# FOOD FOR THE HUNGRY



# EDUCATION SURVEY REPORT

## BANGLADESH
### October 2020

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# Contents

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# Executive Summary

Coinciding with its economic growth over the past few decades, Bangladesh has rapidly improved many social indicators, including access to and the quality of primary and pre-primary education. The National Pre-primary Operational Framework includes a plan for two years of pre-primary education, starting with one year of pre-primary education in all primary schools and gradually growing into a two-year program.

Food for the Hungry Bangladesh (FH/B) has been working in Bangladesh since 1972. FH/B works across the relief and development continuum to build the capacity of Bangladeshis to meet their own needs and improve the quality of life. With around 250 full-time staff, FH/B works in 9 districts: Patuakhali, Barguna, Rajbari, Kushtia, Rajshahi, Mymensingh, Bogra, Dhaka and Cox's bazar. FH has been implementing Child Focused community transformation (CFCT), an integrated program model of FH where health, education, livelihood and DRR are main focus areas with other cross cutting issues such as gender and worldview. FH's education sector's goal is to see children reach their God-given potential through targeted early child interventions in the first nine years of life that will bring holistic development and cognitive gains for lifelong success. We are directly implementing development.

## Key Findings

- Study shows caregiver & teacher meeting has impact on children's early grade success performance. 43.4% of caregivers have not met with their children's teachers in the last two months, 24.4% of caregivers met once with teachers while 32.2% of caregivers met with teachers two or more times.

- Only 9% of children, aged 5.6 – 6.5 years, have mastered IDELA skills. The total IDELA Score of children 5.6-6.5 years of age is 53.3%. While the average IDELA score for children 5.5-6.5 years of age whose caregivers have no books is 43% and the average IDELA score for children whose caregivers have one to two books is 46%, it increases to 61% when a caregiver has three or more books.

- The percentage of children of the nationally recommended age for completion of grade three, who have attained the literacy and numeracy standards for grade 3 is 5.2%

- From the CLA findings we have noted that many elder children in the community couldn't fulfil the minimum grade requirements of their previous grades. They do not have basic literacy & numeracy skills such as reading a passage, solving easy subtraction, multiplication etc.

- Children 9 years of age whose caregivers have knowledge of grade three requirements are 2.5 times more likely to meet the literacy standard compared to the children whose caregivers have no knowledge of grade 3 requirements.

# History of education work in country

Previously FH Bangladesh Education program was emphasized on the adult literacy activities. As the illiteracy rate among the adults was high at that time. FH have run this community based literacy program using Friends in Village Development Bangladesh (FIVDB) literacy materials, which primarily benefits women. After completion of the literacy course, FH provides "Box Library" for the newly literate women. Through the literacy program they not only achieve literacy skills but also get awareness & some life skills. After introducing CFCT, we mainly focus on child. In 2018, FH/B stablish a partnership with Save the Children, Bangladesh to use their ECD curriculum & to get training from them.  Hence we have shifted to modern ECD teaching-learning concepts instead of traditional method. Focusing early child stimulation & school readiness we have now corner materials, number of ECD books, fun time, creative works, game play in every preschool. In 2019, we have introduced Education Cascade for the first time. Activities like- forming education cascade group with caregivers, provide different lessons on early child stimulation, toxic stress, school readiness and early grade success in these cascade groups. FH's goal for the education sector is to see children reach their God-given potential through early child interventions in the first nine years of life. FH's work will be with the caregivers, teachers, and community leaders. Along with these early-years' child development centers (preschools), FH runs child libraries, child clubs and adolescent clubs to ensure the educational success of children at school and to reduce school dropout. FH also provides reading and learning spaces for the weaker and backward students with the collaboration of community members. To improve the children's leadership skills, FH runs the child libraries by the children. In the coming days FH/B will reorganize the child clubs and adolescent club programs to bring more development opportunities for the children on social, cultural, spiritual (values) and leadership skills especially.

# Purpose of the Survey

The main purpose of the Education survey was to gather information about the children and communities in Bangladesh against which to measure future growth and change and to determine baseline status for the education indicators and to monitor activity progress during implementation. The education assessments give us information about:

• Early Learning performance of children 3.5-6.5 years of age
• Early Grade Success performance of children 7-15 years of age
• Caregivers influence on education

# Research Questions

## Research Questions for Children 3.5-6.5 years of age

- Do children have the skills to successfully transition into grade 1?
- What is the relationship between child's gender and child development scores?
- Are children making appropriate development gains from year to year?
- Which domain is the furthest behind?
- How do the results differ by clusters or region?

## Research Questions for Caregiver Influence for children 3.5-6.5 years of age

- Is there a difference in scores for children in HH where the child has three or more children's books? Explain.
- Is there a difference in scores when caregivers engage in regular learning activities?
- Looking at the two factors above, which one (or ones) have the strongest impact on early learning performance?

## Research Questions for children 7-15 years of age

- Are children, age 9, able to meet third grade reading and literacy standards?
- How is the child's gender associated with learning outcomes?
- Are children making appropriate literacy and numeracy gains from grades 1-3?
- Are children making appropriate literacy and numeracy gains from grades 4-8?
- How do child learning outcomes differ by cluster or region?
- How do out-of-school activities increase ability to pass the assessment?
- How does a supporting reading environment increase ability to pass the assessment?

## Research Questions for Caregiver Influence for children 7-15 years of age

- How does pre-school attendance affect whether the child is able to pass third grade literacy and numeracy standards?
- How does caregiver knowledge of grade requirements affect child performance?
- How do caregiver practices affect ability of child to pass grade three standards?
- How does on-time entry into grade 1 affect ability to pass the assessment?
- How do dropout and grade repetition affect ability to pass?

# Summary of Evaluation Methodologies
## Evaluation methodology

Only quantitative methodology was employed for the Education Survey. Cluster surveys are the current gold standard practice to measure performance of any project or track progress of different indicators. The sample size was determined through the Cluster Sampling. Cluster sampling is a process of randomly selecting 'clusters' of interviewees rather than individuals in a population. We have used a type of sample size calculator to determine sample size as below:

- Total sample 768 with 95% statistical significance
- Total sample 392 with 93% statistical significance
- Total sample 192 with 90% statistical significance

We have chosen 3rd option for this survey and the total sample size was given below:

| Cluster | Initial Calculated Sample Size (# of HH) | Actual total samples collected (# of HH) | # of Caregiver Survey | # of IDELA | # of CLA | Total Survey |
|---|---|---|---|---|---|---|
| Dhamrai | 195 | 198 | 198 | 103 | 104 | 405 |
| Godagari | 195 | 198 | 198 | 127 | 112 | 437 |
| Mid-West | 195 | 196 | 196 | 125 | 128 | 448 |
| PB Coastal | 195 | 195 | 195 | 110 | 110 | 414 |
| Tanore | 195 | 197 | 197 | 134 | 148 | 479 |
| Mymensingh | 210 | 210 | 210 | 219 | 210 | 420 |
| Dhaka | 195 | 196 | 196 | 104 | 102 | 118 |
| Grand Total | 1380 | 1390 | 1390 | 922 | 914 | 3226 |

## Tools:

This baseline survey was a household survey, and was conducted using three different tools i.e. (1) IDELA (International Development and Early Learning Assessment), is an, easy-to-use, rigorous global tool that measures children's early learning and development and provides ECCD programs, donors, and government partners with clear evidence on the status of children from 3.5 to 6.5 years, (2) CLA (Citizen- Led Assessment) for children 7 to 15 years and (3) the caregiver questionnaire for both the parents/caregivers of the children in the above age ranges. The survey was conducted in July/August 2019 and it was done through the Open Data Kit software.

# Caregiver Survey Results
## Availability of children's books in the home

**Graph 1 A: Proportion of Households with Children 0-2 years with Children's Books in the Home, Disaggregated by Clusters**



The above graph shows that 2.2% HH with children 0-2 yrs have 3 or more books in the home. Tanore Cluster shows the highest result (10.5%) and Godagari, Mid-West and Mymensingh Cluster shows the lowest result (0.0%).

