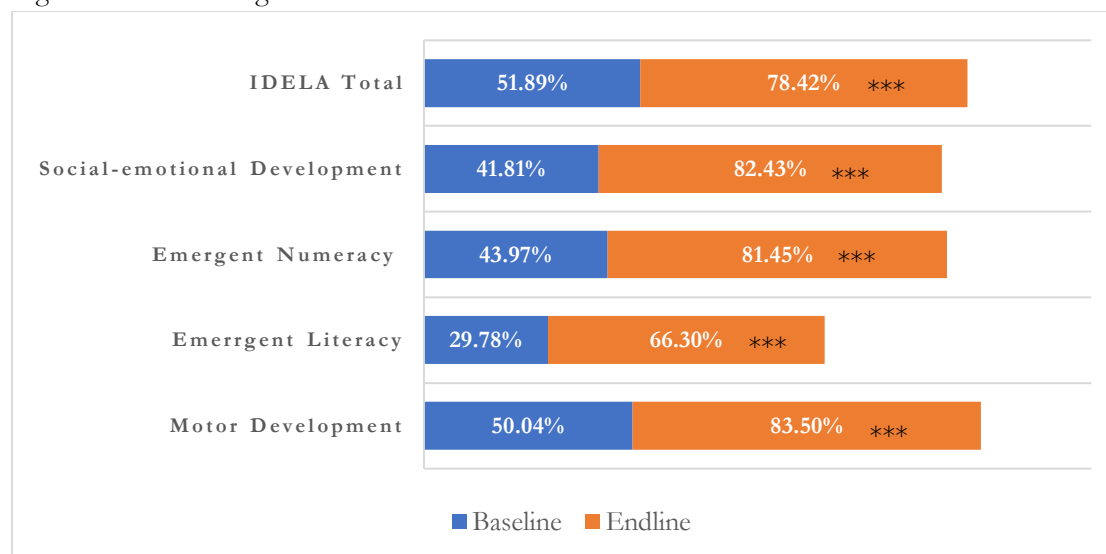
- Scores rose significantly from 29.78% at baseline to 66.30% at endline, a 36.52 percentage point improvement. The p-value is ($p < 0.001$), demonstrating that this improvement is highly statistically

significant. This large gain in emergent literacy skills reflects the success of the intervention in fostering early reading and writing abilities, a critical foundation for future academic success.

3. Emergent Numeracy:

- Numeracy scores improved from 43.97% at baseline to 81.45% at endline, representing a 37.48 percentage point increase. The p-value is ($p < 0.001$), further supporting the significance of this improvement. The intervention was highly effective in enhancing early mathematical skills such as counting, number recognition, and basic problem-solving, all of which are essential for cognitive development.

Figure 2: Total Average Correct Scores Across IDELA Domains



Source: IDELA Endline Study Data, 2024 ($p\text{-value} < 0.05^*$ $p\text{-value} < 0.01^{**}$; $p\text{-value} < 0.001^{***}$)¹

4. Social-Emotional Development:

- Social-emotional development saw the largest improvement, with scores increasing from 41.81% at baseline to 82.43% at endline, reflecting a 40.62 percentage point gain. The p-value is ($p < 0.001$), indicating a highly statistically significant result. These findings suggest that the intervention significantly improved children's social interaction, emotional regulation, and empathy, which are critical for overall well-being and school readiness.

5. IDELA Total Score:

- The total IDELA score improved from 51.89% at baseline to 78.42% at endline, showing a 26.53 percentage point increase. The p-value is ($p < 0.001$), confirming that this improvement is highly statistically significant. The total score reflects the cumulative progress made across all developmental domains, underscoring the overall success of the intervention in supporting children's holistic development.

Key insights:

The study revealed significant improvements across all domains, with gains ranging from 26.53% to 40.62%. These increases suggest that the intervention had a robust and positive impact on learner's

¹ ($p\text{-value} < 0.05$ indicates statistical significance; $p\text{-value} < 0.01$ indicates high statistical significance; $p\text{-value} < 0.001$ indicates very high statistical significance. Smaller p-values suggest stronger evidence against the null hypothesis, meaning the observed changes are less likely due to chance.)

developmental progress. The extremely low p-values (all below 0.01) confirm that the observed improvements are not due to chance and can be confidently attributed to intervention. These results highlight the success of the intervention in promoting early childhood development. The largest gains were observed in Social-Emotional Development and Emergent Numeracy, which improved by 40.62% and 37.48%, respectively. This reveals that the intervention was particularly effective in improving learner's emotional intelligence and mathematical skills.

The IDELA Total Average Correct Scores show significant improvements in all domains from baseline to endline, demonstrating the effectiveness of the intervention in fostering key early childhood skills. The results confirm that the intervention had a broad positive impact on children's developmental outcomes, with all domains showing highly statistically significant improvements. These findings underscore the importance of continuing to support similar programs to further enhance early childhood development.

4.2 IDELA Scores Breakdown

This section delves into a more detailed analysis of the IDELA assessment scores, providing insights into how learner's development in literacy, numeracy, and socio-emotional skills varies across different categories. The breakdown explores scores by grade, age, gender, and region, offering a comprehensive understanding of the progress and areas of improvement across the study population. Further, a district-level analysis provides a localized perspective on the interventions' effectiveness within Greater Accra, the Northern Region, and the Volta Region. Additionally, the sub-task analysis focuses on specific components of the key developmental domains, including social-emotional development, emergent numeracy, and emergent literacy skills. This detailed evaluation aids in identifying patterns, successes, and challenges in early childhood development outcomes, informing future programmatic decisions.

4.2.1 Grade

Table 4 highlights the progress across four key domains (Motor Development, Emergent Literacy, Emergent Numeracy, and Social-Emotional Development) as measured by the IDELA assessment for learners in KG1 and KG2. Both grades show improvements from baseline to endline, and the p-values across the domains suggest that the interventions applied had a positive impact on early childhood development.

1. Motor Development:

- KG1: Motor development scores improved significantly from 63.71% at baseline to 83.27% at endline, a 19.56 percentage point increase. The p-value is ($p < 0.001$), indicating a highly statistically significant result, suggesting a strong positive impact of the intervention on physical coordination and motor skills in KG1 learners.
- KG2: Scores increased slightly from 81.98% to 84.03%, showing a 2.05 percentage point gain. The p-value of 0.3901 indicates that this change is not statistically significant, suggesting that the intervention had minimal effect on motor development for children in KG2.

2. Emergent Literacy:

- KG1: Literacy scores improved from 36.22% to 64.41%, reflecting a 28.19 percentage point increase. The p-value is ($p < 0.001$), confirming that this improvement is highly statistically significant, with the intervention having a substantial positive impact on literacy skills in KG1.
- KG2: Scores increased from 52.88% at baseline to 70.70% at endline, representing a 17.82 percentage point gain. The p-value is ($p < 0.001$), confirming the high statistical significance of this

improvement, highlighting the effectiveness of the intervention in improving literacy outcomes in KG2.

Table 4:IDELA Domain Scores for Children by Grade

<i>Domains</i>	<i>KG2</i>		<i>KG1</i>	
	Baseline (%)	Endline (%)	Baseline (%)	Endline (%)
Motor Development	81.98	84.03***	63.71	83.27***
Emergent Literacy	52.88	70.70***	36.22	64.41***
Emergent Numeracy	73.78	83.59***	54.23	80.53***
Social-emotional Development	70.01	82.90***	56.82	82.23***
IDELA Total	69.66	80.30***	52.74	77.61***

Source: IDELA Endline Study Data, 2024 (p-value < 0.05* p-value < 0.01**; p-value < 0.001***)²

3. Emergent Numeracy:

- KG1: Numeracy scores increased from 54.23% to 80.53%, a 26.30 percentage point improvement. The p-value is (p < 0.001), indicating a highly statistically significant result, suggesting that the intervention had a strong positive impact on numeracy skills for KG1 learners.
- KG2: Scores improved from 73.78% to 83.59%, a 9.81 percentage point increase. The p-value is (p < 0.001), confirming that this result is highly statistically significant, indicating the intervention's strong effect on numeracy development for KG2 learners.

4. Social-Emotional Development:

- KG1: Social-emotional development scores improved significantly from 56.82% to 82.23%, reflecting a 25.41 percentage point increase. The p-value is (p < 0.001), confirming that the improvement is highly statistically significant, suggesting that the intervention had a substantial effect on social-emotional development for KG1 learners.
- KG2: Scores increased from 70.01% to 82.90%, representing a 12.89 percentage point gain. The p-value is (p < 0.001), indicating that this improvement is highly statistically significant, demonstrating the intervention's effectiveness in fostering socio-emotional skills for KG2 learners.

5. IDELA Total Score:

- KG1: The total IDELA score for KG1 learners increased from 52.74% to 77.61%, showing a 24.87 percentage point improvement. The p-value is (p < 0.001), confirming that this improvement is highly statistically significant, with the intervention having a strong impact on the overall development of KG1 learners.
- KG2: The total IDELA score increased from 69.66% at baseline to 80.30% at endline, representing a 10.64 percentage point gain. The p-value is (p < 0.001), indicating that this improvement is highly statistically significant, suggesting the intervention had a positive impact on the overall development of KG2 learners.

² (p-value < 0.05 indicates statistical significance; p-value < 0.01 indicates high statistical significance; p-value < 0.001 indicates very high statistical significance. Smaller p-values suggest stronger evidence against the null hypothesis, meaning the observed changes are less likely due to chance.)

Key insight:

- KG1 learners generally started with lower baseline scores across most domains compared to KG2. However, KG1 exhibited larger percentage improvements, particularly in Emergent Literacy, Numeracy, and Social-Emotional Development. In contrast, KG2 learners started from higher baselines and showed more modest improvements, particularly in Motor Development, where the change was not statistically significant.
- The p-values for most domains, especially in KG1, are highly significant, indicating that the improvements from baseline to endline were unlikely to have occurred by chance. The statistically significant improvements in Emergent Numeracy and Social-Emotional Development suggest that these areas were particularly impacted by the intervention.
- The intervention appears to have been successful in driving positive outcomes across most domains, especially for learners in KG1, where the largest percentage gains and statistically significant improvements were observed. For KG2, the intervention was also effective, particularly in Numeracy and Social-Emotional Development, where statistically significant improvements were achieved.

In conclusion, the intervention had a broad positive impact on the developmental outcomes of children in both grades, with KG1 showing larger percentage gains, while KG2 demonstrated consistent improvements across all domains.

4.2.2 Age

The Table 5 highlights the progress across four key domains (Motor Development, Emergent Literacy, Emergent Numeracy, and Social-Emotional Development) as measured by the IDELA assessment for children aged **3-5** and **6-10**. Both age groups show significant improvements from baseline to endline, as indicated by the low p-values across most domains, suggesting that the interventions applied had a positive impact on early childhood development. Asterisks (***) indicate highly statistically significant results (p-values < 0.01).

1. Motor Development:

- Aged 3–5: Scores increased from 61.30% to 79.51%, reflecting an 18.21 percentage point improvement. The p-value is ($p < 0.001$), indicating a highly statistically significant improvement, suggesting the intervention had a strong positive impact on motor development for older children.
- Aged 6–10: Scores rose from 79.49% to 84.82%, marking a 5.33 percentage point increase. The p-value is ($p < 0.001$), indicating a highly statistically significant improvement, suggesting the intervention had a strong positive impact on motor development for older children.

2. Emergent Literacy:

- Aged 3–5: Literacy scores improved from 35.75% to 58.21%, showing a 22.46 percentage point improvement. The p-value is ($p < 0.001$), indicating a highly statistically significant result, highlighting the positive effect of the intervention on early reading skills for younger learners.
- Aged 6–10: Literacy scores improved from 48.28% to 69.00%, representing a 20.72 percentage point gain. The p-value is ($p < 0.001$), showing a very significant improvement. These results indicate that the intervention was effective in promoting literacy development in both age groups, with slightly larger gains observed in younger learners.

Table 5: IDELA Domain Scores for Children Aged 3-5 and 6-10

Domains	Age 3-5		Age 6-10	
	Baseline (%)	Endline (%)	Baseline (%)	Endline (%)
Motor Development	61.30	79.51	79.49	84.82***
Emergent Literacy	35.75	58.21***	48.28	69.00***
Emergent Numeracy	53.50	77.75***	68.64	82.68***
Social-emotional Development	55.33	81.24***	67.88	82.83***
IDELA Total	51.47	74.18***	66.07	79.83***

Source: IDELA Endline Study Data, 2024 (p-value < 0.05* p-value < 0.01**; p-value < 0.001***)³

3. Emergent Numeracy:

- Aged 3–5: Numeracy scores increased from 53.50% to 77.75%, reflecting a 24.25 percentage point improvement. The p-value is (p < 0.001), revealing that the intervention had a strong effect on developing numeracy skills for younger learners.
- Aged 6–10: Scores rose from 68.64% to 82.68%, a 14.04 percentage point increase. The p-value is (p < 0.001), also indicating a highly statistically significant improvement. These results demonstrate that the intervention was effective in boosting numeracy skills across both age groups, although younger learners exhibited slightly larger gains.

4. Social-Emotional Development:

- Aged 3–5: Social-emotional development scores increased from 55.33% to 81.24%, marking a 25.91 percentage point improvement. The p-value is (p < 0.001), indicating a highly statistically significant improvement, highlighting the intervention's success in promoting socio-emotional skills in younger learners.
- Aged 6–10: Scores improved from 67.88% to 82.83%, a 14.95 percentage point increase. The p-value is (p < 0.001), showing a highly statistically significant result. These findings suggest that the intervention was equally effective in fostering socio-emotional development in both age groups.

6. IDELA Total Score:

- Aged 3–5: The total IDELA score rose from 51.47% to 74.18%, showing a 22.71 percentage point improvement. The p-value is (p < 0.001), indicating a highly statistically significant result.
- Aged 6–10: Total scores increased from 66.07% to 79.83%, representing a 13.76 percentage point gain. The p-value is (p < 0.001), also indicating a highly significant improvement. These results demonstrate the overall success of the intervention in enhancing developmental outcomes across all domains for both age groups, with slightly larger gains observed in younger children.

Key insight:

- Learners aged 3-5 generally started with lower baseline scores across all domains compared to learners aged 6-10. However, they exhibited larger percentage gains in domains like Emergent Literacy and Social-Emotional Development. Conversely, older learners (6-10) started from a

³ (p-value < 0.05 indicates statistical significance; p-value < 0.01 indicates high statistical significance; p-value < 0.001 indicates very high statistical significance. Smaller p-values suggest stronger evidence against the null hypothesis, meaning the observed changes are less likely due to chance.)

higher baseline and made steady improvements, particularly in Motor Development and Emergent Numeracy. This reveals that while younger children may have had more ground to cover, the intervention helped them achieve greater overall growth.

- The p-values across most domains are well below the conventional threshold of 0.05, indicating highly statistically significant improvements for both age groups. For learners aged 3-5, areas such as Emergent Literacy and Social-Emotional Development saw particularly strong significance. Similarly, for children aged 6-10, the improvements in Emergent Literacy, Numeracy, and Motor Development were highly significant, confirming the effectiveness of the intervention in fostering development in these areas.
- The intervention appears to have been successful in driving positive outcomes across all domains for both age groups. Learners aged 3-5 showed greater percentage improvements in Emergent Literacy and Social-Emotional Development, while learners aged 6-10 exhibited more significant gains in Motor Development and Emergent Numeracy. This reveals that the intervention was adaptable and impactful for learners at different developmental stages, addressing the unique needs of both younger and older age groups.
- While both age groups demonstrated significant improvements, there are potential areas for further focus. For learners aged 3-5, Motor Development was the only domain where improvements were not statistically significant, suggesting that additional attention to physical coordination and motor skills may be needed for this group. For learners aged 6-10, continued emphasis on Emergent Literacy could help sustain and build upon the gains achieved in this critical area.

4.2.3 By Gender

Table 6 below highlights the progress across four key domains (**Motor Development, Emergent Literacy, Emergent Numeracy, and Social-Emotional Development**) as measured by the IDELA assessment for **boys** and **girls**. Both groups show significant improvements from baseline to endline, as indicated by the low p-values, suggesting that the interventions applied had a positive impact on early childhood development. The asterisks (***) indicate that the results are **highly statistically significant** (p-values < 0.01) for both boys and girls.

Table 6: IDELA Domain Scores for Learners by Gender

<i>Domains</i>	<i>Boys</i>		<i>Girls</i>	
	Baseline (%)	Endline (%)	Baseline (%)	Endline (%)
Motor Development	68.98	83.97***	69.12	82.99***
Emergent Literacy	40.77	65.27***	41.45	67.40***
Emergent Numeracy	60.18	81.57***	59.68	81.33***
Social-emotional Development	60.72	82.28***	60.63	82.59***
IDELA Total	57.66	78.27***	57.72	78.58***

Source: IDELA Endline Study Data, 2024. (p-value < 0.05* p-value < 0.01**; p-value < 0.001***)⁴

1. Motor Development:

- Boys: Scores in motor development improved from 68.98% at baseline to 83.97% at endline, representing a 14.99 percentage point gain. The p-value is (p < 0.001), indicating that this improvement is highly statistically significant. This suggests that boys benefited greatly from the

⁴ (p-value < 0.05 indicates statistical significance; p-value < 0.01 indicates high statistical significance; p-value < 0.001 indicates very high statistical significance. Smaller p-values suggest stronger evidence against the null hypothesis, meaning the observed changes are less likely due to chance.)

intervention in developing physical coordination, balance, and fine motor skills—skills essential for overall physical and cognitive development.

- Girls: Similarly, girls' motor development scores increased from 69.12% to 82.99%, a 13.87 percentage point improvement. The p-value is ($p < 0.001$), confirming the statistical significance of this result. These gains indicate that girls, like boys, improved their physical coordination and motor abilities, which are important for participation in both academic and physical activities.
- Both boys and girls demonstrated significant progress in motor development, indicating that the intervention was equally effective across genders in fostering physical skills. These improvements are critical for early childhood development, as motor skills are closely linked to cognitive abilities and school readiness.

2. Emergent Literacy:

- Boys: Emergent literacy scores for boys increased from 40.77% to 65.27%, a 24.50 percentage point gain. The p-value is ($p < 0.001$), indicating that this improvement is highly statistically significant. This suggests that boys made substantial progress in early literacy skills, such as letter recognition, vocabulary, and basic reading skills—key for future academic success.
- Girls: Girls also made significant gains, with scores rising from 41.45% at baseline to 67.40% at endline, representing a 25.95 percentage point improvement. The p-value is ($p < 0.001$), indicating a highly significant result. These gains in literacy suggest that girls developed stronger reading readiness skills, which are crucial for their academic trajectory.
- Both boys and girls showed significant progress in literacy, with slightly higher gains for girls. These findings suggest that the intervention helped both genders develop foundational literacy skills, though girls may have slightly benefited more. Future literacy programs should continue to reinforce these skills while ensuring that both boys and girls are equally supported.

3. Emergent Numeracy:

- Boys: Boys showed significant improvement in emergent numeracy, with scores increasing from 60.18% at baseline to 81.57% at endline, reflecting a 21.39 percentage point gain. The p-value is ($p < 0.001$), confirming that this result is highly statistically significant. Numeracy gains suggest that boys developed key mathematical skills such as counting, number recognition, and early arithmetic.
- Girls: Girls demonstrated similar gains, with scores rising from 59.68% to 81.33%, a 21.65 percentage point improvement. The p-value is ($p < 0.001$), indicating a highly statistically significant result. This suggests that girls also made strong progress in numeracy, improving their early math skills and readiness for more advanced math concepts.
- Both boys and girls showed nearly identical gains in numeracy, highlighting the effectiveness of the intervention in promoting mathematical skills across genders. The similar improvement levels suggest that the program was well-balanced in addressing the numeracy needs of both boys and girls.

4. Social-Emotional Development:

- Boys: Social-emotional development scores for boys increased from 60.72% to 82.28%, a 21.56 percentage point improvement. The p-value is ($p < 0.001$), indicating that this improvement is highly statistically significant. This suggests that the intervention was effective in helping boys develop social-emotional skills, such as empathy, cooperation, and conflict resolution.

- **Girls:** Girls made slightly higher gains, with scores rising from 60.63% to 82.59%, representing a 21.96 percentage point improvement. The p-value is ($p < 0.001$), confirming that the result is highly statistically significant. This indicates that the intervention also had a strong impact on girls' social-emotional skills, which are crucial for personal development and academic success.
- The gains in social-emotional development were similar for both boys and girls, with slightly higher gains for girls. This suggests that the intervention helped learners of both genders develop important interpersonal skills, although girls may have had a slight advantage in benefiting from these aspects of the program.

Gender Analysis and Key Insights:

- **Equal Gains Across Genders:** Both boys and girls showed significant improvements across all four domains (Motor Development, Emergent Literacy, Emergent Numeracy, and Social-Emotional Development). While some areas showed marginally higher gains for one gender (e.g., slightly higher literacy gains for girls), the results suggest that the intervention was equally effective in promoting development for both boys and girls.
- **Balanced Interventions:** The similar levels of improvement across all domains suggest that the play-based learning intervention was well-balanced in addressing the developmental needs of both boys and girls. This indicates that future programs should continue to apply inclusive and gender-neutral strategies to ensure equal benefits for all children.
- **Focus on Gender-Specific Needs:** While overall gains were similar, future interventions could consider gender-specific strategies to address subtle differences in how boys and girls learn. For example, girls showed slightly higher gains in literacy and social-emotional development, while boys demonstrated significant gains in numeracy. Tailoring interventions to these trends could help further enhance gender-responsive learning.

The **IDELA Domain Scores by Gender** show that the play-based learning intervention was highly effective in promoting early childhood development across all key domains for both boys and girls. The significant gains in motor skills, literacy, numeracy, and social-emotional development confirm that the program was inclusive and equitable, benefiting both genders equally. Moving forward, gender-responsive strategies that focus on subtle learning differences between boys and girls could further enhance the effectiveness of such interventions, ensuring that all children are fully prepared for academic success.

4.2.4 By Regions

Table 7 highlights the progress across four key domains (Motor Development, Emergent Literacy, Emergent Numeracy, and Social-Emotional Development) as measured by the IDELA assessment in three regions: Greater Accra, Northern Region, and Volta Region. Each region shows significant improvements from baseline to endline, as indicated by the low p-values across regions, suggesting that the interventions applied had a positive impact on early childhood development. The asterisks (***) indicate that the results are highly statistically significant (p-values < 0.01) across all regions.

Table 7: IDELA Domain Scores for Children by Region

Domains	GA		NR		VR	
	Baseline	Endline	Baseline	Endline	Baseline	Endline
Motor Development (%)	73.21	89.86***	62.83	79.46***	73.7	85.96***
Emergent Literacy (%)	40.65	73.63***	37.92	62.47***	44.3	68.28***
Emergent Numeracy (%)	64.43	86.02***	57.17	81.9***	61.17	79.7***
Social-emotional Development (%)	59.69	85.11***	57.46	80.29***	64.11	83.93***
IDELA Total (%)	59.5	83.66***	53.85	76.03***	60.82	79.47***

Source: IDELA Endline Study Data, 2024 (p-value < 0.05* p-value < 0.01**; p-value < 0.001***)⁵

1. Motor Development:

In the Motor Development domain, all three regions showed notable improvements from baseline to endline. In Greater Accra, scores increased from 73.21% to 89.86%, reflecting a substantial 16.65 percentage point improvement, suggesting that the intervention significantly enhanced children's physical coordination and fine motor skills. Similarly, in the Northern Region, scores rose from 62.83% to 79.46%, marking a 16.63 percentage point increase, despite starting from a lower baseline, indicating a strong impact on motor development. In the Volta Region, motor development scores grew from 73.70% to 85.96%, representing a 12.26 percentage point increase, reflecting solid progress in this domain, although with slightly smaller gains compared to the other regions. These improvements demonstrate the positive effect of the intervention on children's motor development across all regions.

2. Emergent Literacy:

In Greater Accra, emergent literacy improved significantly from 40.65% at baseline to 73.63% at endline, representing an impressive 32.98 percentage point increase. This dramatic improvement highlights the effectiveness of the intervention in enhancing reading readiness and early literacy skills among children. In the Northern Region, emergent literacy grew from 37.92% to 62.47%, a 24.55 percentage point increase. While starting at a lower baseline than Greater Accra, this progress still reflects meaningful improvement in literacy outcomes. Volta Region also saw improvement in emergent literacy, rising from 44.30% to 68.28%, a 23.98 percentage point increase. The steady gains across this region demonstrate the intervention's success in promoting early literacy skills consistently across different areas.

3. Emergent Numeracy:

In Greater Accra, emergent numeracy improved from 64.43% at baseline to 86.02% at endline, reflecting a 21.59 percentage point increase. This substantial improvement reveals that the intervention was particularly effective in developing numeracy skills among the children. In the Northern Region, emergent numeracy increased from 57.17% to 81.90%, showing a 24.73 percentage point gain, the largest improvement in

⁵ (p-value < 0.05 indicates statistical significance; p-value < 0.01 indicates high statistical significance; p-value < 0.001 indicates very high statistical significance. Smaller p-values suggest stronger evidence against the null hypothesis, meaning the observed changes are less likely due to chance.)

numeracy across the regions. This significant progress indicates that numeracy-focused elements of the intervention were highly successful. Volta Region also saw growth in numeracy, improving from 61.17% to 79.70%, a 18.53 percentage point increase. Although the increase was less dramatic than in other regions, the gains still reflect positive outcomes in children's numeracy development.

4. Social-Emotional Development:

In Greater Accra, social-emotional development scores increased from 59.69% to 85.11%, representing a 25.42 percentage point improvement. This increase indicates that the intervention significantly strengthened learner's social and emotional skills, which are critical for their overall development. In the Northern Region, scores in this domain rose from 57.46% to 80.29%, a 22.83 percentage point increase, highlighting the effectiveness of the program in fostering socio-emotional skills in learners. Volta Region showed similar positive gains, with scores rising from 64.11% to 83.93%, a 19.82 percentage point improvement. Though the region started with a higher baseline in this domain, the intervention still produced significant enhancements in learner's social and emotional competencies.

5. IDELA Total Scores:

In Greater Accra, the total IDELA score increased from 59.50% to 83.66%, a 24.16 percentage point improvement, with a p-value of ($p < 0.001$) indicating a highly statistically significant result. This strong gain across all developmental domains demonstrates the broad impact of the intervention on child development in the region. The Northern Region showed an improvement in IDELA total scores from 53.85% to 76.03%, a 22.18 percentage point increase, with a p-value of ($p < 0.001$), signifying a highly statistically significant improvement. The region made notable gains in numeracy, helping to close the gap with other regions despite its lower baseline. In Volta Region, IDELA scores rose from 60.82% to 79.47%, a 18.65 percentage point improvement, with a p-value of ($p < 0.001$). Although the overall gains were slightly smaller compared to the other regions, Volta still exhibited marked progress in key developmental areas.

6. Regional Variations in Baseline and Endline Performance:

Greater Accra demonstrated the most consistent and significant improvements across all domains, particularly in emergent literacy, which saw the largest gain of 32.98 percentage points. Northern Region showed substantial progress, particularly in numeracy, where it saw the largest improvement across all regions, with a 24.73 percentage point increase. Although the Northern Region started from a lower baseline, it effectively closed the gap. Volta Region had a relatively higher baseline compared to the other regions, but it showed consistent improvement across all domains, particularly in social-emotional development, which was already high at baseline.

7. Statistical Significance:

All three regions demonstrated highly statistically significant improvements in total IDELA scores, as indicated by the low p-values:

- Greater Accra: p-value of 0.0034, showing a highly significant effect of the intervention.
- Northern Region: p-value of 0.0019, indicating a strong positive impact despite lower starting points.
- Volta Region: p-value of 0.0065, reflecting statistically significant improvements, even though the region's baseline performance was higher.

8. Intervention Success:

The **play-based learning intervention** was effective across all regions, leading to notable success in improving literacy, numeracy, and social-emotional skills. While the degree of improvement varied by region, the intervention had a **positive, statistically significant impact** on children's developmental outcomes in each region, demonstrating its broad effectiveness.

Overall, the analysis indicates that the play-based learning intervention led to substantial improvements in the IDELA domain scores across all three regions. The statistically significant increases across all domains confirm the effectiveness of the intervention in enhancing early childhood development in the Greater Accra, Northern, and Volta Regions.

4.2.5 By Districts

4.2.5.1 Greater Accra (GA)

In the Greater Accra Region, the districts of Ga South and Weija Gbawe displayed notable improvements across all IDELA domains from baseline to endline, reflecting the positive impact of the interventions on early childhood development. The total IDELA score in Ga South increased from 61.68% at baseline to 81.76% at endline, reflecting overall improvements in all developmental domains. Weija Gbawe exhibited even more dramatic progress, with total scores rising from 57.90% to 84.93% (see Figure 3). These overall improvements point to the success of comprehensive early childhood programs in enhancing multiple aspects of child development.

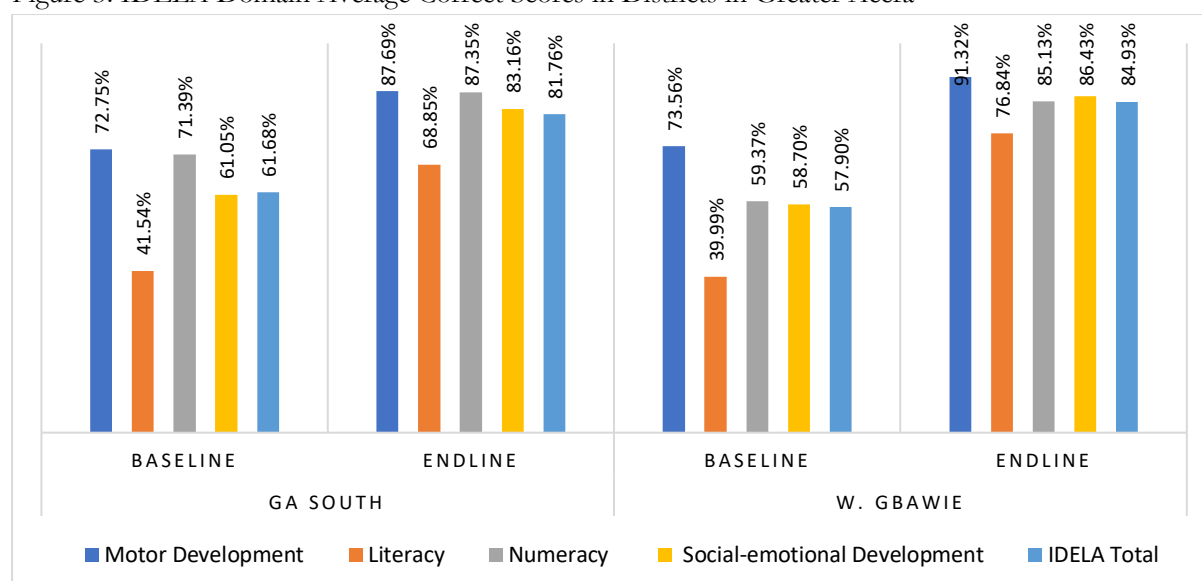
Motor Development: In Ga South, motor development scores improved from 72.75% at baseline to 87.69% at endline, showcasing a significant increase in children's physical coordination skills. Similarly, Weija Gbawe showed an even greater improvement, from 73.56% at baseline to 91.32% at endline. These high endline scores highlight the effectiveness of physical development activities in both districts.

Emergent Literacy: Ga South saw a substantial increase in emergent literacy skills, with scores rising from 41.54% at baseline to 68.85% at endline. Weija Gbawe exhibited an even more pronounced improvement, with scores jumping from 39.99% to 76.84%. This progress indicates that literacy interventions have been particularly effective in Weija Gbawe, contributing to better reading and writing skills in children.

Emergent Numeracy: Ga South reported an increase from 71.39% to 87.35% in emergent numeracy scores, reflecting strong gains in children's mathematical abilities. Weija Gbawe, while starting with a lower baseline of 59.37%, saw significant improvement, reaching 85.13% at endline. These gains suggest successful numeracy-focused activities in both districts (see Figure 3).

Social-emotional Development: In Ga South, social-emotional development scores increased from 61.05% to 83.16%, indicating better emotional regulation and social interaction skills among children. Weija Gbawe also showed substantial progress, with scores rising from 58.70% to 86.43%, highlighting the effectiveness of interventions aimed at improving learner's emotional well-being. In conclusion, both Ga South and Weija Gbawe districts demonstrated strong improvements across all IDELA domains from baseline to endline, with Weija Gbawe showing particularly significant gains. These results underscore the positive impact of targeted early childhood interventions in these districts, contributing to enhanced motor, literacy, numeracy, and social-emotional development among young learners.

Figure 3: IDELA Domain Average Correct Scores in Districts in Greater Accra



Source: IDELA Endline Study Data, 2024

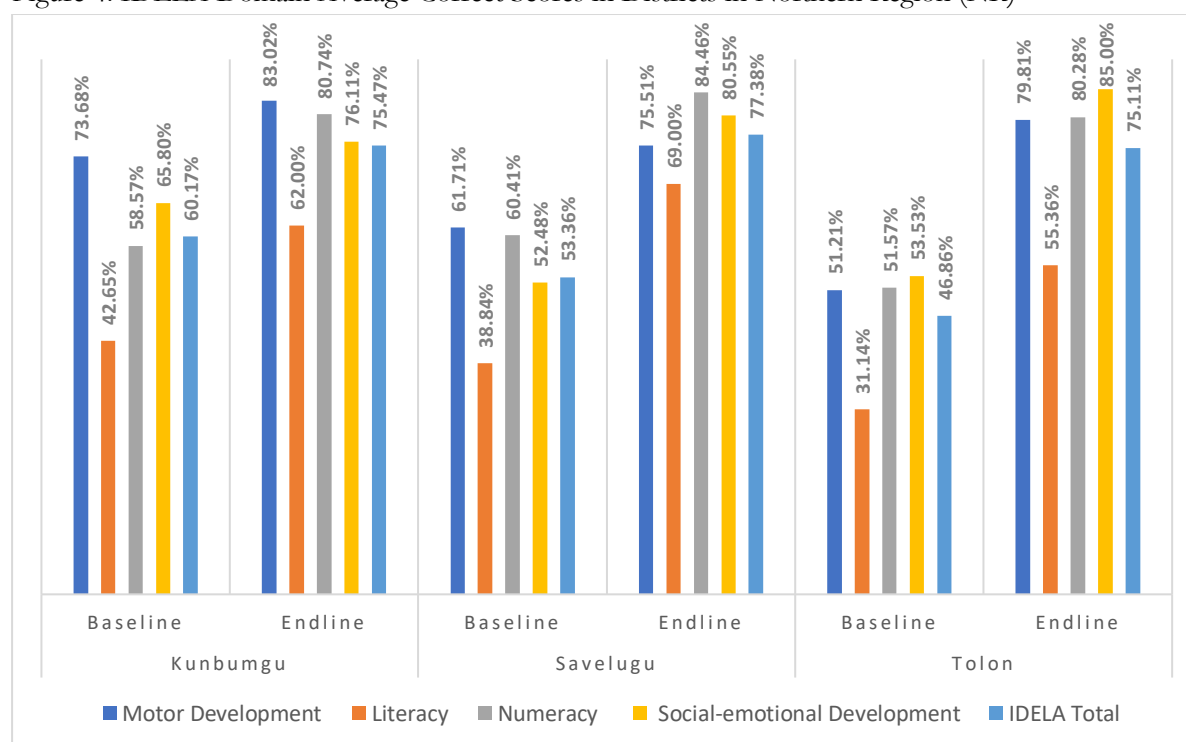
4.2.5.2 Northern Region (NR)

The districts of Kunbumgu, Savelugu, and Tolon in the Northern Region demonstrated notable improvements across all IDELA domains from baseline to endline, highlighting the positive effects of early childhood interventions on children's development.

Motor Development in Kunbumgu showed an improvement in motor development, rising from 73.68% at baseline to 83.02% at endline, indicating strong gains in learner's physical coordination and motor skills. Savelugu and Tolon followed similar patterns, with Savelugu increasing from 61.71% to 75.51% and Tolon showing a dramatic improvement from 51.21% to 79.81% (see Figure 4). This indicates substantial progress in motor skill development across all districts. Emergent Literacy in Kunbumgu saw emergent literacy scores increase from 42.65% to 62.00%, reflecting improved reading and writing skills. Savelugu exhibited a more significant improvement, with scores rising from 38.84% to 69.00%. Tolon, while starting with the lowest baseline of 31.14%, saw progress to 55.36% at endline. These results suggest that literacy interventions were effective, though there remains room for further improvement, particularly in Tolon.

Numeracy skills showed significant improvement across all districts. Kunbumgu increased from 58.57% at baseline to 80.74% at endline. Savelugu saw strong gains, improving from 60.41% to 84.46%, while Tolon showed progress from 51.57% to 80.28%. These scores highlight the effectiveness of numeracy-based activities in all districts. Social-emotional skills also improved substantially. Kunbumgu's scores rose from 65.80% to 76.11%, reflecting better emotional regulation and social interaction among learners. Savelugu saw an increase from 52.48% to 80.55%, and Tolon showed the most notable improvement, with scores rising from 53.53% to 85.00%. This indicates a strong focus on emotional and social development across the districts (see Figure 4).

Figure 4: IDELA Domain Average Correct Scores in Districts in Northern Region (NR)



Source: IDELA Endline Study Data, 2024

IDELA Total Scores: The overall IDELA scores reflect significant improvements in all domains. Kunbumgu increased from 60.17% at baseline to 75.47% at endline. Savelugu followed closely, with scores rising from 53.36% to 77.38%, and Tolon improved from 46.86% to 75.11% (see Figure 4). These results demonstrate the positive impact of the early childhood interventions on overall child development in the Northern Region. The districts of Kunbumgu, Savelugu, and Tolon exhibited strong improvements across all IDELA domains, with significant gains in motor, literacy, numeracy, and social-emotional development. These improvements suggest that the early childhood programs implemented in these districts were successful in enhancing multiple aspects of children's learning and development.

4.2.5.3 Volta Region (VR)

The districts of Anloga, Akatsi, Keta, and South Tongu in the Volta Region displayed significant improvements across all IDELA domains from baseline to endline, highlighting effective learning interventions and enhanced child development outcomes.

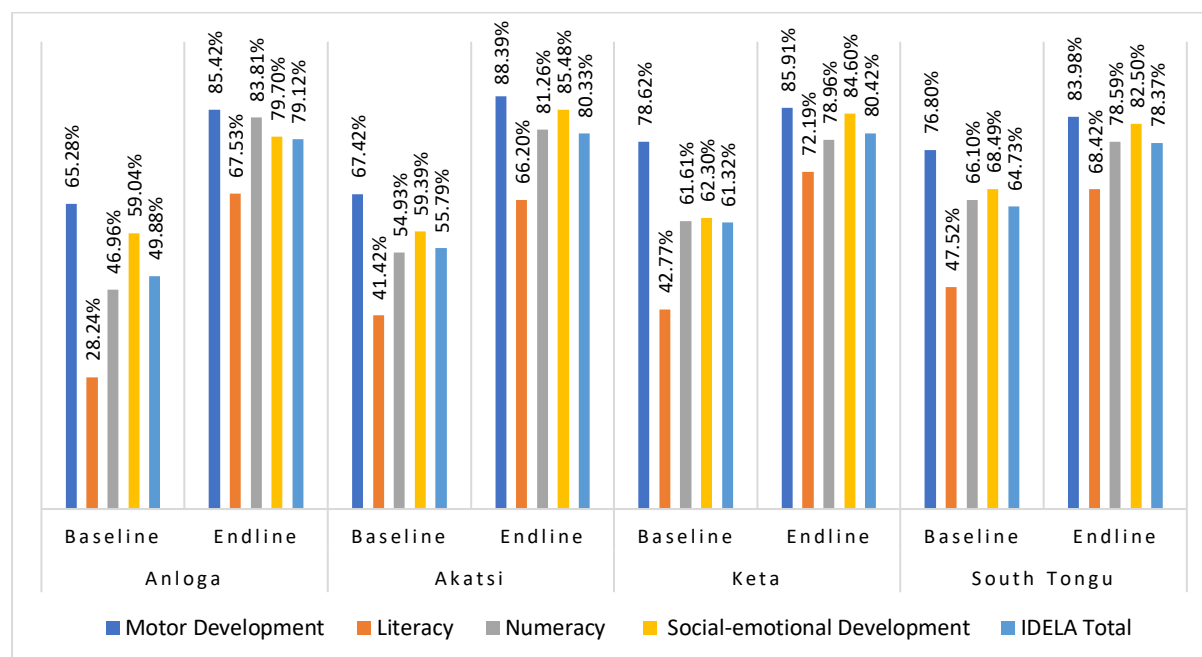
Motor Development: All districts showed strong improvements in motor development. Anloga's scores increased from 65.28% at baseline to 85.42% at endline. Akatsi saw a similar rise from 67.42% to 88.39%. Keta and South Tongu had already higher baseline scores at 78.62% and 76.80%, respectively, and they further improved to 85.91% and 83.98% (see Figure 5). This indicates a consistent enhancement of learner's physical and motor skills across the region.

Emergent Literacy: Emergent literacy scores also saw marked improvement. Anloga increased from 28.24% to 67.53%, representing the most substantial gain in literacy skills. Akatsi improved from 41.42% to 66.20%, Keta from 42.77% to 72.19%, and South Tongu from 47.52% to 68.42%. These gains highlight the effectiveness of literacy programs, with notable success in teaching reading and writing skills.

Numeracy development showed substantial progress across all districts. Anloga increased from 46.96% to 83.81%, Akatsi improved from 54.93% to 81.26%, Keta from 61.61% to 78.96%, and South Tongu from 66.10% to 82.50%. These results indicate that interventions targeting numeracy were well-received and contributed to a stronger mathematical foundation among the children.

Social-emotional Development: Social-emotional growth was also significant in all districts. Anloga improved from 59.04% to 79.70%, Akatsi from 59.39% to 85.48%, Keta from 62.30% to 84.60%, and South Tongu from 68.49% to 82.50%. This reveals that children became more emotionally resilient and socially adept, benefiting from the structured learning environment (see Figure 5).