**Graph 1 B: Proportion of Households with Children 3-6 years with Children's Books in the Home, Disaggregated by Clusters**
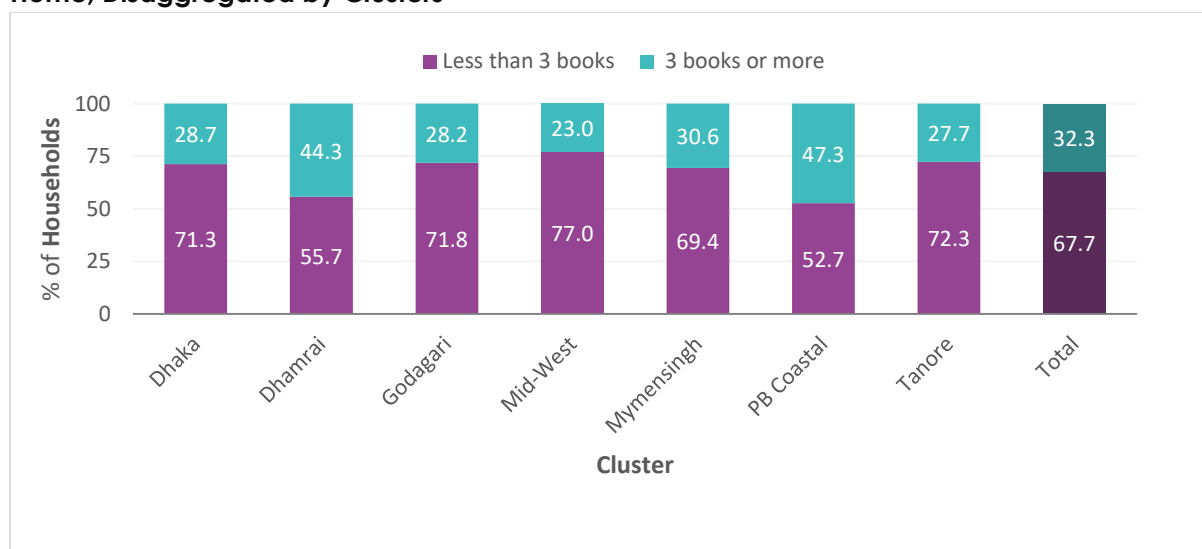


The above graph shows that 32.3% HH with children 3-6 yrs have 3 or more books in the home. PB Coastal Cluster shows the highest result (47.3%) and Mid-West Cluster shows the lowest result (23.0%).

# Caregiver engagement in learning activities

**Graph 2 A: Proportion of Caregivers with Children 0-2 years Engaged in Learning Activities, Disaggregated by Clusters**
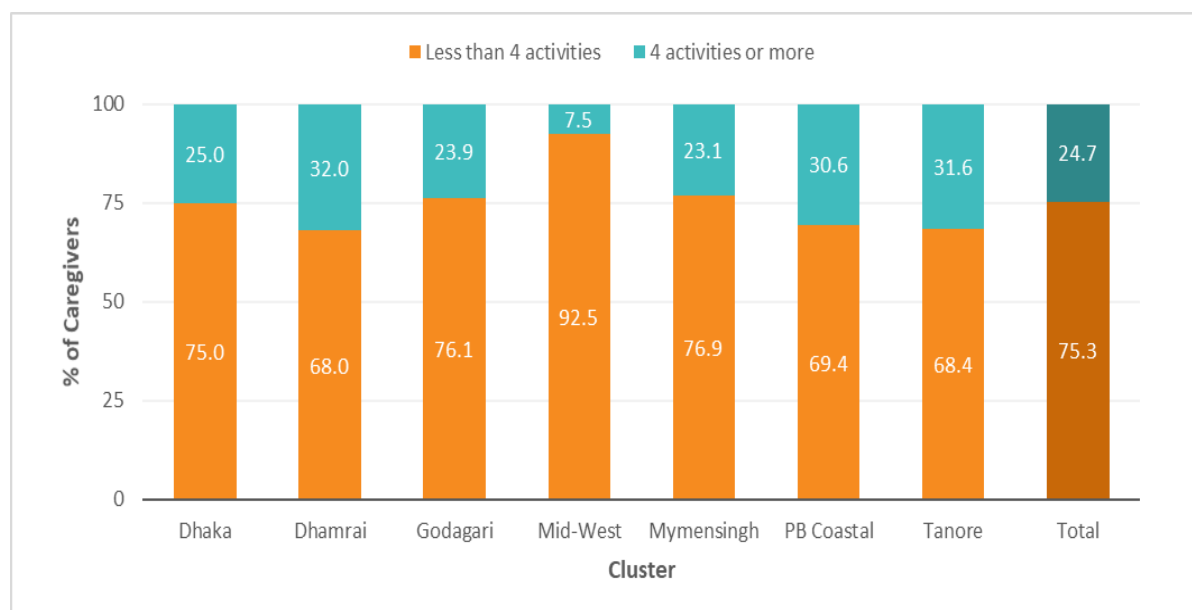


The above graph shows that only 24.7 percent of caregivers of children 3-6 yrs engaged in 4 or more learning activities with their children. Dhamrai Cluster shows the highest result (32.0%) and Mid-West Cluster shows the lowest result (7.5%).

**Graph 2 B: Proportion of Caregivers with Children 3-6 years Engaged in Learning Activities Disaggregated by Clusters**
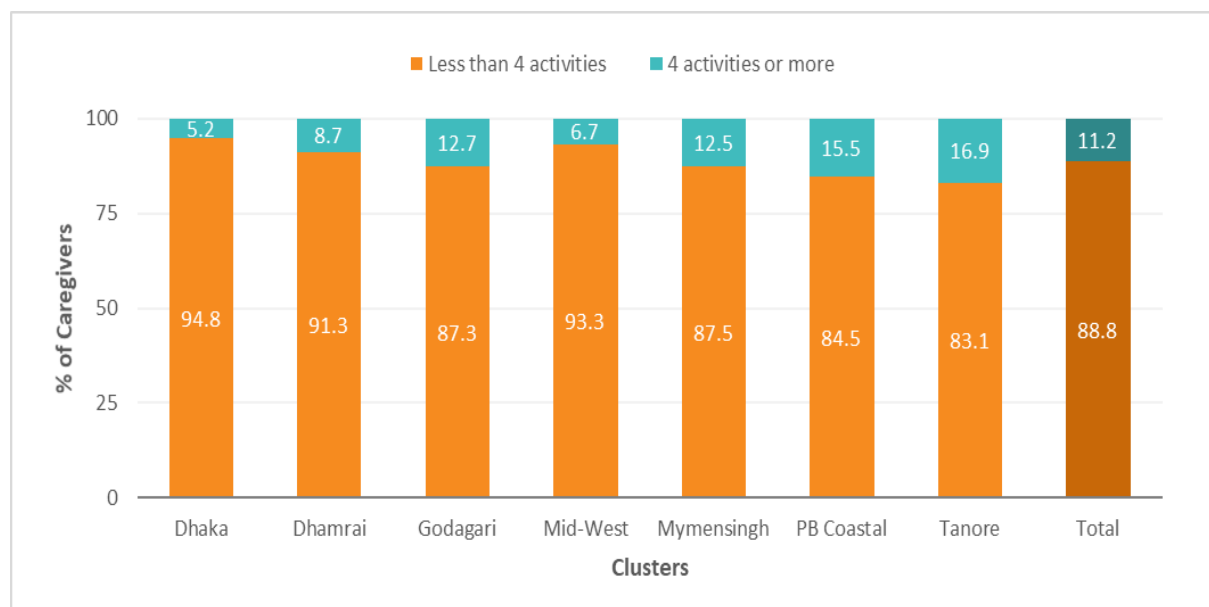


The above graph shows that only 11.2 percent of caregivers of children 3-6 yrs engaged in 4 or more learning activities with their children. Tanore Cluster shows the highest result (16.9%) and Dhaka Cluster shows the lowest result (5.2%).