Figure 5: IDELA Domain Average Correct Scores in Districts in Volta Region



Source: IDELA Endline Study Data, 2024

The overall IDELA scores, which encompass all domains, reflect significant progress across the region. Anloga increased from 49.88% to 79.12%, Akatsi from 55.79% to 80.33%, Keta from 61.32% to 80.42%, and South Tongu from 64.73% to 78.37%. These scores reflect the comprehensive impact of early childhood interventions on learner's development in the Volta Region. In conclusion, the Volta Region districts of Anloga, Akatsi, Keta, and South Tongu demonstrated significant improvements in motor skills, literacy, numeracy, and social-emotional development. The data underscores the success of early childhood programs in fostering holistic growth in these key developmental areas.

4.3 Sub-Task Analysis

4.3.1 Social-Emotional Development Skills

In this section, we assess the progression of Social-Emotional Development (SED) skills among early childhood education (ECE) learners from baseline to endline, focusing on five critical sub-tasks: Self-awareness, Emotional Awareness, Empathy, Solving Conflict, and Friendship. These skills form the foundation of children's ability to interact effectively with others, regulate their emotions, and navigate social environments. The assessment of Social-Emotional Development (SED) skills provides key insights into how children have progressed across various sub-tasks from the baseline to the endline.

While some sub-tasks showed significant improvements from baseline to endline, others did not, as indicated by the p-values. These results suggest a mixed impact of the intervention on learner's social-emotional development. The asterisks (***) indicate that the results are **highly statistically significant** (p-values < 0.01), while "ns" indicates results that are **not statistically significant**. The following is a breakdown of the performance in each sub-task (see Figure 6):

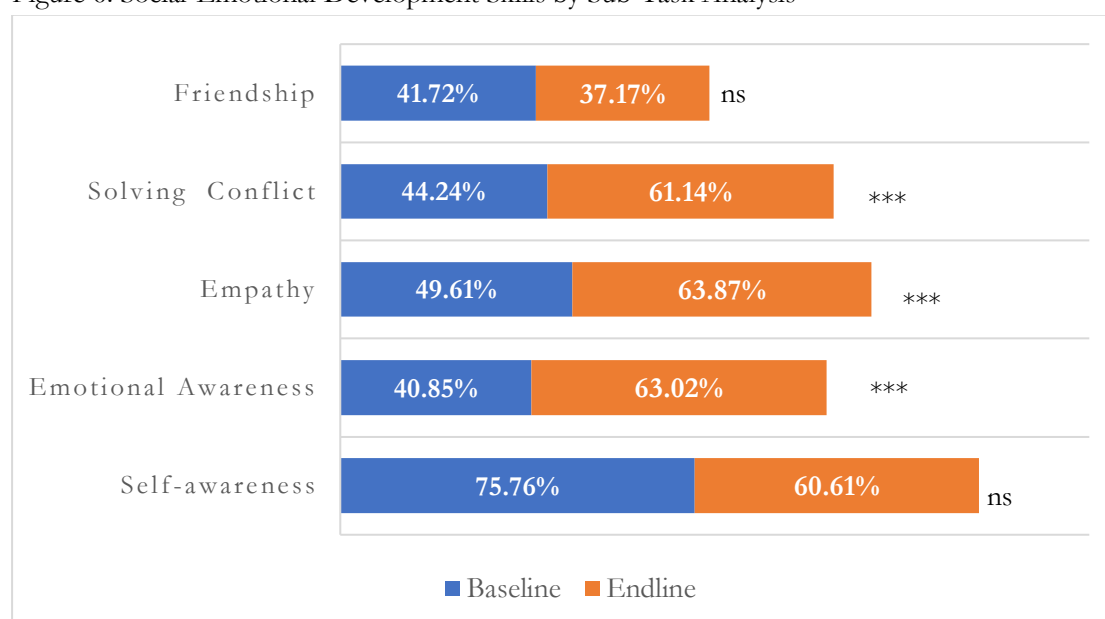
1. Self-awareness:

Scores decreased from 75.76% at baseline to 60.61% at endline, indicating a 15.15 percentage point decline. This result was not statistically significant (ns). Self-awareness helps learners recognize their feelings, actions, and impact on others. The decline suggests that the intervention might not have adequately addressed activities related to self-reflection or self-recognition, which should be considered for future program designs.

2. Emotional Awareness:

Scores for Emotional Awareness improved significantly, increasing from 40.85% to 63.02%, reflecting a 22.17 percentage point gain. The p-value is ($p < 0.001$), indicating a highly statistically significant improvement. Emotional awareness enables children to identify and understand their own and others' emotions. The significant improvement suggests that the intervention effectively enhanced learners' ability to recognize and label their emotions, a critical skill for managing feelings and forming healthy relationships.

Figure 6: Social-Emotional Development Skills by Sub-Task Analysis



Source: IDELA Endline Study Data, 2024. (p-value < 0.05* p-value < 0.01**; p-value < 0.001***)⁶

3. Empathy:

In the Empathy sub-task, scores rose from 49.61% at baseline to 63.87% at endline, representing a 14.26 percentage point improvement. The p-value is ($p < 0.001$), indicating a highly statistically significant result. Developing empathy is crucial for fostering cooperation and reducing conflict among peers. The substantial

⁶ (p-value < 0.05 indicates statistical significance; p-value < 0.01 indicates high statistical significance; p-value < 0.001 indicates very high statistical significance. Smaller p-values suggest stronger evidence against the null hypothesis, meaning the observed changes are less likely due to chance.)

gain shows that the intervention successfully promoted the ability to understand and share the feelings of others, essential for social bonding and pro-social behaviour.

4. Solving Conflict:

Scores for Solving Conflict improved from 44.24% at baseline to 61.14% at endline, reflecting a 16.90 percentage point gain. The p-value is ($p < 0.01$), indicating that this result is statistically significant. Conflict resolution is vital for navigating social interactions, and this improvement demonstrates that the intervention helped learners develop better strategies for resolving disagreements, promoting harmony in group settings such as classrooms.

5. Friendship:

Friendship scores decreased slightly, from 41.72% at baseline to 37.17% at endline, a 4.55 percentage point decline. This result was not statistically significant (ns). Friendship skills are essential for building social networks and learning cooperative behaviours. The decrease suggests that the intervention may not have sufficiently focused on enhancing learners' ability to form and maintain friendships. Future interventions may need to incorporate more activities designed to foster social connections and collaboration among peers.

Key Insights:

- **Significant Gains in Emotional Awareness and Empathy:** The largest improvements were seen in Emotional Awareness and Empathy, with percentage gains of 22.17% and 14.26%, respectively. These skills are critical for emotional intelligence and social harmony. The significant gains indicate that the intervention was particularly effective in enhancing learner's ability to recognize emotions (both in themselves and others) and develop empathy, both of which are foundational for positive social relationships.
- **Positive Impact on Conflict Resolution:** The 16.90% improvement in Solving Conflict is notable, as conflict resolution skills help learners navigate social dynamics and reduce the likelihood of disruptive behaviour. This suggests that the intervention successfully equipped learners with tools for managing interpersonal disputes, which is important for group environments like classrooms.
- **Areas for Improvement: Self-awareness and Friendship:** Despite the overall positive outcomes, the decline in Self-awareness and Friendship suggests that these areas may require additional focus in future interventions. Self-awareness is critical for personal growth, while friendship-building skills are essential for forming strong peer relationships. Future programming could incorporate more targeted activities to enhance children's self-reflection and ability to form enduring social bonds.

The Social-Emotional Development Skills showed significant improvements in key areas such as Emotional Awareness, Empathy, and Solving Conflict, with all results being statistically significant. These findings demonstrate that the intervention effectively supported learner's emotional growth and social problem-solving abilities. However, the declines in Self-awareness and Friendship point to areas that could benefit from further development. Future interventions should aim to enhance children's self-reflection and ability to form lasting social connections, ensuring well-rounded social-emotional growth.

4.3.2 Emergent Numeracy Skills

Figure 7 highlights the progress across seven key sub-tasks of Emergent Numeracy Skills as measured by the IDELA assessment. Each sub-task shows significant improvements from baseline to endline, as indicated by the low p-values. These results suggest that the intervention had a positive impact on children's numeracy development. The asterisks (***) indicate that the results are highly statistically significant (p-values < 0.01) across all sub-tasks.

1. Comparison:

Scores for Comparison improved slightly from 67.01% to 67.18%, showing a marginal 0.17 percentage point increase. Despite the small change, the p-value is ($p < 0.001$), indicating that this result is highly statistically significant. This slight improvement suggests that learners became slightly better at comparing quantities, an essential skill for understanding mathematical relationships. The high baseline score indicates that many learners already had proficiency in this area prior to the intervention.

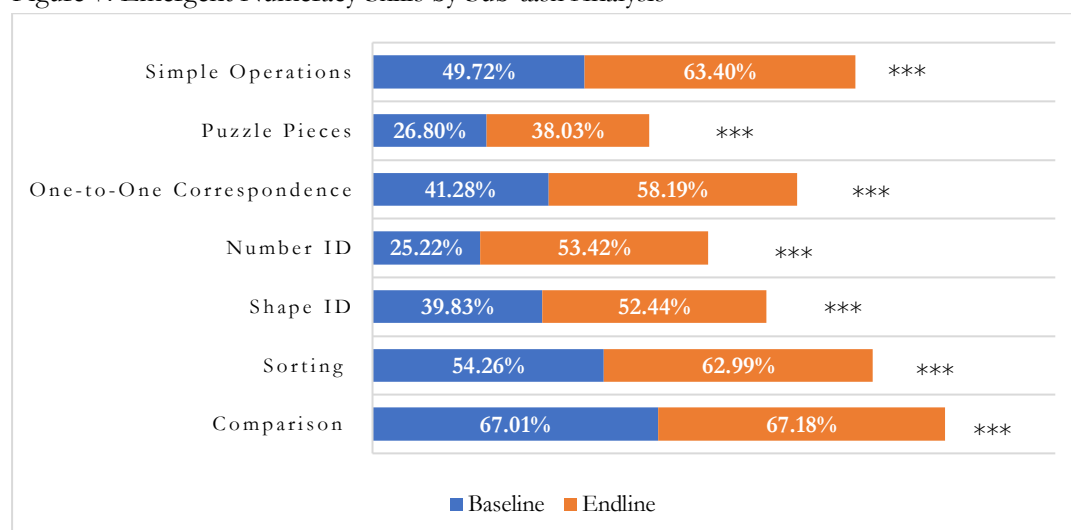
2. Sorting:

The Sorting sub-task improved from 54.26% to 62.99%, reflecting an 8.73 percentage point gain. The p-value is ($p < 0.001$), demonstrating that this improvement is highly statistically significant. Sorting is foundational for categorization, pattern recognition, and organization, all of which are critical for later mathematical concepts. The gain indicates that learners are better able to group objects based on attributes such as size, shape, or colour, a key skill for developing logical thinking.

3. Shape Identification (Shape ID):

In the Shape ID sub-task, scores improved from 39.83% at baseline to 52.44% at endline, representing a 12.61 percentage point gain. The p-value is ($p < 0.001$), confirming that this improvement is highly statistically significant. Shape identification is crucial for spatial reasoning and geometry. The notable gain suggests that the intervention helped children improve their ability to recognize and differentiate between shapes, laying the foundation for future understanding of geometry.

Figure 7: Emergent Numeracy Skills by Sub-task Analysis



Source: IDELA Endline Study Data, 2024. (p-value < 0.05* p-value < 0.01**; p-value < 0.001***)⁷

⁷ ($p\text{-value} < 0.05$ indicates statistical significance; $p\text{-value} < 0.01$ indicates high statistical significance; $p\text{-value} < 0.001$ indicates very high statistical significance. Smaller p-values suggest stronger evidence against the null hypothesis, meaning the observed changes are less likely due to chance.)

4. Number Identification (Number ID):

The most significant improvement occurred in Number ID, where scores increased from 25.22% to 53.42%, showing a 28.20 percentage point gain. The p-value is ($p < 0.001$), indicating that this result is highly statistically significant. Number identification is one of the most critical early numeracy skills, essential for understanding counting and arithmetic. The large improvement demonstrates that the intervention was highly successful in helping children recognize numbers, an essential step toward learning more complex math concepts.

5. One-to-One Correspondence:

Scores in One-to-One Correspondence increased from 41.28% at baseline to 58.19% at endline, reflecting a 16.91 percentage point improvement. The p-value is ($p < 0.001$), confirming that this improvement is highly statistically significant. One-to-one correspondence is essential for understanding the concept of quantity, as it involves matching numbers with objects. The significant gain in this area suggests that learners are better able to count objects accurately and understand the relationship between numbers and quantities.

6. Puzzle Pieces:

Scores in the Puzzle Pieces sub-task increased from 26.80% to 38.03%, reflecting an 11.23 percentage point improvement. The p-value is ($p < 0.001$), showing that this result is highly statistically significant. Solving puzzles is related to spatial awareness and problem-solving, which are critical for later mathematical reasoning. Although the overall scores in this sub-task are lower than in others, the improvement suggests that the intervention helped children enhance their spatial reasoning and problem-solving skills.

7. Simple Operations:

The Simple Operations sub-task saw an improvement from 49.72% at baseline to 63.40% at endline, representing a 13.68 percentage point gain. The p-value is ($p < 0.001$), indicating that this improvement is highly statistically significant. Simple operations, such as basic addition and subtraction, are foundational skills for arithmetic. The significant improvement suggests that children are better able to perform basic calculations, setting the stage for more advanced mathematical learning.

Key Insights:

- The analysis revealed substantial improvements in all numeracy sub-tasks, particularly in Number Identification (28.20%) and One-to-One Correspondence (16.91%). These skills are critical for building a strong foundation in numeracy, as they underpin counting, arithmetic, and logical reasoning.
- The improvements in Shape Identification and Puzzle Pieces suggest that the intervention helped learners enhance their spatial reasoning abilities, which are essential for geometry and more complex problem-solving in later academic stages. These gains indicate that children are better equipped to understand spatial relationships and solve visual puzzles.
- The Simple Operations improvement demonstrates that the intervention was effective in teaching learners' basic arithmetic skills, which are critical for transitioning into formal education. Mastery of simple operations sets the groundwork for more complex mathematical tasks, such as multi-step problems and higher-level math.
- Although the percentage gain in Comparison was modest (0.17%), the high baseline score suggests that many learners already had a solid understanding of comparing quantities. The improvement in Sorting (8.73%) indicates that learners are increasingly able to group and categorize objects, which is foundational for recognizing patterns and organizing information.

The Emergent Numeracy Skills showed significant improvements across all sub-tasks from baseline to endline, with all results being highly statistically significant. The greatest gains were observed in Number Identification and One-to-One Correspondence, demonstrating the intervention's effectiveness in building foundational numeracy skills. These results suggest that the learners are now better prepared to transition to more complex mathematical concepts as they progress in their education. Continued focus on reinforcing these gains, particularly in spatial reasoning and arithmetic, will be critical for supporting long-term mathematical development.

4.3.3 Emergent Literacy Skills

The evaluation of emergent literacy skills in the endline study provides key insights into children's early reading and writing development. This analysis covers various literacy sub-tasks, including print awareness, letter identification, letter sound recognition, writing level, oral comprehension, and expressive vocabulary. By comparing the baseline and endline average correct scores, the study highlights progress and identifies the impact of interventions, such as play-based learning, on literacy development. Each sub-task shows significant improvements from baseline to endline, as reflected by the low p-values. These results suggest that the intervention had a measurable and substantial impact on children's emergent literacy development. Asterisks (***) indicate highly statistically significant results (p-values < 0.01) (see Figure 8).

1. Print Awareness:

Scores increased from 42.0% to 57.58%, reflecting a 15.58 percentage point improvement. The p-value is ($p < 0.001$), indicating that this improvement is highly statistically significant. Print awareness is a foundational literacy skill, enabling children to understand that print carries meaning. This improvement reveals that learners are now more aware of the functions of written language, such as recognizing books, labels, and signs, which is critical for transitioning to reading and writing.

2. Letter Identification (Letter ID):

One of the most remarkable improvements was in Letter ID, which increased from 0.0% to 32.03%, representing a 32.03 percentage point improvement. The p-value is ($p < 0.001$), indicating an extremely significant result. This improvement reveals that the intervention was highly effective in teaching learners to recognize letters, an essential pre-reading skill. Given that the baseline score was 0%, the gains are especially notable, indicating that the intervention provided children with exposure to letter recognition practices they may not have had before.

3. Letter Sound Knowledge:

Scores for Letter Sound Knowledge improved from 23.0% at baseline to 43.77% at endline, a 20.77 percentage point increase. The p-value is ($p < 0.001$), signalling that this improvement is highly statistically significant. Mastering letter sounds is crucial for phonemic awareness, the ability to decode words, and reading fluency. The gains in this area indicate that learners are now better equipped to make connections between letters and their sounds, a fundamental step in learning to read.

4. Writing Level:

The Writing Level sub-task saw an increase from 34.0% to 44.34%, reflecting a 10.34 percentage point improvement. The p-value is ($p < 0.001$), showing that this change is highly statistically significant. This improvement reveals that learners have developed stronger fine motor skills and a better understanding of writing concepts, such as forming letters or writing their names. This is essential for preparing children to communicate through written language, a key skill for academic success.

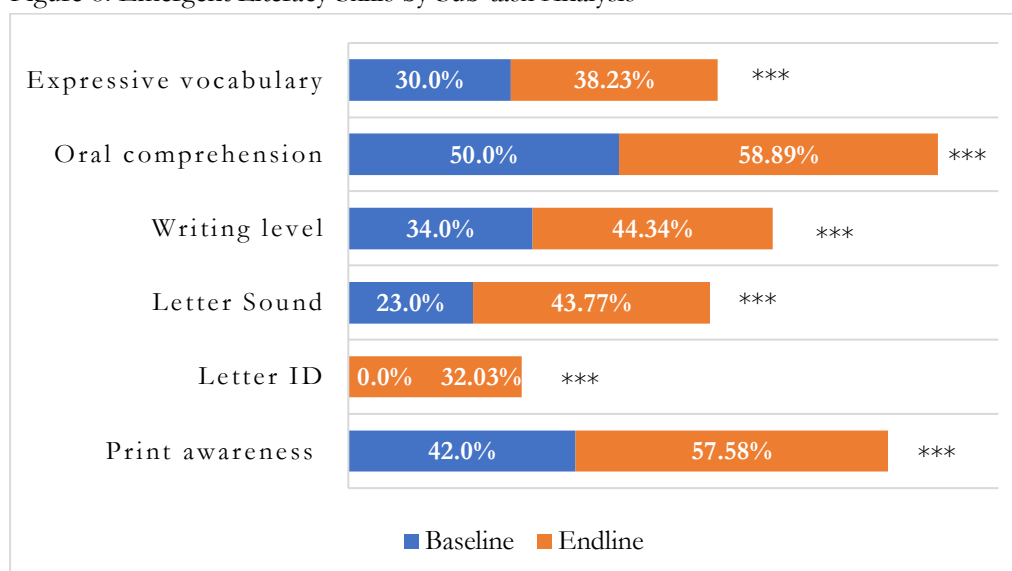
5. Oral Comprehension:

Scores in Oral Comprehension rose from 50.0% to 58.89%, an 8.89 percentage point increase. The p-value is ($p < 0.001$), indicating that this improvement is highly statistically significant. Oral comprehension is crucial for listening and understanding spoken language, which precedes reading comprehension. The modest but significant gain reveals that children have enhanced their ability to follow and understand spoken narratives, which will support their reading comprehension in the future.

6. Expressive Vocabulary:

The Expressive Vocabulary sub-task increased from 30.0% at baseline to 38.23% at endline, reflecting an 8.23 percentage point improvement. The p-value is ($p < 0.001$), confirming that this is highly statistically significant. A broader vocabulary allows children to express their thoughts and ideas more clearly, which is crucial for both verbal and written communication. The improvement in this area reveals that children have expanded their ability to use and understand a wider range of words, improving their overall language skills.

Figure 8: Emergent Literacy Skills by Sub-task Analysis



Source: IDELA Endline Study Data, 2024. ($p\text{-value} < 0.05^*$ $p\text{-value} < 0.01^{**}$; $p\text{-value} < 0.001^{***}$)⁸

Key Insights:

- **Significant Gains in Foundational Literacy Skills:** The study demonstrated substantial improvements in all emergent literacy sub-tasks, particularly in Letter ID and Letter Sound Knowledge, which are crucial for building reading fluency. These skills form the bedrock of early literacy and are key indicators of a child's readiness for more advanced literacy instruction.
- **Letter Recognition and Phonics:** The large gains in Letter ID (32.03%) and Letter Sound Knowledge (20.77%) suggest that the intervention effectively addressed foundational phonics skills. These are critical for children as they prepare to transition from "learning to read" to "reading to learn."
- **Writing Skills:** The improvement in Writing Level (10.34%) indicates that children have developed the ability to form letters and understand the mechanics of writing, which is essential for success

⁸ ($p\text{-value} < 0.05$ indicates statistical significance; $p\text{-value} < 0.01$ indicates high statistical significance; $p\text{-value} < 0.001$ indicates very high statistical significance. Smaller p-values suggest stronger evidence against the null hypothesis, meaning the observed changes are less likely due to chance.)

in early primary school. Writing is a key skill that correlates with reading development and broader cognitive abilities.

- Oral Language Skills: The increases in Oral Comprehension (8.89%) and Expressive Vocabulary (8.23%) suggest that the intervention was effective in promoting language skills that are crucial for communication and comprehension. These skills will serve as the foundation for both social interactions and academic success.

The Emergent Literacy Skills showed significant improvements across all sub-tasks from baseline to endline, with particularly large gains in Letter Identification and Letter Sound Knowledge, demonstrating the intervention's success in preparing children for more advanced reading and writing tasks. The overall improvements are highly statistically significant, confirming the intervention's effectiveness in fostering early literacy development. Moving forward, a focus on enhancing oral language skills and writing may provide even greater benefits as children progress toward full literacy.

5.0 LEARNER'S DEVELOPMENTAL STATUS: BASELINE VS. ENDLINE

The IDELA baseline and endline results for Early Childhood Education (ECE) learners in KG1 and KG2 provide valuable insights into their developmental progression in both social-emotional learning (SEL) and academic skills. These assessments align with the grading system established by the Ghana Ministry of Education, which categorizes learners' performance into six distinct categories, offering a detailed view of their development across key learning domains. The categorization enables a more nuanced understanding of the learner's growth and identifies areas where additional support may be required (Ministry of Education, National Pre-tertiary Education Curriculum Framework for Developing Subject Curricula, 2018). This approach ensures that developmental milestones are tracked effectively, providing a comprehensive measure of the learners' progress in areas critical to their future academic success.

Grading Procedure

Grade A:	80 - 100%	-	Excellent
Grade B:	70 - 79%	-	Very Good
Grade C:	60 - 69%	-	Good
Grade D:	45 - 59%	-	Credit (Satisfactory)
Grade E:	35 - 44%	-	Pass
Grade U	≤ 34%	-	Fail

Source: Ministry of Education, National Pre-tertiary Education Curriculum Framework for developing subject curricula (2018).

Table 8: Grading System Breakdown for Developmental Progress

Grade Category	Score Range	Remark	Description
Grade A	80 - 100%	Excellent	Learners who have not only met but exceeded the expected benchmarks. They demonstrate a profound understanding and mastery of emergent literacy concepts.
Grade B	70 - 79%	Very Good	Learners have showcased a commendable grasp of literacy skills, standing out as high achievers, though not quite reaching the zenith of the 'Excellent' category.
Grade C	60 – 69%	Good	Represents students who have a firm foundation in emergent skill but may need more refinement to ascend to the higher categories.
Grade D	45 – 59%	Credit	Signifies students who have a basic understanding of emergent skill concepts and have crossed the midway point in performance. There's room for improvement to climb to higher performance tiers.
Grade E	35 – 44%	Pass	Learners have just managed to meet the minimal developmental benchmarks in emergent skill and might require additional support and interventions to enhance their literacy skills further.
Grade U	≤ 34%	Fail	Consists of learners who have not met the developmental standards in emergent skill, highlighting the need for immediate attention and tailored educational strategies.
% of Children on track in emergent skill (Pass-Excellent) (35%-100%)			Represents those scoring between 35%-100%. This range encapsulates everyone from the 'Pass' grade upwards, indicating students who are making satisfactory progress in their literacy journey.

% of Children not on track in emergent skill (Fail: $\leq 34\%$)	Showcases the segment of the student population that is currently not on track. This category underscores the students who need focused interventions to bolster their emergent literacy skills.
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5.1 IDELA Total Scores: Developmentally on Track

5.1.1 KG1 by Gender and National Benchmark

The analysis of the baseline and endline performance of KG1 children in the IDELA assessment (covering socio-emotional, literacy, and numeracy skills) shows several key insights when segmented by gender and aligned with national benchmarks.

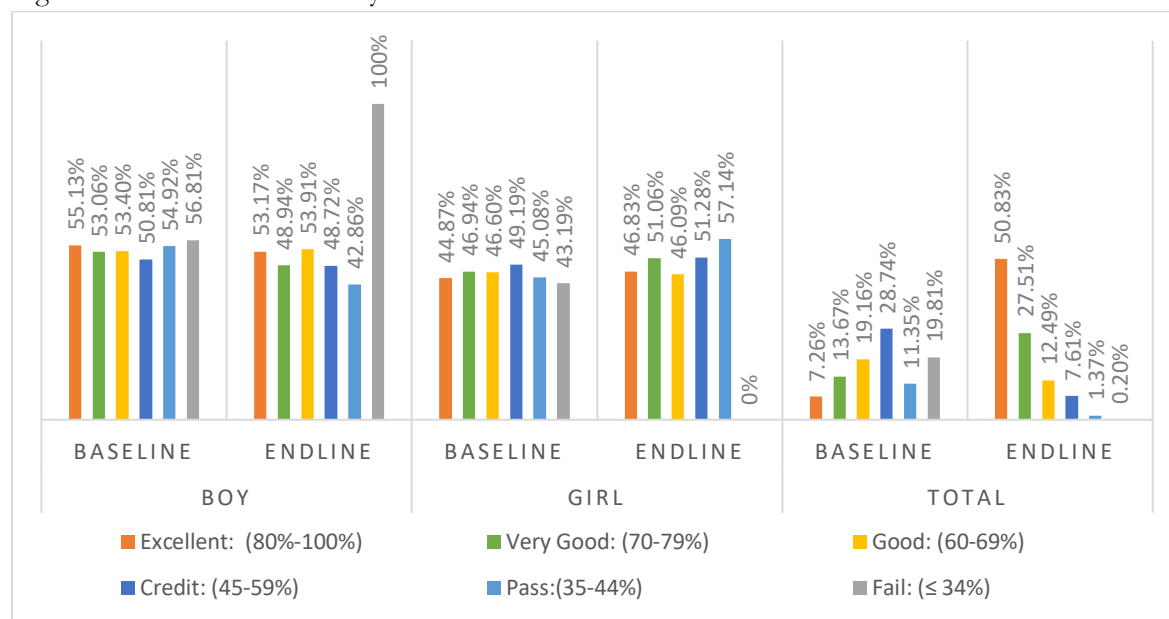
1. Significant Improvement in High Performers (Excellent Category)

The overall percentage of children in the 'Excellent' category (80%-100%) showed a remarkable increase from **7.26%** at baseline to **50.83%** at endline. This indicates a substantial improvement in the performance of high-achieving students, likely resulting from the implementation of targeted PBL strategies that engage and challenge students. Although boys' scores in the 'Excellent' range experienced a slight drop from **55.13%** to **53.17%**, and girls saw a small increase from **44.87%** to **46.83%**, the overall jump in this category reveals that the interventions were generally effective in pushing more learners toward higher mastery levels (see Figure 9).

2. Reduction in Failing Scores

A significant positive outcome is the drastic reduction in the 'Fail' category ($\leq 34\%$). At baseline, 56.81% of boys and 43.19% of girls fell within this range. By the endline, 100% of boys moved out of the 'Fail' category, while no girls remained in this range. This resulted in a dramatic overall decrease from 19.81% at baseline to just 0.20% at endline (see Figure 9). This reveals that the PBL interventions and supportive teaching strategies were highly effective in aiding struggling students to develop the necessary foundational skills to progress academically.

Figure 9: % of KG1 Children by Gender and National Benchmark



Source: IDELA Endline Study Data, 2024

3. Gender Disparities in Performance

The data reveals some gender-based differences in performance across categories. Boys showed remarkable improvement, especially in the 'Fail' category, where they went from 56.81% at baseline to none being classified as 'Fail' by the endline. However, girls also showed progress, though with varying degrees. In the 'Credit' category, boys experienced a slight decrease (from 50.81% to 48.72%), whereas girls had a small increase (from 49.19% to 51.28%) (see Figure 9). The mixed performance by gender indicates the necessity for gender-sensitive approaches in PBL implementation. It reveals that girls may require different types of support or encouragement to maintain and further improve their performance levels.

4. Shifts in Middle Performance Categories

The data shows a reduction in the number of learners in the 'Good' (60-69%) and 'Very Good' (70-79%) categories. For the 'Good' category, the overall percentage dropped from 19.16% at baseline to 12.49% at endline, while the 'Very Good' category saw an increase from 13.67% to 27.51%. This shift implies that learners in the middle ranges are either moving up to higher performance ('Excellent') or fluctuating downwards, requiring further analysis. It could signify a positive trajectory for some students who are developing the skills needed to advance, while also highlighting the need for ongoing support for those who may be struggling to stay in the higher categories.

5. Mixed Outcomes in the "Credit" and "Pass" Categories

There are mixed results in the 'Credit' (45-59%) and 'Pass' (35-44%) categories. Boys in the 'Credit' range decreased from 50.81% to 48.72%, whereas girls increased from 49.19% to 51.28%. The total percentage of students in the 'Credit' category dropped significantly from 28.74% to 7.61%, suggesting that many learners either advanced to higher categories or dropped to lower ones. In the 'Pass' category, boys decreased from 54.92% to 42.86%, while girls showed a notable increase from 45.08% to 57.14%. The overall percentage in this range decreased from 11.35% to 1.37%, potentially indicating that learners are either successfully moving up to higher performance categories or require more targeted support to avoid slipping further down.

The overall trends observed in the data suggest that PBL methods contributed to improving student outcomes, particularly with the significant increase in the 'Excellent' category and the decrease in the 'Fail' category. PBL approaches likely provided a more engaging, hands-on learning experience, enabling learners to develop critical socio-emotional, literacy, and numeracy skills more effectively. However, the varied shifts in middle categories, as well as the gender disparities, suggest that while PBL is effective in general, there may be a need for tailored strategies to ensure balanced support for different groups of students. This may include additional focus on students who hover around the 'Credit' and 'Pass' categories to ensure their continued progress. The results highlight the positive impact of PBL strategies on children's development, particularly in reducing failing scores and increasing the proportion of children reaching excellence. However, they also point to gender-based differences and fluctuations in performance within the middle categories, suggesting that a more nuanced, individualized approach to PBL may be needed to address varying learning needs.

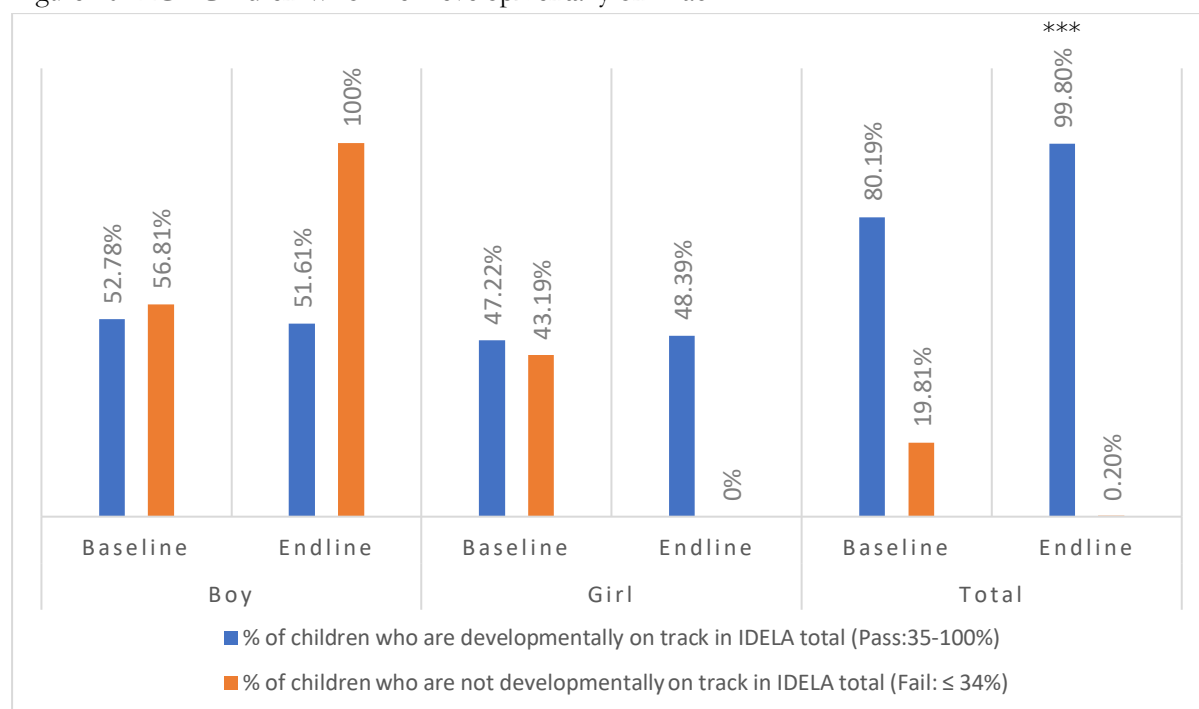
5.1.2 KG1 Learners Who Are Developmentally on Track

For the endline report, the developmental progress of children in KG1 was assessed using the IDELA total scores. The findings, segmented by gender and assessed at both baseline and endline, reveal insights into the children's progress:

1. Learners Developmentally on Track (Pass: 35-100%):

At the baseline, 52.78% of boys and 47.22% of girls who were in KG1 were considered developmentally on track. This indicates that slightly more boys than girls were meeting the expected benchmarks at the start. By the endline, the gender gap narrowed, with 51.61% of boys and 48.39% of girls in KG1 being developmentally on track. Overall, there was a substantial increase in the total percentage of Learners meeting the developmental milestones, rising from 80.19% at baseline to an impressive 99.80% at endline (see Figure 10). The improvement is statistically significant, with a p-value of ($p < 0.001$), indicating that the observed changes are highly meaningful.

Figure 10: KG1 Children Who Are Developmentally on Track



Source: IDELA Endline Study Data, 2024. (p -value < 0.05 * p -value < 0.01 ** p -value < 0.001 ***)⁹

2. Children Not Developmentally on Track (Fail: ≤ 34%):

At baseline, 56.81% of boys and 43.19% of girls were not developmentally on track, highlighting a significant proportion of learners needing support. By the endline, there was a dramatic improvement, with only 0.20% of the total children falling into the 'Fail' category (see Figure 10). Notably, 100% of the boys who were not on track at baseline improved by the endline, and no girls were identified as failing at the endline. This analysis indicates a remarkable overall improvement in children's developmental progress in KG1, with a significant reduction in the number of children falling into the 'Fail' category. The increased percentage of children who are now developmentally on track showcases the positive impact of interventions over the assessment period.

⁹ (p -value < 0.05 indicates statistical significance; p -value < 0.01 indicates high statistical significance; p -value < 0.001 indicates very high statistical significance. Smaller p-values suggest stronger evidence against the null hypothesis, meaning the observed changes are less likely due to chance.)

5.1.3 KG2 Learners by Gender and National Benchmark

The analysis of the baseline and endline performance of children in KG2 in the IDELA assessment across socio-emotional, literacy, and numeracy skills reveals several key insights:

1. Significant Improvement in High Performers (Excellent Category)

There is a notable increase in the overall proportion of learners scoring in the "Excellent" range (80-100%), which rose from **27.93% at baseline to 63.89% at endline** (see Figure 11). This reveals that PBL and educational interventions in the classroom may have positively impacted the development of high-achieving students. This improvement indicates that the curriculum and teaching strategies effectively nurture the skills of learners who are already performing well, propelling them to higher levels of achievement.

2. Reduction in Failing Scores

A significant reduction in the "Fail" category ($\leq 34\%$) was observed, with the overall percentage dropping drastically from 4.28% at baseline to 0.23% at endline (see Figure 11). For boys, this drop was especially noticeable, reducing from 31.58% to 0%. This indicates that educational interventions, perhaps combined with targeted support for struggling learners, were effective in raising the performance of those who were initially underperforming. It is a positive sign that fewer learners are falling behind in essential developmental areas.

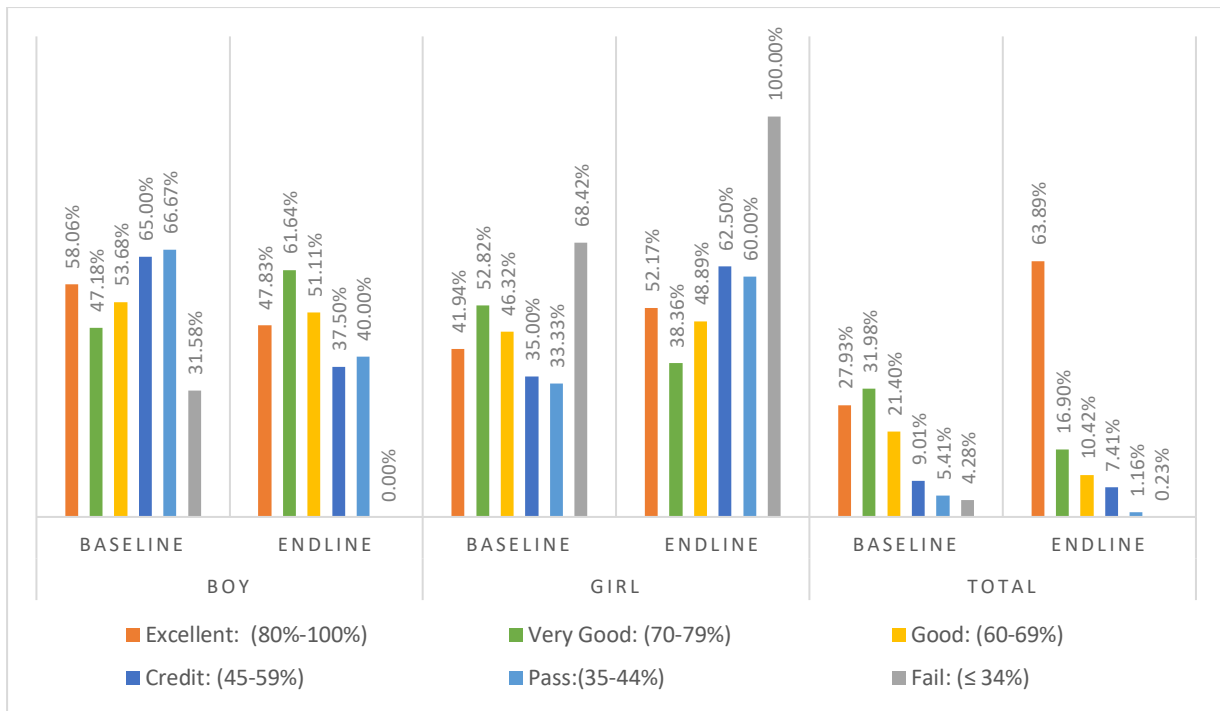
3. Gender Disparities in Performance

The data highlights gender-based differences in performance across various categories. While boys showed remarkable improvement, especially in the "Fail" category, girls experienced mixed results. For instance:

- In the "Fail" category, boys' scores improved significantly, with none falling into this range at endline. However, a substantial number of girls fell into the "Fail" category at endline.
- In contrast, the "Credit" category shows more boys decreasing their presence (from 65.00% to 37.50%) while girls increased theirs (from 35.00% to 62.50%).

These disparities suggest the need for gender-sensitive interventions, possibly indicating that girls may require different support or encouragement to sustain and improve their performance levels.

Figure 11: % of KG2 ECD Children in IDELA Assessment by Gender



Source: IDELA Endline Study Data, 2024

4. Shifts in Middle Performance Categories

The reduction in the percentage of learners in the "Good" (60-69%) and "Very Good" (70-79%) categories is interesting. For "Good," it dropped from 21.40% to 10.42%, and for "Very Good," from 31.98% to 16.90%. This shift may imply that students previously in the middle performance ranges were either successfully moved into higher performance ("Excellent") or needed additional support, and thus some fell into the lower performance ranges ("Credit" or "Pass"). This could indicate a positive trajectory for some students while highlighting the need for further support for others.

5. Mixed Outcomes in the "Credit" and "Pass" Categories

The percentages in the "Credit" and "Pass" categories saw notable changes, particularly with boys in the "Credit" category decreasing from 65.00% to 37.50% and girls increasing from 35.00% to 62.50%. This reveals that while some children have moved into higher categories, others may have fluctuated, possibly due to varying learning needs, external factors, or differences in engagement with the curriculum.

The overall decrease in the "Fail" category and increase in the "Excellent" category highlights the potential effectiveness of play-based learning methods employed between the baseline and endline. PBL approaches likely contributed to more engaging and effective teaching practices, allowing children to develop critical socio-emotional, literacy, and numeracy skills more effectively. However, the mixed results in the middle ranges ("Good," "Very Good") may indicate that while PBL is beneficial, there might be a need for targeted strategies to ensure balanced development across different performance groups. The data from KG2 highlights the benefits of the interventions, showing overall progress in children's socio-emotional, literacy, and numeracy skills, as indicated by the higher numbers in the "Excellent" category and the reduction of failing scores. However, gender disparities and mixed results in other performance ranges point to the need for a nuanced, ongoing approach to supporting all learners effectively.

5.1.4 KG2 Learners Who Are Developmentally on Track

The analysis of children in KG2 based on their developmental progress in the IDELA assessment offers insights into the proportion of children on track versus those who are not, segmented by gender.