**Graph 2 C: Proportion of Caregivers with Children 7-15 years Engaged in Learning Activities Disaggregated by Clusters**
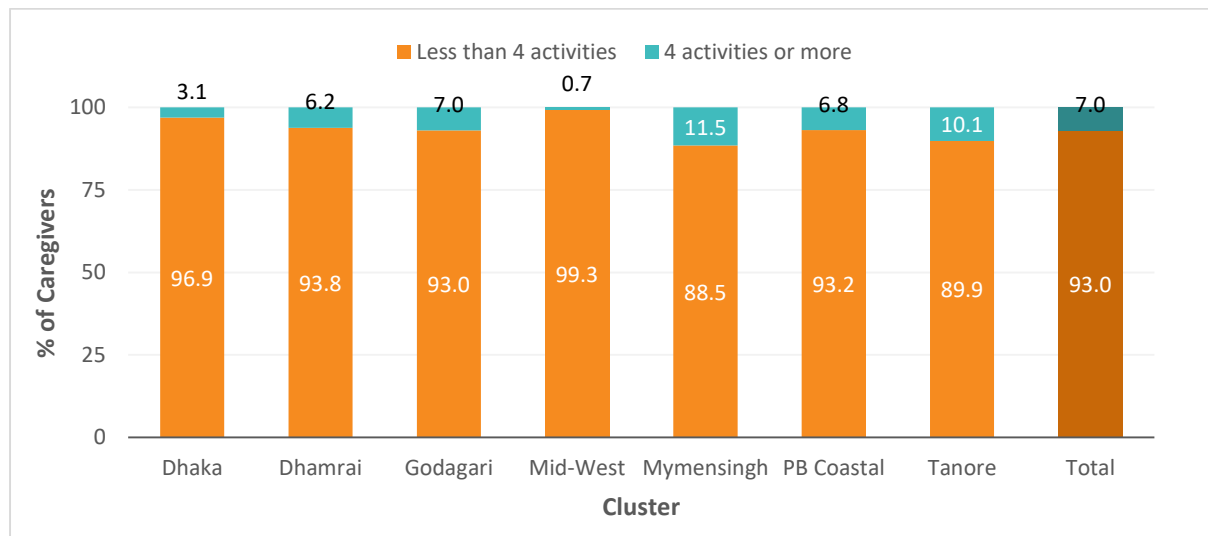


The above graph shows that only 7.0 percent of caregivers of children 7-15 yrs engaged in 4 or more learning activities with their children. Mymensingh Cluster shows the highest result (11.5%) and Mid-West Cluster shows the lowest result (0.7%).

# Preschool attendance of children aged 7-15 years

**Graph 3: Proportion of Caregivers whose child (7-15 years) Attended Pre-School, Disaggregated by Clusters**
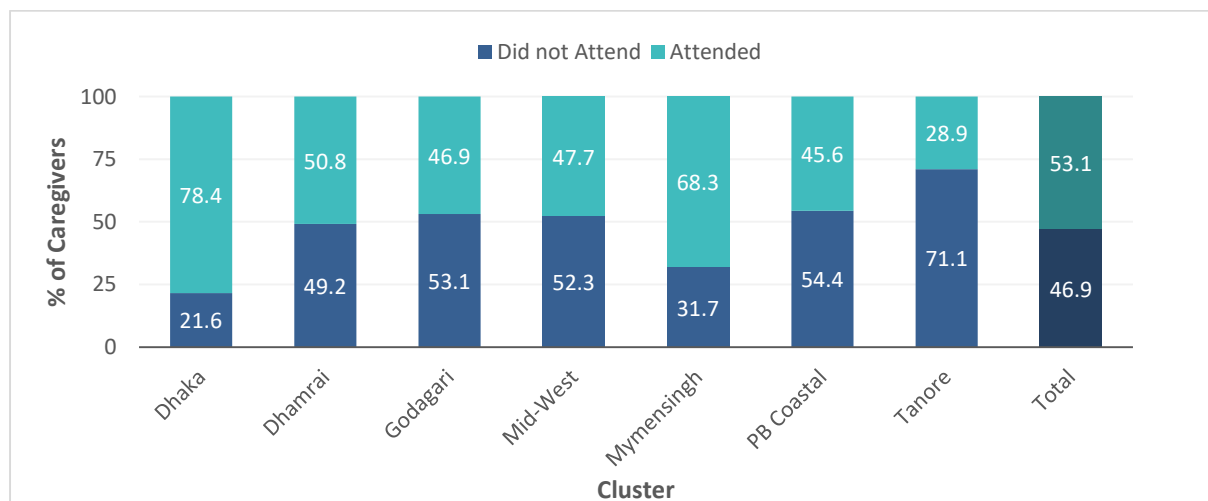


Regarding the proportion of preschool attendance, most of the clusters scored very low. Actually, preschool is a newer concept in Bangladesh. In many cases, parents admit their children straight into grade 1 in a primary school. They don't even know that there is a preschool grade before entering into grade 1. In recent decades, the scenario has started to change. However, in this graph we can see a significant number of the respondents marked that their child did not attend any preschool before admitting in grade 1. Among these clusters, Tanore has the lowest ratio regarding preschool attendee, whereas Dhaka cluster has the highest rate of

preschool attendee. Mymensingh cluster also has a good ratio. Hence, on an average, 53% caregivers have marked that their children attended preschool.

**Table 1: Reason Given by Caregivers for not Sending their Child to Pre-School, Cross Tabulated by Clusters**

| Reason | Total (%) | Cluster (%) | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Dhaka | Dhamrai | Godagari | Mid-West | Mymensingh | PB Coastal | Tanore |
| No pre-school access | **60.2** | 59.3 | 32.2 | 54.4 | 80.9 | 43.1 | 80.6 | 64.8 |
| Other | **12.5** | 11.1 | 32.2 | 16.2 | 5.9 | 3.1 | 4.8 | 13.9 |
| Distance to school | **9.8** | 7.4 | 6.8 | 14.7 | 4.4 | 16.9 | 8.1 | 9.3 |
| Not necessary for my child / not needed | **5.9** | 7.4 | 13.6 | 1.5 | 1.5 | 13.8 | 3.2 | 3.7 |
| Cost / too expensive | **5.7** | 3.7 | 8.5 | 8.8 | 1.5 | 10.8 | 0.0 | 5.6 |
| Won't say | **4.2** | 11.1 | 3.4 | 2.9 | 2.9 | 9.2 | 1.6 | 2.8 |
| Child is needed at home | **1.1** | 0.0 | 3.4 | 1.5 | 1.5 | 0.0 | 1.6 | 0.0 |
| Quality of the pre-school is poor | **0.7** | 0.0 | 0.0 | 0.0 | 1.5 | 3.1 | 0.0 | 0.0 |

Caregivers gave many reasons for not sending their children to preschool. The main reason caregivers stated was a lack of access to preschool. As table 1 shows, other reasons caregivers stated include long distances to school, and high school fees & other expenses. Another reason was that the child was needed at home in some clusters. A very small percentage (0.7%) also mentioned the quality of the preschool was poor.

# Caregivers meeting with teacher on a regular basis

**Graph 4: Caregivers Meeting with Teachers on a Regular Basis Disaggregated by Clusters**
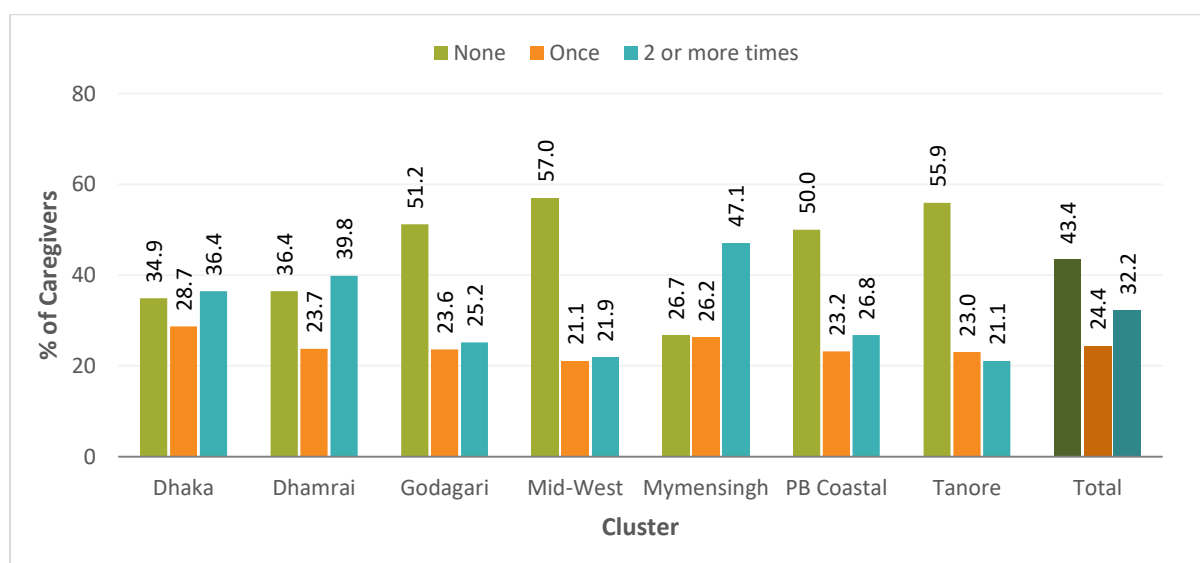
The results show that 43.4% of caregivers have not met with their children's teachers in the last two months, 24.4% of caregivers met once with teachers while 32.2% of caregivers met with teachers two or more times. Of all the clusters, Mid-West has the highest proportion of caregivers who have not met with the teacher at all in the last two months, at 57%. In Mymensingh cluster, 47.1% of caregivers met with their children's teachers two or more times in the past two months.

## Designated space in the home for study

**Graph 5: Proportion of Caregivers who have a designated space in the home for children's study**
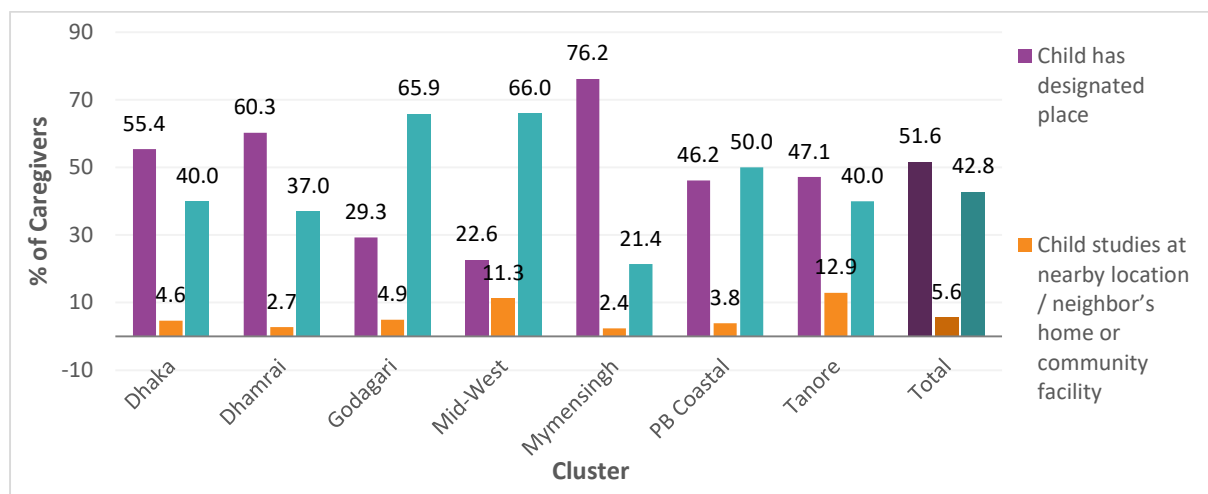


The above graph demonstrates, 51.6% of HH's have a designated place in the home for children's study. The highest result was shown in the Mymensingh Cluster (76.2) and lowest in the Mid-West Cluster (22.6).

## School attendance

**Graph 6: Proportion of Children who currently attend and do not attend school**
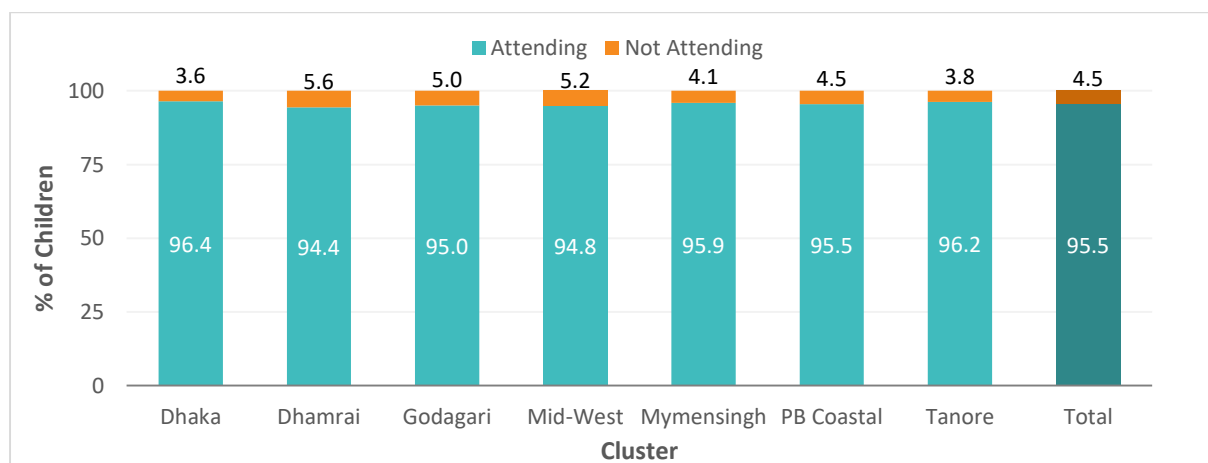


As the above graph (6) shows, the ratio of current school attendance is over 95%. That is undoubtedly a remarkable score. This is another good indicator that almost 95% of the children currently attend school. Having said this, there are 4.5% remaining out of

school. Also the dropout rate is a major concern. A significant number of children are failing to complete the cycle (primary level: grade 5)[1] and are not able to move to the next level (secondary level- grade 6). Poverty is one of the main reasons behind this dropping out.

**Table 2: Reason Given by Caregivers for Child Not Currently Attending School**

| Reason | Total (%) | Cluster (%) | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Dhaka | Dhamrai | Godagari | Mid-West | Mymensingh | PB Coastal | Tanore |
| Other | **31.0** | 57.1 | 25.0 | 22.2 | 28.6 | 14.3 | 33.3 | 57.1 |
| Child failed examinations and had to repeat classes or schooling | **22.4** | 14.3 | 0.0 | 0.0 | 28.6 | 57.1 | 33.3 | 0.0 |
| Child needed to work for the family | **12.1** | 14.3 | 0.0 | 22.2 | 28.6 | 0.0 | 16.7 | 14.3 |
| Child had prolonged illness | **8.6** | 0.0 | 37.5 | 22.2 | 0.0 | 0.0 | 0.0 | 0.0 |
| School was too far away | **6.9** | 14.3 | 12.5 | 0.0 | 0.0 | 14.3 | 0.0 | 0.0 |
| No money for school fees | **6.9** | 0.0 | 12.5 | 0.0 | 0.0 | 14.3 | 16.7 | 0.0 |
| Child had problems in school | **3.4** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 28.6 |
| Child found work | **3.4** | 0.0 | 0.0 | 11.1 | 14.3 | 0.0 | 0.0 | 0.0 |
| Child needed at home to care for family members | **3.4** | 0.0 | 12.5 | 11.1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Child or caregiver felt they had enough schooling | **1.7** | 0.0 | 0.0 | 11.1 | 0.0 | 0.0 | 0.0 | 0.0 |

One of the main reasons given by caregivers for why their children are not currently attending school was because the child failed examinations and had to repeat classes (22.4%). The next commonly cited reason was that children needed to work for the family (12.1%), while most of the caregivers marked other reasons for this issue.