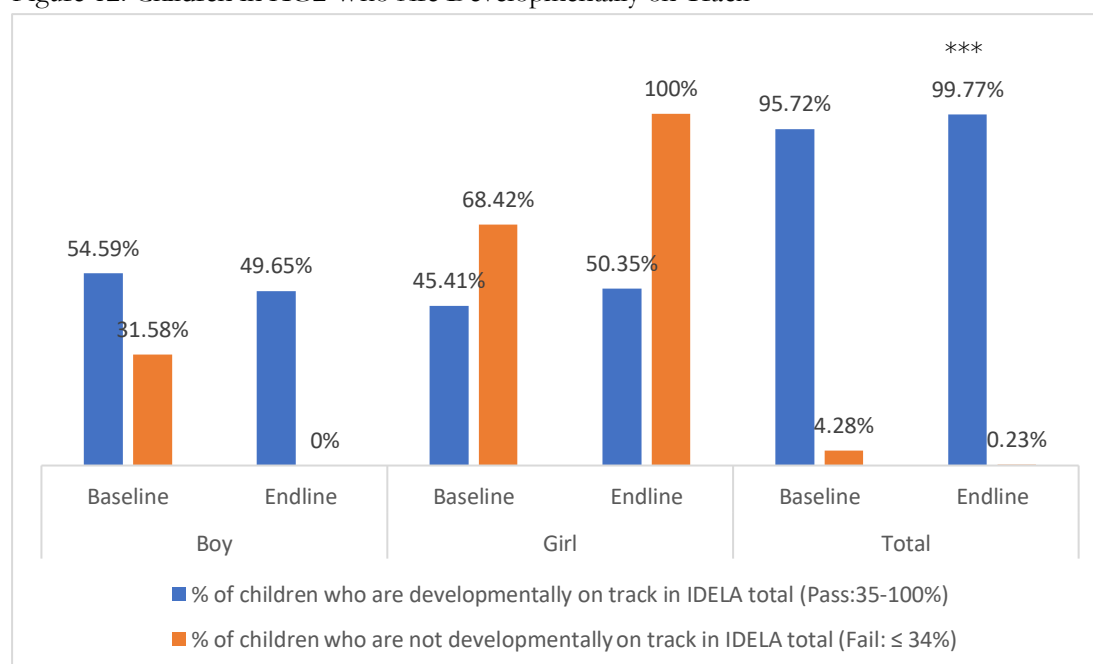
Learners Developmentally on Track (Pass: 35-100%):

At the baseline, 54.59% of boys and 45.41% of girls were developmentally on track. The combined total of children who were on track at baseline was 95.72%. By the endline, the percentage of boys who were developmentally on track slightly decreased to 49.65%, while the percentage of girls increased to 50.35%. This resulted in a total of 99.77% of children being on track at the endline, showing an overall improvement in the developmental progress of the cohort. The improvement is statistically significant, with a p-value of ($p < 0.001$), indicating that the observed changes are highly meaningful. (see Figure 12).

Learners Not Developmentally on Track (Fail: $\leq 34\%$):

At the baseline, 31.58% of boys and a significant 68.42% of girls were not developmentally on track. By the endline, there was a complete turnaround for boys, with 0% remaining in the "Fail" category, indicating marked improvement. However, for girls, 100% were in the "Fail" category at endline, suggesting a drastic drop in their developmental progress. Overall, the total proportion of children not on track decreased from 4.28% at baseline to 0.23% at endline, suggesting a major positive impact on the group as a whole (see Figure 12).

Figure 12: Children in KG2 Who Are Developmentally on Track



Source: IDELA Endline Study Data, 2024. (p -value < 0.05 * p -value < 0.01 **; p -value < 0.001 ***)¹⁰

The overall increase in learners who are developmentally on track from 95.72% to 99.77% reveals that educational interventions have been largely successful in supporting the development of KG2 children. The complete reduction of boys in the "Fail" category is a notable success. However, the significant increase

¹⁰ (p -value < 0.05 indicates statistical significance; p -value < 0.01 indicates high statistical significance; p -value < 0.001 indicates very high statistical significance. Smaller p-values suggest stronger evidence against the null hypothesis, meaning the observed changes are less likely due to chance.)

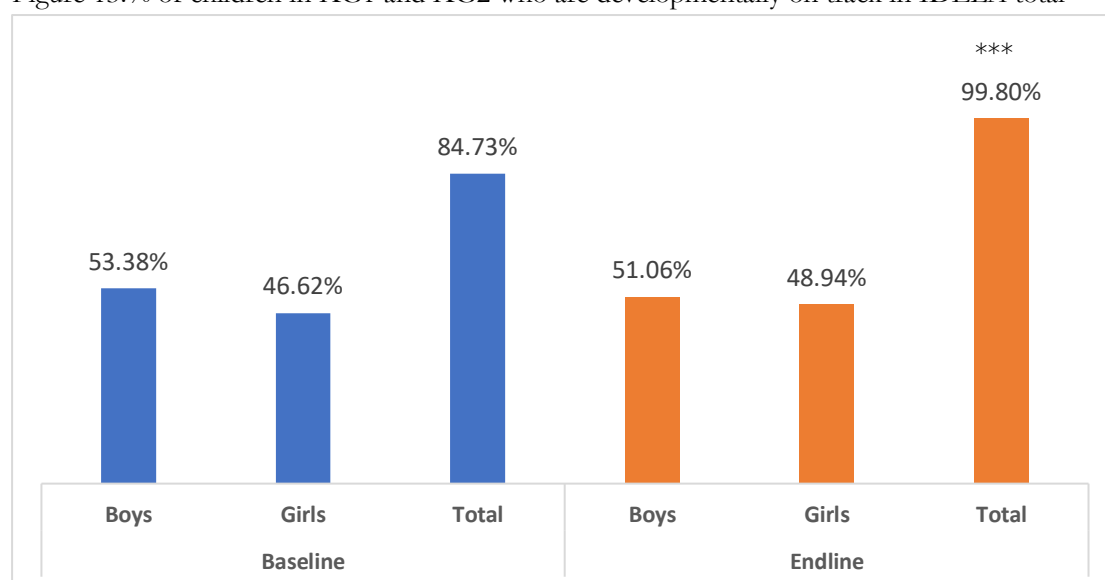
in girls falling into the "Fail" category by endline highlights a gender disparity that needs to be addressed. This indicates the need for targeted support strategies for girls to ensure balanced developmental progress in both genders.

5.1.5 KG1 and KG2 learners who are developmentally on track in IDELA total

The analysis of developmental progress in early childhood education (ECE) for children in KG1 and KG2 reveals notable shifts in the percentage of children who are developmentally on track, as measured by the IDELA total scores. At baseline, 53.38% of boys and 46.62% of girls in KG1 and KG2 combined were classified as developmentally on track, yielding an overall total of 84.73%. This initial data indicates that while a significant majority of children were meeting the expected developmental benchmarks, there were still considerable opportunities for improvement, particularly among girls, who were trailing behind boys in this regard.

By the endline assessment, however, the results demonstrated remarkable progress. The percentage of boys developmentally on track decreased slightly to 51.06%, while the percentage of girls saw a minor increase to 48.94%. Collectively, the total percentage of children who were developmentally on track surged to an impressive 99.80%. This dramatic increase from 84.73% to 99.80% underscores the effectiveness of the interventions implemented during the educational period, particularly in enhancing the developmental outcomes of the entire cohort. The p-value for this improvement is ($p < 0.001$), indicating that the observed changes are highly statistically significant.

Figure 13: % of children in KG1 and KG2 who are developmentally on track in IDELA total



Source: IDELA Endline Study Data, 2024. (p -value < 0.05 * p -value < 0.01 **; p -value < 0.001 ***)¹¹

¹¹ (p -value < 0.05 indicates statistical significance; p -value < 0.01 indicates high statistical significance; p -value < 0.001 indicates very high statistical significance. Smaller p-values suggest stronger evidence against the null hypothesis, meaning the observed changes are less likely due to chance.)

The substantial improvement in the total percentage of children on track indicates that the educational strategies, possibly including play-based learning and targeted curriculum adjustments, were successful in fostering developmental growth across both genders. While the slight decrease in the percentage of boys developmentally on track might suggest a need for further investigation into the specific factors influencing their progress, the overall trends point to a significant enhancement in the developmental skills of both boys and girls in the KG1 and KG2 classes. The findings reflect a strong foundation for continued learning and development in early childhood education settings, paving the way for positive future academic outcomes.

5.2 Emergent Literacy: Children on Track

5.2.1 KG1 by Gender and National Benchmark

1. Significant Improvement in High Performers (Excellent Category)

One of the most notable changes is the increase in learners scoring in the "Excellent" category (80%-100%). At baseline, no boys were in this category, while by the endline, **55.21%** of boys achieved an "Excellent" score. For girls, there was a similar upward trend, moving from **0%** at baseline to **44.79%** at the endline. The overall rise in the "Excellent" category from a negligible **0.28%** to **9.37%** indicates that the educational strategies, possibly including PBL interventions, have had a substantial impact on high-achieving students (see Figure 13). This reveals that the curriculum is effectively nurturing the skills of students who can reach higher levels of proficiency.

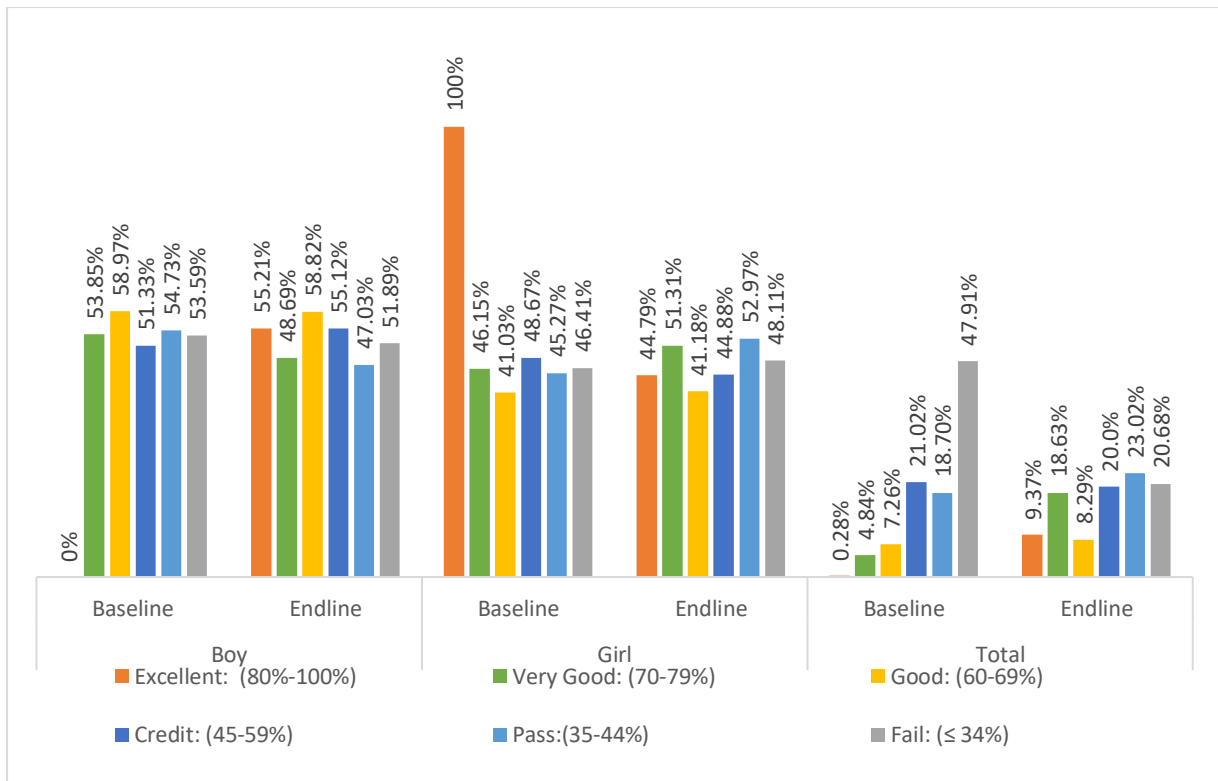
2. Reduction in Failing Scores

A critical insight is the significant reduction in the number of learners falling into the "Fail" category ($\leq 34\%$). The total percentage of learners in this category dropped from **47.91%** at baseline to **20.68%** at endline. For boys, the decline was from **53.59%** to **51.89%**, while for girls, it was from **46.41%** to **48.11%** (see Figure 13). Despite these improvements, the persistent presence of some learners in this category highlights the ongoing need for targeted support to further reduce the number of learners struggling in emergent literacy.

3. Gender Disparities in Performance

The data reveals noticeable gender disparities in various performance categories. For instance, boys showed remarkable improvement in the "Excellent" category, moving from **0%** at baseline to **55.21%** at endline. Girls also improved but to a slightly lesser extent, rising to **44.79%** in the same category. In contrast, girls experienced an increase in the "Pass" category, from **45.27%** to **52.97%**, while boys showed a decrease in this range. This pattern reveals that girls may be progressing at a steadier pace, whereas boys seem to exhibit more variability in their performance. These disparities indicate the need for gender-sensitive approaches to ensure that both boys and girls receive the necessary support and encouragement to maximize their learning potential.

Figure 14: % of KG1 children by Gender and National Benchmark



Source: IDELA Endline Study Data, 2024

4. Shifts in Middle Performance Categories

There were minimal changes in the "Good" category (60-69%). For boys, the percentage remained almost constant at around **58.97%**, while girls also stayed around **41%**. The overall total showed a slight increase from **7.26%** to **8.29%**. These results suggest that children in the "Good" category maintained their literacy levels, potentially indicating a plateau in their learning. This stability points to the need for tailored strategies to help students in this range move into higher categories.

5. Mixed Outcomes in the "Credit" and "Pass" Categories

The "Credit" category (45-59%) exhibited mixed results. Boys experienced a slight increase from 51.33% to 55.12%, while girls saw a decrease from 48.67% to 44.88%. Overall, the total remained relatively stable, with a minor reduction from 21.02% to 20.00% (see Figure 13). In the "Pass" category (35-44%), boys showed a decrease from 54.73% to 47.03%, while girls exhibited an increase from 45.27% to 52.97%. This fluctuation reveals that while some children moved up to higher proficiency levels, others, especially boys, may have needed additional support or intervention.

The increase in the percentage of children in the "Excellent" and "Very Good" categories, along with the decrease in "Fail" scores, reveals that PBL strategies were effective in enhancing emergent literacy skills. The playful and interactive nature of PBL likely contributed to better engagement and understanding of literacy concepts, resulting in overall improved student outcomes. However, the varied performance in the middle categories ("Credit" and "Pass") indicates that while PBL has positively impacted many students, there is still a need for differentiated support. This might involve more tailored play-based activities to address specific literacy gaps and further push students towards higher proficiency levels. The analysis highlights a general improvement in emergent literacy skills, particularly with the significant increase in the "Excellent" category and the reduction in "Failing" scores. Despite these positive trends, gender disparities persist, and there are mixed outcomes in middle performance categories. These findings underscore the

potential of PBL in advancing literacy while pointing to areas where further targeted support is necessary to ensure balanced progress for all learners.

5.2.2 KG1 Learners Who Are Developmentally

This analysis examines the developmental progress of KG1 children in emergent literacy skills, focusing on the percentage of children who are "on track" and "not on track" based on their scores. The results are segmented by gender, providing insights into how the children's literacy skills have evolved from baseline to endline.

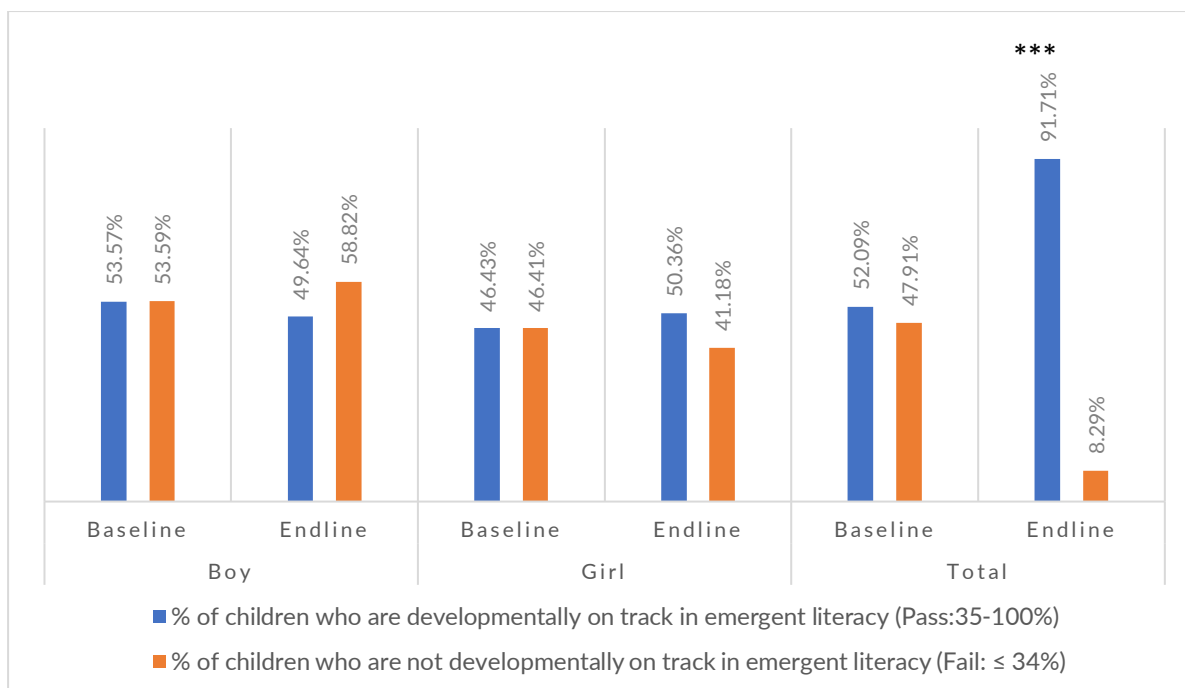
1. Children on Track in Emergent Literacy (Pass: 35-100%)

At baseline, **53.57%** of boys and **46.43%** of girls were on track in emergent literacy skills, reflecting a near-even distribution between genders. The overall percentage of children on track stood at **52.09%**. By the endline, the percentage of boys on track slightly decreased to **49.64%**, whereas the percentage of girls increased to **50.36%**. This shift indicates that a greater proportion of girls improved or maintained their literacy development compared to boys during the study period. Importantly, the total percentage of children on track in emergent literacy skills showed a substantial increase, rising from **52.09%** at baseline to **91.71%** at endline with a extreme statistically significant ($p < 0.000001$) (see Figure 15). This overall improvement reveals that interventions and teaching strategies implemented during this period were effective in enhancing the emergent literacy skills of the children.

2. Children Not on Track in Emergent Literacy (Fail: $\leq 34\%$)

At baseline, **53.59%** of boys and **46.41%** of girls were not on track, indicating a relatively balanced proportion of children struggling with emergent literacy. By the endline, the situation for boys worsened slightly, with **58.82%** still not on track. However, there was a positive change among girls, as the percentage of those not on track decreased to **41.18%**. This change indicates that the interventions had a more pronounced effect on improving the literacy skills of girls compared to boys. The overall percentage of children not on track in emergent literacy significantly decreased from **47.91%** at baseline to **8.29%** at endline (see Figure 15). This substantial reduction reveals that the majority of children have made significant progress in their literacy skills, moving out of the "Fail" category.

Figure 15: % of KG1 Children Who Are Developmentally



Source: IDELA Endline Study Data, 2024. (p-value < 0.05* p-value < 0.01**; p-value < 0.001***)¹²

5.2.3 KG2 Children by Gender and National Benchmark

This analysis provides insights into the performance of KG2 children in emergent literacy skills, segmented by gender and aligned with the national benchmark. The results highlight various trends and changes between the baseline and endline, revealing areas of improvement as well as ongoing challenges.

1. Significant Improvement in High Performers (Excellent Category)

The percentage of children scoring in the "Excellent" category (80%-100%) showed a notable gender disparity. For girls, there was a significant increase, rising from **55.56%** at baseline to **73.33%** at endline. This indicates a positive outcome for girls in achieving high levels of literacy proficiency. Conversely, boys showed a decline in the "Excellent" category, dropping from **44.44%** at baseline to **26.67%** at endline (see Figure 15). This decrease reveals that while some girls have been able to move into the highest proficiency levels, boys may be struggling to sustain or achieve similar gains in this category. Despite these gender-based differences, the overall percentage of children in the "Excellent" category remains relatively low, increasing slightly from **2.03%** to **3.47%**, indicating that there is still room for improvement in raising the proportion of high performers.

2. Reduction in Failing Scores

The "Fail" category (≤ 34%) presented a mixed picture. For boys, there was a decrease in the number of children in this category, from **58.44%** at baseline to **52.27%** at endline. This modest decline reveals that some boys are beginning to overcome their initial struggles with literacy. Girls, however, showed a slight increase in the "Fail" category, moving from **41.56%** to **47.73%** (see Figure 15). This increase is concerning, as it indicates that a significant portion of girls remains in the lower proficiency range, highlighting the need for targeted interventions to support their literacy development. Overall, the total percentage of children in

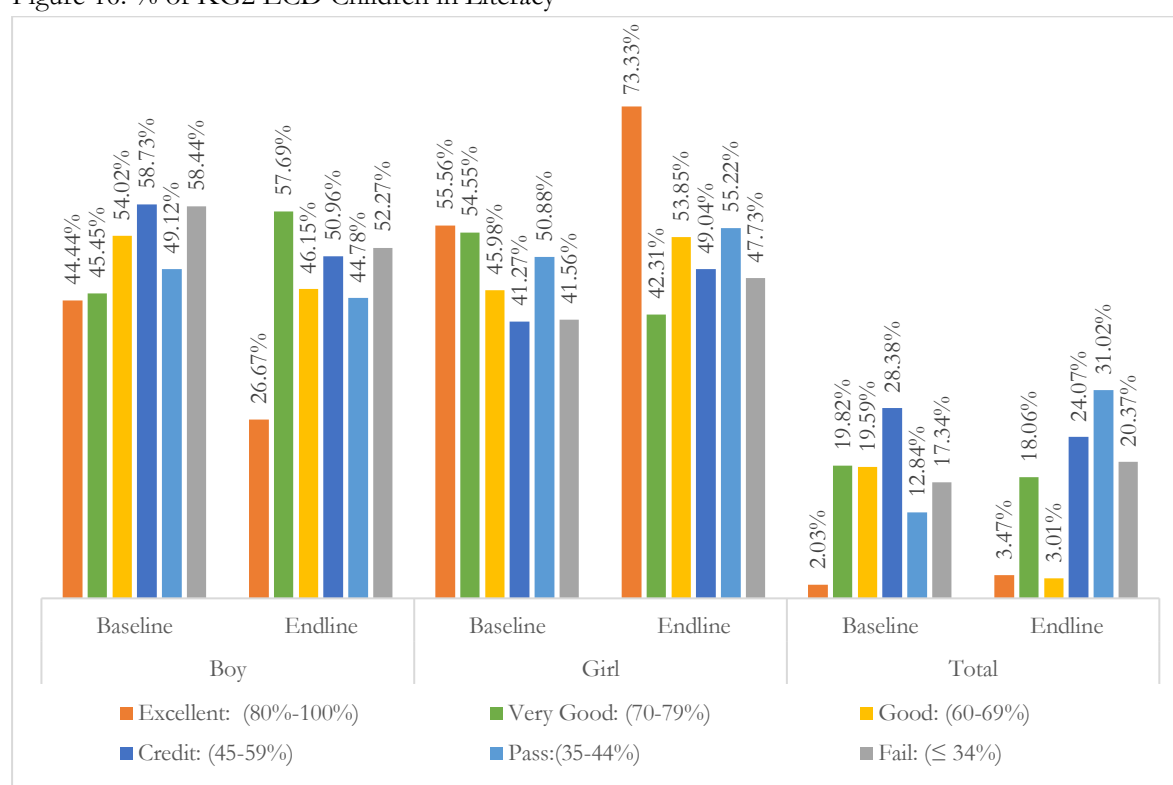
¹² (p-value < 0.05 indicates statistical significance; p-value < 0.01 indicates high statistical significance; p-value < 0.001 indicates very high statistical significance. Smaller p-values suggest stronger evidence against the null hypothesis, meaning the observed changes are less likely due to chance.)

the "Fail" category increased from **17.34%** at baseline to **20.37%** at endline, suggesting that although there have been individual improvements, more effort is needed to reduce the number of children struggling with foundational literacy skills.

3. Gender Disparities in Performance

There are noticeable gender disparities in performance across different categories. Girls outperformed boys in the "Excellent" category, increasing their presence to **73.33%** at endline. Conversely, boys dominated the "Very Good" category (70-79%), showing an increase from **45.45%** to **57.69%**. Interestingly, boys saw a decline in the "Good" category (60-69%) from **54.02%** to **46.15%**, while girls increased slightly in this range, moving to **53.85%** (see Figure 15). This shift indicates that girls are becoming more consistent in their literacy performance. The disparities suggest that while both boys and girls are showing progress, they may require different types of support to excel in literacy.

Figure 16: % of KG2 ECD Children in Literacy



Source: IDELA Endline Study Data, 2024

4. Shifts in Middle Performance Categories

There were mixed results in the "Good" and "Very Good" categories. For boys, the "Good" category (60-69%) saw a decrease from **54.02%** to **46.15%**, indicating a movement of some students into either higher or lower performance bands. Girls, on the other hand, increased slightly in this category to **53.85%** at endline. The "Very Good" category (70-79%) saw boys increase their presence from **45.45%** to **57.69%**, suggesting improvement. Girls, however, declined in this category from **54.55%** to **42.31%** (see Figure 15), pointing to a potential shift in their performance distribution. These shifts reflect that while some children are progressing, others are fluctuating, which may signal the need for more consistent support mechanisms in the classroom.

5. Mixed Outcomes in the "Credit" and "Pass" Categories

In the "Credit" category (45-59%), both boys and girls showed a decrease from baseline to endline, with boys moving from 58.73% to 50.96% and girls from 41.27% to 49.04%. The total percentage decreased slightly from 28.38% to 24.07%. For the "Pass" category (35-44%), there was a notable shift. Boys decreased from 49.12% to 44.78%, while girls increased from 50.88% to 55.22%. The total percentage of children in this range rose significantly, from 12.84% to 31.02% at endline (see Figure 15). This reveals that some children have improved their literacy skills sufficiently to move out of the "Fail" category but have not yet reached higher proficiency levels.

The baseline and endline performance analysis for KG2 children reveals some encouraging trends, such as an increase in high performers among girls and a reduction in failing scores for boys. However, the data also shows that many children remain in lower performance categories, particularly in the "Fail" and "Pass" ranges. Gender disparities are evident, with boys showing more variability in performance and girls displaying stronger results in specific categories. These findings suggest that while PBL is beneficial, further adjustments and targeted support are necessary to ensure balanced and comprehensive literacy development for all children.

5.2.4 KG2 Children Who Are Developmentally on Track

This analysis evaluates the developmental progress of children in KG2 concerning their emergent literacy skills. The performance of children is assessed based on the national benchmarks, segmented by gender, and compared between baseline and endline.

1. Children On Track in Emergent Literacy (Pass: 35-100%)

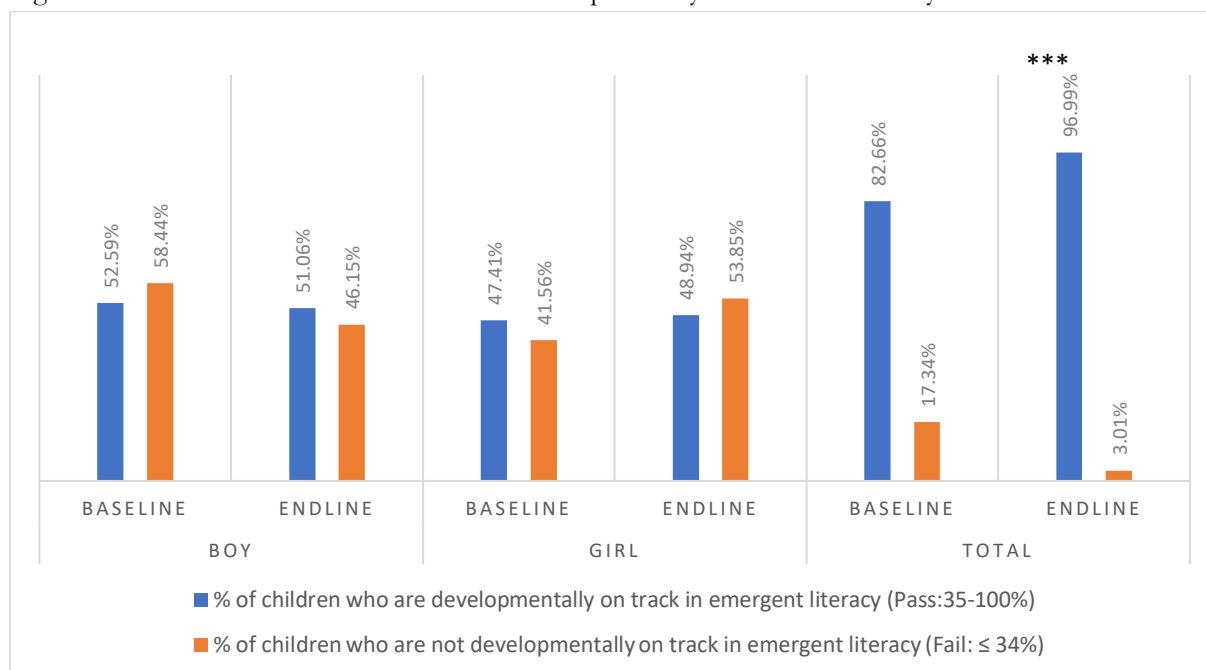
At baseline, 52.59% of boys were on track in emergent literacy. By the endline, this percentage showed a slight decrease to 51.06%, indicating minimal change in the number of boys meeting the national benchmark. This suggests that while some boys maintained their literacy skills, the interventions may not have significantly improved their performance. In contrast, 47.41% of girls were on track in emergent literacy at baseline, which increased to 48.94% at endline, reflecting a modest improvement. Although the increase is small, it still represents a positive shift in the literacy development of girls. The total percentage of children on track in emergent literacy improved significantly, rising from 82.66% at baseline to 96.99% at endline. This substantial increase suggests that the educational interventions, particularly the play-based learning (PBL) methods, were highly effective overall in advancing the literacy skills of children in KG2. The p-value ($p < 0.001$) confirms that this improvement is highly statistically significant, providing strong evidence that the interventions had a meaningful impact on the literacy development of the children (Figure 17).

2. Children Not on Track in Emergent Literacy (Fail: $\leq 34\%$)

There was a marked improvement in the percentage of boys who were not on track. At baseline, 58.44% of boys fell into this category, which decreased to 46.15% by the endline (see Figure 16). This decline reveals that interventions have helped some boys move out of the "Fail" category, although nearly half remain struggling. The percentage of girls not on track increased slightly from 41.56% at baseline to 53.85% at endline. This increase indicates that despite the interventions, a significant number of girls struggled to meet the developmental benchmarks in emergent literacy, highlighting a potential area for targeted support. The total percentage of children not on track decreased significantly, from 17.34% at baseline to 3.01% at endline. This sharp decline in the overall "Fail" category underscores the success of the PBL approaches

and literacy interventions in assisting the majority of children to meet or exceed the literacy benchmarks (Figure 17).

Figure 17: % of Children in KG2 Who Are Developmentally on Track in Literacy



Source: IDELA Endline Study Data, 2024. (p-value < 0.05* p-value < 0.01**; p-value < 0.001***)¹³

5.3 Emergent Numeracy: children on Track

5.3.1 KG1 Children by Gender and National Benchmark

This analysis examines the emergent numeracy skills of children in KG1 using the IDELA assessment results, segmented by gender and aligned with national benchmarks. It compares performance across various categories: Excellent, Very Good, Good, Credit, Pass, and Fail, providing insights into how PBL and other educational interventions have impacted children's numeracy development.

1. Significant Improvement in High Performers (Excellent Category)

The percentage of boys scoring in the "Excellent" category (80-100%) decreased slightly from 53.42% at baseline to 50.31% at endline. Conversely, the percentage of girls in the "Excellent" category increased from 46.58% at baseline to 49.69% at endline. There is a substantial increase in the total percentage of children scoring "Excellent," from 14.98% at baseline to 63.02% at endline (see Figure 18). This significant improvement reveals that the teaching strategies, possibly including PBL, effectively enhanced the numeracy skills of high-performing students.

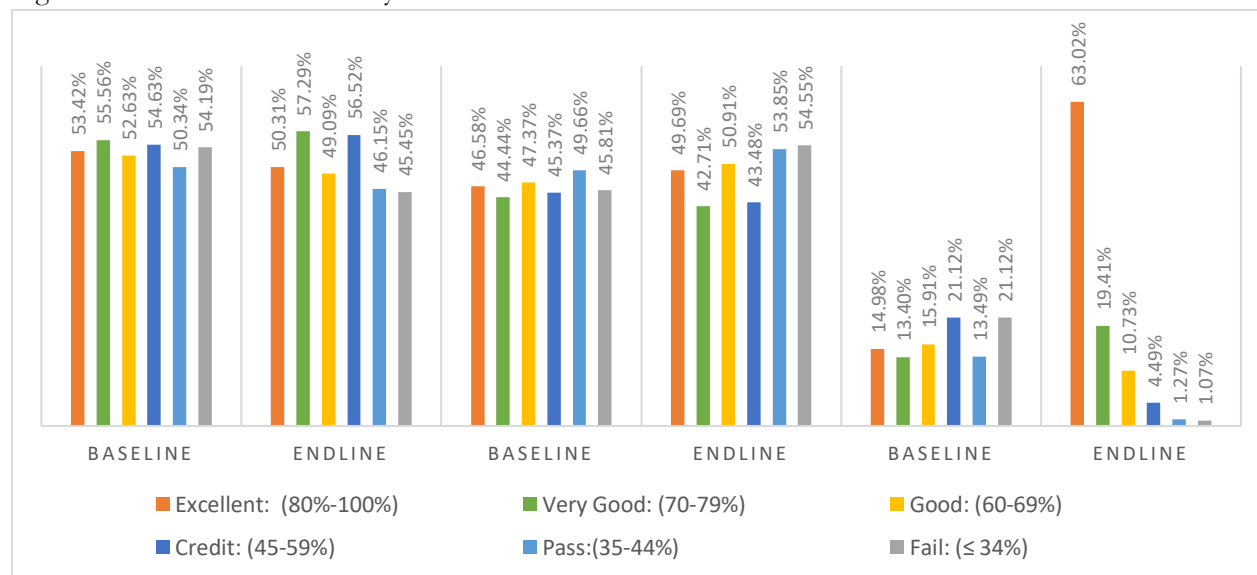
2. Reduction in Failing Scores (≤ 34%)

The percentage of boys falling into the "Fail" category dropped from **54.19%** to **45.45%** at the endline, indicating that some of the interventions were successful in elevating underperforming boys. Conversely, there was an increase in the percentage of girls in the "Fail" category from **45.81%** at baseline to **54.55%** at

¹³ (p-value < 0.05 indicates statistical significance; p-value < 0.01 indicates high statistical significance; p-value < 0.001 indicates very high statistical significance. Smaller p-values suggest stronger evidence against the null hypothesis, meaning the observed changes are less likely due to chance.)

endline (see Figure 18). This rise reveals that girls might face challenges in numeracy development that were not adequately addressed during the study period. The total percentage of children in the "Fail" category saw a dramatic reduction from **21.12%** at baseline to **1.07%** at endline, highlighting the overall positive impact of educational interventions on most children's numeracy skills.

Figure 18: % of KG1 Children by Gender and National Benchmark



Source: IDELA Endline Study Data, 2024

3. Gender Disparities in Performance

While boys showed a decrease in the "Fail" category, they also experienced a slight decline in the "Excellent" category, indicating that while some boys were successfully moved out of the failing group, they did not necessarily all transition into the top performance category. The increase in the "Fail" category among girls reveals potential challenges that need to be addressed. In the "Credit" category, a decrease was noted, showing some fluctuations in girls' overall performance levels. These gender-based disparities suggest a need for gender-sensitive educational strategies, as boys and girls may respond differently to PBL and other interventions.

4. Shifts in Middle Performance Categories

"Good" (60-69%): The total percentage of children in the "Good" category decreased from 15.91% at baseline to 10.73% at endline. Boys saw a slight decrease, while girls showed a marginal increase. This shift could imply that students who were in the "Good" category either improved to the "Very Good" or "Excellent" range or dropped into the lower categories.

"Very Good" (70-79%): An overall increase was observed, with the total percentage rising from 13.40% to 19.41%. Boys experienced a small increase, while girls experienced a slight decline. This indicates some successful movement of students into higher performance levels, particularly benefiting boys more than girls.

5. Mixed Outcomes in the "Credit" and "Pass" Categories

Credit (45-59%): The overall percentage of children in this category decreased significantly from **21.12%** to **4.49%**. Boys showed a slight increase, whereas girls experienced a decrease, suggesting that while some boys maintained their position in this category, many girls shifted either to higher or lower performance levels. **Pass (35-44%):** The overall percentage saw a considerable decrease from **13.49%** to **1.27%**. Boys

decreased in this category, while girls slightly increased, showing a shift in where boys and girls fall within the spectrum of developmental progress in numeracy.

The overall increase in children performing in the "Excellent" and "Very Good" categories indicates that PBL may have had a positive impact on numeracy development. PBL approaches, which emphasize hands-on, interactive learning experiences, could be instrumental in nurturing critical numeracy skills in young learners. However, the increase in the "Fail" category for girls raises concerns and reveals that while PBL is effective, it might require tailored strategies to address specific learning needs, particularly for girls. This calls for the incorporation of more gender-sensitive methods within PBL to ensure balanced progress across all learners. The analysis indicates that the implementation of PBL and other educational strategies has contributed to significant improvements in children's emergent numeracy skills, particularly by reducing the number of children in the "Fail" category and increasing those in the "Excellent" category. However, gender disparities persist, pointing to the need for more focused, gender-sensitive interventions to support all children equally in their numeracy development journey.

5.3.2 KG1 Children Who Are Developmentally on Track in Emergent Numeracy

This analysis examines the baseline and endline percentages of children in KG1 who are developmentally on track in emergent numeracy, segmented by gender. The focus is on the improvement or decline in performance over time, using the pass/fail threshold of 35% in emergent numeracy skills.

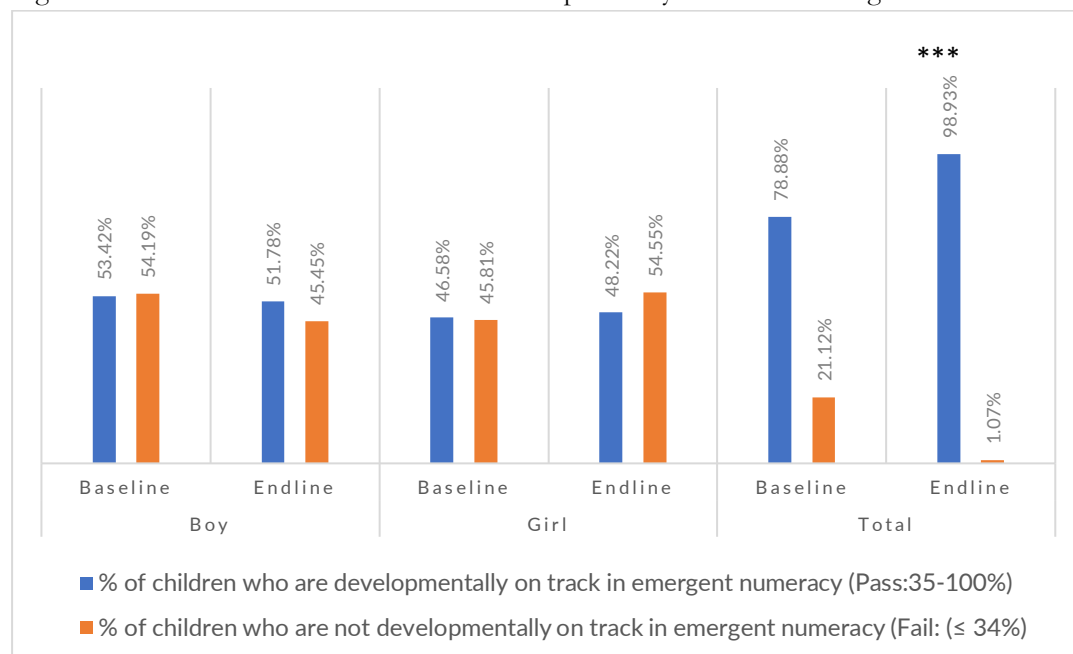
1. Children Developmentally on Track (Pass: 35-100%)

At baseline, 53.42% of boys were developmentally on track in emergent numeracy. By the endline, this slightly decreased to 51.78%, indicating a small decline in the number of boys meeting the expected developmental standards in numeracy (see Figure 19). This suggests that while boys generally maintained their numeracy skills, the intervention may not have had a substantial positive impact on their performance in this area. For girls, the percentage on track in emergent numeracy increased from 46.58% at baseline to 48.22% at endline, showing a positive improvement in their numeracy performance over time. Although modest, this gain reflects a meaningful enhancement in the numeracy skills of girls, contributing to their overall developmental progress.

2. Children Not Developmentally on Track (Fail: $\leq 34\%$)

At baseline, **54.19%** of boys were not developmentally on track in emergent numeracy, but this figure decreased to **45.45%** by the endline (see Figure 18). This reveals that interventions have helped reduce the number of boys struggling with numeracy, though nearly half still fall below the required threshold. Interestingly, the percentage of girls not on track increased from **45.81%** at baseline to **54.55%** at endline. This indicates that while some girls improved their overall performance, a significant portion still struggles to meet the developmental standards in numeracy. The total percentage of children not developmentally on track in emergent numeracy dropped dramatically from **21.12%** at baseline to just **1.07%** at endline. This reveals that educational interventions have been effective in bringing the majority of students up to speed in numeracy.

Figure 19: % of children in KG1 who are developmentally on track in emergent



Source: IDELA Endline Study Data, 2024. (p-value < 0.05* p-value < 0.01**; p-value < 0.001***)¹⁴

The total percentage of children who are developmentally on track in emergent numeracy increased significantly from 78.88% at baseline to 98.93% at endline. This substantial improvement highlights the overall effectiveness of the interventions in improving numeracy development across both genders, with a particularly strong impact on girls. The p-value ($p < 0.001$) confirms that this improvement is highly statistically significant, providing strong evidence that the interventions had a major positive effect on numeracy development.

5.3.3 KG2 Children by Gender and National Benchmark

This analysis delves into the performance of children in KG2 in the IDELA assessment focusing on emergent numeracy skills. The data is segmented by gender and aligned with national benchmarks, offering insights into student progress and the potential impact of PBL interventions.