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[1] 18.8pc dropout in primary education (2018)
Link: https://www.newagebd.net/article/32556/188pc-dropout-in-primary-education

**Graph 7: Average number of days of school attended in the last 10 school days**
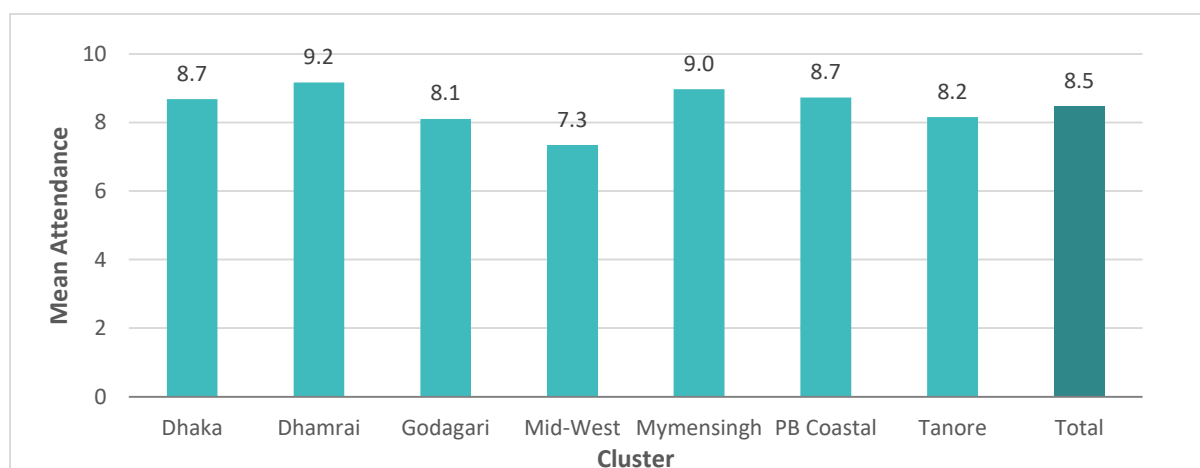


As graph 7 shows, over 80% of the children attended school in the last 10 school days except Mid-West cluster. So, the total ratio is also above 80%. This is a good indicator that most of the children attend in their schools. The school attendance scenario is being improved in our country due to governments policies & incentives for the last decade. Having said this still there are lot to improve. One of the reason for irregular school attendance across these clusters was that the child was needed to work at home. Another reason was to suffer from sickness.

**Table 3: Reason Given by Caregivers for Irregular Attendance Cross Tabulated by Clusters**

| Reason | Total (%) | Cluster (%) | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Dhaka | Dhamrai | Godagari | Mid-West | Mymensingh | PB Coastal | Tanore |
| Child was sick | **30.1** | 31.7 | 57.5 | 27.8 | 20.0 | 36.7 | 15.4 | 27.9 |
| Child did not want to go to school | **24.2** | 17.1 | 17.5 | 24.1 | 27.1 | 38.3 | 28.2 | 14.7 |
| Child was needed at home to care for family members | **7.3** | 12.2 | 5.0 | 11.1 | 5.7 | 1.7 | 5.1 | 10.3 |
| Other | **26.9** | 29.3 | 17.5 | 29.6 | 31.4 | 11.7 | 35.9 | 32.4 |
| Child was needed at home to work land or help family business / livestock, etc. | **8.3** | 0.0 | 0.0 | 7.4 | 15.7 | 8.3 | 10.3 | 10.3 |
| School was closed or teachers were absent | **3.2** | 9.8 | 2.5 | 0.0 | 0.0 | 3.3 | 5.1 | 4.4 |

The most frequently cited reason cited by caregivers for why their children didn't attend school in the two weeks before the survey was because of sickness (30.1%). The next most frequently cited reasons were that the child didn't want to go to school (24.2%). Dhamrai cluster had the highest result, that is 57.5% of the children not attending school due to sickness.

# Age at entrance in primary

**Graph 8: On time entry to grade 1, disaggregated by cluster**
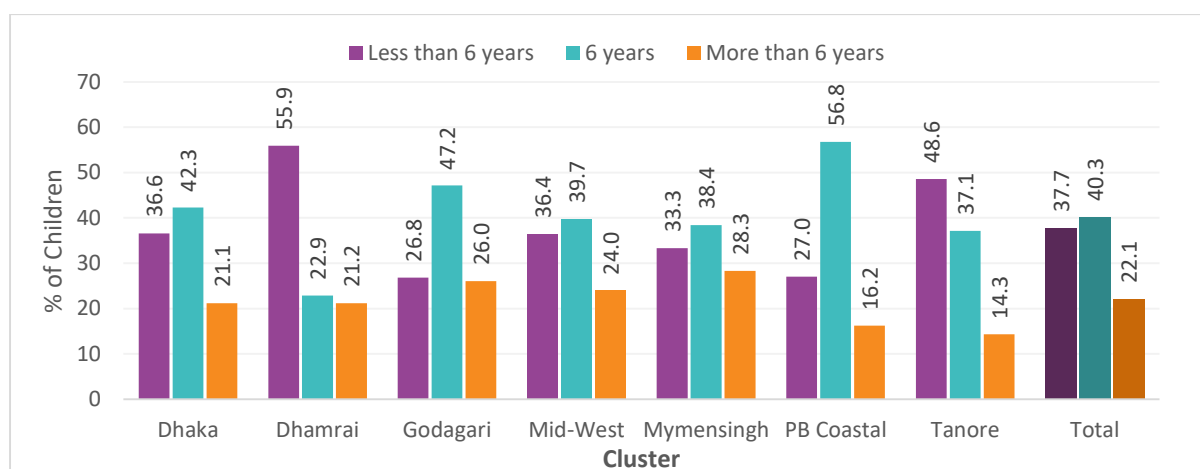


As above graph shows, most of the respondents indicated that the children were enrolled in primary grade 1 when they were at 6 years of age. The majority of respondents of in Dhamrai & Tanore indicated that the children enrolled before 6 years of age. On the other hand, still there is a significant percentage (from 14% to 28%) who indicated that enrolment age of the children is more than 6 years. Due to lack of awareness among the caregivers this delayed enrollment usually occurs.

**Table 4: Reason Given by Caregivers for Late Entry into Primary School Cross Tabulated by Clusters**

| Reason | Total (%) | Cluster (%) | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Dhaka | Dhamrai | Godagari | Mid-West | Mymensingh | PB Coastal | Tanore |
| Child was not ready | **55.8** | 50.0 | 48.0 | 46.9 | 69.0 | 62.5 | 50.0 | 55.0 |
| Distance to school | **14.1** | 15.4 | 16.0 | 15.6 | 6.9 | 16.1 | 16.7 | 10.0 |
| Won't say | **10.2** | 19.2 | 8.0 | 6.3 | 6.9 | 8.9 | 16.7 | 10.0 |
| Other | **8.3** | 11.5 | 8.0 | 15.6 | 6.9 | 3.6 | 5.6 | 10.0 |
| Child is mentally or physically disabled | **7.3** | 3.8 | 12.0 | 15.6 | 6.9 | 0.0 | 11.1 | 10.0 |
| Child is needed at home | **3.4** | 0.0 | 4.0 | 0.0 | 3.4 | 7.1 | 0.0 | 5.0 |
| Cost / too expensive | **1.0** | 0.0 | 4.0 | 0.0 | 0.0 | 1.8 | 0.0 | 0.0 |

The most frequently cited reason cited by caregivers for why their children late entry into primary school is that their child was not ready. Actually, as per our observation due to lack of awareness among the caregivers this delayed enrollment usually occurs. Many caregivers in the community are indifferent about their child's school readiness process in order to ensure expected child development. They feel that their children are so young to enroll in a preschool at an early age, that's why most of them mentioned that their child was not ready. The next most frequently cited reasons were

that the distance to school (14.1%). MId-West cluster had the highest result, that is 69% of the caregivers marked the reason for late entry into primary school as their child was not ready.

## Caregivers' knowledge of grade requirements
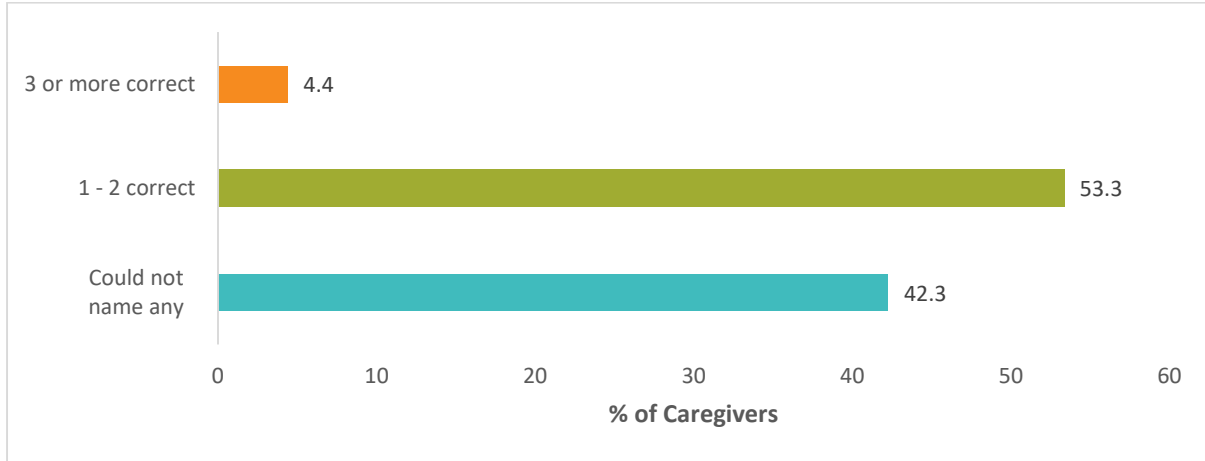


**Graph 9: Caregiver Knowledge of Grade Requirements**

Regarding knowledge on grade requirements, only 4% of caregivers were able to name 3 or more correct benchmarks, and 53% could name 1 or 2 correctly, while another 42% caregivers could not name any of them.