1. Significant Improvement in High Performers (Excellent Category)

There was a slight decrease in the percentage of boys in the "Excellent" category (80-100%), from 57.08% at baseline to 50.97% at endline. Despite the drop, the percentage remains relatively high, suggesting that many boys have continued to excel in emergent numeracy. Girls showed a minor increase in the "Excellent" category, rising from 42.92% to 49.03%. This improvement indicates that educational interventions, including PBL, might be positively impacting girls' performance in numeracy skills. The total percentage of

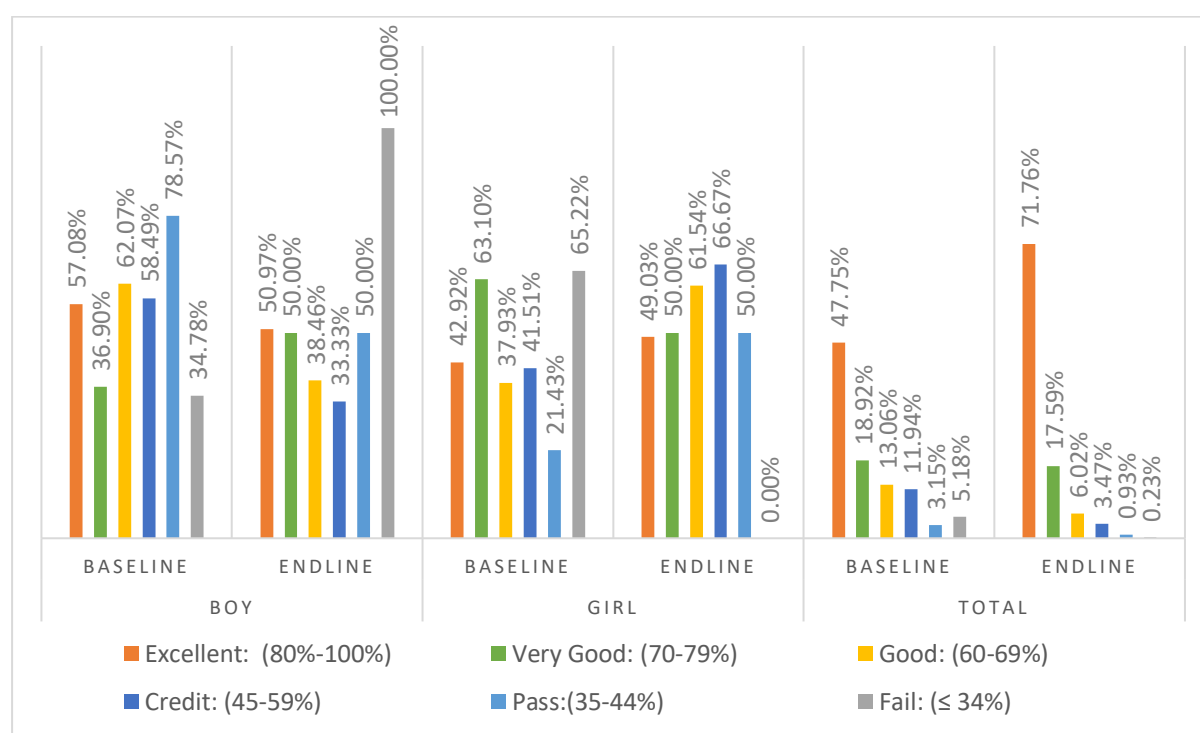
¹⁴ (p -value < 0.05 indicates statistical significance; p -value < 0.01 indicates high statistical significance; p -value < 0.001 indicates very high statistical significance. Smaller p -values suggest stronger evidence against the null hypothesis, meaning the observed changes are less likely due to chance.)

students in the "Excellent" category increased significantly from 47.75% at baseline to 71.76% at endline (see Figure 20). This substantial growth indicates that a considerable portion of students is now achieving high levels in numeracy, highlighting the success of educational strategies employed between the baseline and endline.

2. Reduction in Failing Scores ($\leq 34\%$)

There was a drastic increase in the percentage of boys falling into the "Fail" category at the endline, jumping from 34.78% to 100%. This outcome raises concerns about potential challenges faced by boys in this cohort and reveals a need for more targeted interventions to support struggling students. In contrast, girls showed remarkable progress, with 65.22% of them in the "Fail" category at baseline reducing to 0% at endline. This indicates significant improvement and successful support for girls who were initially underperforming. The total percentage of children in the "Fail" category dropped sharply from 5.18% to 0.23% (see Figure 19). This reduction is a positive sign that interventions have successfully decreased the number of children who are severely behind in numeracy skills.

Figure 20: % of KG2 Children by Gender and National Benchmark



Source: IDELA Endline Study Data, 2024

3. Gender Disparities in Performance

The increase in boys in the "Fail" category at endline is a concerning trend, contrasting sharply with the significant improvements seen in other categories. While some boys continued to perform well in the "Excellent" and "Very Good" categories, the spike in failing scores indicates a need for more specialized support to address the diverse learning needs among boys. Girls experienced more consistent improvements across categories, particularly in reducing failing scores and increasing the "Excellent" category percentage. The data reveals that interventions, possibly including PBL, were more effective in enhancing girls' numeracy skills.

4. Shifts in Middle Performance Categories

The percentage of children in the "Good" (60-69%) category decreased from 13.06% to 6.02% overall. While this could indicate that some students improved to higher categories like "Very Good" or "Excellent," it also reveals that others might have dropped to lower performance levels, highlighting the mixed outcomes of educational interventions (see Figure 19).

The percentage of students in this "Very Good" (70-79%) category remained relatively stable, with a slight decrease from 18.92% to 17.59%. Boys increased in this category, while girls experienced a minor decline. This reveals that while some students have made moderate progress, there is room for further improvement to move more students into the top performance brackets.

5. Mixed Outcomes in the "Credit" and "Pass" Categories

The total percentage of children in the "Credit" (45-59%) category decreased notably from 11.94% to 3.47%. Boys saw a decrease from 58.49% to 33.33%, while girls increased from 41.51% to 66.67%. This fluctuation indicates that while some children moved to higher performance categories, others fell behind. The overall percentage of children in the Pass (35-44%) category also decreased from 3.15% to 0.93%. Interestingly, boys experienced a sharp decline, while girls remained consistent, pointing to varying learning trajectories between genders (see Figure 19).

The substantial reduction in the "Fail" category and the increase in the "Excellent" category highlight the potential positive impact of PBL on emergent numeracy skills. PBL's interactive and engaging nature may have facilitated better understanding and retention of numeracy concepts. However, the stark rise in failing scores among boys reveals that while PBL is generally effective, it may not fully address the needs of all student groups. There might be a need for more tailored interventions, especially for boys, to ensure balanced progress. The analysis shows a positive trend in overall numeracy performance, particularly in the reduction of failing scores and an increase in the "Excellent" category. However, gender disparities persist, with boys showing less consistent progress compared to girls. These results emphasize the importance of tailored, gender-sensitive educational interventions and the need for PBL approaches that can address the specific learning needs of both boys and girls to ensure balanced developmental outcomes.

5.3.4 KG2 Children Who Are Developmentally on Track by the Emergent Numeracy

This analysis examines the baseline and endline performance of children in KG2 in emergent numeracy, segmented by gender. The focus is on identifying changes in the percentage of children who are developmentally on track, aligned with a pass/fail threshold of 35%.

1. Children Developmentally on Track (Pass: 35-100%)

At baseline, 54.63% of boys were developmentally on track in emergent numeracy. By the endline, this percentage slightly decreased to 49.42%, indicating a small decline in the number of boys achieving the expected developmental benchmarks in numeracy. This suggests that while some boys maintained their numeracy skills, the intervention may not have significantly enhanced their overall performance in this area.

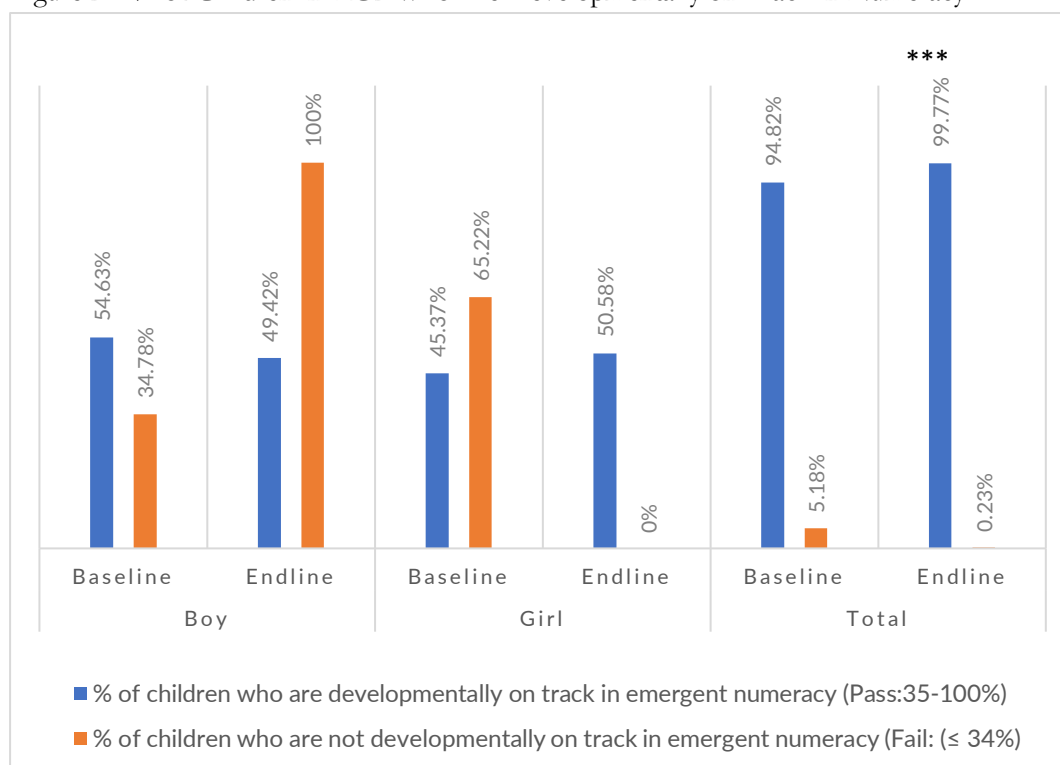
For girls, there was an improvement in performance, with 45.37% on track at baseline, increasing to 50.58% by the endline. This shift reveals that girls experienced positive gains in numeracy skills over time, showing a notable improvement in their ability to meet developmental expectations in this domain. The total percentage of children on track in emergent numeracy saw a notable increase from 94.82% at baseline to 99.77% at endline. This overall improvement indicates that the educational interventions or curriculum adjustments between the baseline and endline assessments were effective in supporting numeracy development for most students. The p-value ($p < 0.001$) confirms that this improvement is highly

statistically significant, providing strong evidence that the interventions had a major positive impact on numeracy development, particularly among girls.

2. Children Not Developmentally on Track (Fail: $\leq 34\%$)

There is a drastic shift for boys in the "Fail" category. At baseline, 34.78% of boys were not developmentally on track. However, by the endline, 100% of the boys were recorded as being on track, showing a complete turnaround in performance (see Figure 20). Conversely, girls had 65.22% not on track at baseline, but this percentage dropped to 0% by the endline. This is a remarkable improvement, indicating that all girls met the developmental standards in numeracy by the endline assessment. The total percentage of children not on track decreased significantly from 5.18% at baseline to just 0.23% at endline. This reveals a major success in educational interventions, as nearly all students moved out of the "Fail" category.

Figure 21: % of Children in KG2 Who Are Developmentally on Track in Numeracy



Source: IDELA Endline Study Data, 2024. (p -value < 0.05 * p -value < 0.01 **; p -value < 0.001 ***)¹⁵

The improvement for girls is particularly noteworthy, moving from 45.37% to 50.58% on track, and reducing the "Fail" percentage from 65.22% to 0% (see Figure 21). This reveals that interventions were highly successful in addressing challenges girls faced in numeracy, ensuring that all girls met the necessary developmental milestones by the endline. The results reflect a strong positive trend in numeracy development for KG2 children, with both boys and girls showing improvements, especially in reducing the number of those not on track. The most striking finding is the total elimination of children in the "Fail" category among girls and boys by the endline, signifying the effectiveness of the interventions employed.

¹⁵ (p -value < 0.05 indicates statistical significance; p -value < 0.01 indicates high statistical significance; p -value < 0.001 indicates very high statistical significance. Smaller p -values suggest stronger evidence against the null hypothesis, meaning the observed changes are less likely due to chance.)

However, the slight decrease in the percentage of boys on track reveals a need for continued support to maintain and enhance their performance.

5.4 Social-Emotional Skills: Children on Track

5.4.1 KG1 by Gender and National Benchmark

This analysis explores the baseline and endline performance of KG1 children in social-emotional skills as assessed by the IDELA framework. The data is segmented by gender and categorized based on national benchmarks (Fail, Pass, Credit, Good, Very Good, and Excellent).

1. Significant Improvement in High Performers (Excellent Category)

In the "Excellent" category, 55.51% of boys were at this level at baseline, which slightly decreased to 51.55% by the endline (see Figure 22). Despite the drop, the majority of boys still performed excellently. A similar pattern was observed among girls, with 44.49% in the "Excellent" category at baseline, increasing to 48.45% at endline. There was a remarkable increase in the total percentage of children in the "Excellent" category, rising from 23.63% at baseline to 69.27% at endline. This reveals that educational interventions, possibly incorporating PBL strategies, significantly enhanced the children's social-emotional development.

2. Reduction in Failing Scores

The most dramatic improvement is seen in the "Fail" category ($\leq 34\%$). At baseline, 57.56% of boys and 42.44% of girls fell into this category. By the endline, 0% of both boys and girls were in the "Fail" range. The total percentage of children in the "Fail" category dropped from 22.14% at baseline to 0% at endline (see Figure 21). This indicates that targeted interventions were successful in ensuring that all children moved out of the lowest performance bracket in social-emotional skills.

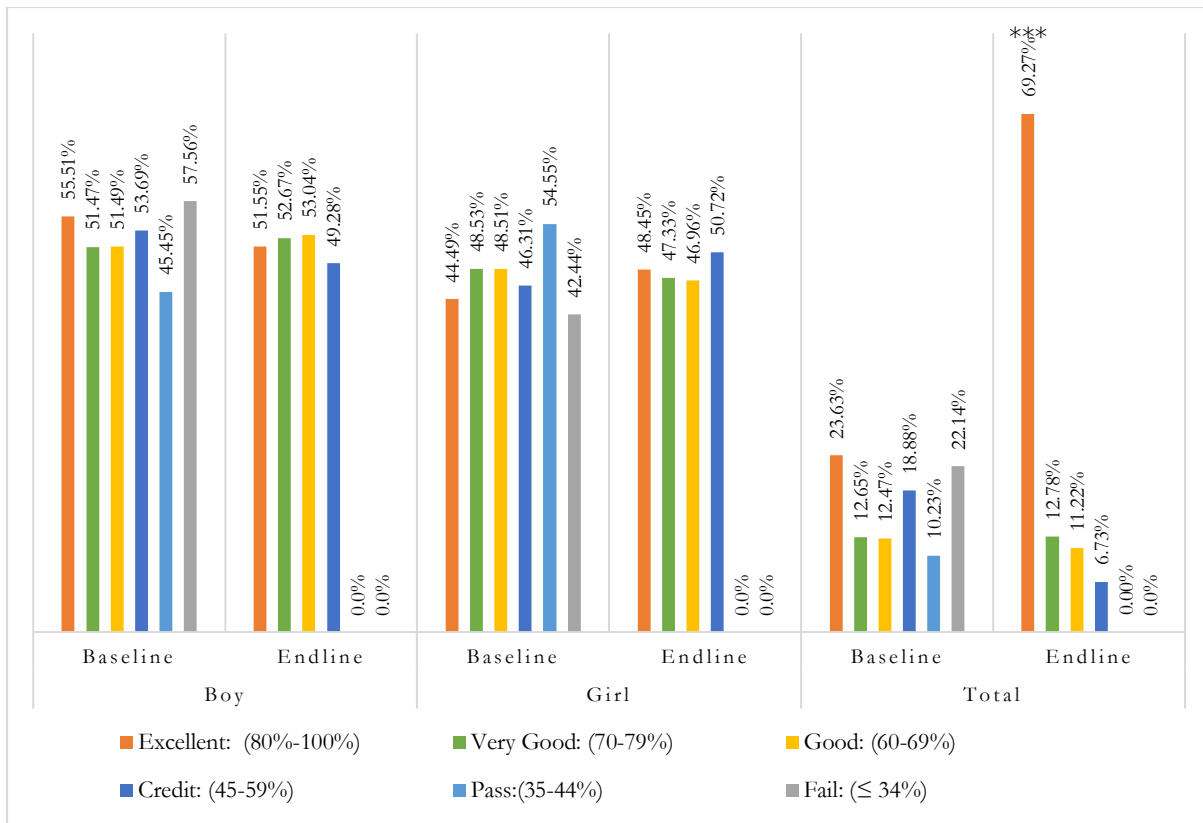
3. Gender Disparities in Performance

Boys experienced a small decrease in the "Excellent" category and a reduction in the "Credit" category from **53.69%** to **49.28%**. This indicates that some boys may have shifted into higher performance categories or fluctuated between others. For girls, there was a slight increase in the "Credit" category from **46.31%** to **50.72%** (see Figure 21), indicating that more girls moved up into this middle performance range. These gender-based shifts highlight the need for differentiated support strategies, with a focus on ensuring both boys and girls maintain or improve their performance levels in social-emotional development.

4. Shifts in Middle Performance Categories

The percentage of boys in the "**Good (60-69%)**" category increased slightly from **51.49%** to **53.04%** at endline. Conversely, girls showed a small decrease, from **48.51%** to **46.96%**. Both boys and girls saw minimal changes in **Very Good (70-79%)** category, with the total percentage moving slightly from **12.65%** at baseline to **12.78%** at endline. This stability indicates a consistent level of children performing at a very good level in social-emotional skills (see Figure 21).

Figure 22: % of KG1 children by Gender and National Benchmark



Source: IDELA Endline Study Data, 2024

5. Mixed Outcomes in the "Credit" and "Pass" Categories

There was a notable drop in the percentage of children in the **Credit (45-59%)** category. For boys, it decreased from **53.69%** to **49.28%**, while girls saw an increase from **46.31%** to **50.72%**. The total percentage in this range decreased significantly from **18.88%** at baseline to **6.73%** at endline. This indicates that while some children improved to higher categories, others may need more targeted support. Interestingly, both boys and girls moved entirely out of the **"Pass (35-44%)"** category by the endline (from **10.23%** to **0%**), suggesting an overall improvement in children's social-emotional skills (see Figure 21).

The significant increase in children reaching the "Excellent" category, coupled with the complete elimination of those in the "Fail" category, underscores the positive impact of PBL strategies. These approaches likely fostered an environment where children could actively engage in social interactions, empathy-building exercises, and conflict-resolution scenarios, thus enhancing their social-emotional development. However, the mixed outcomes in the middle categories ("Credit" and "Good") suggest that while PBL effectively pushed some children to the top, it may need to be further tailored to support others who are hovering in the middle ranges. The analysis reveals a strong overall improvement in social-emotional skills among KG1 children. The most notable success is the complete removal of children from the "Fail" category by the endline. While more boys moved out of the lower categories into higher performance ranges, girls showed consistent gains in middle and higher categories. These findings highlight the success of play-based learning strategies in promoting essential social-emotional skills in early childhood education. Nonetheless, further targeted support is recommended for children in the "Credit" and "Good" categories to continue elevating their performance.

5.4.2 KG1 Children Who Are Developmentally on Track in Social-Emotional Skills

This analysis evaluates the percentage of children in KG1 who are developmentally on track in social-emotional skills. The data is segmented by gender and compares the baseline and endline results, focusing on children who are developmentally on track (Pass: 35-100%) and children who are not (Fail: $\leq 34\%$).

1. Children Developmentally on Track (Pass: 35-100%)

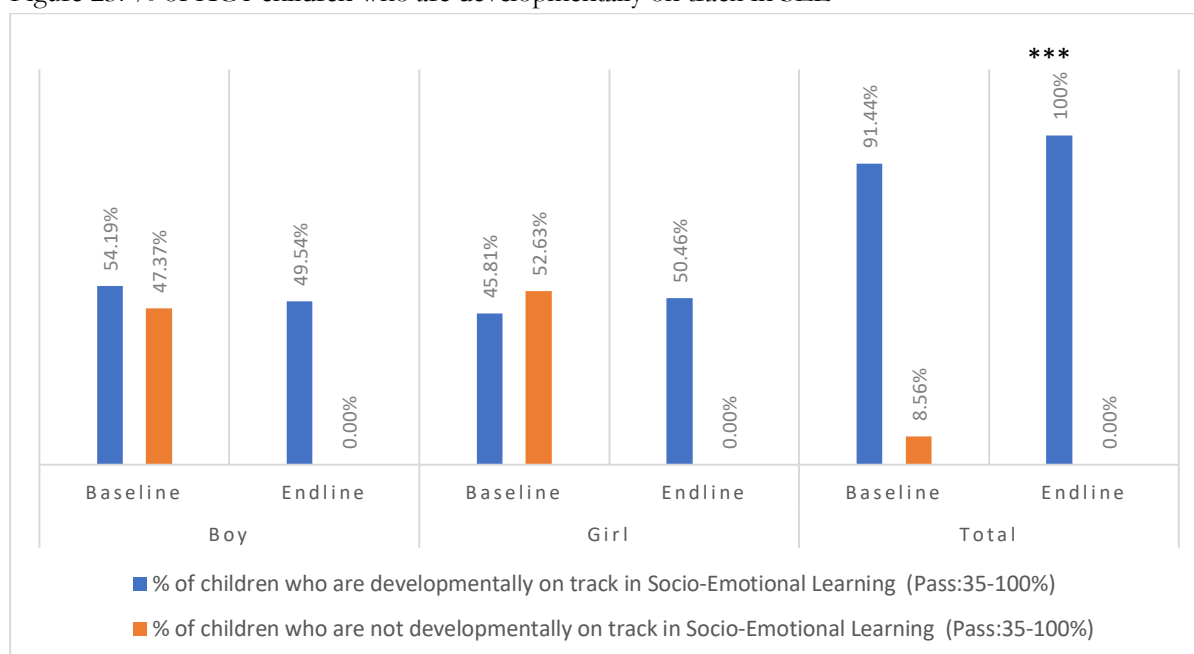
At baseline, 91.44% of children were developmentally on track in socio-emotional skills. By the endline, this increased to 100%, showing that all children achieved the developmental benchmarks for socio-emotional skills. For boys, the percentage on track decreased slightly from 54.19% at baseline to 49.54% at endline (see Figure 22). This change indicates a near balance between boys and girls by the endline, suggesting effective support for both genders in socio-emotional development. For girls, the percentage of children on track increased from 45.81% at baseline to 50.46% at endline. This shift reveals that girls benefited positively from the interventions, achieving developmental benchmarks at rates similar to boys.

2. Children Not Developmentally on Track (Fail: $\leq 34\%$)

At baseline, 8.56% of children were not developmentally on track in socio-emotional skills. By the endline, this number dropped to 0%, indicating that every child met the socio-emotional benchmarks. For boys, the percentage not on track was 47.37% at baseline, dropping to 0% by the endline, indicating substantial improvement (see Figure 22). For girls, 52.63% of children not on track at baseline also fell to 0% by the endline, showing that girls equally achieved the socio-emotional development benchmarks.

The significant improvement in socio-emotional development can be attributed to the implementation of PBL strategies. The p-value of ($p < 0.001$) indicates that this positive outcome is highly statistically significant. PBL likely provided a more engaging and supportive environment for children to develop key socio-emotional skills such as self-awareness, empathy, and conflict resolution.

Figure 23: % of KG1 children who are developmentally on track in SEL



Source: IDELA Endline Study Data, 2024

Overall, the analysis reveals comprehensive improvement in the socio-emotional development of KG1 children, with all children meeting the developmental benchmarks by the endline. Both boys and girls showed balanced progress, highlighting the success of the interventions, particularly play-based learning, in fostering socio-emotional growth. This achievement indicates a strong foundation for the children's overall well-being and future learning outcomes.

5.4.3 KG2 by Gender and National Benchmark

This analysis explores the performance of KG2 children in the social-emotional domain of the IDELA assessment, segmented by gender and aligned with national benchmarks. The benchmarks include categories such as "Fail," "Pass," "Credit," "Good," "Very Good," and "Excellent." The results provide valuable insights into the developmental progress of these children over time.

1. Significant Improvement in High Performers (Excellent Category)

At the baseline, 51.94% of boys scored in the "Excellent" category (80-100%). By the endline, this percentage saw a slight decrease to 47.57% (see Figure 23). Despite this minor drop, nearly half of the boys continued to demonstrate a high level of social-emotional skills. The percentage of girls in the "Excellent" category increased from 48.06% at baseline to 52.43% at endline, indicating that a greater proportion of girls excelled in social-emotional skills by the end of the study period. There was a notable increase in the total percentage of children scoring in the "Excellent" range, rising from 46.40% at baseline to 66.67% at endline. This substantial improvement indicates the effectiveness of educational strategies, possibly including PBL, in enhancing children's social-emotional development.

2. Reduction in Failing Scores

One of the most remarkable findings is the complete elimination of children in the "Fail" category ($\leq 34\%$) by the endline. At baseline, 8.56% of children were in this category, split between 47.37% boys and 52.63% girls (see Figure 23). By the endline, 0% of children fell into this category. This drastic reduction reveals that interventions and teaching practices during the study period were successful in supporting the development of social-emotional skills, ensuring no children were left in the lowest performance range.

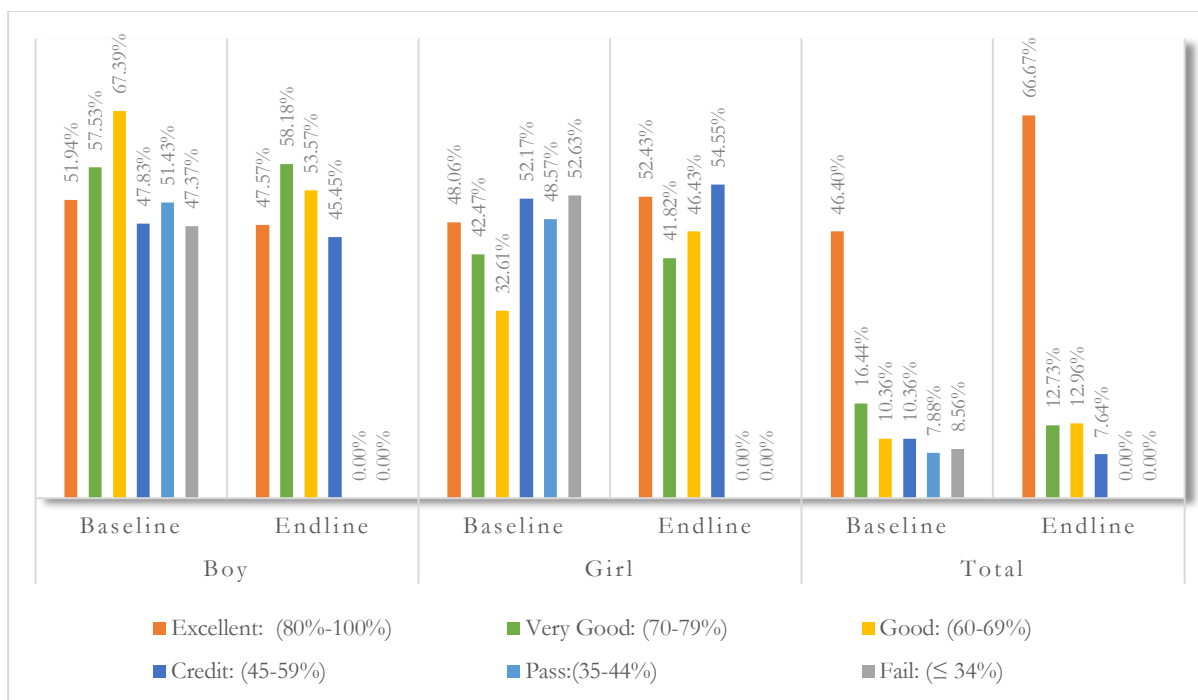
3. Gender Disparities in Performance

In the "Good" category (60-69%), the percentage of boys decreased significantly from **67.39%** to **53.57%**, which may indicate a shift of some boys into either higher (Excellent) or lower categories. Girls showed an increase in the "Excellent" category and a balanced shift in other categories, implying a stable yet positive trend in their social-emotional development. These variations point to potential gender differences in response to learning strategies, suggesting a need for gender-sensitive interventions to further support both boys and girls in their development.

4. Shifts in Middle Performance Categories

Both boys and girls showed a slight change in the Credit (45-59%) category. Boys decreased from 47.83% to 45.45%, while girls increased from 52.17% to 54.55% at the endline. The overall percentage in this range declined from 10.36% to 7.64%. There was a minor decrease in children in the Very Good (70-79%) category, from 16.44% to 12.73% at the endline (see Figure 23). Boys saw a slight increase from 57.53% to 58.18%, while girls experienced a decrease from 42.47% to 41.82%. This reveals a movement of children from "Very Good" to either "Excellent" or other performance levels.

Figure 24: % of KG2 Children in SEL by Gender and National Benchmark



Source: IDELA Endline Study Data, 2024

5. Mixed Outcomes in the "Credit" and "Pass" Categories

The “Pass (35-44%)” category saw a complete decline for both boys and girls at the endline, indicating that children who were previously just meeting the developmental benchmark have now either moved up to higher performance levels or, less likely, dropped to lower levels. The total percentage in this category fell from 7.88% at baseline to 0% at endline. While boys showed a decrease in the “Good (60-69%)” category, girls saw a proportional increase, indicating that some girls who were not performing well initially improved into this middle performance range. The total in this category slightly increased from 10.36% to 12.96% at endline (see Figure 23).

The baseline and endline performance analysis of KG2 children reveals a general improvement in social-emotional skills, especially in moving children out of the "Fail" category and into the "Excellent" range. Boys showed more varied results across categories, while girls experienced a steady increase in high performance. PBL approaches may have created a more engaging and interactive learning environment, allowing children to practice and develop their social-emotional skills. However, the shifts in the middle categories, particularly the slight decrease in the "Very Good" category and the elimination of the "Pass" category, highlight areas for further support. Further focus on gender-sensitive support and interventions could help maintain and build upon these positive outcomes.

5.4.4 KG2 Children Who Are Developmentally on Track by the SEL

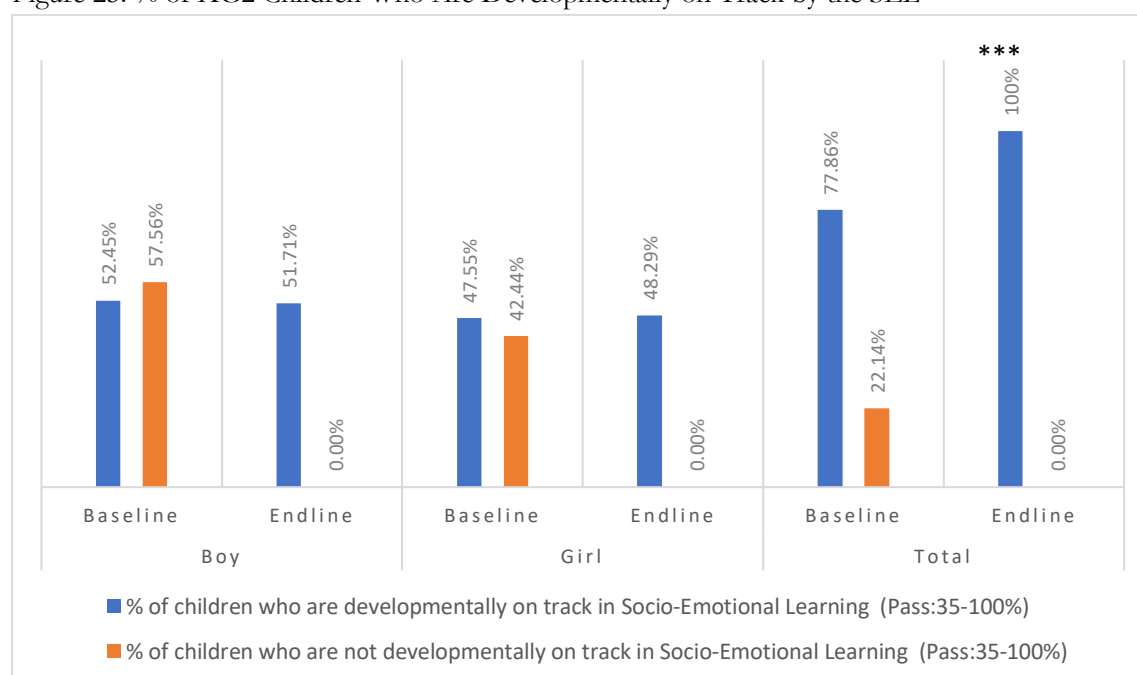
This analysis evaluates the percentage of KG2 children who are developmentally on track in social-emotional skills. The data is segmented by gender and compares the baseline and endline results, focusing on two main categories: children who are developmentally on track (Pass: 35-100%) and children who are not (Fail: ≤ 34%).

1. Children Developmentally on Track (Pass: 35-100%)

At baseline, 77.86% of children were developmentally on track in social-emotional skills. This figure rose to 100% at the endline, indicating that all children reached the developmental benchmarks for socio-

emotional skills by the endline assessment. The percentage of boys who were developmentally on track was 52.45% at baseline, remaining stable at 51.71% at endline. This stability reveals consistent and effective support for boys in improving and maintaining their socio-emotional skills. At baseline, 47.55% of the children on track were girls, and this percentage increased slightly to 48.29% by the endline (see Figure 24). This slight improvement indicates that the educational interventions benefitted girls effectively, almost equally to boys. The p-value for this improvement is also ($p < 0.001$), indicating that the elimination of children not meeting benchmarks is highly statistically significant.

Figure 25: % of KG2 Children Who Are Developmentally on Track by the SEL



Source: IDELA Endline Study Data, 2024. (p -value < 0.05 * p -value < 0.01 ** p -value < 0.001 ***)¹⁶

2. Children Not Developmentally on Track (Fail: ≤ 34%)

At the baseline, **22.14%** of children fell into the "not on track" category in socio-emotional development. By the endline, this percentage dropped to **0%**, indicating a complete elimination of children who were not meeting the expected benchmarks for socio-emotional skills. Of the children not on track at baseline, **57.56%** were boys. By the endline, this percentage dropped to **0%**, showing significant improvement among boys in developing their socio-emotional skills. Girls constituted **42.44%** of the children not on track at baseline (see Figure 24). Similarly, by the endline, this percentage also fell to **0%**, signifying that all girls achieved the developmental benchmarks by the endline assessment.

The significant improvement in children's socio-emotional development can be largely attributed to the integration of Play-Based Learning (PBL) in their education. PBL's focus on interactive, child-centred learning environments promotes the development of crucial socio-emotional skills, such as empathy, self-awareness, and conflict resolution. This holistic approach has fostered a more inclusive and effective learning experience. The analysis of KG2 (now Grade 1) children's socio-emotional development reveals remarkable progress, with all children being developmentally on track by the endline. This improvement is consistent across genders, underscoring the effectiveness of PBL and other educational interventions in

¹⁶ (p -value < 0.05 indicates statistical significance; p -value < 0.01 indicates high statistical significance; p -value < 0.001 indicates very high statistical significance. Smaller p -values suggest stronger evidence against the null hypothesis, meaning the observed changes are less likely due to chance.)

enhancing socio-emotional skills. The complete eradication of the "Fail" category marks a significant success, showcasing the potential of well-implemented educational strategies to comprehensively support early childhood development.

5.5 Summary of Tracking Developmental Progress

Table 5.5 presents the IDELA results, aligned with the Ghana Ministry of Education grading system, showcasing significant improvements in the developmental progress of KG1 and KG2 learners across socio-emotional, literacy, and numeracy skills. The percentage of children developmentally on track in socio-emotional, literacy, and numeracy skills increased notably, with total percentages rising from 80.19% at baseline to 99.80% at endline. Specifically, boys showed a decrease from 52.78% to 51.61%, while girls demonstrated an increase from 47.22% to 48.39%. In socio-emotional learning, all children achieved the benchmarks by the endline, rising from 77.86% to 100%. Emergent literacy scores improved from 52.09% to 91.71%, and emergent numeracy skills increased from 78.88% to 98.93% in KG1. In KG2, the total percentage of children on track improved from 95.72% at baseline to 99.77% at endline. Both boys and girls made significant gains in socio-emotional learning and emergent literacy, with girls' scores rising from 45.41% to 50.35% in total development and boys' scores moving from 54.59% to 49.65%.

Table 9: Performance Metrics Framework

Indicators	Baseline			Endline		
KG1	Boys	Girls	Total	Boys	Girls	Total
Percentage of ECD Children who are developmentally on track in IDELA total (Socio-emotional, Literacy and Numeracy skills)	52.78%	47.22%	80.19%	51.61%	48.39%	99.80%***
Percentage of ECD Children in who are developmentally on track in IDELA socio-emotional learning	52.45%	47.55%	77.86%	51.71%	48.29%	100%***
Percentage of ECD Children in who are developmentally on track in IDELA emergent Literacy skills	53.57%	46.43%	52.09%	49.64%	50.36%	91.71%***
Percentage of ECD Children in KG1 who are developmentally on track in IDELA emergent Numeracy skills	53.42%	46.58%	78.88%	51.78%	48.22%	98.93%***
KG2						
Percentage of ECD Children who are developmentally on track in IDELA total (Socio-emotional, Literacy and Numeracy skills)	54.59%	45.41%	95.72%	49.65%	50.35%	99.77%***
Percentage of ECD Children who are developmentally on track in IDELA socio-emotional learning	54.19%	45.81%	91.44%	49.54%	50.46%	100%***
Percentage of ECD Children who are developmentally on track in IDELA emergent Literacy skills	52.59%	47.41%	82.66%	51.06%	48.94%	96.99%***
Percentage of ECD Children who are developmentally on track in IDELA emergent Numeracy skills	54.63%	45.37%	94.82%	49.42%	50.58%	99.77%***
KG1 & KG2						
Percentage of ECD children in KG1 and KG2 who are developmentally on track in IDELA total	53.38%	46.62%	84.73%	51.06%	48.94%	99.8%***

These results reflect the effectiveness of the interventions implemented during the educational period, indicating a comprehensive enhancement in the developmental outcomes for KG1 and KG2 learners.

Asterisks (***) denote highly statistically significant results ($p < 0.001$), affirming the substantial impact of the educational strategies employed.

CLASSROOM ENVIRONMENT RESULTS

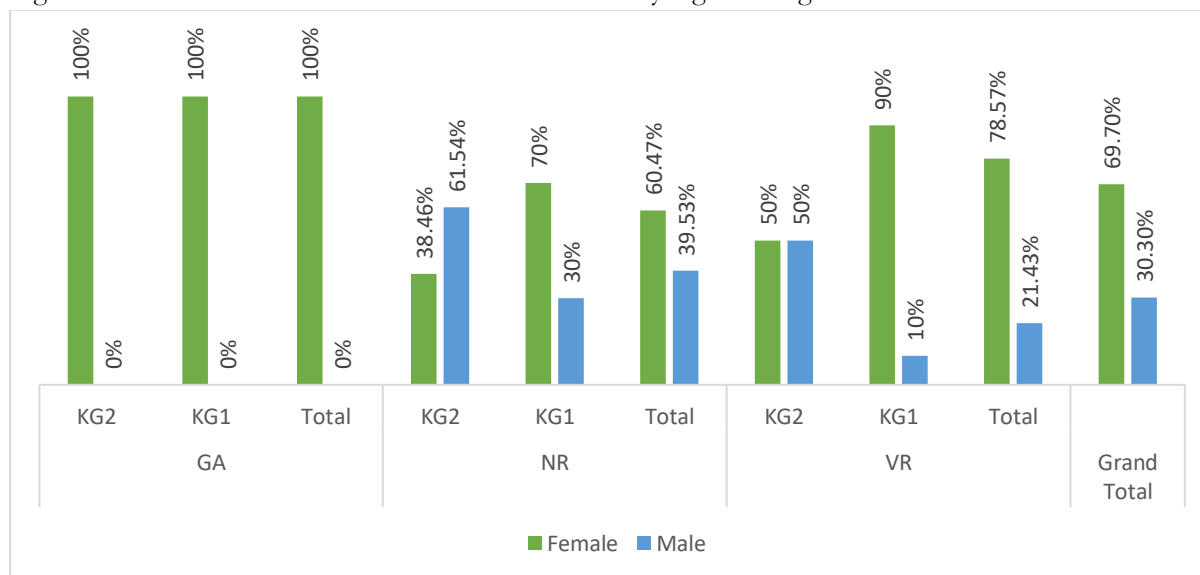
The IDELA Classroom Environment tool was utilized during the endline evaluation to assess the quality of early childhood education settings within the PBL project. This tool focuses on key elements that shape children's learning experiences, such as classroom layout, availability of educational materials, and teacher practices. Although the baseline results were not readily available for comparison, the endline IDELA Classroom Environment assessment provides crucial insights into the current state of the learning environments across the participating Early Childhood Development (ECD) centres. The findings offer a snapshot of how these environments support or hinder play-based learning and child development. This data is instrumental in identifying strengths within the classroom settings that contributed to the learning outcomes of the learners, as well as areas that may require further enhancement to better support young learners. The results will help inform future strategies to optimize classroom environments and improve overall educational outcomes in the targeted regions.

6.1 Teacher and Classroom Demographics

6.1.1 Teacher Distribution by Gender, Region, and Grade

The analysis of teacher gender distribution across the Greater Accra (GA), Northern Region (NR), and Volta Region (VR) highlights a significant gender imbalance, with a predominance of female teachers overall. In Greater Accra, all teachers in both KG2 and KG1 were female (100%). In the Northern Region, female teachers represented 60.47% of the total, with a higher concentration in KG1 (70%) compared to KG2 (38.46%) (see Figure 25).

Figure 26: % of Gender of Teacher distribution across by region and grade



Source: IDELA Endline Study Data, 2024

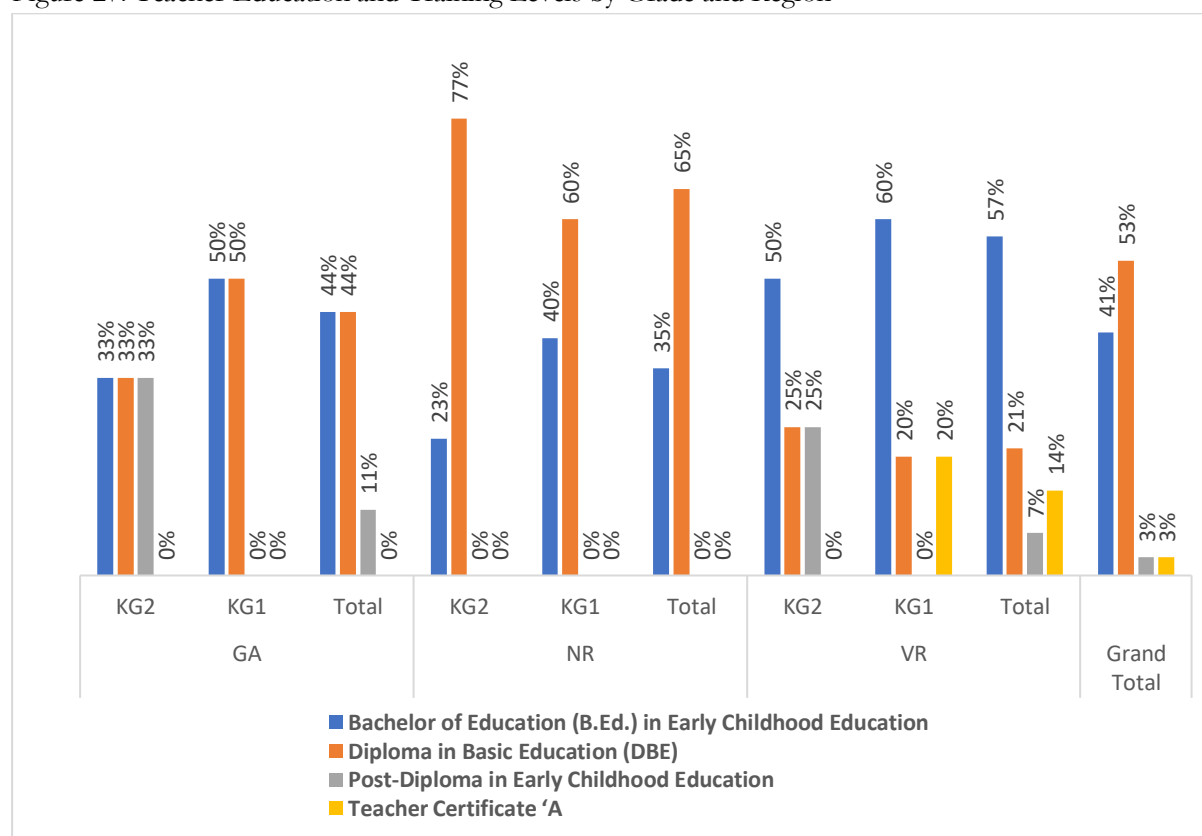
In contrast, male teachers were more prevalent in KG2 (61.54%) in the Northern Region. The Volta Region also showed a strong female majority, with 78.57% of teachers being female, particularly in KG1 (90%). Overall, across all regions, 69.7% of teachers were female, indicating that female teachers play a dominant role in Early Childhood Education (ECE), especially in KG1, while male teachers were more commonly found in KG2, particularly in the Northern Region. This gender distribution could have implications for

the implementation and outcomes of educational programs, as female teachers might bring different perspectives and approaches to the classroom compared to their male counterparts.

6.1.2 Teacher Education and Training Levels

The endline study assessed the education and training levels of teachers across Greater Accra, Northern, and Volta regions, focusing on KG2 and KG1. The Diploma in Basic Education (DBE) was the most common qualification, held by 53% of teachers overall, especially in the Northern Region. The Bachelor of Education (B.Ed.) in Early Childhood Education was the next most common, with 41% of teachers holding this qualification, particularly in the Volta Region (see Figure 26). Very few teachers held a Post-Diploma in Early Childhood Education (3%) or Teacher Certificate 'A' (3%), indicating these are less prevalent qualifications. The distribution of qualifications varies by region, with the Volta Region showing the highest level of advanced qualifications.

Figure 27: Teacher Education and Training Levels by Grade and Region



Source: IDELA Endline Study Data, 2024

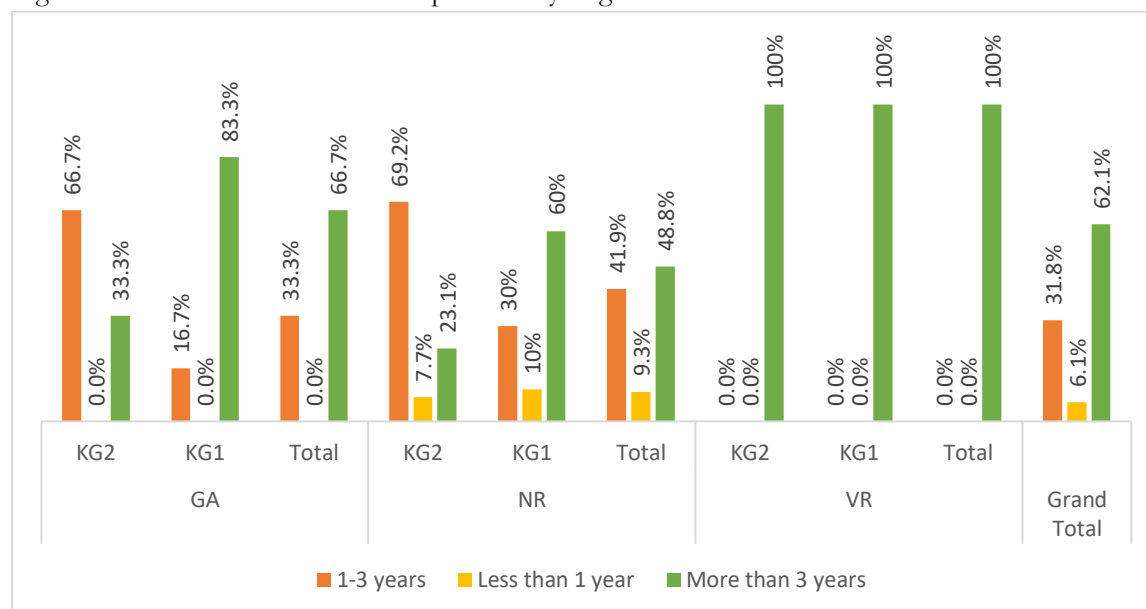
The distribution of teacher qualifications is a critical factor that can influence the success of the PBL project at the endline, affecting both the quality of implementation and the consistency of outcomes across different regions. Addressing gaps in teacher qualifications through targeted interventions could enhance the project's impact and sustainability.

6.1.3 Years of Teaching Experience

The study revealed significant variations in teacher experience across the Greater Accra, Northern, and Volta regions, with implications for the effectiveness of the PBL project. In Greater Accra, a mixed distribution of experience was noted, with a large proportion of KG2 teachers (66.7%) having only 1-3 years of experience, while most KG1 teachers (83.3%) had over 3 years of experience (see Figure 28). In the Northern Region, 41.9% of teachers had 1-3 years of experience, with nearly half (48.8%) having more than 3 years of experience. The Volta Region stood out, with all teachers having more than 3 years of experience, indicating a strong foundation of experienced educators.

These variations in experience levels are likely to impact the PBL project's success. The Volta Region, with its highly experienced teachers, is well-positioned for effective implementation of PBL methods, which could lead to better learning outcomes. However, the Northern Region and Greater Accra, where many teachers have less experience, may face challenges in delivering consistent and high-quality PBL instruction. This highlights the need for targeted support and professional development in these regions to ensure that all teachers, regardless of experience level, can effectively contribute to the success of the PBL project.

Figure 28: % of Teacher Years of Experience by Region and Grade



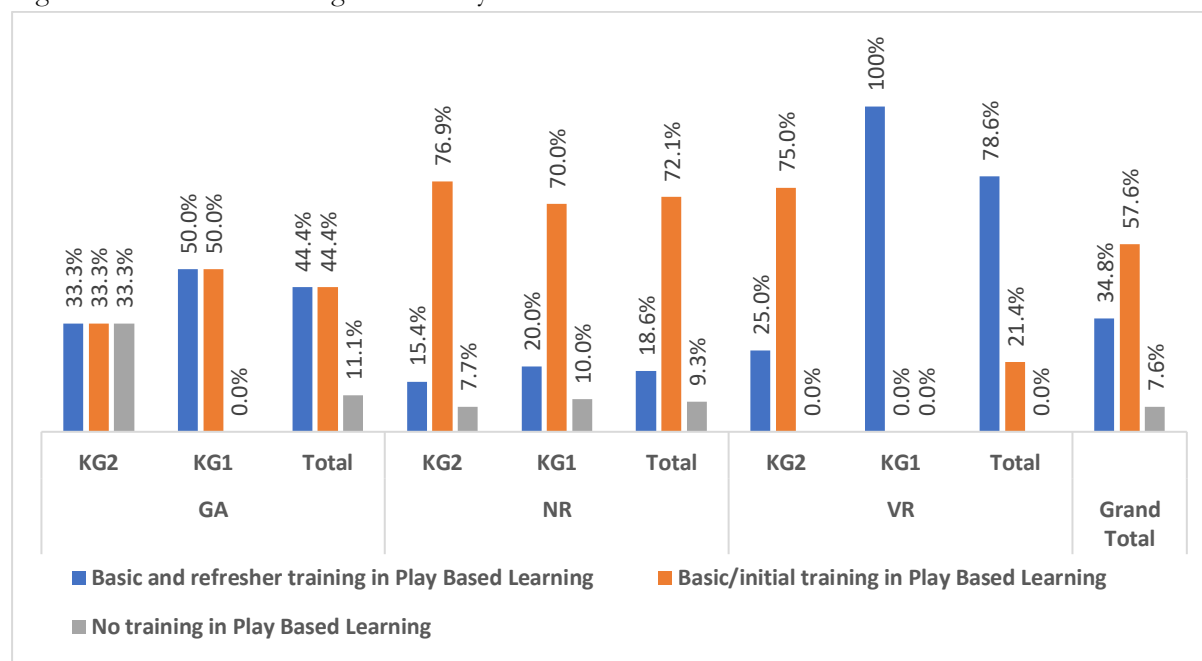
Source: IDELA Endline Study Data, 2024

6.1.4 Participation in Play-Based Learning (PBL) Training

The endline study assessed the levels of training that teachers across Greater Accra (GA), Northern Region (NR), and Volta Region (VR) received in PBL, focusing on both KG2 and KG1 levels. The analysis categorized teachers based on whether they received basic and refresher training, basic/initial training, or no training in PBL. Overall, 34.8% of teachers received both basic and refresher training, with the Volta Region showing the highest participation (78.6%). Basic/initial training was the most common, with 57.6% of teachers across all regions receiving this level, particularly in the Northern Region (72.1%). However, 7.6% of teachers, mainly in Greater Accra and Northern Region, reported receiving no PBL training, indicating a gap that needs addressing (see Figure 29).

The impact of these training levels on the PBL project is significant. Regions with higher levels of comprehensive training, like Volta, are likely to see better implementation and outcomes, especially in KG1. In contrast, the Northern Region and Greater Accra, with lower refresher training levels, may face challenges in achieving consistent application of PBL methods, potentially affecting the project's overall success. The data underscores the need for ongoing support and training to ensure uniformity and sustainability of the PBL approach across all regions.

Figure 29: % of PBL Training Received by Teachers



Source: IDELA Endline Study Data, 2024

6.2 Quality of ECD Centres

6.2.1 Classroom Accessibility and Physical Conditions

In the Greater Accra (GA) region, the physical conditions of classrooms exhibit both strengths and areas needing improvement. For KG2, 66.67% of classrooms were safely accessible year-round, ensuring consistent attendance and participation. The same percentage of classrooms were spacious enough to facilitate dynamic learning activities, and all classrooms were clean and well-organized, fostering a conducive learning environment. However, a significant gap was noted in furniture availability, with none of the KG2 classrooms having enough or appropriate furniture, and only 33.33% having defined learning stations, potentially limiting the effectiveness of play-based learning. Additionally, while 66.67% of classrooms had safe spaces for gross motor play, none had sufficient equipment in good condition, highlighting resource shortfalls (see Table 5). KG1 classrooms showed some improvements, particularly in accessibility and furniture availability, with all classrooms being safely accessible year-round and 83.33% having sufficient and appropriate furniture. However, like KG2, only 33.33% of KG1 classrooms had defined learning stations, indicating a continued need for resources in this area. The provision of safe spaces for gross motor play was slightly lower in KG1, with only 50% of classrooms meeting this criterion. Overall, while there are areas of progress, particularly in furniture availability, the need for enhanced resources and better-equipped learning stations remains evident across both grades.

In the Northern Region, the physical conditions of classrooms for both KG2 and KG1 show a mix of strengths and areas needing improvement. A significant majority of classrooms (92.31%) were safely accessible year-round, ensuring consistent attendance. However, only 69.23% of these classrooms were spacious enough for easy movement, which is crucial for interactive learning. While cleanliness and organization were present in 76.92% of classrooms, the availability of sufficient furniture was limited to just 46.15%, and only 30.77% had defined learning stations, which could hinder play-based learning. Additionally, while 69.23% of classrooms provided safe spaces for gross motor play, only 38.46% had adequate equipment, indicating a need for improved resources.

Table 10: Classroom Accessibility and Physical Conditions

	GA			NR			VR			Grand Total
	KG2	KG1	Total	KG2	KG1	Total	KG2	KG1	Total	
Classroom is safely accessible year-round	66.7%	100%	88.9%	92.3%	90%	90.7%	50%	70%	64.3%	84.8%
Classroom size allows easy movement	66.7%	66.7%	66.7%	69.2%	80%	76.7%	50%	90%	78.6%	75.8%
Classroom is clean and organized	100%	100%	100%	76.9%	76.7%	76.7%	50%	100%	85.7%	81.8%
Classroom has enough appropriate furniture	0.0%	83.3%	55.6%	46.2%	36.7%	39.5%	75%	70%	71.4%	48.5%
Defined learning stations with materials	33.3%	33.3%	33.3%	30.8%	40%	37.2%	25%	60%	50.0%	39.4%
Safe space for gross motor play	66.7%	50%	55.6%	69.2%	66.7%	67.4%	75%	80%	78.6%	68.2%
Sufficient equipment in good condition	0.0%	16.7%	11.1%	38.5%	43.3%	41.9%	0%	40%	28.6%	34.8%

Source: IDELA Endline Study Data, 2024

KG2 classrooms reflected both progress and challenges. Although 90% of these classrooms were safely accessible year-round, classroom size was more favourable, supporting dynamic learning activities. Cleanliness and organization levels were consistent at 76.67%, but the availability of adequate furniture dropped to 36.67%, signalling a critical need for enhancement. On the positive side, 40% of KG2 classrooms featured defined learning stations, showing some advancement in supporting play-based learning, and 66.67% of classrooms offered safe spaces for gross motor play, with 43.33% having sufficient equipment, indicating a slight improvement in preparedness.

In the Volta Region, the analysis of classroom physical conditions revealed differences between KG2 and KG2, with KG2 classrooms generally being more favourable. For KG2, only 50% of classrooms were safely accessible year-round and large enough for easy movement, which could hinder effective learning and participation. Cleanliness and organization were also subpar, with only half of the classrooms meeting the necessary standards. However, 75% of KG2 classrooms had adequate furniture, and 75% provided safe spaces for gross motor play, although none had sufficient equipment in good condition, highlighting a need for resource improvements.

KG2 classrooms in the Volta Region showed stronger physical conditions, with 70% safely accessible year-round and 90% large enough for easy movement. All KG2 classrooms were clean and organized, creating a conducive learning environment. While 70% had enough appropriate furniture, a notable 60% had defined learning stations, supporting diverse learning activities. Additionally, 80% of KG2 classrooms offered safe spaces for gross motor play, and 40% had sufficient equipment in good condition, indicating better resource availability compared to KG2.

6.2.2 Classroom Layout and Its Support for Play-Based Learning

The analysis of classroom layouts across the Greater Accra (GA), Northern Region (NR), and Volta Region (VR) reveals varied approaches to organizing learning environments, each with different implications for supporting or hindering play-based learning.

In Greater Accra (GA), the classrooms predominantly employed Traditional Layouts (33.3% in KG2), which typically limit movement and interaction, thereby potentially hindering the effectiveness of play-based learning. However, there was a significant presence of Practical and Utility Layouts (33.3% in both KG2 and KG1), which support functional use of space but may not fully encourage interactive or dynamic learning experiences. The use of Flexible and Dynamic Layouts (33.3% in KG2) and Innovative and Thematic Layouts (22.2% overall) indicates some efforts to foster a more engaging and versatile learning environment in KG2 (see Table 6).

Table 11: Classroom Layout and Its Support for Play-Based Learning

Variables	Greater Accra			Northern Region			Volter Region			Total
	KG2	KG1	Total	KG2	KG1	Total	KG2	KG1	Total	
Traditional Layouts ¹⁷	33.3%	0%	11.1%	23.1%	8.7%	13.9%	25%	0%	8.3%	12.3%
Flexible & Dynamic ¹⁸	0%	33.3%	22.2%	15.4%	21.7%	19.4%	25%	25%	25%	21.1%
Activity-Specific Layouts ¹⁹	0%	16.7%	11.1%	7.7%	13%	11.1%	25%	12.5%	16.7%	12.3%
Inclusive & Accessible ²⁰	0%	0%	0%	15.4%	13%	13.9%	0%	12.5%	8.3%	10.5%
Innovative & Thematic ²¹	33.3%	16.7%	22.2%	15.4%	13%	13.9%	25%	0%	8.3%	14%
Practical & Utility ²²	33.3%	33.3%	33.3%	15.4%	17.4%	16.7%	0%	25%	16.7%	19.3%
Community & Interaction Focused ²³	0%	0%	0%	7.7%	13%	11.1%	0%	25%	16.7%	10.5%

Source: IDELA Endline Study Data, 2024

In the Northern Region (NR), Traditional Layouts were less prevalent (13.9% overall), suggesting a shift towards more interactive setups. Flexible and Dynamic Layouts were used in 19.4% of classrooms, indicating a moderate adoption of layouts that facilitate movement and interaction, essential for play-based learning. However, the presence of Practical and Utility Layouts (16.7%) and Activity-Specific Layouts (11.1%) highlights a focus on functional and targeted learning areas, which could support specific play-based activities. The limited use of Community and Interaction Focused Layouts (11.1%) reveals that there may be fewer opportunities for collaborative and social learning (see Table 6).

¹⁷ Traditional Layouts: Desks are arranged in rows facing the teacher, emphasizing direct instruction and individual work. This layout is common in conventional classrooms and supports lecture-based teaching.

¹⁸ Flexible & Dynamic Layouts: Furniture and seating arrangements can be easily reconfigured to accommodate different activities, group sizes, or teaching methods, promoting adaptability and student engagement.

¹⁹ Activity-Specific Layouts: Designed to support particular learning tasks or subjects, such as reading corners, art stations, or science labs, enabling children to engage in focused, hands-on activities.

²⁰ Inclusive & Accessible Layouts: Arranged to ensure that all students, including those with physical disabilities, have equal access to learning spaces, resources, and activities, fostering a supportive environment for all learners.

²¹ Innovative & Thematic Layouts: Classrooms are organized around a central theme or concept, often integrating technology or creative elements to stimulate learning and enhance student interaction with the subject matter.

²² Practical & Utility Layouts: Focused on functionality and efficiency, this layout optimizes the use of space to store materials and resources while providing a clear structure that supports day-to-day classroom activities.

²³ Focused Layouts: Emphasize creating quiet, distraction-free zones where students can concentrate on individual tasks or self-directed learning activities.

In the Volta Region (VR), the emphasis on Flexible and Dynamic Layouts (25% in both KG2 and KG1) and Practical and Utility Layouts (25% in KG2) reveals a balanced approach to creating environments that are both versatile and functional, supporting various play-based learning activities. However, the presence of Activity-Specific Layouts (16.7%) and Community and Interaction Focused Layouts (16.7%) in KG2 indicates a recognition of the importance of targeted and collaborative learning spaces. The lesser focus on Traditional Layouts (8.3%) and Innovative and Thematic Layouts (8.3%) may reflect a more contemporary approach to classroom design, though there is still room for enhancing creativity and thematic integration in these learning environments (see Table 6).

Overall, the data indicates a regional variation in classroom layout, with some regions and grades adopting more flexible and interactive environments conducive to play-based learning, while others remain more traditional or functional in their approach. This variation in classroom design directly impacts the effectiveness of play-based learning, with more dynamic and inclusive layouts offering greater support for the diverse learning needs of young children.

6.2.3 Teacher-Student Interactions and Engagement

The endline study assessed the quality of classroom interactions across three regions—Greater Accra (GA), Northern Region (NR), and Volta Region (VR)—focusing on key practices such as the use of positive discipline, teacher warmth, classroom management, and gender equity in student engagement. The findings reveal notable differences in the application of these practices by region and grade.

In Greater Accra (GA), there is a significant variation between KG2 and KG1 in terms of positive classroom interactions. For instance, 83.3% of KG1 teachers frequently used positive discipline techniques, compared to only 33.3% in KG2. Similarly, 83.3% of KG1 teachers consistently showed warmth and respect towards children, while this was observed in 66.7% of KG2 teachers. Classroom management was also stronger in KG2, with 83.3% of teachers managing their classrooms well, compared to 66.7% in KG1. However, the practice of asking children about their life experiences was less prevalent, particularly in KG2 (33.3%) compared to KG1 (66.7%). Notably, KG1 teachers in GA also excelled in engaging both boys and girls equally in classroom activities, with 100% of teachers demonstrating this practice (see Table 11).

In the Northern Region (NR), classroom interactions were generally strong across both grades. A high percentage of teachers in both KG2 (92.3%) and KG1 (90%) frequently used positive discipline techniques, and all KG2 teachers consistently showed warmth and respect towards children. Classroom management was similarly effective, with 84.6% of KG2 and 86.7% of KG1 teachers managing their classrooms well. However, there was a noticeable decline in the practice of incorporating children's life experiences into lessons, especially in KG1 (53.3%). Despite this, teachers in NR maintained a high level of gender equity in classroom engagement, with over 90% of teachers in both grades effectively engaging boys and girls equally (see Table 11).

In the Volta Region (VR), the quality of classroom interactions was notably high, particularly in KG1. All KG1 teachers were reported to consistently manage their classrooms well and engage boys and girls equally in activities. Positive discipline techniques were also widely used, with 90% of KG1 teachers and 100% of KG2 teachers applying these strategies. However, similar to the other regions, the practice of asking children about their life experiences was less consistent, with 50% of KG2 and 80% of KG1 teachers incorporating this into their lessons. Overall, VR demonstrated strong classroom interactions, particularly in KG2, with teachers effectively fostering an inclusive and supportive learning environment (see Table 11).

Across all regions, KG1 teachers generally exhibited stronger classroom interaction practices compared to KG2 teachers. The consistent use of positive discipline, warmth, respect, and gender equity in student engagement were key strengths, although there remains room for improvement in integrating children's life experiences into lesson content. These findings suggest a need for continued support and training, particularly in KG2, to ensure that all students benefit from high-quality, interactive learning environments.

Table 12: Teacher-Student Interactions and Engagement

Variables	Greater Accra			Northern Region			Volta Region			Total
	KG2	KG1	Total	KG2	KG1	Total	KG2	KG1	Total	
Uses positive discipline	33.3%	83.3%	66.7%	92.3%	90%	90.7%	100%	90%	92.9%	87.9%
Shows warmth and respect	66.7%	83.3%	77.8%	100%	93.3%	95.3%	50%	100%	85.7%	90.9%
Resolves conflicts	66.7%	83.3%	77.8%	100%	93.3%	95.3%	100%	100%	100%	93.9%
Manages classroom effectively	66.7%	83.3%	77.8%	84.6%	86.7%	86.0%	100%	100%	100%	87.9%
Uses children's experiences	33.3%	66.7%	55.6%	84.6%	53.3%	62.8%	50%	80%	71.4%	63.6%
Engages boys and girls equally	33.3%	100%	77.8%	92.3%	93.3%	93.0%	100%	100%	100.0%	92.4%
Includes all children in activities	66.7%	50%	55.6%	92.3%	90.0%	90.7%	100%	100%	100.0%	87.9%
Children treat each other respectfully	100%	50%	66.7%	92.3%	73.3%	79.1%	50%	90%	78.6%	77.3%
Children actively engaged	66.7%	100%	88.9%	76.9%	83.3%	81.4%	75%	100%	92.9%	84.8%

Source: IDELA Endline Study Data, 2024

6.2.4 Lesson Planning and Schedule Adherence

In the analysis of schedule and lesson plans by grade across regions, it is evident that there are varying levels of adherence to best practices, which directly impacts learning outcomes at the Early Childhood Development Centres (ECDCs) (see Table 12).

In KG2, the majority of classrooms in the Greater Accra (GA) and Volta Region (VR) had daily routines clearly posted, with 100% in GA and 50% in VR, compared to 46.15% in the Northern Region (NR) (see Table 8). This structured environment helps children understand the flow of the day, reducing anxiety and enhancing engagement. However, only 33% of KG2 teachers in GA smoothly followed these routines, whereas this improved to 53.85% in NR and 100% in VR. Smooth transitions between activities are crucial in maintaining student focus and minimizing disruptions. Moreover, all KG2 teachers in GA and VR had written daily lesson plans, demonstrating strong preparedness, which is vital for effective teaching. In contrast, only 46.15% of teachers in NR had daily lesson plans, indicating a need for improvement. Teacher preparedness and motivation were consistently high in GA and VR, with 100% of teachers well-prepared, whereas NR lagged behind with 46.15% (see Table 12).

Table 13: Schedule and Lesson Plan Adherence by Grade and Region

Variables	GA			NR			VR			Grand Total
	KG2	KG1	Total	KG2	KG1	Total	KG2	KG1	Total	
Daily routine posted in classroom	100%	83.3%	88.9%	46.2%	33.3%	37.2%	50%	90%	78.6%	53.0%

Teacher follows routine smoothly	33%	83.3%	66.7%	53.8%	46.7%	48.8%	100%	80%	85.7%	59.1%
Daily lesson plan prepared	100%	66.7%	77.8%	46.2%	43.3%	44.2%	100%	80%	85.7%	57.6%
Teacher well-prepared and motivated	100%	83.3%	88.9%	46.2%	76.7%	67.4%	100%	90%	92.9%	75.8%

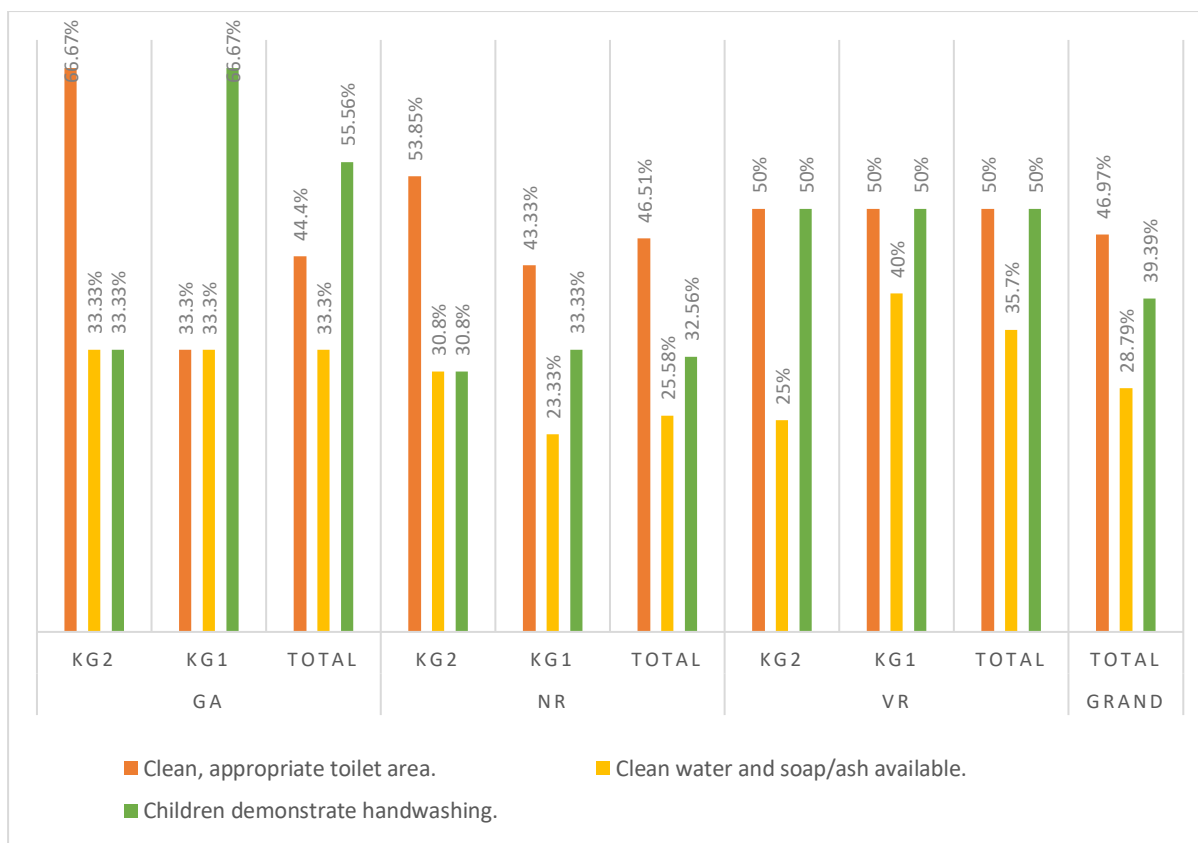
Source: IDELA Endline Study Data, 2024

For KG2, a similar trend is observed, with 83.33% of classrooms in GA and 90% in VR having their daily routines clearly posted, compared to 33.33% in NR. The adherence to routine and smooth transitions was higher in GA (83.33%) and VR (80%), while NR showed a lower rate at 46.67%. This difference in routine adherence reveals varying levels of classroom structure, which can impact student engagement and learning outcomes. KG2 teachers in GA and VR also demonstrated better planning practices, with 66.67% in GA and 80% in VR having daily lesson plans, compared to 43.33% in NR. The overall teacher preparedness and motivation were commendable in GA and VR, with 83.33% and 90% respectively, while NR showed improvement with 76.67% (see Table 12). These findings underscore the importance of consistent daily routines, lesson planning, and teacher preparedness in fostering an effective learning environment, particularly in regions where these practices are less consistently applied.

6.2.5 Hygiene and Sanitation Practices

The hygiene and sanitation conditions in KG2 and KG1 classrooms across the Greater Accra (GA), Northern Region (NR), and Volta Region (VR) show varying levels of adequacy, with room for improvement in several areas. In KG2, GA had the highest percentage (66.67%) of classrooms with clean and appropriate toilet facilities, though access to clean water and soap for handwashing was limited across all regions, particularly in NR (30.77%) and VR (25%). Proper handwashing practices were observed more consistently in GA and VR (50% each) but were less common in NR (30.77%) (see Figure 30).

Figure 30: Hygiene and Sanitation Practices



Source: IDELA Endline Study Data, 2024

For KG2, the availability of clean and appropriate toilet facilities was generally lower, particularly in GA (33.33%). However, KG1 classrooms in all regions demonstrated better handwashing practices compared to KG2, with GA showing the highest percentage (66.67%) (see Figure 30). Despite this, the availability of clean water and soap remained insufficient, with NR and VR needing significant improvements. Overall, the analysis highlights the importance of enhancing hygiene and sanitation conditions to support better learning outcomes, particularly by improving access to clean water, soap, and consistent hygiene practices across all grades and regions.

6.2.6 Literacy and Numeracy Environment

6.2.6.1 Literacy environment

The analysis of the literacy environment in KG2 and KG1 classrooms across the Greater Accra (GA), Northern Region (NR), and Volta Region (VR) reveals varying levels of resources and instructional strategies that contribute to improving learning outcomes, particularly through PBL.

KG2:

All KG2 classrooms (100%) had ample print materials on the walls and labelled objects, providing a rich visual environment that supports literacy development. Teachers in these classrooms also consistently engaged students in activities involving printed letters or words (100%) and read books while engaging students with questions to deepen their understanding (66.67%). However, only 33.33% of classrooms had many age-appropriate books accessible to children, indicating a need for improvement in this area (see Table 9).

KG2 classrooms in NR showed moderate literacy support, with 61.54% having print materials and labelled objects. Teachers encouraged exploration of printed letters in 69.23% of classrooms and frequently asked open-ended questions (69.23%), promoting critical thinking. However, the availability of age-appropriate books was limited (46.15%), suggesting that further enhancement is needed to support literacy.

KG2 classrooms in VR were well-resourced, with 100% having print materials on the walls, and teachers actively engaging students in literacy activities and discussions (100%). Age-appropriate books were more accessible in 50% of the classrooms, contributing to a balanced literacy environment that supports PBL and overall learning outcomes.

Table 14: Literacy Environment by Grade and Region

Variable	GA			NR			VR			Grand Total
	Gr.1	KG2	Total	Gr.1	KG2	Total	Gr.1	KG2	Total	
Print materials & Labelled objects on walls (%)	100	83.33	88.89	61.54	66.67	65.12	100	90	92.86	74.24
Encourages activities with printed letters/words (%)	100	66.67	77.78	69.23	70.0	69.77	100	80	85.71	74.24
Access to age-appropriate Books (%)	33.33	50.0	44.44	46.15	36.67	39.53	50	60	57.14	43.94
Reads & discusses books with Children (%)	66.67	100	88.89	69.23	66.67	67.44	75	80	78.57	72.73
Asks open-ended questions (%)	66.67	50.0	55.56	69.23	73.33	72.09	100	80	85.71	72.73
Explains new words and Corrects language (%)	66.67	50.0	55.56	76.92	63.33	67.44	50	80	71.43	66.67

Source: IDELA Endline Study Data, 2024

KG2: In GA, 83.33% of KG2 classrooms had print materials and labelled objects, and 66.67% of teachers engaged students in literacy activities involving printed letters. The availability of age-appropriate books was slightly higher than in KG2, at 50%. Teachers were also more proactive in reading and discussing books (100%) and explaining new words (50%), which enhances vocabulary and comprehension skills, vital for literacy development (see Table 9).

KG2 classrooms in NR had a slightly better literacy environment than KG2, with 66.67% featuring print materials. Teachers engaged in literacy activities and asked open-ended questions (73.33%) to promote deeper learning. However, access to age-appropriate books remained a challenge, with only 36.67% of classrooms adequately resourced in this area.

The literacy environment in KG2 classrooms in VR was strong, with 90% having print materials and teachers actively involving students in literacy activities (80%). Access to age-appropriate books was the highest across all regions and grades (60%), contributing significantly to the effectiveness of PBL in enhancing learning outcomes. Overall, the presence of print-rich environments, teacher engagement in literacy activities, and the availability of age-appropriate books are critical factors in supporting the literacy development of young learners. These elements, when effectively integrated into PBL, can greatly enhance learning outcomes, particularly in early childhood education. However, the disparities across regions and grades highlight areas where targeted interventions could further improve the literacy environment and, consequently, the educational outcomes of children in these regions.

6.2.6.2 Numeracy Environment

The numeracy environment across regions and grades presents a mixed picture of how classrooms are equipped to support PBL and improve learning outcomes for young learners.

In KG2, the display of numbers alongside their equivalent objects was present in 33.3% of classrooms in Greater Accra (GA), 69.23% in the Northern Region (NR), and 25% in the Volta Region (VR). This reveals that while some regions like NR are emphasizing visual aids to support numerical understanding, others, particularly VR and GA, might need additional focus in this area. The availability of materials for practicing counting and engaging in small group activities was lower in GA at 33.3% and in NR at 38.46%, but relatively higher in VR at 50%. Engaging students in mixed-order counting activities, an essential aspect of developing mathematical reasoning, was more prevalent in NR (61.54%) and VR (75%) compared to GA (33.3%). Finally, the involvement of children in activities such as pattern recognition and sorting were strong in GA (66.67%), but lower in NR (46.15%) and VR (50%) (see Table 14). These differences highlight the need for more consistent and widespread use of numeracy-enhancing activities across all regions, particularly in GA and VR, where the impact of PBL on learning outcomes could be further maximized by integrating more diverse and engaging numeracy exercises.

Table 15: Numeracy Environment by grade and region

Variable	GA			NR			VR			Grand Total
	KG2	KG1	Total	KG2	KG1	Total	KG2	KG1	Total	
Numbers and objects displayed together (%)	33.33	83.33	66.67	69.23	70.0	69.77	25.0	80.0	64.29	68.18
Materials for counting and small group activities (%)	33.33	33.33	33.33	38.46	43.33	41.86	50.0	80.0	71.43	46.97
Engages in mixed order number activities (%)	33.33	50.0	44.44	61.54	46.67	51.16	75.0	80.0	78.57	56.06
Involves children in patterns, sorting, and comparing (%)	66.67	66.67	66.67	46.15	43.33	44.19	50.0	80.0	71.43	46.97

Source: IDELA Endline Study Data, 2024

For KG1, the numeracy environment generally improved across all regions. In GA, 83.3% of classrooms displayed numbers alongside their corresponding objects, providing a strong visual foundation for number recognition and understanding. Similar emphasis was seen in NR (70%) and VR (80%). The availability of counting materials and engagement in small group activities remained consistent with 33.3% in GA, 43% in NR, and an increased 80% in VR, suggesting that VR classrooms are particularly well-resourced in this area. KG1 also saw higher engagement in mixed-order number activities, especially in VR (80%) and NR (46.67%), with GA at 50%, indicating a focus on activities that develop numerical fluency. Additionally, activities involving pattern recognition and sorting were evenly practiced in GA (66.67%) and VR (80%), while NR showed a slightly lower emphasis at 43%. The strong numeracy environment in KG1 classrooms across regions, particularly in VR, reveals a more structured approach to embedding foundational numeracy skills through PBL, which is crucial for fostering mathematical understanding and improving overall learning outcomes (see Table 14). Overall, the emphasis on the numeracy environment in KG1, supported by play-based learning, contributes significantly to preparing young learners with essential skills for their academic journey. However, there is a need for greater consistency across grades and regions to ensure that all children benefit equally from these educational practices.

6.3 Play-Based Learning Activities and Implementation

6.3.1 Specific Play Activities Observed in Lessons

This analysis provides an overview of the diverse play-based learning activities observed in classrooms across the Greater Accra (GA), Northern Region (NR), and Volta Region (VR) for both KG2 and KG1. The inclusion of proportions and the focus on various activities highlights how teachers integrate play to facilitate early childhood development (ECD). Out of the 66 observations made, the most prevalent activity was music and movement, accounting for 28.8% of the total. This high proportion indicates that teachers heavily rely on songs, rhythms, and physical movement to engage children, making learning interactive and lively. This method was particularly popular in KG1, especially in the Volta and Northern Regions, reflecting an emphasis on using dynamic activities to support development.

Counting and sorting activities were also commonly observed, comprising 16.7% of the total. Teachers in the Northern Region seemed particularly inclined to use this approach, where 23.1% of KG2 activities focused on numeracy skills. The use of counting and sorting in play indicates a deliberate effort to build foundational numeracy skills through engaging, hands-on methods.

Role-playing activities made up 12.1% of the total play activities. This method was relatively more frequent in the Northern Region, suggesting that teachers there are utilizing role-playing to enhance students' social-emotional skills and practical knowledge. By acting out scenarios related to daily life, such as playing house, visiting a doctor, or acting as shopkeepers, children develop critical social interaction abilities and problem-solving skills.

Outdoor play, observed in 10.6% of activities, involved physical games conducted outside the classroom. Teachers in both the Northern and Volta Regions leveraged outdoor play to foster motor skills and to connect children with their environment. These activities support the development of physical coordination, teamwork, and an understanding of the natural world.

Creative activities, including drawing, colouring, and storytelling, were less frequent, each accounting for 6.1% of the total observations. While these activities are crucial for nurturing creativity, imagination, and language skills, their lower prevalence reveals they might be secondary to more structured activities like music, counting, and role-playing.

In terms of regional and grade-specific distribution, teachers in KG1 showed a more diverse range of play activities compared to KG2, with a noticeable emphasis on music, movement, and counting. This reveals an attempt to provide a balanced approach to developing various skills during early childhood. For instance, in Greater Accra, music and movement were employed in 44.4% of activities observed in KG1, indicating an effort to make lessons both interactive and enjoyable for the learners.

This analysis reveals a strong preference for activities such as music, movement, counting, and sorting across the regions and grades, illustrating the adaptive use of play to enhance learning outcomes. Teachers actively engage students through a mix of physical activities, songs, and hands-on tasks, supporting the development of key skills in numeracy, literacy, and social-emotional growth. However, the relatively lower use of storytelling, drawing, and sensory play indicates an opportunity to further diversify activities, fostering creativity and critical thinking. This varied yet targeted use of play-based activities aligns with the core principles of early childhood development, highlighting the teachers' efforts to create an enriching learning environment.

6.3.2 Use of Play Activities for Specific Content

The integration of play activities into classroom teaching has proven to be an essential tool for enhancing children's learning experiences across different regions and grades. This analysis provides a comprehensive overview of how teachers in Greater Accra, Northern, and Volta regions employed various play-based activities to teach a range of subjects, including literacy, numeracy, science, and social-emotional development. By examining these activities in the context of specific lesson content, we gain insights into the dynamic use of play to support children's educational outcomes.

In Greater Accra, play activities were observed in both KG2 and KG1 classes, with 67% of these activities taking place in KG2. The activities primarily focused on weather conditions, literacy, and numeracy. Teachers used to sing and rhymes, such as the song "Rain, rain go away," to introduce topics on weather conditions. In science, hands-on activities such as demonstrations were employed to teach children about sources of light, while songs and movements helped to reinforce literacy topics, particularly the Jolly Phonics method for teaching letter sounds. Numeracy lessons often incorporated counting and sorting exercises, where children used physical objects to understand numbers and arithmetic concepts. This variety in play-based teaching methods reveals that teachers in Greater Accra leverage diverse activities to enhance students' engagement and comprehension, especially in KG2.