# IDELA Results

## IDELA results - Global KPI

| | | |
|---|---|---|
| **GLOBAL KPI:** | Proportion of children, aged 5.6 – 6.5 years, who have mastered IDELA skills. | **9%** |

| | |
|---|---|
| Total IDELA Score of children 5.6-6.5 years of age. | **53.3%** |

**Graph 10: Proportion of children aged 5.6-6.5 by domain and performance level**
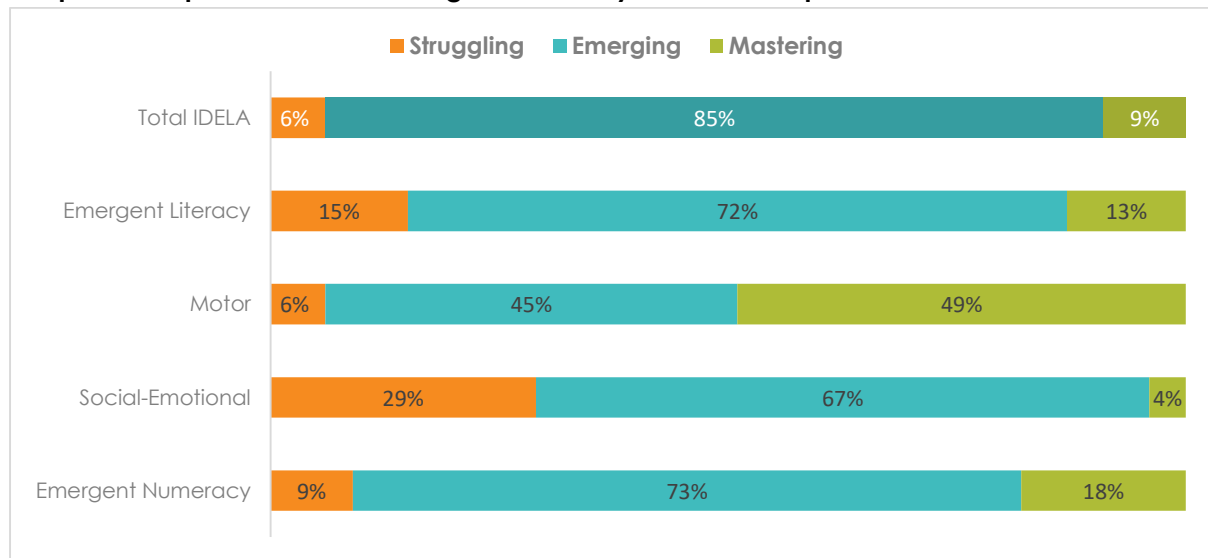
# IDELA Results - Country level

**Graph 11: Average IDELA Score by Child's Age and Domain**
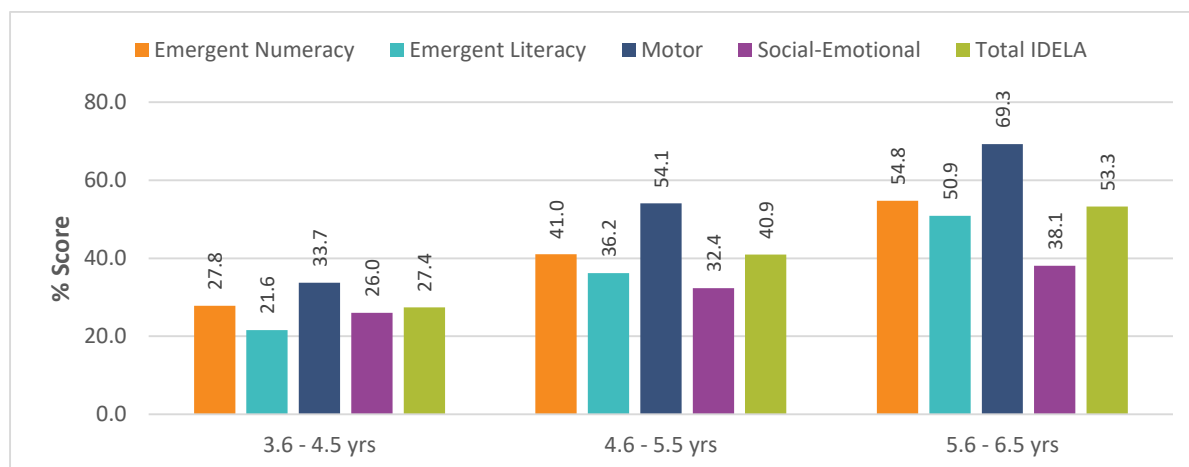


The average IDELA score increases by approximately 13 percent points, as the children's age group increases by 1-year from 3.6~4.5 years-old to 4.6~5.5 years-old to 5.6~6.5 years-old. On the other hand, the increase should be larger than the increase measured for children to be substantially prepared to begin grade 1. In addition, the score increase in Social-Emotional domain is approximately 6%, which is markedly lower than the other domains. It may be related to the stages of child development, but the Social-Emotional domain still requires attention.

# Average IDELA Score by gender

**Graph 12: Average IDELA Score by Gender**
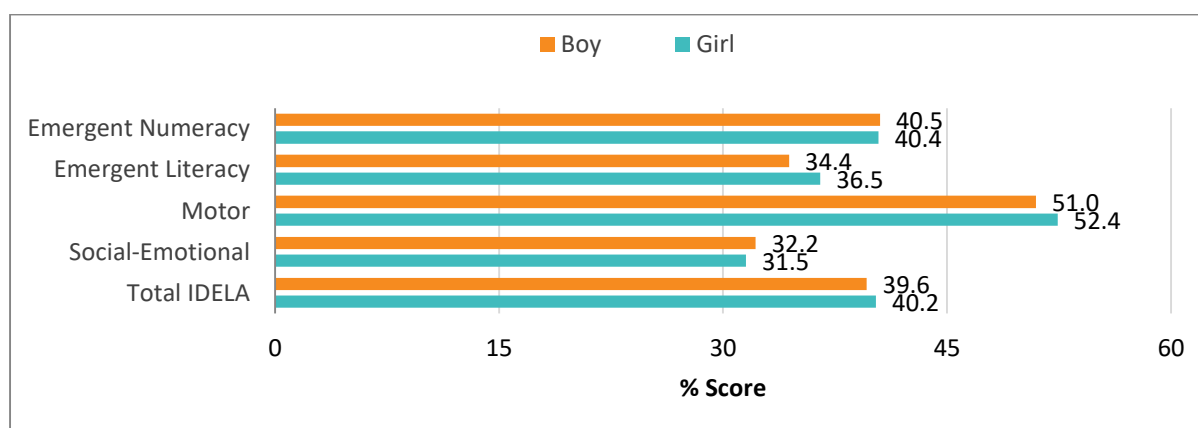


The IDELA score differs by gender; however, it is not a notable difference. The largest difference of scores is in the Emergent Literacy domain, where the girls have scored 2.1% higher than the boys. The boys have higher scores in the domains of Emergent Numeracy and Socio-Emotional, and the girls have higher scores in the domains of Emergent Literacy and Motor. The total IDELA score by gender only differs 0.6%.