In the Northern Region, a broad range of play activities was used, with an emphasis on KG2 (approximately 70% of the observed activities). Teachers in this region employed role-playing scenarios, storytelling, and hands-on activities to support learning in science, literacy, numeracy, and social-emotional development. For example, role play was used to teach personal hygiene, where children demonstrated how to brush their teeth and take baths, making connections to their science topics. Numeracy lessons involved sorting and counting objects to illustrate fundamental arithmetic concepts, fostering an interactive environment for students. Literacy topics were often introduced through storytelling with puppets, which helped develop vocabulary and narrative skills. Additionally, role-playing in conflict resolution scenarios allowed children to practice social skills and learn about emotions. This diverse use of play activities in the Northern Region highlights a holistic approach to children's development, covering academic and emotional learning aspects.

In the Volta Region, play activities were also predominantly observed in KG2 classes (71%). Outdoor games featured prominently in this region, especially for teaching science and numeracy. Teachers conducted physical activities outside, which helped students learn about weather conditions and natural phenomena in an engaging manner. Literacy activities, similar to those in the Northern Region, involved storytelling using puppets to enhance students' vocabulary and narrative abilities. For numeracy, teachers used sorting and counting games, providing a hands-on approach to learning numbers. This indicates that outdoor games and storytelling are key strategies employed in the Volta Region to promote active and holistic learning among young children.

The analysis shows that teachers effectively tailor play activities to specific content areas. Singing and music are commonly used for teaching literacy, while hands-on activities are preferred for numeracy, and outdoor games are utilized for science topics. There is a notable focus on play-based learning in KG2 classes, suggesting that teachers find it particularly beneficial for younger learners. The flexible approach, including singing, storytelling, role-playing, and experiments, accommodates different learning needs. Overall, incorporating play into lessons not only aligns with the content but also supports children's cognitive, emotional, and social development.

6.3.3 Teacher Strategies for Student Involvement

The observation of classroom practices across Greater Accra (GA), Northern (NR), and Volta (VR) regions reveals that teachers implemented various strategies to actively involve students in lessons. These actions

include using hands-on activities, encouraging student participation, providing guidance, and modelling play activities, among others. Here's a breakdown of how teachers involved students, analysed by region and grade.

In Greater Accra, teacher involvement was observed equally across both KG2 and KG1, highlighting a focus on engaging younger learners in dynamic ways. The strategies employed by teachers included calling on students to participate in word pronunciation, which was particularly used in literacy lessons. Teachers also provided positive reinforcements, such as high-fives, to keep students motivated. One teacher incorporated a "shake-up" action, instructing students to stand up, sit down, and jump while counting. This activity not only engaged the learners but also created an energetic environment, helping students grasp numeracy concepts. Additionally, teachers used direct teaching aids, such as charts and flashcards, to involve students in identifying letters and numbers. This hands-on approach indicates a strong use of physical materials to enhance learning.

In Northern Region, a broader range of activities was observed, with more actions directed toward KG2 students (approximately 70%). Teachers frequently allowed students to choose their play activities, promoting autonomy and encouraging active engagement. Demonstrating activities was a common approach, where teachers would model play activities like washing hands and then ask students to try it themselves. Encouraging peer collaboration was another key strategy in the Northern Region. Teachers grouped students to identify living and non-living things or engage in problem-solving games. For example, one teacher used the topic of personal hygiene and had students demonstrate brushing their teeth. This collaborative method helped build social skills and fostered a supportive learning environment. Teachers in this region also used questioning techniques to engage students. By asking open-ended questions and linking play activities to real-life situations, they made lessons more interactive and relatable. The use of demonstrations and positive feedback, such as clapping for correct answers, further contributed to an inclusive classroom environment.

In Volta Region, teacher involvement was observed more in KG2, where teachers used play-based learning to connect students with lesson content. Hands-on play activities, such as outdoor games and physical education, were used to facilitate understanding of concepts in subjects like science and mathematics. For example, in teaching numeracy, teachers would engage students in counting and sorting exercises using tangible objects. Teachers also modelled play activities to guide appropriate behaviour, such as participating in games alongside students. Additionally, they ensured that classroom management was maintained, often grouping students and calling on them one by one to participate in activities like letter identification on cards. This strategy not only kept students engaged but also ensured that every child had a chance to contribute to the lesson.

Teachers consistently use interactive techniques, such as high-fives, clapping, and student choices in play activities, to actively engage students in the learning process. This student autonomy, particularly observed in the Northern Region, enhances participation and learning outcomes. The frequent use of hands-on activities, especially in kindergarten, aligns with younger learners' developmental needs. Additionally, teachers provide guidance to keep students on track during activities, contributing to an inclusive and supportive classroom environment. These strategies collectively reflect a commitment to play-based learning and likely improve learning outcomes across the regions.

6.3.4 Classroom Layout and Its Impact on Play-Based Learning

The classroom layout plays a crucial role in supporting or hindering play-based learning. The arrangement of desks, availability of learning materials, and the overall organization can significantly influence how effectively children engage in various activities. Here's a detailed analysis of classroom layouts observed

across Greater Accra (GA), Northern (NR), and Volta (VR) regions, considering their impact on play-based learning.

In Greater Accra, classrooms generally featured a variety of layouts aimed at facilitating play-based learning. Desks were arranged to allow free movement, and there was a visible effort to provide learning materials. In some classrooms, chairs were moved aside to create space, allowing learners to sit on mats and engage in activities comfortably. Walls were adorned with labelled pictures, numbers, and letters, and some classrooms included designated play corners, such as construction areas, enhancing students' access to learning through play. However, some classrooms faced challenges due to limited space and inadequate furniture. These limitations hindered free movement and, consequently, the ease of conducting play-based activities. One classroom reported an insufficient space that could not accommodate different play areas, which limited students' exposure to various learning experiences.

The classrooms in Northern Region displayed a mix of layouts, with several promoting an environment conducive to play-based learning. Many classrooms had open and flexible layouts, allowing teachers to rearrange furniture to suit different activities. Some classes featured "horseshoe" arrangements that facilitated interaction between students and teachers. The use of child-friendly storage ensured that learning materials were accessible, fostering independence and choice among students. However, some classrooms were observed to be less conducive to play-based learning due to clutter and inadequate space. In these cases, classrooms lacked designated play areas like reading corners, resulting in limitations on the diversity of play activities. Poor arrangement of desks and a crowded environment, sometimes shared by both KG1 and KG2, further obstructed movement and hindered engagement in play-based learning.

Classrooms in the VR region tended to focus on creating an open and flexible environment, which encouraged movement and interaction among students. Teachers could rearrange the layout to support different activities, enhancing transitions between play and academic exercises. The incorporation of natural elements, such as plants and natural lighting, contributed to a stimulating learning environment. In addition, some classrooms had designated play areas that supported specific activities like reading or art. However, similar to the other regions, some classrooms in VR struggled with space issues. Crowding was reported in certain classrooms, limiting children's movement and interaction during play. Additionally, in cases where materials were packed haphazardly or the classroom environment was cluttered, the effectiveness of play-based learning was compromised.

In summary, the classroom environment plays a critical role in supporting play-based learning. Classrooms with ample space, flexible layouts, and accessible materials foster an inclusive and interactive learning atmosphere. Conversely, inadequate space, poor organization, and a lack of designated play areas limit opportunities for children to engage in meaningful play. Addressing these limitations can significantly enhance the quality of play-based learning in early childhood education centres.

6.4 Factors hindering the effective implementation of Play-Based Learning

The successful implementation of PBL in early childhood education is crucial for fostering holistic development in young learners. However, teachers in KG2 and KG1 have reported several challenges that hinder the effective execution of PBL methodologies. These challenges were identified through Key Informant Interviews (KIIs) with teachers across different regions, providing valuable insights into the obstacles faced in both KG2 and KG1 classrooms. The feedback highlights specific issues related to resource availability, classroom management, infrastructure, and teacher training, which significantly impact the learning environment and the success of PBL (see Figure 31).

KG2

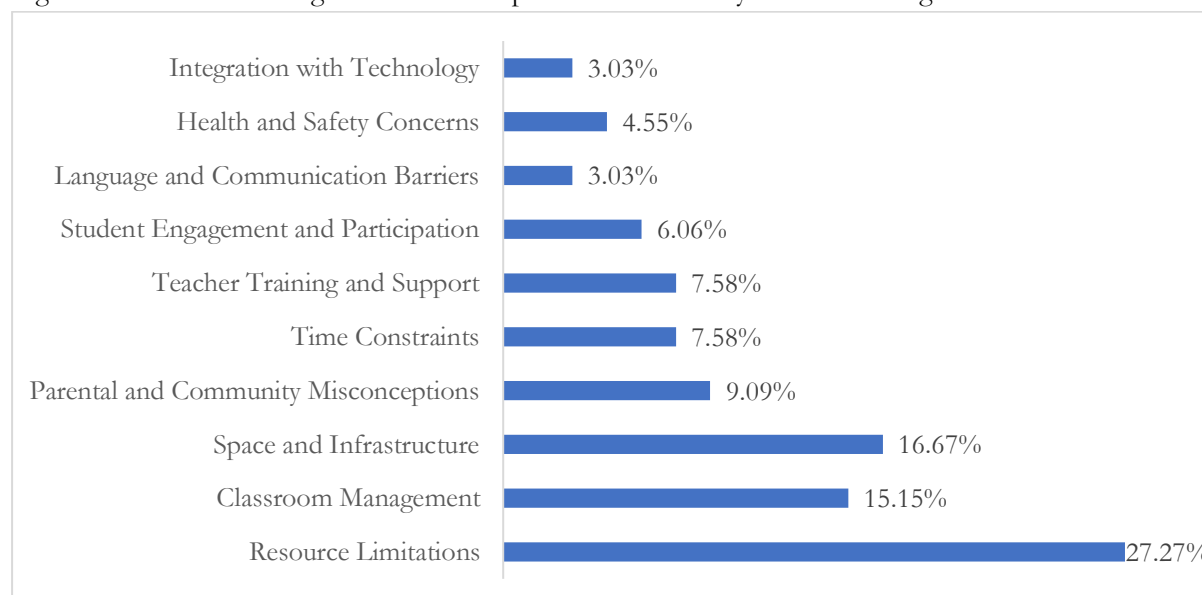
Resource Limitations: Teachers in KG2, across all regions (GA, NR, VR), report significant resource limitations, with 27.27% citing issues such as insufficient learning materials and teaching resources. One teacher expressed the concern: *"We often have to improvise because there aren't enough materials for everyone. It makes it difficult to engage all students in hands-on activities."* (KII, Teacher, Greater Accra). This shortage affects their ability to implement PBL, which relies on diverse and engaging materials to facilitate interactive learning.

Classroom Management: Managing large class sizes and noisy environments is a challenge for 15.15% of KG2 teachers. As one teacher in the Northern Region noted, *"With over 40 children in one classroom, it's nearly impossible to keep everyone focused during play activities."* (KII, Teacher, Northern Region). Effective classroom management is crucial for PBL, where active and collaborative activities are essential. Difficulties in maintaining order can detract from the overall learning experience.

Space and Infrastructure: Inadequate classroom conditions, such as overcrowding and poor lighting, were mentioned by 16.67% of teachers. A teacher from the Volta Region shared, *"Our classrooms are so cramped that there's hardly any room for children to move around during play activities."* (KII, Teacher, Volta Region). These conditions make it challenging to create an environment that supports exploratory and interactive play.

Teacher Training and Support: A smaller proportion, 7.58%, of KG2 teachers struggle with a lack of adequate training and support. One teacher remarked, *"We were given basic training on PBL, but more follow-up support would help us implement it effectively."* (KII, Teacher, Greater Accra). This challenge affects their ability to adapt PBL methods to meet their students' needs.

Figure 31: Factors affecting the effective Implementation of Play-Based Learning



Source: IDELA Endline Study Data, 2024

KG1

Resource Limitations: For KG1, resource limitations are also a significant issue, affecting 27.27% of teachers. A teacher from Greater Accra highlighted, *"The lack of educational toys and materials limits our ability to*

conduct engaging play-based activities." (KII, Teacher, Greater Accra). PBL requires various resources to captivate young learners and facilitate meaningful play.

Parental and Community Misconceptions: In KG1, 9.09% of teachers face challenges related to parental and community misconceptions about PBL. One teacher mentioned, *"Some parents don't understand the value of play-based learning and think it's just 'wasting time' instead of teaching the children."* (KII, Teacher, Northern Region). These misconceptions can undermine the support needed from parents and the community for effective PBL implementation.

Time Constraints: KG1 teachers, accounting for 7.58%, find it challenging to balance play activities with the required curriculum. A teacher from the Volta Region expressed, *"We have so much to cover in the curriculum that there's hardly enough time for proper play-based activities."* (KII, Teacher, Volta Region). The time-consuming nature of PBL activities can create difficulties in managing the structured elements of the curriculum.

Space and Infrastructure: Similar to KG2, KG1 teachers face challenges related to space and infrastructure, with 16.67% citing overcrowded classrooms and inadequate space. *"Our classroom is too small to set up different play stations,"* a teacher explained (KII, Teacher, Northern Region). This limitation hampers the effectiveness of PBL, which thrives in a spacious and adaptable learning environment.

KG2 and KG1 Combined

Classroom Management: Both KG2 and KG1 teachers collectively report challenges with classroom management, particularly with large class sizes and noisy environments, affecting 15.15% of respondents. *"It's hard to keep children engaged in play when the noise levels get too high,"* shared a teacher from Greater Accra (KII, Teacher, Greater Accra). Effective management is crucial for maintaining an environment conducive to PBL.

Teacher Training and Support: The need for improved training and support for PBL is evident, with 7.58% of teachers facing difficulties. A teacher from Volta Region commented, *"More hands-on workshops and continuous support would make a big difference in how we implement PBL."* (KII, Teacher, Volta Region). Adequate training and professional development are necessary for teachers to effectively implement and adapt PBL strategies.

Integration with Technology: Although less common, 3.03% of KG2 teachers specifically mention difficulties integrating technology into PBL. *"We don't have enough technological resources, like tablets or interactive boards, to incorporate into play-based learning,"* explained a teacher from the Northern Region (KII, Teacher, Northern Region).

Addressing these challenges—particularly around resource limitations, space and infrastructure, and classroom management—is crucial for enhancing the implementation of PBL. As one teacher aptly summarized, *"With more support, materials, and training, we can create an environment where play-based learning truly thrives."* (KII, Teacher, Greater Accra). By focusing on these areas, educators can better support the learning needs of children and improve educational outcomes through play-based approaches.

6.5 School Child Protection Protocols by Region and Districts

This analysis provides a snapshot of the implementation of child protection protocols in schools across different regions, focusing on three key areas: the existence of a teacher code of conduct, access to trained personnel for child protection and psychosocial support, and teachers' access to psychosocial support. The

data is categorized by region—Greater Accra (GA), Northern Region (NR), and Volta Region (VR)—and specific districts within these regions.

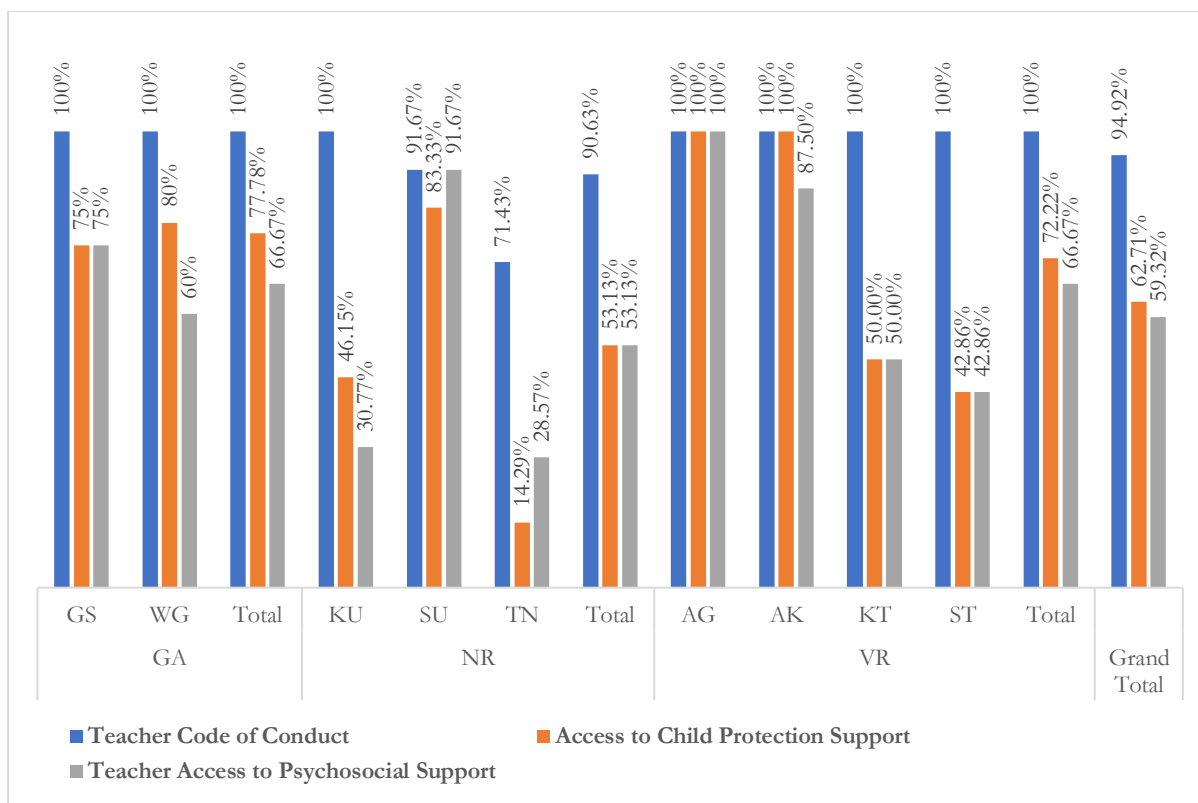
1. Existence of a Teacher Code of Conduct

There is a high level of compliance with having a teacher code of conduct across all regions, with an overall adherence rate of 94.92%. In Greater Accra, all districts reported a 100% compliance rate, showing that every school has established clear behavioural expectations for teachers. Similarly, in the Volta Region, all districts reported 100% compliance. However, in the Northern Region, while KU district also reported 100% compliance, SU and TN districts showed slightly lower rates at 91.67% and 71.43% respectively, averaging 90.63% across the region. This strong adherence to a teacher code of conduct is crucial for maintaining a safe and professional environment conducive to learning (see Figure 32).

2. Access to a Trained Point Person for Child Protection Referral and Psychosocial Support

Access to trained personnel for child protection and psychosocial support varies significantly across regions, with an overall access rate of 62.71%. In Greater Accra, the access rate is relatively high, averaging 77.78% across the region. The Northern Region shows significant variability, with access ranging from 46.15% in KU to 83.33% in SU, and a low of 14.29% in TN, resulting in an average of 53.13%. In the Volta Region, access is diverse, with 100% access in AG and AK, but much lower rates in KT (50.00%) and ST (42.86%), leading to a regional average of 62.71%. These disparities suggest that while some districts are well-resourced, others may lack the necessary infrastructure to provide comprehensive child protection and psychosocial support, potentially affecting student well-being (see Figure 32).

Figure 32: School Child Protection Protocols by Region and Districts



Source: IDELA Endline Study Data, 2024

3. Teachers' Access to Psychosocial Support

Teachers' access to psychosocial support is also varied, with an overall access rate of 59.32%. In Greater Accra, access is moderate, averaging 66.67% across the region. In the Northern Region, access is inconsistent, with KU at 30.77%, SU at 91.67%, and TN at 28.57%, leading to a regional average of 53.13%. The Volta Region shows diverse results, with 100% access in AG and 87.50% in AK, but lower rates in KT (50.00%) and ST (42.86%), averaging 66.67% across the region. This variability indicates that while some regions are well-equipped to support teacher well-being, others may require additional resources and training to ensure consistent access to support services (see Figure 32).

Overall, the analysis shows strong adherence to teacher codes of conduct, reflecting a commitment to maintaining professional standards in schools. However, there are significant disparities in access to trained personnel for child protection and psychosocial support across regions, particularly in the Northern and Volta Regions. Addressing these gaps could enhance the overall child protection environment in schools, leading to improved outcomes for both students and teachers.

6.7 Parent and Community Support to PBL Activities Implementation

The analysis of parent and community support for PBL activities implementation reveals varying levels of engagement across the Greater Accra (GA), Northern Region (NR), and Volta Region (VR). This support is crucial in improving the learning outcomes of children in Early Childhood Development (ECD) centres. In the GA region, the presence of committees that meet all requirements was relatively high at 55.56%, with KG2 having a slightly higher percentage (66.67%) compared to KG1 (50%). However, the support from community volunteers was lower in GA, with only 11.11% indicating reliable/ongoing support, predominantly in KG2. Additionally, regular support in terms of resources was minimal (11.11%), suggesting a need for increased community involvement. Despite this, coordinated activities between

ECCD and PBL programs were reported in 55.56% of cases, which likely aids in the smooth transition between programs and contributes positively to learning outcomes (see Table 15).

Table 16: Parent and Community Support to PBL Activities by region and grade

	GA			NR			VR			Grand Total
	Gr.1	KG2	Total	Gr.1	KG2	Total	Gr.1	KG2	Total	
Committee meets all requirements	66.67%	50%	55.56%	38.46%	36.67%	37.21%	25%	20%	21.43%	36.36%
Volunteer support in community	33.33%	0%	11.11%	38.46%	53.33%	48.84%	50%	40%	42.86%	42.42%
Regular support (money, resources)	0%	16.67%	11.11%	38.46%	43.33%	41.86%	25%	20%	21.43%	33.33%
Parenting sessions regularly attended	0%	33.33%	22.22%	53.85%	40%	44.19%	50%	20%	28.57%	37.88%
Coordinated ECCD and PBL activities	33.33%	66.67%	55.56%	53.85%	60%	58.14%	25%	70%	57.14%	57.58%

Source: IDELA Endline Study Data, 2024

In the NR, there was moderate community engagement, with committees meeting all requirements in 37.21% of cases, fairly consistent across both grades. Community volunteer support was significantly stronger (48.84%) compared to GA, particularly in KG2 (53.33%). Regular support from parents and the community was also higher than in GA, standing at 41.86%, which is essential for maintaining the quality of PBL activities. Notably, parenting sessions were well-attended in this region (44.19%), indicating a strong emphasis on parental involvement in children's education. This engagement is vital in reinforcing the concepts taught in school and improving overall learning outcomes. Coordinated activities between ECCD and PBL programs were present in 58.14% of cases, suggesting that efforts are being made to ensure continuity in children's learning experiences.

The VR exhibited mixed results, with a lower percentage of committees meeting all requirements (21.43%) and variable support from community volunteers (42.86%). However, the region showed strong engagement in parenting sessions (28.57%) and coordinated activities (57.14%), particularly in KG2, where 70.00% reported such activities. This reveals that while formal structures like committees may be weaker, there is still significant informal support from the community, particularly in the form of parenting sessions and coordinated activities, which are likely to contribute positively to children's learning outcomes. The involvement of parents and the community in these regions is crucial for sustaining the PBL approach and ensuring that children receive consistent support both at home and in their educational settings.

KNOWLEDGE, ATTITUDES, AND PRACTICES (KAP) OF TEACHERS

This section delves into the Knowledge, Attitudes, and Practices (KAP) of teachers concerning the Play-Based Learning (PBL) program under the Enhancing Quality Early Childhood Education in Ghana Project. Teachers are central to the successful implementation of PBL, as their understanding, acceptance, and application of play-based methods directly impact children's learning experiences and outcomes. The analysis draws from interviews and surveys, shedding light on teachers' familiarity with the PBL approach, their attitudes towards integrating play in classroom activities, and the practices they employ to enhance student engagement and learning. By exploring these facets, this section aims to provide a nuanced understanding of the key drivers and challenges faced by teachers in the delivery of the PBL program, offering insights to inform future training and support initiatives.

7.1 Knowledge of Play-Based Learning

7.1.1 Teachers Attending PBL Training Workshops in the Last Year

The analysis of teachers' participation in PBL training workshops over the past year shows significant variations across grades and regions.

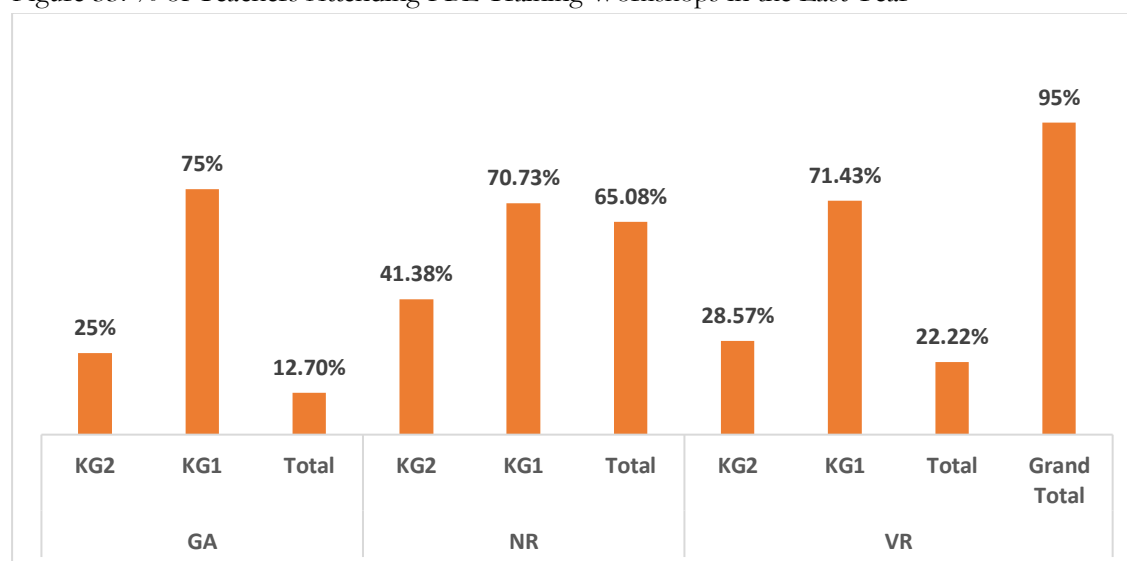
1. Greater Accra (GA):

In GA, only 25% of KG2 teachers attended any PBL training workshops in the last year. This low attendance reveals that a large proportion of teachers may lack updated training in PBL methodologies, which could impact the effective implementation of PBL strategies in the classroom. In contrast, 75% of KG2 teachers in GA participated in PBL training workshops. This higher participation rate among KG1 teachers indicates a stronger alignment with the PBL curriculum, potentially leading to more effective early childhood education outcomes (see Figure 33).

2. Northern Region (NR):

In NR, 41.38% of KG2 teachers attended PBL training workshops, indicating moderate engagement with professional development opportunities. This level of participation reveals that while some teachers are keeping up with PBL methodologies, others may need additional training to fully integrate PBL strategies into their teaching. A significantly higher percentage (70.73%) of KG1 teachers attended PBL training workshops in NR. This reveals that KG1 teachers are more likely to be equipped with current PBL practices, which could enhance the learning experiences and outcomes for young children in this region (see Figure 33).

Figure 33: % of Teachers Attending PBL Training Workshops in the Last Year



Source: IDELA Endline Study Data, 2024

3. Volta Region (VR):

In VR, 28.57% of KG2 teachers attended PBL training workshops, reflecting a relatively low level of participation. This reveals that most KG2 teachers in VR may not have received recent training in PBL, which could limit their effectiveness in implementing PBL activities. However, 71.43% of KG1 teachers in VR attended PBL training workshops, indicating strong engagement with professional development. This higher attendance rate among KG1 teachers reveals that these educators are better prepared to apply PBL methods, potentially leading to improved learning outcomes in early childhood education (see Figure 33).

Overall, the analysis reveals that KG1 teachers across all regions are more likely to have attended PBL training workshops compared to KG2 teachers. This reveals that younger children in KG1 might benefit more from updated PBL practices, whereas KG2 students may not receive the full advantages of these methods due to lower teacher participation in training. The varying levels of attendance also highlight the need for targeted efforts to increase PBL training participation among KG2 teachers, particularly in regions like Greater Accra and Volta, to ensure that all students can benefit from the enriched learning environment that PBL offers.

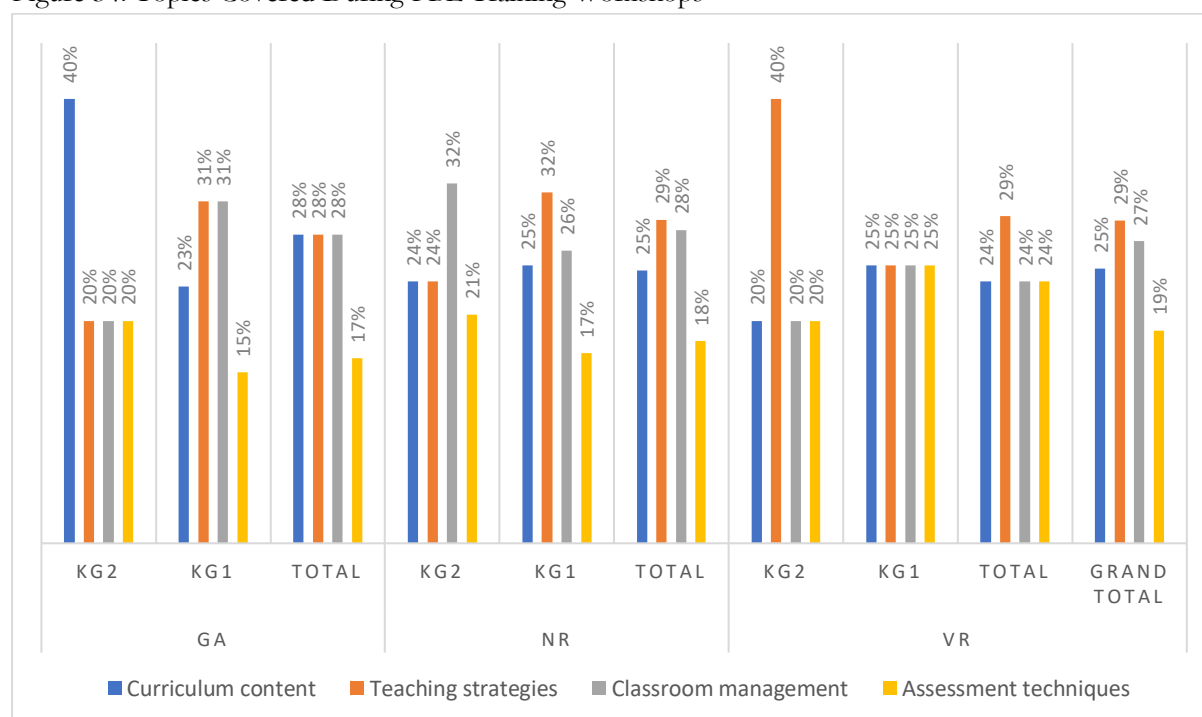
7.1.2 Topics Covered During PBL Training Workshops

The analysis of the topics covered during PBL training workshops reveals a focus on several key areas essential for effective PBL implementation. The coverage of these topics varies across grades and regions, reflecting the diverse training needs of educators in different contexts.

1. Curriculum Content:

Curriculum content was a key focus across all regions, with 25% of the total workshops addressing this topic. This emphasis indicates that understanding and aligning with the curriculum is a priority for educators implementing Play-Based Learning (PBL). A breakdown by grade and region reveals that in Greater Accra, 40% of KG2 teachers and 23% of KG1 teachers reported covering curriculum content, resulting in an overall coverage of 28%. In the Northern Region, 24% of teachers in both KG2 and KG1 mentioned curriculum content, demonstrating consistency across grades. Meanwhile, in the Volta Region, 20% of KG2 teachers and 25% of KG1 teachers focused on curriculum content, achieving an overall coverage of 24% (see Figure 34).

Figure 34: Topics Covered During PBL Training Workshops



Source: IDELA Endline Study Data, 2024

2. Teaching Strategies:

Teaching strategies emerged as the most frequently covered topic, with 29% of the workshops focusing on this area. This strong emphasis reveals a concerted effort to equip teachers with the necessary methods and techniques for effectively implementing Play-Based Learning (PBL). Analyzing by grade and region, in Greater Accra, 20% of KG2 teachers and 31% of KG1 teachers reported focusing on teaching strategies, resulting in an overall coverage of 28%. In the Northern Region, teaching strategies were highlighted in 32% of workshops, with 24% of KG2 and 32% of KG1 teachers mentioning it. In the Volta Region, 40% of KG2 teachers and 25% of KG1 teachers focused on this topic, achieving a 29% overall coverage (see Figure 34).

3. Classroom Management:

Classroom management emerged as another significant focus, covered in 27% of the workshops. This reflects the critical need to create an environment conducive to Play-Based Learning (PBL), where students can engage and learn effectively. Analyzing by grade and region, in Greater Accra, 20% of KG2 teachers and 31% of KG1 teachers reported focusing on classroom management, resulting in an overall coverage of 28%. In the Northern Region, classroom management received higher attention, with 32% of KG2 and 26% of KG1 teachers covering the topic, leading to 28% overall coverage. In the Volta Region, 20% of KG2 teachers and 25% of KG1 teachers addressed classroom management, resulting in a total of 24% coverage (see Figure 34).

4. Assessment Techniques:

Assessment techniques were the least emphasized area, covered in only 19% of the workshops. This indicates that while assessment is acknowledged, it may not be prioritized as highly as other aspects of PBL training. By grade and region, in Greater Accra, 20% of KG2 teachers and 15% of KG1 teachers focused on assessment techniques, resulting in an overall coverage of 17%. The Northern Region reported 21% coverage, with 21% of KG2 teachers and 17% of KG1 teachers mentioning assessment techniques. In the Volta Region, 20% of KG2 teachers and 25% of KG1 teachers concentrated on assessment techniques, achieving 24% overall coverage. The analysis shows that the PBL training workshops provided a balanced focus on curriculum content, teaching strategies, classroom management, and assessment techniques. However, teaching strategies and classroom management received the most attention, indicating a priority on practical skills that directly impact the classroom environment and instructional effectiveness.

7.1.3 Teacher Knowledge on PBL Curriculum Components

This analysis examines the ability of teachers across three regions—Greater Accra (GA), Northern Region (NR), and Volta Region (VR)—to list key components of the PBL curriculum, categorized by grade (KG2 and KG1). The examples provided by teachers reflect their understanding of the PBL curriculum's core elements (see Figure 35).

1. Teachers Listing Three Key Components:

In GA, 22.2% of teachers (1 teacher each from KG2 and KG1) could list three key components of the PBL curriculum. Examples of components listed include "Numeracy, Language and Literacy, Creative Art" and "RCA (Reflect, Connect, Apply), Preparing the brain of the learners using the starter, and Group activities and gender equality." These responses suggest a comprehensive understanding of the curriculum's multi-faceted approach to early childhood education. Only 6.1% of teachers (2 teachers from KG1) in NR could list three key components. Examples include "Self-direction, Unstructured Exploration, Play must be

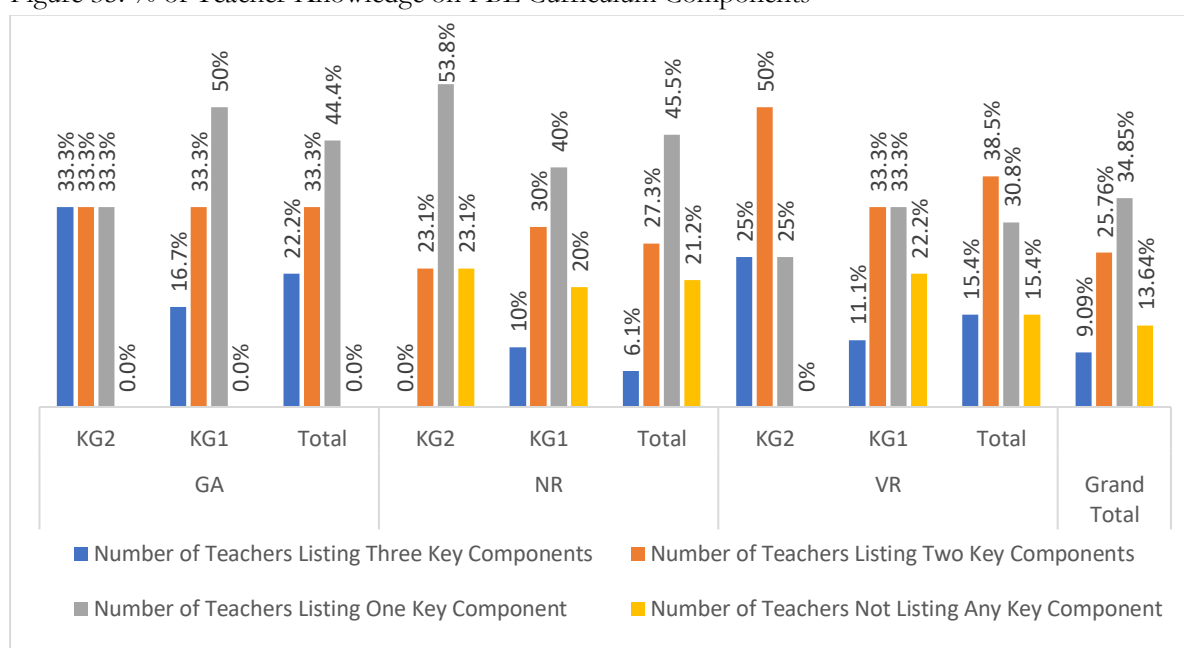
enjoyable for children." This indicates a limited but focused understanding of the curriculum's emphasis on child-led learning and exploration (see Figure 35).

Similarly, 15.4% of teachers (1 teacher each from KG2 and KG1) in VR listed three key components, such as "Promotes language development, fosters creativity and imagination, Develops social-emotional skills." This reflects a balanced understanding of the curriculum's goals in promoting holistic child development.

2. Teachers Listing Two Key Components:

In GA, 33.3% of teachers (1 from KG2 and 2 from KG1) listed two key components. Examples include "Creativity, Language Skills, and Enquiry" and "Communication, Leadership, Creativity." These responses highlight the teachers' focus on essential developmental areas, though a more comprehensive understanding could be beneficial. 27.3% of teachers (3 from KG2 and 6 from KG1) in NR listed two components. Examples include "Gender Sensitivity, Talking Classroom" and "Assessment and Evaluation, Learning Centers." This indicates an awareness of critical elements like gender inclusion and assessment but reveals the need for further depth in understanding the full scope of PBL. In VR, 38.5% of teachers (2 from KG2 and 3 from KG1) listed two components. Examples include "Group Activity, Pairing" and "Learning Center, Book Center." This reveals that while teachers are familiar with some structural elements of PBL, a broader grasp of the curriculum's objectives is needed (see Figure 35).

Figure 35: % of Teacher Knowledge on PBL Curriculum Components



Source: IDELA Endline Study Data, 2024

3. Teachers Listing One Key Component:

In the Greater Accra (GA) region, 44.4% of teachers (1 from KG2 and 3 from KG1) could identify only one key component, such as "Child-centred Approach" and "Interactive, Playful Learning." While these responses show a basic understanding of child-centred education, they lack the depth required for comprehensive implementation. In the Northern Region (NR), 45.5% of teachers (7 from KG2 and 8 from KG1) listed one component, including "Creative Play" and "Assessment Techniques." This indicates that although teachers are aware of individual aspects of play-based learning (PBL), they may not fully understand how these elements integrate into a cohesive educational strategy. In the Volta Region (VR),

30.8% of teachers (1 from KG2 and 3 from KG1) could mention one key component, such as "Literacy, Music, and Numeracy." While this shows some familiarity with subject-specific elements, it highlights a need for a more holistic grasp of the curriculum (see Figure 35).

4. Teachers Not Listing Any Key Component:

In Greater Accra, all teachers listed at least one component, indicating that they have had some exposure to the PBL curriculum. However, in the Northern Region, **21.2% of teachers** (3 from KG2 and 4 from KG1) could not list any components, pointing to a significant gap in curriculum knowledge that may impact teaching effectiveness. In the Volta Region, **15.4% of teachers** (2 from KG1) did not identify any components, emphasizing the need for further professional development to enhance their ability to implement PBL strategies effectively.

The analysis reveals varying levels of familiarity with the PBL curriculum across grades and regions. Teachers in the Volta Region demonstrated relatively better understanding, with a higher proportion able to list two key components. In contrast, the Northern Region had the highest percentage of teachers unable to list any components, indicating a significant need for targeted training and support. The examples provided highlight that while some teachers grasp essential elements like creativity, language development, and social-emotional skills, there is a need for a more comprehensive understanding of how these components interconnect within the PBL framework. This understanding is crucial for improving learning outcomes in Early Childhood Development Centres (ECDC) through the effective application of PBL strategies.

7.2 Teacher Attitudes Towards Play-Based Learning

7.2.1 Teacher Sentiments on Incorporating PBL

This section examines teachers' attitudes toward incorporating Play-Based Learning (PBL) into their teaching methods, segmented by region (Greater Accra, Northern Region, and Volta Region) and grade level. Teacher sentiments were grouped into three categories: "Very Positive," "Positive," and "Neutral." The results provide insights into regional variations and highlight areas where PBL is widely embraced or where further support may be needed.

Greater Accra (GA)

In Greater Accra, teacher sentiments toward PBL were relatively varied. For both KG2 and KG1 teachers, the feelings about incorporating play into learning were mixed. About 22.22% of teachers held a neutral stance, indicating some reservations or ambivalence regarding the full integration of PBL in their classrooms. One teacher remarked, *"PBL is a good approach, but I feel it requires more time and resources than we currently have."* (KII, Teacher, Greater Accra).

Similarly, 22.22% of teachers felt positively about PBL, suggesting an openness to the approach, though not an overwhelming enthusiasm. As one KG1 teacher put it, *"I see the benefits of PBL, especially in engaging the children, but sometimes it's challenging to fit it into the curriculum."* (KII, Teacher, Greater Accra).

Notably, a larger proportion—55.56%—expressed very positive sentiments, particularly among KG1 teachers. One teacher shared, *"PBL has transformed the way my students learn. They are more active and eager to participate in lessons."* (KII, Teacher, Greater Accra). This reveals that while a majority of teachers in GA see the value in PBL, there remains a portion that might benefit from further support or training.

Northern Region (NR)

In the Northern Region, the attitude towards PBL is significantly more favourable. Only a small fraction (2.33%) of teachers reported neutral feelings, indicating that most teachers in this region are inclined toward

adopting play-based methods in their classrooms. One teacher with a neutral stance explained, *"PBL is effective, but managing the class during these activities can be overwhelming."* (KII, Teacher, Northern Region).

About 20.93% of teachers were positive, indicating an acceptance of PBL while leaving room for further development in their use of play-based techniques. One KG2 teacher noted, *"I use PBL occasionally, and I see how it benefits the children, but I feel we need more structured guidelines to implement it fully."* (KII, Teacher, Northern Region).

However, the majority—76.74%—were very positive, highlighting a strong belief in the benefits of PBL for student engagement and learning. A KG1 teacher shared, *"Using play in my teaching has made a huge difference. The children grasp concepts faster and are more enthusiastic about coming to school."* (KII, Teacher, Northern Region). This widespread enthusiasm in both KG2 and KG1 reveals a well-established appreciation for PBL in the Northern Region.

Volta Region (VR)

Teachers in the Volta Region exhibit the strongest support for play-based learning, with unanimous enthusiasm in the responses. Among KG2 teachers, 100% felt very positive about using PBL in their teaching. A KG2 teacher enthusiastically stated, *"PBL is the future of learning. It has completely changed how I interact with my students, and I see their joy in learning every day."* (KII, Teacher, Volta Region).

Similarly, 90% of KG1 teachers shared this sentiment, with one KG1 teacher highlighting, *"Play-based learning has allowed me to connect with my students on a different level. They are more curious and ask more questions during lessons."* (KII, Teacher, Volta Region). This near-universal endorsement reveals that teachers in Volta have either received more training, possessed more resources, or had a cultural preference for incorporating play into early childhood education.

Across all regions, 4.55% of teachers expressed neutral feelings toward PBL, suggesting that while the majority see its value, a small group may still be uncertain about its implementation. One teacher remarked, *"PBL is effective, but without proper training and support, it's hard to execute consistently."* (KII, Teacher, Greater Accra).

About 18.18% of teachers were positive, indicating an openness to PBL, though perhaps with some reservations or the need for more support. A teacher shared, *"I am open to using PBL more frequently, but we need more materials and time to integrate it fully into our daily lessons."* (KII, Teacher, Northern Region).

The majority, however, with 77.27% expressing very positive sentiments, reflect strong nationwide support for play-based learning. This is especially prominent in the Northern and Volta regions, where teachers have experienced firsthand the positive impact PBL has on student engagement and learning outcomes. One teacher summed it up well, *"PBL is not just a method; it's a game-changer for how we teach and how students learn."* (KII, Teacher, Volta Region).

7.2.2 Perceived Benefits of PBL for Students

The analysis of teacher responses regarding the benefits of PBL for students reveals several key themes across the regions and grades:

1. **Enhanced Learning and Retention:** A significant proportion of teachers identified enhanced learning and retention as a primary benefit of PBL. In KG2, 33% of teachers in Greater Accra (GA) and 50% in the Volta Region (VR) noted this benefit. In KG1, 13% of teachers in GA and 23% in the Northern Region (NR) highlighted this advantage. Overall, 27% of teachers emphasized that PBL helps students retain information better and understand concepts more effectively.

2. **Increased Student Engagement and Participation:** This was the most frequently cited benefit, with 36% of teachers across all regions and grades recognizing how PBL increases student engagement and participation. In GA, 67% of KG2 teachers and 38% of KG1 teachers noted this. Similarly, in NR, 46% of KG2 teachers and 27% of KG1 teachers emphasized the active participation PBL fosters. This indicates that PBL effectively keeps students engaged and encourages them to be more involved in classroom activities.
3. **Development of Critical Skills:** Teachers also noted that PBL contributes to the development of critical skills such as problem-solving, creativity, and critical thinking. In NR, 15% of KG2 teachers and 17% of KG1 teachers pointed this out, along with 25% of KG1 teachers in GA. Overall, 18% of teachers across regions and grades saw PBL as instrumental in building these essential skills.
4. **Improved Emotional and Social Development:** Some teachers (15% overall) emphasized the role of PBL in improving students' emotional and social development. This was particularly noted by 20% of KG1 teachers in NR and 13% in GA. Teachers mentioned that PBL helps students develop better emotional intelligence and social skills by interacting with peers in a structured yet playful environment.
5. **Positive Impact on Classroom Environment:** A smaller, but notable, percentage of teachers (12% overall) highlighted the positive impact PBL has on the classroom environment. This was mentioned by 13% of KG1 teachers in GA and NR and by 14% of KG1 teachers in VR. Teachers observed that PBL creates a more dynamic, enjoyable, and conducive learning atmosphere, which benefits both students and teachers.

These findings demonstrate that teachers perceive PBL as a highly effective approach to improving not only academic outcomes but also the overall development and well-being of students. The data underscores the importance of PBL in fostering a holistic educational experience that supports cognitive, emotional, and social growth.

7.3 Implementation Practices

7.3.1 Frequency of Play-Based Activities in the Classroom

Play-based learning activities are integral to engaging young learners and enhancing their cognitive, social, and emotional development. This analysis examines the frequency with which teachers in different regions and grades use play-based activities in their classrooms.

1. Daily Use of Play-Based Activities

Daily use of play-based activities is the most frequent occurrence across all regions and grades, with an overall rate of 63.64%. In GA, 33.33% of KG2 teachers and a significant 83.33% of KG1 teachers reported daily use, resulting in a total of 66.67% for the region. NR showed a high consistency with 61.54% in KG2 and 63.33% in KG1, averaging 62.79%. VR had the highest daily use, with 75.00% in KG2 and 60.00% in KG1, totalling 64.29%. The frequent use of daily play-based activities, especially in KG1 across regions, underscores the emphasis on integrating play in early childhood education. The lower percentage in GA KG2 compared to KG1 reveals a potential shift in instructional focus as children progress in grades.

2. Monthly Use of Play-Based Activities

Monthly use of play-based activities is relatively uncommon, accounting for only 1.52% of responses. Only 33.33% of KG2 teachers in GA reported monthly use, with no reports from other grades or regions. The

low frequency of monthly play-based activities indicates that most teachers prefer more regular incorporation of play into their teaching methods. The GA KG2 teachers reporting monthly use may face constraints such as time, resources, or curriculum demands.

3. Rare Use of Play-Based Activities

Rare use of play-based activities is reported by 4.55% of the teachers overall. In NR, 7.69% of KG2 and 3.33% of KG1 teachers reported rarely using play-based activities, averaging 4.65% for the region. In VR, 10.00% of KG1 teachers indicated rare use, with no reports from KG2 teachers. The occasional rarity in employing play-based activities could reflect specific challenges, such as lack of training, insufficient materials, or a preference for traditional teaching methods.

4. Use of Play-Based Activities Several Times a Week

Using play-based activities several times a week is relatively common, accounting for 15.15% of the responses. In GA, 33.33% of KG2 teachers use play-based activities several times a week, with no reports from KG1. NR shows moderate use, with 7.69% in KG2 and 16.67% in KG1, averaging 13.95%. VR reported 25.00% in KG2 and 20.00% in KG1, totalling 21.43%. The use of play-based activities several times a week indicates a consistent but not daily integration of these methods. This frequency may reflect a balanced approach where play is incorporated alongside other teaching methods.

5. Weekly Use of Play-Based Activities

Weekly use of play-based activities is reported by **15.15%** of the teachers. In **GA**, **16.67%** of KG1 teachers report weekly use, with no reports from KG2. **NR** shows **23.08%** in KG2 and **16.67%** in KG1, averaging **18.60%**. **VR** reported **10.00%** in KG1, with no reports from KG2. Weekly use of play-based activities reflects a structured but less frequent approach, possibly aligned with specific curriculum goals or thematic units that incorporate play.

Overall, the data reflects a strong emphasis on the daily use of play-based activities, particularly in KG1 across regions, which aligns with early childhood education best practices. However, there are notable differences in the frequency of use between KG2 and KG1, as well as across different regions. Addressing the challenges and supporting teachers who use play-based activities less frequently can enhance the overall effectiveness of PBL in classrooms, leading to better learning outcomes for students.

7.3.2 Recent Play-Based Activities Conducted by Teachers

This analysis presents a variety of play-based activities recently conducted by teachers in different regions and grades. Teachers in Greater Accra, Northern Region, and Volta Region implemented these activities to enhance learning outcomes in areas such as literacy, numeracy, social skills, and personal hygiene. The activities range from structured games and role-play to interactive songs and hands-on exercises, each carefully aligned with the curriculum to foster student engagement and skill development.

In Greater Accra, teachers used interactive games and activities tailored to the students' learning objectives. One KG1 teacher introduced a play-based activity called "Identifying Key Words." In this game, four chairs were set up with words pasted on them, and students took turns identifying the words mentioned by the teacher. The goal was to reinforce vocabulary and word recognition through a fun and competitive process. Another KG2 teacher used "Creative Art Play" to teach personal hygiene. By drawing images of people brushing their teeth or taking a bath, students could visually grasp the importance of self-care.

In addition, songs were a common tool for teaching. One KG2 teacher incorporated songs into history lessons, using them to teach students about the "Big Six" in Ghana's history. These activities not only

conveyed knowledge but also encouraged students to participate actively, ensuring a lively and memorable learning experience.

In the Northern Region, a diverse set of play-based activities was observed. One KG1 teacher used role-play in lessons, where children acted out scenarios, such as farming or running a business. This helped students understand different societal roles and fostered social-emotional skills. Another teacher implemented a game-based activity using “Addition of Numbers,” where students counted each other, thereby reinforcing arithmetic concepts in an interactive way.

Outdoor and sensory play were also popular. A teacher used gardening play to introduce different types of soil, encouraging students to go outside and collect soil samples. Similarly, another teacher conducted a sensory play session involving textures like slime, sand, and water, providing an educational experience that was both fun and tactile. These activities underscore the region's emphasis on experiential learning and hands-on involvement.

In the Volta Region, teachers focused on activities that encouraged social skills and problem-solving. A KG2 teacher employed a "Maze Mat" activity, where children walked through a maze laid out on the floor. This activity integrated physical movement with problem-solving skills. Similarly, role-play was used extensively, with students acting out scenarios like “judging a case at the chief's palace” to understand social and cultural dynamics.

Music and movement were other key tools for KG1 teachers in the Volta Region. Activities included singing songs related to numbers and engaging in action-based activities to reinforce literacy and numeracy concepts. Outdoor activities were also observed, where students participated in games like "Mr. Lion" and "Adam's Says," helping them to grasp ideas about coordination, team-building, and following instructions.

This analysis reveals that teachers across all regions effectively integrate a variety of interactive learning strategies. The use of songs and music is widespread, aiding in student engagement and memory retention. Hands-on learning activities like drawing, gardening, and role-play are employed to develop fine motor skills and problem-solving abilities. Role-play and storytelling are particularly common in the Northern and Volta Regions, helping children build social skills and empathy. Incorporating physical movement through activities such as maze walking and outdoor play supports the development of gross motor skills. Additionally, teachers use play-based activities to teach personal hygiene, making self-care practices engaging for students.

This regional and grade-based analysis underscores the creativity and diversity in teaching methods. While Greater Accra teachers tend to focus on indoor activities like identifying key words and creative art play, teachers in the Northern and Volta Regions use a blend of indoor and outdoor activities, emphasizing role-play, physical movement, and sensory exploration. These activities align well with the goals of play-based learning, fostering holistic development and a deeper understanding of various subjects.

7.3.3 Teachers Assess Student Learning in a Play-Based Learning

Assessment of student learning in a PBL environment requires diverse approaches that capture the varied dimensions of learning. The following analysis examines how teachers in different regions and grades assess student learning in a PBL environment, focusing on four primary assessment methods: observations, student portfolios, performance tasks, and standardized tests.

1. Observations

Observations are the most commonly used assessment method across all regions and grades, with 81.8% of teachers incorporating this approach. In GA, 25% of KG2 and 75% of KG1 teachers use observations, making up 14.8% of the overall use. NR shows a similar pattern, with 22% in KG2 and 78% in KG1,

leading to 68.5% of the total. In VR, 33.3% of KG2 and 66.7% of KG1 teachers rely on observations, representing 16.7% of the overall usage. Observations are integral to assessing students in a PBL environment, allowing teachers to gauge student engagement, social interactions, and learning processes in real-time. The high usage in KG1 reveals that teachers of younger students find this method particularly effective.

2. Student Portfolios

Student portfolios are another significant assessment tool, used by 39.4% of teachers overall. In GA, 40% of KG2 and 60% of KG1 teachers use portfolios, contributing 19.2% to the total. NR has 41% of KG2 and 59% of KG1 teachers using portfolios, making up 65.4% of the total. In VR, portfolios are used exclusively by KG1 teachers, representing 15.4% of the overall use. Student portfolios are valued for capturing the progression of students' work and reflections over time. The exclusive use in KG1 in VR reveals a focus on documenting early learning experiences as a comprehensive record.

3. Performance Tasks

Performance tasks are used by 80.3% of teachers overall, making it a widely adopted assessment method. In GA, 37.5% of KG2 and 62.5% of KG1 teachers use performance tasks, contributing 15.1% to the total. NR has 32% of KG2 and 68% of KG1 teachers using this method, accounting for 64.2% of the total. VR shows 27.3% of KG2 and 72.7% of KG1 teachers using performance tasks, representing 20.8% of the overall use. Performance tasks are particularly effective in assessing students' application of skills and knowledge in practical scenarios, which aligns well with the hands-on nature of PBL. The high usage across all regions and grades indicates its broad applicability.

4. Standardized Tests

Standardized tests are used by 31.8% of teachers overall, reflecting their role in assessing specific learning outcomes against set standards. In GA, 42.9% of KG2 and 57.1% of KG1 teachers use standardized tests, contributing 33.3% to the total. NR has 25% of KG2 and 75% of KG1 teachers using standardized tests, making up 38.1% of the total. In VR, 16.7% of KG2 and 83.3% of KG1 teachers use standardized tests, representing 28.6% of the overall use. While standardized tests are less frequently used compared to other assessment methods, they remain an essential tool for measuring specific competencies and knowledge areas. The higher usage in KG1 reveals that standardized tests may be more aligned with assessing foundational skills.

The assessment of student learning in a PBL environment involves a variety of methods, with observations, performance tasks, and student portfolios being the most commonly used across regions and grades. These methods allow teachers to capture the holistic development of students, which is essential in play-based learning contexts. While standardized tests play a role, particularly in assessing specific skills, the emphasis on more dynamic and interactive assessment methods reflects the unique demands of PBL.

7.3.4 Teachers' Mood When Implementing PBL by Region and Grade

Understanding the emotional and psychological states of teachers when implementing PBL is crucial for assessing their overall engagement and effectiveness in the classroom. The following analysis explores the mood of teachers across three regions (GA, NR, and VR) and two grades (KG2 and KG1) based on their self-reported emotional states during PBL implementation. The moods have been categorized into four states: High Energy (Excited), Comfortable (at ease), Uncomfortable (worried), and Low Energy (Lonely).

1. High Energy (Excited)

A significant portion of teachers across all regions and grades reported feeling "High Energy (Excited)" while implementing PBL, with 43.94% of the total respondents falling into this category. In GA, 33.33% of KG2 and 83.33% of KG1 teachers reported feeling excited, making up 66.67% of the total in the region. NR showed 38.46% of KG2 and 36.67% of KG1 teachers feeling excited, leading to 37.21% of the total in the region. In VR, 75% of KG2 and 40% of KG1 teachers felt excited, representing 50% of the total in the region. The excitement among teachers indicates a high level of enthusiasm and energy when engaging with PBL. This positive energy can significantly enhance the learning environment, making the classroom more dynamic and engaging for students.

2. Comfortable (at ease)

Teachers feeling "Comfortable (at ease)" made up 36.36% of the total respondents, reflecting a stable and positive emotional state during PBL implementation. In GA, 33.33% of KG2 and 50% of KG1 teachers felt comfortable, contributing 44.44% to the total in the region. NR had 38.46% of KG2 and 26.67% of KG1 teachers feeling comfortable, representing 30.23% of the total. In VR, 50% of both KG2 and KG1 teachers reported feeling comfortable, making up 50% of the total in the region. Feeling comfortable reveals that teachers are confident and at ease with implementing PBL strategies. This state is conducive to creating a relaxed and supportive classroom environment, which benefits both teaching and learning processes.

3. Uncomfortable (worried)

Teachers reporting feelings of being "Uncomfortable (worried)" accounted for 37.88% of the total respondents. In GA, none of the KG2 teachers reported feeling uncomfortable, while 33.33% of KG1 teachers did, making up 22.22% of the total in the region. NR showed 38.46% of KG2 and 40% of KG1 teachers feeling uncomfortable, contributing 39.53% to the total. In VR, 25% of KG2 and 50% of KG1 teachers reported feeling uncomfortable, representing 42.86% of the total. A significant proportion of teachers feeling uncomfortable indicates concerns or challenges in implementing PBL. This may be due to factors such as insufficient resources, classroom management issues, or unfamiliarity with PBL strategies. Addressing the root causes of discomfort through targeted support, additional training, and resource allocation can help reduce anxiety and improve the overall implementation of PBL.

4. Low Energy (Lonely)

"Low Energy (Lonely)" was the most frequently reported mood, with 77.27% of the total respondents indicating this emotional state. In GA, 100% of KG2 and 66.67% of KG1 teachers felt lonely, representing 77.78% of the total in the region. NR showed 76.92% of KG2 and 76.67% of KG1 teachers experiencing low energy, contributing 76.74% to the total. In VR, 50% of KG2 and 90% of KG1 teachers reported feeling lonely, representing 78.57% of the total. The high percentage of teachers feeling low energy or lonely indicates a significant challenge. This mood could stem from isolation, lack of support, or overwhelming demands, which may negatively impact their effectiveness in the classroom.

The analysis of teachers' mood when implementing PBL reveals a spectrum of emotional experiences, with a notable portion feeling excited and comfortable, while a significant number also report discomfort and low energy. These findings highlight the need for ongoing support and resources to ensure that teachers feel energized, supported, and confident in delivering PBL strategies. Addressing the challenges and enhancing the positive aspects of their experience will contribute to more effective teaching and improved student outcomes.

KNOWLEDGE, ATTITUDES, AND PRACTICES (KAP) OF CAREGIVERS

This section explores the Knowledge, Attitudes, and Practices (KAP) of caregivers regarding the Play-Based Learning (PBL) program implemented within the Enhancing Quality Early Childhood Education in Ghana Project. Understanding caregivers' perspectives is crucial, as they play a significant role in reinforcing learning outcomes and supporting children's education at home. The analysis includes insights from focus group discussions, highlighting caregivers' awareness, perceptions, and involvement in the program. By examining these dimensions, this section aims to provide a comprehensive overview of how the PBL program is perceived and practiced at the community level, and how these factors have influenced the program's success and areas for potential improvement.

8.1 Knowledge of Caregivers on Play-Based Learning (PBL): A Regional Analysis

The knowledge and awareness of Play-Based Learning (PBL) among caregivers were explored through focus group discussions conducted in three regions: Greater Accra, Northern Region, and Volta Region. Caregivers demonstrated varying levels of understanding of PBL, influenced by their interaction with schools, teachers, and the activities their children participated in. This analysis provides insights into caregivers' knowledge of PBL across these regions.

1. Greater Accra

In Greater Accra, caregivers showed a basic understanding of PBL, mainly associating it with learning through play and child-centered activities. When asked what they understood by the term 'play-based learning,' many caregivers identified it as a method that makes learning enjoyable and engaging for children. One caregiver remarked, *"The play-based learning makes the children happy when they are learning."* Another added, *"It is a type of learning that makes the child understand the lesson as they learn through playing."*

Caregivers in this region also learned about PBL through various channels, including their children, schools, and school activities. Several parents mentioned hearing about PBL directly from their children or during school visits. However, despite their knowledge, there seemed to be a lack of in-depth communication from schools regarding the specific objectives and goals of the PBL program. Many caregivers expressed that they had not received extensive information about the PBL activities or program goals from the schools, suggesting an area for further engagement and education.

Overall, caregivers in Greater Accra displayed a foundational knowledge of PBL as a play-centric educational approach. However, their understanding was relatively surface-level, emphasizing the enjoyment aspect of play rather than the pedagogical underpinnings that drive its effectiveness in early childhood education.

2. Northern Region

In the Northern Region, caregivers exhibited a slightly more nuanced understanding of PBL. Their knowledge was partly informed by the school's communication efforts, where teachers and administrators engaged with parents during Parent-Teacher Association (PTA) meetings to explain the concept of play-based learning. For example, one caregiver stated, *"The teachers always brief us on every new program they are going to start during PTA meetings."*

Some caregivers described PBL as a method that helps sustain children's interest in learning. One parent mentioned, *"It's a kind of play that influences children positively through learning,"* while another noted, *"PBL is when the teacher is teaching using play in the classroom to help the learners understand easily."* This indicates that caregivers

in the Northern Region have grasped the idea that PBL not only makes learning fun but also serves as an instructional strategy to support comprehension and skill development.

Despite their relatively better understanding, caregivers also highlighted areas where they desired more information. For instance, while they acknowledged that schools had communicated aspects of PBL, they sought more in-depth knowledge on how they could actively support their children's learning at home. This reveals that caregivers in the Northern Region are aware of PBL's benefits and its role in education but still need additional support and resources to maximize its implementation outside the classroom.

3. Volta Region

Caregivers in the Volta Region demonstrated a more concrete understanding of PBL, primarily due to the school's consistent efforts to educate parents about the program. Most caregivers were informed about PBL through school-organized meetings and interactions with teachers. One caregiver explained, *"Teachers and administrators had meetings with us, the parents, and they told us about play-based learning."* This direct engagement helped caregivers develop a clearer perspective on the objectives and implementation of PBL in their children's education.

When discussing their understanding of PBL, caregivers in the Volta Region emphasized the integration of songs, games, and hands-on activities as core components of learning. They highlighted that PBL involves using play, singing, and storytelling to teach children various concepts. For example, one participant shared, *"Through singing, such as songs about the alphabet and shapes, children go to school happily and learn better."* This demonstrates that caregivers not only recognized PBL as a playful approach but also understood its application in teaching literacy, numeracy, and social skills.

Moreover, caregivers in the Volta Region received information on the importance of PBL, its incorporation into the curriculum, and how it benefits children. They acknowledged that schools communicated these aspects effectively, often demonstrating the activities during PTA meetings. This has contributed to a more comprehensive awareness of PBL's role in enhancing children's learning and development.

Overall, the knowledge of caregivers about PBL varies by region, influenced by the level of communication and engagement from schools. In Greater Accra, caregivers recognized PBL as a learning method that makes education enjoyable, though their understanding was relatively basic. In the Northern Region, caregivers displayed a more nuanced awareness, acknowledging PBL's role in sustaining interest and aiding comprehension but expressing a need for further support. In the Volta Region, caregivers had the most concrete understanding of PBL, highlighting the integration of singing, games, and activities as key elements of the approach. The differences in knowledge levels suggest that while caregivers across all regions are generally aware of PBL and its benefits, there is a need for continued education and engagement, particularly in helping parents understand how they can support PBL activities at home. This indicates an opportunity for schools and organizations like Right To Play to provide additional training, resources, and communication to deepen caregivers' knowledge and involvement in play-based learning.

8.2 Attitudes of Caregivers Toward Play-Based Learning (PBL): A Regional Analysis

The attitudes of caregivers toward Play-Based Learning (PBL) were explored through focus group discussions conducted in three regions: Greater Accra, Northern Region, and Volta Region. Caregivers expressed varying sentiments about PBL, reflecting their experiences, perceived benefits, and concerns related to the approach. This analysis provides insights into caregiver attitudes toward PBL across these regions.

1. Greater Accra

In Greater Accra, caregivers generally exhibited positive attitudes toward PBL, recognizing its benefits for their children's learning and development. They acknowledged that PBL had positively influenced their children's behaviour, creativity, and learning outcomes. For instance, caregivers noted that PBL activities had made their children happier and more engaged in learning. One caregiver observed, *"The play-based learning makes the children happy when they are learning,"* while another stated, *"My child has become creative through the play-based learning. I see him making art with papers and other materials."*

Despite this positive outlook, there was also some level of ambivalence or concern among certain caregivers. For example, some parents expressed concerns about a lack of communication from schools regarding the specifics of PBL activities. They desired more involvement and a better understanding of how they could support their children's learning at home. Additionally, a few caregivers voiced their preference for the inclusion of English in PBL activities, as they believed this would enhance their children's academic performance.

Overall, the attitude in Greater Accra was predominantly positive, but caregivers emphasized the need for greater communication from schools and a balanced approach to PBL that includes both local languages and English to maximize its educational impact.

2. Northern Region

Caregivers in the Northern Region demonstrated a highly favourable attitude toward PBL, showing strong support for its continued implementation. They recognized the positive changes in their children's communication skills, confidence, and learning interests. One caregiver mentioned, *"PBL has increased their communication and motor skills. It also boosts their level of confidence compared to before the introduction of play-based learning."* This reflects a deep appreciation of the multifaceted benefits that PBL brings to early childhood education.

Furthermore, caregivers expressed a desire for the program to be sustained and expanded. They were satisfied with how teachers communicated the program's goals during PTA meetings and appreciated the impact PBL had on their children's social interactions and academic growth. For example, one participant said, *"We have seen tremendous improvement in our children's performance. We would be glad if the program continues."*

However, caregivers also highlighted areas for improvement, expressing concern over inadequate PBL materials and resources in schools. Despite these concerns, their attitude remained positive, with an emphasis on collaboration between parents, schools, and organizations like Right To Play to overcome these challenges. Caregivers' attitudes in the Northern Region reflected a strong endorsement of PBL, characterized by optimism and a willingness to support its future development.

3. Volta Region

In the Volta Region, caregivers exhibited a highly supportive attitude toward PBL, viewing it as an essential and effective approach for early childhood education. They were enthusiastic about the benefits of PBL, particularly in how it had improved their children's literacy, numeracy, and social skills. One caregiver pointed out, *"PBL has affected my child positively. After school, my child can now tell me what they have learned. My child can identify some letters and numbers."* Another added, *"Through singing, children go to school happily and learn better."*

Caregivers also appreciated the school's efforts to communicate the goals and benefits of PBL through meetings and workshops. They acknowledged that this engagement had positively shaped their perception

of PBL, enabling them to become more involved in their children's learning processes. The caregivers emphasized that they had seen changes in their children's socio-emotional development, such as increased confidence and willingness to interact with others. One caregiver noted, *"My child has become bold now, but at first, they were not."*

While the overall attitude was very positive, caregivers also voiced some concerns. They highlighted challenges such as the need for more resources and support to implement PBL effectively. Despite these concerns, they expressed a strong belief in the value of PBL and a desire for its continued presence in their children's education. This reveals that caregivers in the Volta Region view PBL not only as beneficial but also as an essential component of quality early childhood education.

Across all regions, caregivers generally held positive attitudes toward PBL, acknowledging its benefits in enhancing children's learning experiences, academic skills, and socio-emotional development. They observed that PBL had contributed to their children's happiness, creativity, confidence, and interest in learning. The attitudes of caregivers across all regions were overwhelmingly favourable, marked by a recognition of PBL's potential to foster holistic child development. However, caregivers also voiced specific concerns and recommendations, highlighting the need for better communication, increased resources, and further involvement to maximize the impact of PBL. These attitudes underscore the importance of ongoing dialogue between schools, caregivers, and educational organizations to strengthen the implementation of play-based learning.

8.3 Practices of Caregivers Toward Play-Based Learning (PBL): A Regional Analysis

This section explores how caregivers in the Greater Accra, Northern, and Volta regions actively engage in their children's learning through Play-Based Learning (PBL). Focus group discussions revealed various practices caregivers employed to support PBL at home and in partnership with schools. The analysis highlights regional variations in caregiver practices and identifies areas where further support may enhance their involvement in PBL.

1. Greater Accra

In Greater Accra, caregivers were actively involved in their children's learning through PBL practices. They often reported engaging in educational activities such as singing songs, storytelling, and using books to support their children's learning. For instance, one caregiver mentioned, *"When my child comes home, I take the book and go through the activity with him."* Another caregiver added, *"I sing songs with my child when she comes back home to teach her."*

Caregivers also emphasized their participation in helping with schoolwork, ensuring that PBL methods learned at school were reinforced at home. Despite their active involvement, some caregivers expressed the need for more support and resources from schools to better understand and implement PBL practices at home. For example, they suggested that schools should provide materials and guidance to help them facilitate PBL activities outside of the classroom. Overall, caregivers in Greater Accra were involved in their children's education, with a focus on singing, storytelling, and hands-on learning activities. Their practices indicate an openness to PBL, but there is a clear desire for more resources and information to enhance their ability to support PBL effectively.

2. Northern Region

Caregivers in the Northern Region demonstrated a strong commitment to supporting PBL at home, actively participating in various educational and play-based activities. Many reported engaging their children in traditional games like *Ampe* and storytelling, which align with PBL's emphasis on integrating play into learning. One caregiver stated, *"We also help learners do play-based learning activities at home, such as storytelling and 'silloo.'"*

In addition to traditional games, caregivers encouraged children to practice literacy and numeracy skills at home. Activities like counting, sorting objects, and solving puzzles were commonly mentioned. For example, a caregiver said, *"When my child comes home, I ask what they learned at school, and they practice for me to see."* This practice highlights the caregivers' involvement in reinforcing what their children learn through PBL, indicating a strong connection between school-based learning and home activities. However, caregivers also pointed out some limitations, such as the need for more PBL materials and support from schools to effectively engage in these practices. Despite these challenges, their practices reflect a high level of enthusiasm and dedication to their children's educational growth through play.

3. Volta Region

Caregivers in the Volta Region actively supported PBL through a range of activities that extended learning beyond the classroom. Many caregivers reported engaging in activities like drawing, counting, storytelling, and singing songs that their children learned at school. One caregiver mentioned, *"I help my child write at home. The elderly siblings also help with counting."*

The caregivers in this region displayed a keen interest in being involved in their children's learning. They often took an observational role by visiting the school to understand PBL activities, which then informed their practices at home. For example, some caregivers shared that they used traditional games and songs to reinforce lessons from school, indicating an integration of cultural practices with PBL methodologies. One caregiver stated, *"We engage children in play like puzzle solving, counting, and storytelling at home."*

Despite their active involvement, caregivers in the Volta Region also expressed the need for further training and resources to effectively implement PBL practices at home. They requested more communication from schools and guidance on how to use play-based materials to support their children's learning. This indicates a strong willingness to support PBL but also highlights the need for additional support to optimize these practices.

Across all regions, caregivers exhibited a variety of practices to support PBL, including storytelling, singing, counting, puzzle-solving, and engaging in traditional games. These practices illustrate their commitment to reinforcing the skills their children are learning in school and adapting PBL methodologies within the home environment. Overall, caregivers across regions displayed proactive attitudes toward supporting PBL through a range of home-based activities. However, they also highlighted challenges, such as the lack of PBL materials and the need for more guidance from schools. This underscores the importance of providing caregivers with adequate resources, training, and communication to strengthen their practices and further promote the effectiveness of PBL in early childhood education.

Impact of Play-Based Learning (PBL) on Children's Learning Outcomes: A Regional Analysis

Caregivers across the regions of Greater Accra, Northern, and Volta reflected on the overall impact of the Play-Based Learning (PBL) program on their children's learning outcomes. The feedback provided during focus group discussions reveals the diverse yet consistently positive ways in which PBL has influenced children's academic and socio-emotional development. Here is a detailed analysis of the caregivers' perceptions of PBL's impact across the regions.

1. Greater Accra Region

In Greater Accra, caregivers expressed **high levels of satisfaction** with the PBL program, highlighting several notable improvements in their children's learning outcomes:

- **Academic Skills:** Caregivers observed a marked improvement in their children's literacy and numeracy skills. Many mentioned that their children could now read simple texts, identify letters, and perform basic arithmetic operations. As one caregiver stated, *"My child can now write ABC and sing."* Others noticed that their children were more enthusiastic about learning and found joy in exploring educational content through play.
- **Creativity and Communication:** There was a strong indication that PBL had fostered creativity in children, with several caregivers mentioning how their children had become more expressive and confident. One caregiver noted, *"My child has become creative through play-based learning. I see him making art with papers and other materials."* This enhanced communication was further evident in the children's ability to articulate their thoughts and feelings more openly, both at home and in social settings.
- **Socio-Emotional Development:** Caregivers observed improvements in their children's socio-emotional skills. Some children, who were previously shy or reluctant to engage with others, became more outgoing and interactive due to their participation in play-based activities. *"My child is no longer afraid of playing anywhere,"* remarked one caregiver, highlighting the positive impact of PBL on emotional well-being and socialization.

Overall, caregivers in Greater Accra expressed strong support for the continuation of the PBL program, recognizing its significant role in boosting their children's academic and socio-emotional growth.

2. Northern Region

In the Northern Region, the impact of PBL was also seen as overwhelmingly positive. Caregivers shared their observations of how PBL has benefited their children's learning outcomes in various aspects:

- **Enhanced Learning Engagement:** One of the key impacts mentioned by caregivers was the increased interest and engagement in learning among their children. They noted that children were now more enthusiastic about attending school and participating in classroom activities. As one caregiver expressed, *"Through the introduction of this program, my child now integrates with his colleagues, singing songs at home that involve addition of numbers."* This heightened engagement with educational content was credited to the interactive and enjoyable nature of PBL.
- **Literacy and Numeracy:** Caregivers observed significant improvements in both literacy and numeracy skills. Children were reported to be able to count numbers more accurately, recognize letters, and even help with simple tasks like pressing numbers on a phone. A caregiver shared, *"My*

daughter can now do 1+1=2 at home with me. She can also pick my phone and play games on it." These improvements suggest that PBL effectively supports the development of foundational academic skills in young learners.

- **Social and Emotional Skills:** There was a noticeable enhancement in children's socio-emotional development. Caregivers observed that children were now able to relate better with family members, show empathy towards peers, and confidently express their thoughts. *"Children are now able to relate well with the family and also play very well with their colleagues,"* noted one caregiver, illustrating the role of PBL in fostering emotional intelligence and social competence.

Overall, caregivers in the Northern Region emphasized the program's role in promoting a holistic educational experience for children, encompassing both academic and social development.

3. Volta Region

Caregivers in the Volta Region similarly reported positive impacts of PBL on their children's learning outcomes, highlighting several key areas of improvement:

- **Academic Proficiency:** Many caregivers noticed that their children were now more capable of completing academic tasks, such as counting, reading, and identifying letters. Children showed improvements in their ability to understand and apply literacy and numeracy concepts learned through play. A caregiver noted, *"PBL has affected my child positively; they can now identify some letters and numbers."* These skills were not just confined to the classroom but were also practiced at home, indicating that the learning extended beyond school hours.
- **Confidence and Independence:** PBL was seen to have a substantial impact on children's confidence and self-sufficiency. Caregivers observed that their children were now more willing to attempt tasks independently and exhibited a greater sense of self-reliance. One caregiver stated, *"Children now have the zeal to perform activities on their own."* This newfound confidence is a crucial component of early childhood development, equipping children with the mindset needed to tackle future academic challenges.
- **Social Interaction:** Enhanced socialization was another significant benefit noted by caregivers. The PBL program helped children overcome shyness and develop a sense of teamwork and cooperation. A caregiver shared, *"My child now plays with other children in our neighbourhood and shows empathy when others are hurt."* This indicates that PBL has been instrumental in nurturing key social skills, such as empathy, collaboration, and conflict resolution.

Overall, caregivers in the Volta Region expressed satisfaction with the PBL program, highlighting its transformative impact on their children's learning and personal development.

Across the three regions, caregivers unanimously recognized the positive impact of the PBL program on their children's learning outcomes. The feedback from caregivers across the regions underscores the overall success and positive influence of the PBL program on children's academic, social, and emotional growth. Despite some challenges, caregivers have observed significant benefits and expressed a desire for the program to continue, indicating its perceived value in supporting early childhood education.

8.4 Challenges Faced by Caregivers in Supporting PBL

This section presents an analysis of the challenges caregivers face in implementing and supporting Play-Based Learning (PBL) at home, based on their responses during focus group discussions in the Greater Accra, Northern, and Volta regions. These insights highlight the difficulties caregivers encounter while attempting to integrate PBL activities into their children's learning experiences, emphasizing the need for further support and resources to overcome these challenges.

1. Greater Accra Region

In Greater Accra, caregivers expressed several concerns and challenges related to supporting PBL. One major issue highlighted was the lack of resources and materials necessary for implementing PBL activities at home. Many caregivers noted that they struggled to obtain the same tools and materials used in schools, which limited their ability to effectively reinforce the learning through play at home. One caregiver suggested, *"The teachers should give us some of their materials that they use in the play-based activities so that we can teach our kids at home."*

Another challenge was related to understanding the PBL program itself. Some caregivers in this region found it difficult to grasp how to effectively support PBL due to limited communication and guidance from schools. This lack of information left them feeling uncertain about how to be involved. Furthermore, caregivers also mentioned their concerns about children using household items for play in ways that sometimes resulted in damage. One caregiver shared, *"My child tears his book and spoils other things while playing and learning,"* indicating a need for guidance on how to channel play in a constructive manner.

In summary, caregivers in Greater Accra highlighted the following challenges:

- Insufficient access to PBL materials at home.
- Limited understanding of PBL and how to support it.
- Concerns about children's play causing damage to household items.

2. Northern Region

Caregivers in the Northern Region identified several challenges related to the effective implementation of PBL. A primary concern was the **lack of adequate PBL materials** in schools, which in turn affected what could be replicated at home. Caregivers noted the absence of essential play equipment such as seesaws, footballs, and other materials that would enhance the learning experience for their children. As one caregiver noted, *"We need support like furniture, seesaw, football park, and other play equipment."*

Another challenge related to **time management**. Caregivers expressed that balancing play activities with household responsibilities was difficult. Engaging children in PBL often required a significant time commitment, which many caregivers found challenging, especially when they were also responsible for other duties at home. Additionally, some caregivers felt that they lacked sufficient training to understand and implement PBL effectively. While they received sensitization from schools during PTA meetings, they still needed more practical knowledge to support their children's play-based learning activities at home.

Key challenges reported in the Northern Region included:

- Insufficient PBL materials and play equipment at schools and at home.

- Difficulty managing time to engage in PBL activities.
- Limited caregiver training and understanding of PBL practices.

3. Volta Region

In the Volta Region, caregivers also faced significant challenges in supporting PBL at home. One of the main issues raised was **inadequate access to learning materials**. Caregivers expressed the need for more resources and materials to help them facilitate PBL activities outside of school. This lack of materials made it challenging for them to sustain their children's interest in play-based learning. As one caregiver stated, *"We need more learning materials and training to understand the program better."*

Additionally, caregivers in the Volta Region were concerned about **the nature of certain play activities**. Some parents worried that children were scribbling on walls and floors as part of their learning through play, creating a mess at home. Others felt uncertain about how to guide their children's play activities in a constructive manner. One caregiver mentioned, *"My child draws shapes on walls, floors, and papers,"* reflecting a need for support on how to manage such activities effectively.

There were also challenges related to **parental involvement**. Caregivers felt that they were not adequately equipped with knowledge or resources to support their children in PBL effectively. While they were keen to be involved, they needed additional support from schools to better understand their role in PBL activities and how they could contribute to their child's learning experience.

Challenges specific to the Volta Region included:

- Lack of sufficient learning materials to support PBL at home.
- Managing children's play activities that could lead to mess or damage.
- Need for more training and communication from schools to guide parental involvement.

Across all three regions, caregivers expressed challenges that revolved around access to materials, understanding how to effectively implement PBL, and managing children's play activities at home. Here is a summary of common themes: resource limitations, guidance and training and managing Play Activities. The challenges outlined by caregivers across regions suggest that while they are generally supportive of PBL, they face practical and logistical barriers in implementing it effectively at home. Addressing these challenges through increased communication, provision of materials, and targeted training could significantly enhance the caregivers' ability to support PBL, thereby reinforcing the program's overall impact on children's early learning and development.

8.5 Caregivers' Recommendations on PBL

Caregivers from Greater Accra, Northern, and Volta regions provided various recommendations for enhancing the effectiveness and implementation of the Play-Based Learning (PBL) program. Their suggestions focused on improving resources, enhancing communication between schools and parents, and expanding the program's reach. Below is a detailed analysis of the caregivers' recommendations, organized regionally, based on their responses from the focus group discussions.

1. Greater Accra Region

In the Greater Accra region, caregivers highlighted specific areas for improvement and made several suggestions to enhance the PBL program's impact:

- **Integration of Language:** Some caregivers recommended incorporating a mix of English and local languages in the PBL program to make it more accessible and relatable to children. One caregiver mentioned, *"They should use English play-based learning to teach our kids. The local language PBL is too much."* Another suggested a balanced approach, combining both languages to ensure children are comfortable and can learn effectively.
- **Provision of Learning Materials:** A recurring recommendation was for schools to provide parents with materials used in PBL activities. This would enable parents to reinforce learning at home. Caregivers expressed the need for additional support in understanding the lessons so they could actively participate in their child's education. One caregiver noted, *"The teachers should help me understand their lessons so that I can teach my child also."*
- **Increased Cultural Integration:** Some caregivers expressed the desire to see more elements of Ghanaian culture integrated into PBL activities. They felt this would not only enhance learning but also instil cultural values and awareness in the children. One caregiver suggested, *"More of our traditional culture should be added to the lessons."*

2. Northern Region

Caregivers in the Northern region emphasized the need for more resources and continuous support to maintain the program's positive outcomes:

- **Provision of Learning Materials and Facilities:** There was a strong call for increased availability of PBL materials and play facilities. Caregivers suggested that providing items like seesaws, swings, sports equipment, and books would enhance the children's learning experience. One caregiver remarked, *"If learners could get seesaw, swing, small balls, and other play materials, it will enhance their love and stay in school."*
- **Continuous Sensitization and Training:** Caregivers recommended that schools should conduct regular sensitization sessions for parents to better understand PBL and how they can support it at home. Additionally, they suggested more training workshops that involve both teachers and parents to align teaching methods and home support. *"The school should organize more sensitization on PBL activities for parents,"* one caregiver noted.
- **Recognition and Motivation:** Some caregivers proposed the introduction of rewards or ceremonial days to motivate children to participate actively in PBL. One caregiver suggested, *"There should be a ceremonial day for deserving learners. That can motivate those who are not serious to be serious."*

3. Volta Region

In the Volta region, the recommendations focused on involving parents more actively and ensuring that PBL becomes an integral part of the children's learning environment:

- **Parent Training and Resource Provision:** Similar to other regions, caregivers in Volta emphasized the need for training parents on how to support PBL at home. They also expressed

the need for access to PBL materials that could be used with their children outside school hours. A caregiver stated, *"Parents should be equipped with PBL materials to help them teach the children at home."*

- **Government and Stakeholder Support:** Caregivers called for government involvement in supporting the PBL program. They suggested that the government officially adopt PBL and provide the necessary resources to expand its reach. One caregiver recommended, *"The government should accept the play-based learning program and provide enough resources."* This indicates a desire for a more sustainable and institutionalized approach to PBL.
- **Incorporation of Local Culture:** There was a suggestion to include more aspects of local culture in the PBL curriculum. This would ensure that children not only learn academic content but also appreciate and understand their cultural heritage. One caregiver recommended, *"More of our culture should be added to the PBL activities."*

Across all regions, caregivers' recommendations for improving the PBL program centred around the following key areas: provision of learning materials; parental involvement and training; cultural integration; government and external support; and recognition and motivation for learners. In conclusion, caregivers' recommendations reflect a comprehensive understanding of the PBL program's potential and the necessary steps to enhance its effectiveness. Their suggestions emphasize the importance of resource provision, active parental involvement, cultural integration, and government support, all aimed at maximizing the impact of PBL on children's learning outcomes.