# IDELA Results for Children 5.6 – 6.5 years of age

**Graph 13: Average IDELA Score of Children 5.6 - 6.5 years of age by Domain**
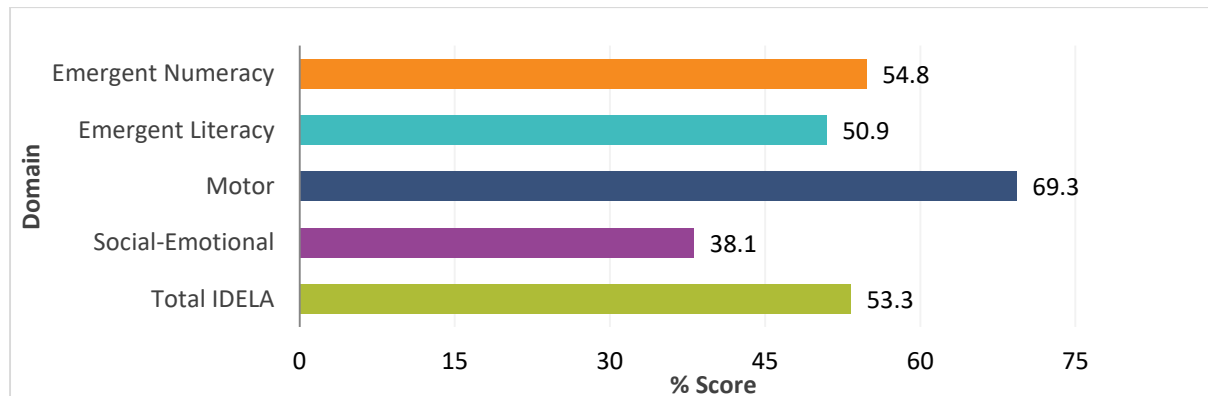


The survey results indicated that children in age group 5.6 to 6.5 years old have an average IDELA score of 53.3 out of 100-point scale measurement. This result means that the skills to successfully transit to grade 1 lack among the target children. The Social-Emotional domain is significantly lower than the other 3 domains of IDELA.

# IDELA Results for Children 4.6-5.5 years of age

**Graph 14: Average IDELA Score of Children 4.6 - 5.5 years of age by Domain**
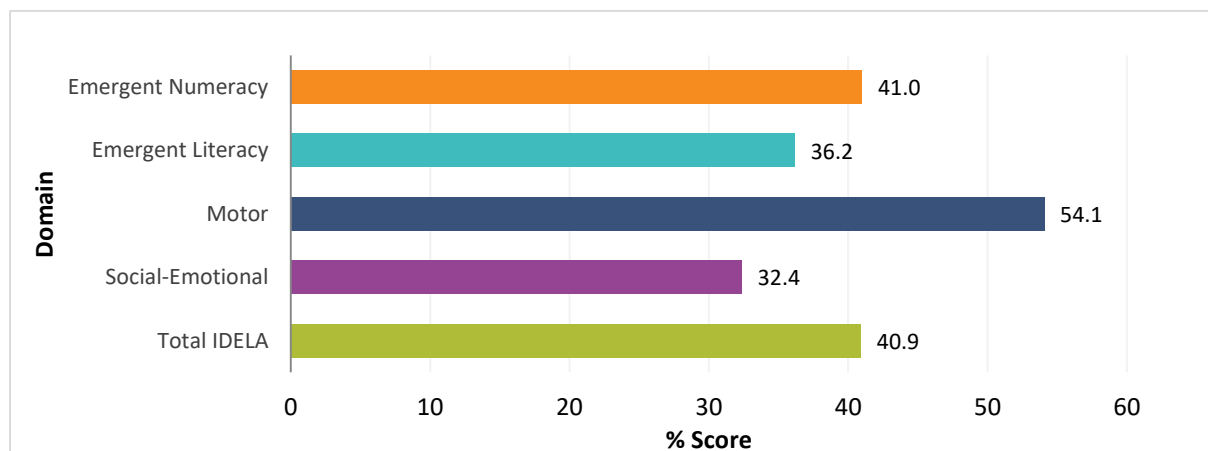


The survey results indicated that children in age group 4.6 to 5.5 years old have an average IDELA score of 40.9 out of 100-point scale measurement. The Social-Emotional domain is significantly lower than the other 3 domains of IDELA.

# IDELA Results for Children 3.5 – 4.5 years of age

**Graph 15: Average IDELA Score of Children 3.5 - 4.5 years of age by Domain**
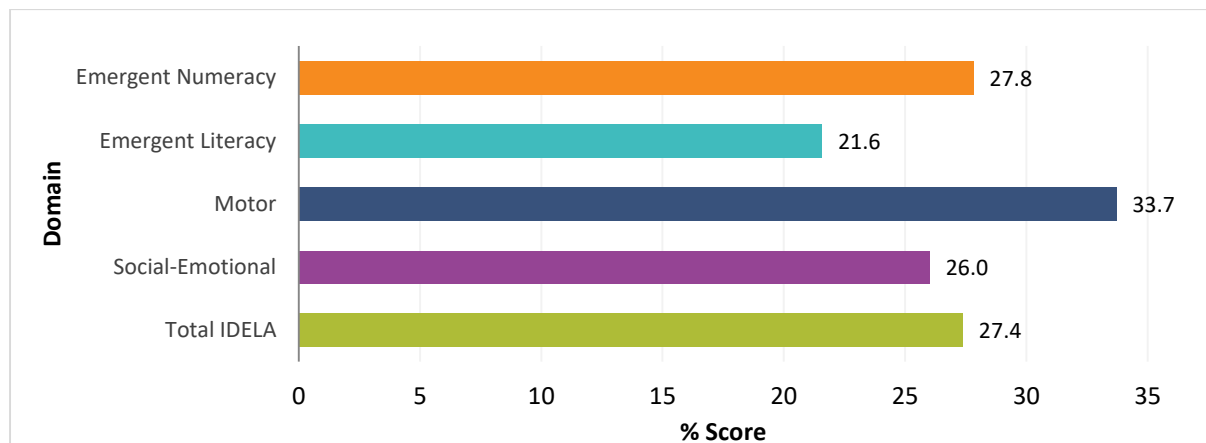


The survey results indicated that children in age group 3.5 to 4.5 years old have an average IDELA score of 27.4 out of 100-point scale measurement., The emergent literacy domain is significantly lower than the other 3 domains of IDELA.

# IDELA Results for Children 5.6 – 6.5 years of age by Cluster

**Graph 16: Average IDELA Score of Children 5.6 - 6.5 years of age by Cluster**
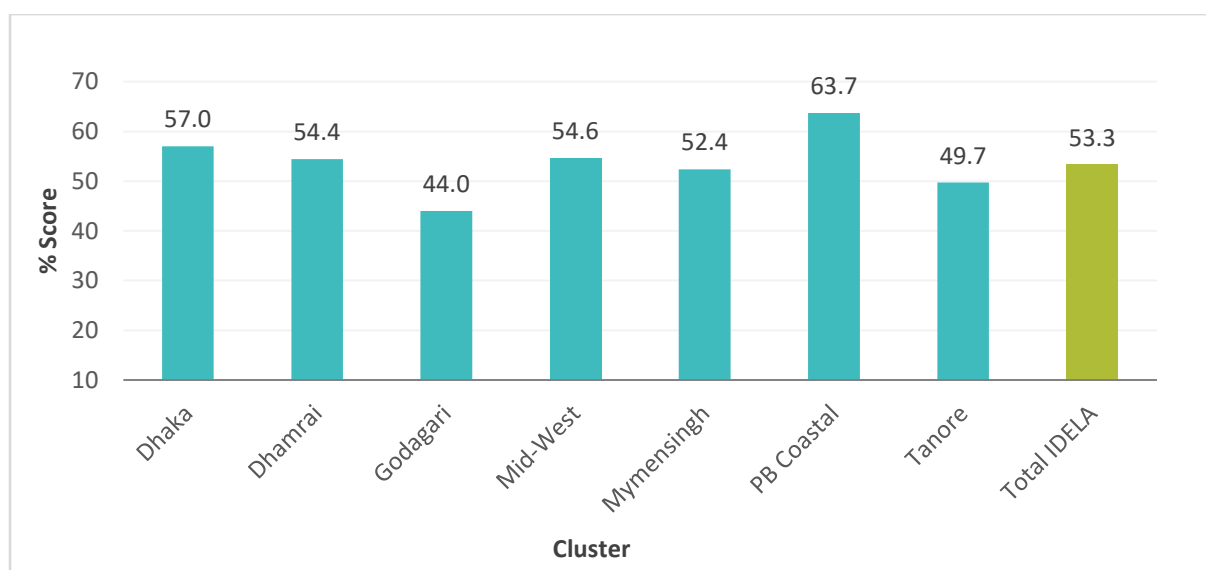


The above graph is a comparison of the average IDELA score of children 5.6 to 6.5 years-old by cluster of FH Bangladesh. PB Coastal has scored the highest, and Godagari the lowest. The difference between the highest and lowest clusters differs by approximately 20%. What causes the difference by the clusters is not identified yet. Between the three age groups, the highest difference between clusters can be found in 5.6-6.5 years.