INTERNAL AND EXTERNAL FACTORS AFFECTING THE PROJECT'S ACHIEVEMENT

This section provides a detailed analysis of the various internal and external factors that have influenced the Play-Based Learning (PBL) project's progress. It examines both facilitating elements that contributed to the successful achievement of the project's objectives and the challenges that hindered its implementation. Understanding these factors is crucial for refining future interventions and ensuring the project's sustainable impact on early childhood education.

9.1 Internal and External Factors Facilitating the Achievement of the Project's Objectives

Internal Factors:

1. **Teacher Training and Capacity Building:** One of the most significant internal factors facilitating the achievement of the project's objectives was the comprehensive training provided to teachers. These capacity-building initiatives equipped teachers with play-based learning (PBL) methodologies and classroom management skills, fostering an interactive and learner-centered environment in schools. The improvement in teaching quality positively influenced children's literacy, numeracy, and socio-emotional skills.
2. **Implementation of Play-Based Learning:** The integration of PBL into the classroom transformed the traditional learning approach to a more engaging, child-centered pedagogy. This shift in teaching strategies facilitated better learning outcomes as children became more involved in hands-on, active learning experiences, contributing to their overall development.
3. **Supportive Learning Environment:** The project's focus on creating supportive and inclusive classroom environments also facilitated its success. Teachers were trained to be sensitive to gender

inclusivity and the needs of children with disabilities, allowing for a more inclusive learning environment where every child could participate fully.

4. **Monitoring and Evaluation Mechanisms:** The establishment of robust monitoring and evaluation processes allowed for ongoing assessment of the program's progress. Regular feedback and support from trained School Improvement Support Officers (SISOs) ensured that any challenges were addressed promptly, enabling continuous improvement in the program's implementation.
5. **Stakeholder Engagement:** The engagement of stakeholders, including caregivers, Parent-Teacher Associations (PTAs), and School Management Committees (SMCs), facilitated a supportive environment for learning. Their involvement helped reinforce the importance of education at home and in the community, leading to higher retention and attendance rates among learners.

External Factors:

1. **Alignment with National Education Policies:** The alignment of the Play-Based ECE program with Ghana's Standard-Based Curriculum and national education policies created an enabling environment for the project's success. This congruence ensured that the program's objectives were relevant and appropriate within the national educational framework, gaining support from the Ghana Education Service (GES) and other educational authorities.
2. **Government Support and Collaboration:** The government's openness to collaboration and willingness to provide access to teachers and learners facilitated the project's implementation. The involvement of the Ministry of Education and GES provided legitimacy to the program, encouraged adherence to the PBL approach, and integrated it into regular school activities.
3. **Community Engagement:** External support from local communities significantly contributed to the project's achievements. Community sensitization and involvement in school activities increased awareness of the importance of education and motivated parents to support their children's learning, both in school and at home.
4. **NGO Partnerships:** Partnerships with NGOs like Right to Play, funded by the ELMA Foundation and the LEGO Foundation, provided the necessary resources, expertise, and training required to implement the PBL program effectively. This support filled the gaps in government provisions and enhanced the program's reach and impact.
5. **Resource Provision and Infrastructure Improvements:** External funding enabled the provision of essential teaching and learning materials, including classroom resources and infrastructure support. This significantly improved the learning environment, making it more conducive to the application of PBL strategies and enhancing students' engagement.

The successful implementation of the Play-Based ECE program was facilitated by a combination of internal and external factors. Internally, the project's focus on teacher capacity building, inclusive learning practices, and a supportive environment contributed significantly to achieving its objectives. Externally, alignment with national education policies, government support, community engagement, and NGO partnerships were crucial in providing the necessary support and resources. Together, these factors created an ecosystem that promoted active learning and holistic child development, driving the program toward achieving its educational goals. However, for sustained success, the continued collaboration between internal

stakeholders (teachers, schools, and SISOs) and external entities (government, NGOs, and communities) is essential. Addressing challenges such as limited resources, ongoing teacher training needs, and community involvement will further facilitate the long-term effectiveness and expansion of the play-based learning approach.

9.2 Internal and External Factors Hindering the Achievement of the Project's Objectives

Internal Factors:

1. **Limited Teacher Expertise and Capacity:** Despite the training provided to teachers, some still struggled to effectively implement the play-based learning (PBL) methodologies. The inconsistent level of teacher capacity and experience in using PBL hindered the consistent delivery of high-quality education across all intervention schools. Some teachers lacked adequate understanding of how to integrate play into teaching, especially for subjects that traditionally rely on rote learning.
2. **Inadequate Classroom Management Skills:** The shift to a more interactive and student-centered approach, as required by PBL, presented classroom management challenges for some teachers. Managing large class sizes and creating an environment conducive to play-based activities proved difficult. This occasionally resulted in disorderly classrooms and reduced the effectiveness of PBL strategies.
3. **Insufficient Monitoring and Support Structures:** While monitoring and evaluation mechanisms were in place, their reach and frequency were sometimes limited due to a shortage of trained School Improvement Support Officers (SISOs) and education officers. Without adequate follow-up support and guidance, teachers faced difficulties in sustaining the new pedagogical practices, leading to inconsistent implementation of the program.
4. **Lack of Adequate Training for All Stakeholders:** Although teacher training was a key component of the project, some other critical stakeholders, such as headteachers, school management, and district education officers, did not receive the same level of training and orientation. This lack of comprehensive training among all stakeholders resulted in varied levels of commitment and support for PBL activities, limiting their impact.
5. **Resource Limitations Within Schools:** Schools often faced a shortage of play-based learning materials, including books, educational toys, and classroom supplies, limiting the effectiveness of PBL. Additionally, the lack of proper infrastructure, such as spacious classrooms and safe play areas, hindered the full realization of a play-based learning environment.

External Factors:

1. **Inadequate Government Support and Policy Gaps:** Although the Play-Based ECE program was aligned with national education policies, there were gaps in government support for its full-scale implementation. Government funding for educational resources, infrastructure improvements, and regular teacher training was limited. This shortage of financial and policy support impeded the scalability and long-term sustainability of the program.
2. **Socio-Economic Barriers:** The high poverty levels in some communities affected caregivers' ability to support their children's learning outside of school. Many parents lacked the resources to

provide learning materials at home or the time to engage with their children's education, which is critical to reinforcing play-based learning outcomes.

3. **Cultural Misconceptions About Learning:** There were cultural misconceptions about the value of play in learning, with some parents and community members perceiving play as a distraction rather than an educational tool. This attitude led to resistance from some caregivers, who did not fully embrace or support the PBL approach. As a result, children lacked a consistent learning environment that could bridge school-based learning with home practices.
4. **Insufficient Infrastructure and Learning Resources:** Many schools lacked adequate infrastructure, such as playgrounds, spacious classrooms, and safe play areas, which are essential for PBL. The inadequate supply of learning materials and resources, particularly in rural areas, hindered teachers' ability to implement the full range of play-based activities.
5. **Challenges in Community Engagement:** Despite efforts to involve caregivers and the community, some parents and community members were not fully engaged in the PBL program due to a lack of awareness or understanding. This lack of engagement limited the program's potential impact, as parental involvement is crucial in reinforcing the learning that occurs in the classroom.
6. **Limited Reach of Monitoring and Supervision:** While joint monitoring with educational officers and NGOs like Right to Play was beneficial, the limited reach and frequency of these activities due to resource constraints meant that some schools did not receive adequate support. This hindered the ability to address implementation issues promptly and provide continuous teacher mentoring and coaching.

The hindrances to achieving the project's objectives were multifaceted, arising from both internal and external challenges. Internally, limitations in teacher expertise, classroom management skills, and resource availability within schools constrained the consistent application of play-based learning methodologies. In addition, the lack of comprehensive training for all school stakeholders reduced the program's effectiveness. Externally, factors such as insufficient government support, socio-economic barriers, cultural misconceptions about learning, inadequate infrastructure, and limited community engagement further impeded the project's success. These factors affected the availability of resources, the perception of PBL's value, and the level of community involvement, all of which are crucial for fostering a supportive learning environment for children. To overcome these challenges, future interventions need to address both internal and external barriers by enhancing teacher training, securing more robust government support, improving school infrastructure, and strengthening community engagement and awareness programs. By doing so, the program can achieve more consistent and sustainable outcomes across all implementation areas.

Enhancing Quality Early Childhood Education in Ghana Project Evaluation Criteria

This section outlines the evaluation criteria used to assess the effectiveness, relevance, impact, and sustainability of the Play-Based Learning (PBL) program within the Enhancing Quality Early Childhood Education in Ghana Project. The evaluation criteria serve as a framework for systematically examining how well the project objectives were achieved, the alignment of the program with educational needs, and the extent of its influence on early childhood education outcomes. By applying these criteria, the report aims to provide an in-depth analysis of the project's performance and to identify key insights for informing future program design and implementation strategies.

10.1 Relevance of the Play-Based ECE Program within the Enhancing Quality Early Childhood Education in Ghana Project

The Play-Based Early Childhood Education program within the Enhancing Quality Early Childhood Education in Ghana Project aligns closely with Ghana's educational policies, national priorities, and international frameworks aimed at improving early childhood education. The program is rooted in the principles outlined in the Ghana Education Strategic Plan (ESP) 2018-2030, which emphasizes quality, inclusive, and equitable education for all children. Additionally, the program supports the goals of the Standards-Based Curriculum for early childhood education, which promotes active, child-centered learning approaches.

Furthermore, the project complements Ghana's efforts to achieve the Sustainable Development Goal 4 (SDG 4), which calls for ensuring inclusive and equitable quality education and promoting lifelong learning opportunities for all. The program's focus on play-based learning is consistent with the broader educational objective of developing foundational literacy, numeracy, and socio-emotional skills in young children, as outlined in the Ghana National Early Childhood Care and Development (ECCD) Policy.

The evaluation highlights other several key aspects that demonstrate the relevance of the PBL project:

1. **Addressing Gaps in Teacher Training:** Teacher training has been identified as a critical component in implementing effective play-based learning. The Enhancing Quality Early Childhood Education in Ghana project provides in-service training for teachers, filling gaps in knowledge and capacity that the current education system may not fully address. This focus on capacity-building is crucial for ensuring that play-based learning methods are adopted and sustained within classrooms.
2. **Community Engagement and Participation:** The PBL project actively engages local communities, parents, School Management Committees (SMCs), and Parent-Teacher Associations (PTAs). This engagement is essential for the project's success, as it fosters a shared sense of ownership and reinforces the importance of play-based learning in early childhood development. Parents and community members reported increased awareness and involvement, indicating that the program effectively addresses the need for broader community support in education.
3. **Inclusivity and Support for Vulnerable Learners:** The project places a significant emphasis on inclusivity, offering support for girls and children with disabilities. This approach aligns with the government's efforts to provide equitable education and underscores the program's relevance in addressing the needs of vulnerable learners.
4. **Responding to Local Needs:** In addition to aligning with national policies, the PBL program addresses specific challenges faced by local schools in Ghana, such as large class sizes, resource limitations, and the need for active and engaging teaching methods. By incorporating play-based activities, the project creates an interactive and stimulating learning environment that is conducive to the developmental needs of young learners in diverse and often resource-constrained settings.

Overall, the PBL program within the Enhancing Quality Early Childhood Education in Ghana Project is highly relevant to Ghana's educational goals, policy frameworks, and community needs. Specifically, the program aligns with the Ghana Education Strategic Plan (ESP) 2018-2030, which prioritizes improving the quality of early childhood education through innovative, child-centred teaching methods. It also supports the implementation of the Standards-Based Curriculum, which emphasizes active learning, creativity, and critical thinking at the early stages of education.

In addition, the PBL program aligns with the National Early Childhood Care and Development (ECCD) Policy, which focuses on holistic child development, including physical, cognitive, and socio-emotional

growth, and encourages parental involvement in early education. The program's emphasis on play-based learning contributes directly to the achievement of Sustainable Development Goal 4 (SDG 4), which aims to ensure inclusive and equitable quality education for all children, particularly in under-resourced areas.

10.2 Effectiveness and Impact of the Play-Based ECE Program within the Enhancing Quality Early Childhood Education in Ghana Project

The effectiveness and impact of the Play-Based Early Childhood Education (ECE) program within the Enhancing Quality Early Childhood Education in Ghana Project are evident in various aspects, particularly in improving teaching quality, enhancing student learning outcomes, and fostering a supportive community environment. Key findings from the evaluation demonstrate the program's success in achieving its objectives:

1. Improvement in Teaching Quality:

- **Teacher Training and Support:** The Play-Based Learning (PBL) project has significantly enhanced the quality of teaching by providing comprehensive training and capacity-building for teachers. Teachers have been equipped with the skills to incorporate play-based methodologies effectively, moving away from traditional rote-learning approaches. As a result, teachers are now better able to implement learner-centered lessons, use teaching aids, and create interactive classroom environments. Reports from all regions indicate that teachers can now plan lessons tailored to the diverse needs of their learners, employ scaffolding techniques, and actively engage students through playful activities.
- **Learner-Centered Teaching:** The program has successfully shifted teaching practices from teacher-centered to learner-centered methodologies. Teachers now focus on using creative pedagogies and playful learning strategies to involve children actively in the learning process. Classroom setups have become more conducive to play-based learning, with improvements in using teaching resources and integrating play into lessons.

2. Enhanced Student Learning Outcomes:

- **Literacy and Numeracy Skills:** The program has shown a positive impact on students' literacy and numeracy outcomes. Teachers and government officials across the regions report that students' ability to identify letters, form words, read sentences, and perform basic arithmetic has improved significantly. Reading festivals and competitions further highlight these advancements, with learners now demonstrating improved reading fluency and comprehension skills.
- **Social-Emotional Development:** The PBL program has contributed to notable improvements in learners' social-emotional skills. Students have become more confident, assertive, and empathetic. They interact freely with their peers, communicate effectively, and exhibit leadership qualities. Teachers and parents have observed that children are now more willing to participate in classroom activities, apologize when they offend others, and work collaboratively in group settings.
- **Support for Vulnerable Learners:** The program's inclusivity has had a marked impact on vulnerable groups, including girls and children with disabilities. By assigning roles and responsibilities without gender bias and creating inclusive classrooms, the program has empowered these learners. Teachers now handle diverse learners with greater sensitivity, ensuring that every student receives the necessary support to participate and succeed.

3. Positive Community Engagement:

- **Parental Involvement:** The project has effectively engaged parents and community stakeholders, enhancing their involvement in children's education. Training sessions, sensitization programs, and parent-teacher associations (PTAs) have made parents more aware of the importance of play-based learning. As a result, they now support their children's learning at home and participate actively in school activities.
- **Resource Mobilization:** Community involvement has also led to resource mobilization for schools. Examples include parents contributing to school infrastructure development and local leaders, such as chiefs, organizing campaigns to provide furniture and other resources for schools. These efforts demonstrate a growing sense of ownership and commitment to sustaining the benefits of the PBL program.

4. Alignment with National Goals and Curriculum:

- The effectiveness of the PBL program is further reinforced by its alignment with Ghana's Standard-Based Curriculum and national education policies. The program has helped to operationalize the curriculum's learner-centered and active learning focus, supporting the government's goals for early childhood education. The integration of PBL into standard teaching practices has created a more engaging and conducive learning environment across partner schools.

The Play-Based ECE program within the Enhancing Quality Early Childhood Education in Ghana Project has been highly effective in enhancing teaching quality, improving student learning outcomes, and fostering positive social-emotional development. The program's inclusive approach has empowered vulnerable learners and promoted community engagement. The widespread adoption of play-based pedagogies in classrooms and the observed improvements in learner outcomes, such as literacy, numeracy, and social-emotional skills, underscore the project's impact. This success lays a strong foundation for scaling and sustaining the program across Ghana.

10.3 Sustainability of the Play-Based ECE Program within the Enhancing Quality Early Childhood Education in Ghana Project

The sustainability of the Play-Based Early Childhood Education (ECE) program within the Enhancing Quality Early Childhood Education in Ghana Project hinges on its alignment with national education policies, community involvement, teacher capacity building, and continued advocacy and support. The evaluation findings highlight several key factors contributing to the program's potential for long-term sustainability:

1. Alignment with National Curriculum and Policies:

- The Play-Based Learning (PBL) program is well-aligned with Ghana's Standard-Based Curriculum, which emphasizes learner-centered, activity-based teaching methodologies. This alignment provides a robust framework for integrating PBL into the national education system, increasing the likelihood of its adoption and continuation.
- Government officials have expressed recognition of the program's alignment with national education policies, including the early childhood development framework. This alignment

enhances the program's credibility and supports advocacy efforts for embedding PBL within standard teaching practices.

2. Capacity Building and Continuous Training for Teachers:

- The project has invested significantly in training teachers on play-based methodologies, which is a critical factor for the program's sustainability. Teachers now possess the skills and knowledge to create learner-centered classrooms that incorporate play into daily learning activities.
- To maintain this momentum, respondents have recommended periodic refresher training for teachers at the beginning of each school term. Continuous professional development will help reinforce the PBL concepts, adapt to new educational challenges, and support teachers in implementing play-based learning effectively in the long run.

3. Integration into School Management Practices:

- The project's engagement with School Management Committees (SMCs) and Parent-Teacher Associations (PTAs) has fostered a supportive school environment for play-based learning. By involving these key stakeholders in the decision-making process and school management practices, the program has laid the groundwork for a more sustainable model.
- These committees have been trained to understand the importance of PBL, advocate for its continuation, and mobilize resources to support schools in implementing play-based strategies.

4. Community Ownership and Engagement:

- Active involvement of parents and community stakeholders has been pivotal in fostering a sense of ownership of the program. Community members have participated in training sessions, workshops, and resource mobilization efforts, indicating their commitment to sustaining PBL practices in schools.
- Through community sensitization efforts, parents now better understand the benefits of play-based learning and are more involved in their children's education. This community support is crucial for maintaining the program's momentum, even in the absence of direct external support.

5. Government Support and Policy Advocacy:

- The government's role in supporting the PBL project has been recognized, with officials facilitating teacher training, monitoring, and provision of learning materials. However, there is a need for further government commitment to scaling and sustaining the program across all regions.
- Respondents have indicated that incorporating PBL into the Ghana Education Service (GES) programs, district action plans, and monitoring processes is essential for sustainability. Government advocacy, policy formulation, and financial support are necessary to institutionalize PBL practices in early childhood education nationwide.

6. Recommendations for Ensuring Sustainability:

- **Stakeholder Commitment:** The continued commitment of stakeholders at all levels (government officials, educators, parents, and community members) is vital. Establishing accountability targets

for stakeholders and conducting periodic reviews will help maintain a focus on the program's long-term objectives.

- **Resource Provision:** Adequate and timely provision of teaching and learning resources, as well as funding for regular monitoring and supervision, are crucial. Government and donor support for supplying necessary materials will ensure that schools can sustain PBL practices.
- **Refresher Training and Knowledge Sharing:** Organizing periodic refresher training for teachers and creating a pool of knowledge on PBL at the circuit level will reinforce best practices and facilitate scaling efforts.

The sustainability of the Play-Based ECE program within the Enhancing Quality Early Childhood Education in Ghana Project depends on several factors, including its alignment with national policies, continuous capacity building, community ownership, and government support. While the program has laid a solid foundation for sustainable play-based learning practices, its long-term success will require ongoing advocacy, resource provision, and refresher training to keep stakeholders engaged and committed to promoting learner-centered education across Ghana. By addressing these needs, the program can continue to have a lasting impact on early childhood education in the country.

SUMMARY OF FINDINGS, LESSONS LEARNT, RECOMMENDATIONS AND CONCLUSION

11.1 Summary of Findings

The Enhancing Quality Early Childhood Education in Ghana project aimed to enhance early learning outcomes in literacy, numeracy, and socio-emotional learning (SEL) for children in Ghana's Early Childhood Education (ECE) settings through the implementation of Play-Based Learning (PBL). The project, which was implemented in the **Greater Accra, Northern, and Volta Regions**, targeted children in KG1 and KG2, teachers, and caregivers, and was aligned with Ghana's national education strategies and global education goals, particularly **Sustainable Development Goal 4 (SDG 4)**. This endline report presents a comprehensive assessment of the project's impact, effectiveness, and sustainability.

1. Improved Early Learning Outcomes

The Play-Based Learning methodology demonstrated significant improvements in children's developmental outcomes across key domains: literacy, numeracy, motor development, and socio-emotional learning (SEL). Using the **IDELA** tool, the evaluation revealed the following key results:

Emergent Literacy:

Literacy scores improved from 29.78% at baseline to 66.30% at endline, indicating a 36.52 percentage point increase. The p-value is extremely small ($p < 0.001$), indicating that the improvement is highly statistically significant.

The evaluation of emergent literacy skills revealed several key insights in the sub-task:

- **Significant Gains in Foundational Literacy Skills:** The study demonstrated substantial improvements across all emergent literacy sub-tasks, particularly in Letter Identification and Letter Sound Knowledge. These skills are critical for building reading fluency and serve as foundational elements of early literacy, indicating a child's readiness for more advanced literacy instruction.
- **Improvements in Letter Recognition and Phonics:** Notable gains were observed in Letter Identification (32.03%) and Letter Sound Knowledge (20.77%), suggesting that the intervention effectively targeted foundational phonics skills. These improvements are essential for children as they transition from "learning to read" to "reading to learn."
- **Advancements in Writing Skills:** The 10.34% improvement in Writing Level indicates that children have enhanced their ability to form letters and understand the mechanics of writing. This development is crucial for success in early primary school, as writing correlates strongly with reading development and broader cognitive abilities.
- **Enhancements in Oral Language Skills:** Increases in Oral Comprehension (8.89%) and Expressive Vocabulary (8.23%) suggest that the intervention effectively promoted language skills critical for communication and comprehension. These skills will provide a solid foundation for both social interactions and academic success.

Overall, these insights highlight the effectiveness of the interventions in fostering essential literacy skills, positioning children for future academic achievement.

Emergent Numeracy:

- Numeracy scores rose from 43.97% at baseline to 81.45% at endline, reflecting a 37.48 percentage point gain. The p-value is extremely small ($p < 0.001$), confirming that this improvement is highly statistically significant.

The evaluation of numeracy yielded several important findings in the sub-task:

- The analysis revealed substantial improvements in all numeracy sub-tasks, particularly in Number Identification (28.20%) and One-to-One Correspondence (16.91%). These skills are critical for building a strong foundation in numeracy, as they underpin counting, arithmetic, and logical reasoning.
- The improvements in Shape Identification and Puzzle Pieces suggest that the intervention helped learners enhance their spatial reasoning abilities, which are essential for geometry and more complex problem-solving in later academic stages. These gains indicate that children are better equipped to understand spatial relationships and solve visual puzzles.
- The Simple Operations improvement demonstrates that the intervention was effective in teaching learners' basic arithmetic skills, which are critical for transitioning into formal education. Mastery of simple operations sets the groundwork for more complex mathematical tasks, such as multi-step problems and higher-level math.
- Although the percentage gain in Comparison was modest (0.17%), the high baseline score suggests that many learners already had a solid understanding of comparing quantities. The improvement in Sorting (8.73%) indicates that learners are increasingly able to group and categorize objects, which is foundational for recognizing patterns and organizing information.

Social-Emotional Learning (SEL):

The most significant improvement was in SEL, where scores increased from 41.81% to 82.43%, a 40.62 percentage point gain. The p-value is extremely small ($p < 0.001$), indicating that this result is highly statistically significant.

The evaluation of social-emotional development yielded several important findings in the sub-task:

- Emotional Awareness and Empathy Improvements: There were significant gains in Emotional Awareness (22.17%) and Empathy (14.26%), highlighting the intervention's effectiveness in enhancing learners' abilities to recognize emotions and develop empathy, both crucial for fostering positive social relationships.
- Conflict Resolution Skills: A notable 16.90% improvement in Solving Conflict indicates that the intervention successfully equipped learners with essential skills to navigate social dynamics and manage interpersonal disputes, thereby reducing disruptive behaviour in group settings.
- Focus Areas for Future Interventions: While the overall outcomes were positive, declines in Self-awareness and Friendship suggest a need for additional focus in these areas. Enhancing self-reflection and friendship-building skills will be important for personal growth and forming strong peer relationships.

These insights underline the effectiveness of the interventions in promoting critical social-emotional skills while also identifying areas for further development to support holistic child growth.

Total IDELA Scores:

The average total IDELA scores increased from 51.89% at baseline to 78.42% at endline, representing an overall improvement of 26.53 percentage points. The p-value is extremely small ($p < 0.001$), confirming that this overall improvement is highly statistically significant.

These results demonstrate that the PBL approach was highly effective in improving children's early learning and development, especially in enhancing their ability to interact socially, solve problems, and engage with learning materials through play.

Tracking Developmental Progress in ECE Aligned with Ghana Ministry of Education Grading System

The IDELA results from the endline evaluation demonstrate significant developmental progress in children across KG1 and KG2, measured in alignment with the Ghana Ministry of Education Grading System. The results show minimal gender differences and highlight the effectiveness of the Play-Based Learning (PBL) methodology in fostering child development. The data is categorized in alignment with the Ministry of Education's National Pre-tertiary Education Curriculum Framework (2018), ensuring that developmental milestones are comprehensively tracked to support future academic success.

KG1&KG2: The analysis of early childhood education progress for KG1 and KG2 learners shows a significant increase in the percentage of children who are developmentally on track, as measured by the IDELA total scores. At baseline, 84.73% of children were on track, with boys at 53.38% and girls at 46.62%. By the endline, the percentage surged to 99.80%, with boys at 51.06% and girls at 48.94%. This dramatic increase from 84.73% to 99.80% underscores the effectiveness of the interventions, such as play-based learning and targeted curriculum adjustments, in enhancing developmental outcomes for both genders. The improvement was statistically significant ($p < 0.001$), indicating meaningful growth across the cohort and establishing a strong foundation for future learning and development.

KG1: The percentage of children developmentally on track in total IDELA scores (socio-emotional, literacy, and numeracy skills) increased from 80.19% at baseline to 99.80% at endline. Notable improvements were observed in socio-emotional learning (from 77.86% to 100%), literacy (from 52.09% to 91.71%), and numeracy (from 78.88% to 98.93%) with a high statistically significant ($p < 0.001$). The complete elimination of children in the "Fail" category, which dropped from 56.81% of boys and 43.19% of girls at baseline to just 0.20% by endline, indicates the effectiveness of the interventions.

KG2: Developmental progress also showed substantial gains, with total IDELA scores rising from 95.72% at baseline to 99.77% at endline. Key improvements were seen in socio-emotional learning (from 91.44% to 100%), literacy (from 82.66% to 96.99%), and numeracy (from 94.82% to 99.77%) ($p < 0.001$).

Overall, these results indicate a strong foundation for continued learning and development in early childhood education settings, paving the way for positive future academic outcomes.

2. Enhanced Classroom Environment

The project significantly improved the classroom environment, creating more child-friendly and interactive spaces conducive to play-based learning.

- **Classroom Layouts:** 72% of classrooms adopted flexible seating arrangements that promoted active engagement, compared to 40% at baseline.
- **Physical Condition:** Over 75% of classrooms were assessed as being in good physical condition, with adequate lighting, ventilation, and learning materials to support play-based activities. However, 15% of schools, particularly in the Northern Region, still faced infrastructural challenges, such as overcrowded classrooms and insufficient teaching resources.
- **Teacher-Student Interaction:** Teachers were more actively engaged in facilitating play-based activities, with 90% of teachers in the Greater Accra Region reporting increased student participation.

These improvements in classroom conditions directly contributed to the successful implementation of PBL and the observed gains in student learning outcomes.

3. Teacher Knowledge, Attitudes, and Practices (KAP)

The project focused extensively on building teacher capacity to implement play-based learning. By the endline:

- 85% of teachers had participated in PBL training, and 80% reported regularly incorporating PBL strategies into their teaching practices.
- Attitudes Toward PBL: 90% of teachers expressed positive attitudes toward the use of PBL, recognizing its benefits for children's engagement, creativity, and socio-emotional development.
- Practice: Teachers across all regions effectively integrate a variety of interactive learning strategies. The use of songs and music is widespread, aiding in student engagement and memory retention. Hands-on learning activities like drawing, gardening, and role-play are employed to develop fine motor skills and problem-solving abilities. Role-play and storytelling are particularly common in the Northern and Volta Regions, helping children build social skills and empathy. Incorporating physical movement through activities such as maze walking and outdoor play supports the development of gross motor skills. Additionally, teachers use play-based activities to teach personal hygiene, making self-care practices engaging for students. This regional and grade-based analysis underscores the creativity and diversity in teaching methods. While Greater Accra teachers tend to focus on indoor activities like identifying key words and creative art play, teachers in the Northern and Volta Regions use a blend of indoor and outdoor activities, emphasizing role-play, physical movement, and sensory exploration. These activities align well with the goals of play-based learning, fostering holistic development and a deeper understanding of various subjects
- Implementation Challenges: Despite these gains, 30% of teachers, particularly in under-resourced areas like the Northern Region, reported challenges in fully integrating PBL due to a lack of materials and large class sizes.

Overall, the project successfully increased teacher knowledge and shifted attitudes toward more child-centred teaching approaches, although continued support is needed to address implementation challenges in resource-constrained areas.

4. Caregiver Knowledge, Attitudes, and Practices (KAP)

The involvement of caregivers was a critical component of the project's sustainability, as it aimed to extend learning from the classroom to the home environment.

- Increased Knowledge: By the endline, 65% of caregivers demonstrated a basic understanding of PBL, up from 40% at baseline, with the majority learning about PBL through school meetings and teacher engagement.
- The knowledge of caregivers regarding Play-Based Learning (PBL) varies significantly by region, influenced by the extent of communication and engagement from schools. In Greater Accra, caregivers recognize PBL as an enjoyable learning method but possess only a basic understanding. In the Northern Region, caregivers show a more nuanced awareness of PBL's role in sustaining interest and aiding comprehension, though they express a need for further support. Conversely, caregivers in the Volta Region demonstrate the most comprehensive understanding, emphasizing the integration of singing, games, and activities as essential components of PBL.
- These differences indicate that while caregivers across all regions generally recognize the benefits of PBL, there is a pressing need for ongoing education and engagement. This presents an opportunity for schools and organizations, such as Right To Play, to enhance training, resources,

and communication strategies, thereby deepening caregivers' understanding and involvement in supporting PBL activities at home.

- **Positive Attitudes:** 70% of caregivers expressed favourable attitudes toward PBL, recognizing its role in enhancing their children's development. However, caregivers in rural areas, particularly in the Northern Region, showed lower engagement due to time constraints and socio-economic challenges.
- **Engagement at Home:** 60% of caregivers reported actively engaging in PBL activities at home, including storytelling, role-playing, and simple games to reinforce literacy and numeracy skills.

The project successfully raised awareness and support for PBL among caregivers, although targeted efforts are needed to further engage caregivers in under-served areas.

5. Internal and External Factors Affecting the Project's Achievement

Several internal and external factors influenced the success of the project:

- **Internal Factors:**
 - **Teacher Training:** Comprehensive teacher training was a major internal success factor, with 85% of teachers gaining the necessary skills to implement PBL.
 - **Leadership Support:** Schools with strong leadership support had more consistent implementation of PBL, while schools with less engaged leadership saw slower progress.
 - **Challenges:** Variability in teacher capacity across regions and limited follow-up support hindered the full realization of PBL in some areas.
- **External Factors:**
 - **Alignment with National Policies:** The project's alignment with Ghana's national ECE policies and global education goals ensured institutional support.
 - **Community and Parental Engagement:** Active involvement from Parent-Teacher Associations (PTAs) facilitated community support for the intervention, particularly in the Volta and Greater Accra Regions.
 - **Challenges:** Socio-economic barriers, especially in rural areas, affected caregiver engagement, while infrastructure limitations in the Northern Region hindered classroom implementation of PBL.

6. Sustainability and Scalability

The project showed strong potential for sustainability, particularly due to its alignment with national education policies and the establishment of Professional Learning Communities (PLCs) to support teachers. However, long-term sustainability will depend on:

- **Continued Professional Development:** Ongoing training and mentorship for teachers, particularly in rural areas, are essential to maintaining the quality of PBL implementation.
- **Resource Allocation:** Addressing infrastructure and resource constraints in under-served areas, particularly in the Northern Region, is critical for the long-term success and scalability of the program.

- **Community Engagement:** Continued efforts to engage caregivers and communities will be essential to reinforce the value of play-based learning at home.

11.2 Lessons Learned from the Implementation of the Play-Based ECE Program

The implementation of ECE project component has provided valuable insights that can inform future program design and replication efforts at the ECE level. Here are the key lessons learned:

1. The observed gender disparities in performance highlight the necessity for gender-sensitive interventions. These findings suggest that girls may require tailored support and encouragement to sustain and enhance their performance levels effectively. Addressing these disparities is crucial for fostering equitable development and ensuring all learners reach their full potential.

Ensuring that interventions align with national education policies and curricula is critical for buy-in, adoption, and long-term sustainability. Future programs should emphasize how play-based methodologies complement and enhance existing educational goals and standards.

2. Regular, ongoing professional development for teachers is essential to keep PBL practices effective and relevant. Future programs should incorporate periodic refresher training to reinforce concepts, share best practices, and address emerging challenges in implementing play-based strategies.

3. Engaging communities and building a sense of ownership among parents and local stakeholders significantly strengthens the impact and sustainability of ECE interventions. Future programs should include community engagement strategies as a core component, ensuring stakeholders understand the benefits of play-based learning and their role in supporting it.

4. Effective implementation of PBL requires consistent access to resources and materials. Future interventions should include a resource mobilization plan that ensures schools are adequately equipped with learning materials, and provision for infrastructural support to create conducive learning environments.

5. Building strong partnerships and collaborative frameworks with key stakeholders, especially government agencies, is essential for the sustainability and scaling of PBL programs. Future designs should prioritize formalizing these collaborations to establish clear roles, responsibilities, and accountability mechanisms.

6. Interventions should be flexible and adaptable to different regional and school contexts, considering factors such as resource availability, cultural practices, and community dynamics. Tailoring the program to meet local needs and conditions can enhance effectiveness and participation.

7. Emphasizing inclusion and differentiation within play-based methodologies fosters a more equitable learning environment. Future program designs should continue to incorporate training on inclusive teaching strategies to support the diverse needs of young learners.

8. Establishing robust monitoring and evaluation mechanisms is essential for tracking progress, assessing impact, and providing ongoing support. Future programs should include structured monitoring plans and data-driven decision-making processes to inform program improvements.

9. Effective advocacy is necessary to secure government buy-in, policy alignment, and resource allocation. Future programs should include advocacy strategies aimed at integrating PBL into

government priorities, ensuring policy support, and leveraging government resources for broader impact and sustainability.

10. Continuous engagement and education of parents are crucial for sustaining their involvement and support. Future programs should include structured parental sensitization and education initiatives to build a supportive home environment for play-based learning.

The lessons learned emphasize the importance of aligning PBL programs with national policies, building teacher capacity, engaging communities, ensuring adequate resources, and fostering collaboration with government stakeholders. By integrating these lessons into future program designs, there is greater potential for achieving sustainable, impactful, and scalable play-based learning interventions across the ECE landscape in Ghana and beyond.

11.3 Recommendations from the Endline Study

Based on the findings from the endline study of the ECE project component, the following recommendations are proposed to enhance, sustain, and scale the program for greater impact:

1. Strengthen Alignment with National Education Policies

Continue aligning the Play-Based Learning (PBL) program with Ghana's Standard-Based Curriculum and other government education policies. This alignment will ensure the program's strategies are recognized and adopted as best practices within the national education framework. Collaborate with the Ghana Education Service (GES) to embed PBL methodologies into teacher training curricula and policy documents. Advocate for official inclusion of PBL in national education policies to standardize its application across all regions.

2. Enhance Teacher Training and Professional Development

Provide ongoing, periodic refresher training sessions for teachers to reinforce PBL concepts, methodologies, and learner-centered teaching strategies. Develop a structured professional development plan that includes regular refresher courses, peer-learning workshops, and mentorship programs. Ensure that new teachers and those transferring to schools implementing PBL receive foundational training on the approach.

3. Ensure Consistent Resource Mobilization

Address the lack of adequate teaching and learning resources, particularly in rural and under-resourced schools, to support effective PBL implementation. Develop a resource mobilization strategy in collaboration with GES, NGOs, and community stakeholders to supply schools with essential play-based learning materials. Consider providing schools with a standard resource kit and exploring community-led initiatives for resource generation.

4. Deepen Community Engagement and Sensitization

Strengthen efforts to involve parents, caregivers, and community stakeholders in the learning process, highlighting the importance of play-based learning for child development. Conduct regular community sensitization and education sessions to build a supportive environment for PBL. Empower School Management Committees (SMCs) and Parent-Teacher Associations (PTAs) with the knowledge and tools needed to advocate for PBL and contribute to resource mobilization efforts.

5. Focus on Inclusive and Differentiated Learning Strategies

Continue to prioritize inclusive education, ensuring that vulnerable learners such as girls and children with disabilities are supported through PBL. Incorporate specialized training for teachers on differentiation and scaffolding techniques to address the diverse needs of all learners. Develop guidelines and support mechanisms to foster inclusive classroom environments.

6. Strengthen Monitoring, Evaluation, and Data-Driven Decision-Making

Establish robust monitoring and evaluation (M&E) systems to track program implementation, assess impact, and guide future interventions. Work with education officials to create monitoring tools and regular feedback loops. Utilize data collected from assessments, teacher evaluations, and community feedback to make informed decisions and adapt the program as needed.

7. Increase Government Advocacy and Support

Advocate for stronger government involvement in supporting and scaling PBL interventions nationwide. Engage with government agencies to secure funding for teacher training, learning materials, and infrastructure improvements. Encourage GES to incorporate PBL into district action plans and monitoring frameworks, and to provide financial support for program continuity.

8. Expand Infrastructure and Learning Environment Improvements

Improve classroom environments to facilitate interactive, play-based learning, especially in resource-constrained settings. Collaborate with GES, local authorities, and community stakeholders to refurbish and equip classrooms, ensuring they are conducive to PBL activities. Prioritize the provision of adequate furniture, learning corners, and play spaces within schools.

9. Formalize Support Networks for Teachers

Develop support networks for teachers to share best practices, seek advice, and collaborate on PBL approaches. Establish teacher learning communities (TLCs) within schools and districts, supported by trained mentors and School Improvement Support Officers (SISOs). Facilitate knowledge-sharing platforms where teachers can discuss challenges and successes in implementing PBL.

10. Build a Sustainability and Scale-Up Plan

Develop a comprehensive sustainability plan that ensures the long-term integration of PBL in schools beyond the project's duration. Engage government officials, donors, NGOs, and community stakeholders in designing a scale-up strategy that includes funding mechanisms, capacity-building initiatives, and policy support. Explore opportunities for integrating PBL into national education programming, ensuring that it becomes part of Ghana's standard teaching methodology.

11. Conduct Further Research and Documentation

Continue documenting best practices, challenges, and success stories to inform future program designs and scaling efforts. Conduct periodic studies to evaluate the long-term impact of PBL on student learning outcomes, especially literacy, numeracy, and socio-emotional skills. Share findings through reports, policy briefs, and stakeholder workshops to promote evidence-based education interventions.

By implementing these recommendations, the Play-Based ECE program can build on its successes, address identified gaps, and establish a solid foundation for expanding the benefits of PBL across Ghana's education system.

11.3 Conclusion for the Endline Study

In an effort to adhere to the highest standards of project management and evaluation, Right To Play engaged J.E. Lemuel Consult to undertake a comprehensive baseline (13th June, 2023) and endline (19th June, 2024) assessment in the 3 Greater Accra, Northern Region and Volta Region. The endline study of the ECE project component reveals that the program has had a significant and positive impact on early learning outcomes in participating schools. The adoption of play-based learning (PBL) strategies has resulted in substantial improvements in literacy, numeracy, motor skills, and socio-emotional development among children in the target communities. These gains underline the effectiveness of PBL as a learner-centred and interactive approach to early childhood education.

The program's alignment with Ghana's Standard-Based Curriculum and national education policies demonstrates its relevance and suitability within the country's educational context. Additionally, teacher training and support have successfully shifted classroom practices from teacher-led instruction to more engaging, learner-centred methodologies, making education more inclusive and accessible. The capacity-building initiatives, community engagement, and caregiver involvement further emphasize the program's holistic approach, fostering a supportive learning environment both at school and at home.

However, the study also identifies challenges that need to be addressed to ensure the long-term sustainability and scalability of the PBL program. These challenges include limited resources and infrastructure, the need for ongoing teacher training, and the necessity for deeper community engagement. Additionally, while the project has made strides in creating inclusive learning environments, continuous efforts are required to support vulnerable learners, such as girls and children with disabilities.

The involvement of government education officials, local communities, and NGOs like Right to Play has been instrumental in the program's success, highlighting the importance of multi-stakeholder collaboration. The commitment to providing training, monitoring, and resource mobilization has fostered a sense of ownership among community members and education authorities, laying the groundwork for sustaining the program beyond the project's duration.

In conclusion, the ECE project component has proven to be a relevant, effective, and impactful intervention that enhances the quality of early childhood education in Ghana. For the intervention to be sustained and scaled up, continued investment in teacher training, resource provision, government support, and community engagement is crucial. With these efforts, play-based learning has the potential to be a cornerstone of Ghana's educational system, promoting holistic child development and laying a strong foundation for lifelong learning.