# IDELA Results for Children 4.6-5.5 years of age by Cluster

**Graph 17: Average IDELA Score of Children 4.6 - 5.5 years of age by Cluster**
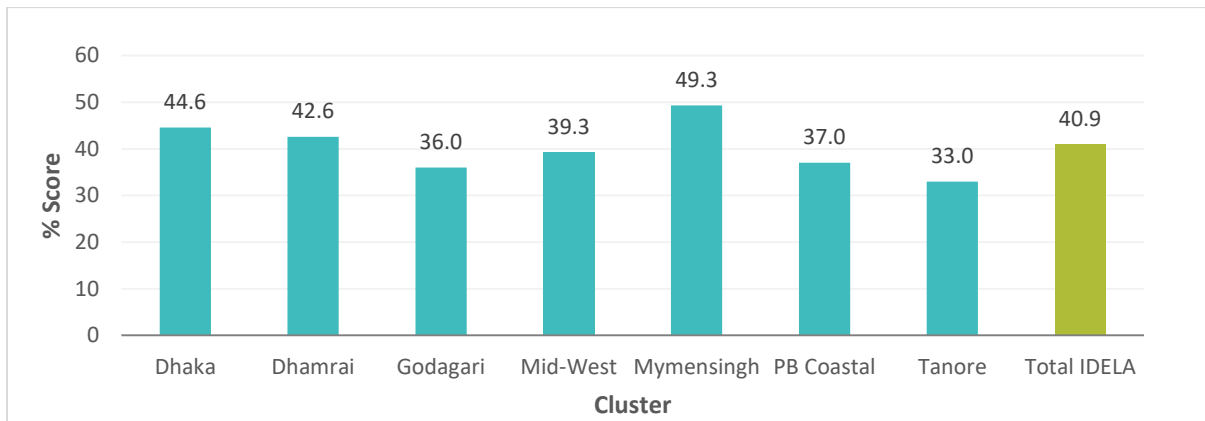


The above graph is a comparison of the average IDELA score of children 4.6 to 5.5 years-old by cluster of FH Bangladesh. Mymensingh has scored the highest, and Tanore the lowest. The difference between the highest and lowest clusters differs by approximately 16%. What causes the difference by the clusters is not identified yet. Between the three age groups, the highest difference between clusters can be found in 5.6-6.5 years.

# IDELA Results for Children 3.5 – 4.5 years of age by Cluster

**Graph 18: Average IDELA Score of Children 3.5 - 4.5 years of age by Cluster**



The above graph is a comparison of the average IDELA score of children 3.5 to 4.5 years-old by cluster of FH Bangladesh. Mymensingh has scored the highest, and Godagari the lowest. The difference between the highest and lowest clusters differs by approximately 7%. What causes the difference by the clusters is not identified yet. Between the three age groups, the highest difference between clusters can be found in 5.6-6.5 years.

# Cross Tabulation Results – Home Learning Environment & IDELA Outcomes

## Research Question 1: Is there a difference in scores for children in HH where the child has three or more children's books?

The hypothesis is that the more books a caregiver has, the higher the IDELA score of the child should be. It is clearly visible in the graph 1 that as the number of books the caregiver has increases, so does the IDELA score of children 5.5 - 6.5 years of age. While the average IDELA score for children 5.5-6.5 years of age whose caregivers have no books is 43% and the average IDELA score for children whose caregivers have one to two books is 46%, it increases to 61% when a caregiver has three or more books.

**Graph 19: Relationship Between IDELA Score of children 5.5-6.5 years of age and the Number of Books a caregiver has**
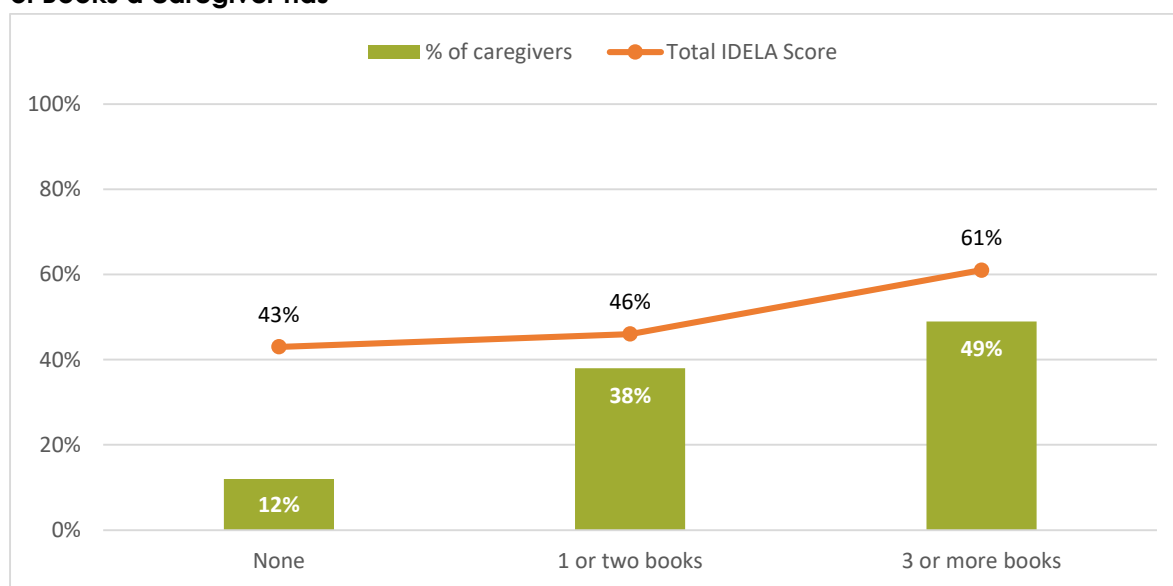


**Table 5.1: Association between caregivers with children aged 5.5 -6.5 years having three or more books and the children achieving the mastery status in IDELA**

| | Point | 95% Confidence Interval | |
|---|---|---|---|
| | Estimate | Lower | Upper |
| PARAMETERS: Odds-based | | | |
| Odds Ratio (cross product) | 5.0657 | 1.3878 | 18.4907 (T) |

Table 5.1 clearly shows that children aged 5.5 - 6.5 years of age whose caregivers have 3 or more books are five times (Odds Ratio 5.0657) more likely to achieve mastery level (a score of 75% or more) compared to children with caregivers who do not have any books. The finding is not statistically significant since the difference between the point estimate and the lower and upper limits is greater than +-5%.

**Table 1.2: Association between caregivers with children aged 5.5 -6.5 years having one or more books and the children achieving the mastery status in IDELA**

| | Point | 95% Confidence Interval | |
| --- | --- | --- | --- |
| | Estimate | Lower | Upper |
| PARAMETERS: Odds-based | | | |
| Odds Ratio (cross product) | 2.2388 | 0.2802 | 17.8862 (T) |

Similarly, in table 5.2, children aged 5.5 - 6.5 years of age whose caregivers have one or more books are 2.2 times more likely to achieve mastery level compared to children with caregivers who do not have any books. The finding is not statistically significant as the confidence interval crosses over one.

**Table 5.3: Association between IDELA score of children aged 3.5 -6.5 years and the number of books the caregivers have**

| Table 5.3.1: ANOVA  - 3 or more books | | | | |
| --- | --- | --- | --- | --- |
| Variation | SS | df | MS | F statistic |
| Between | 4.3443 | 1.0000 | 4.3443 | 146.5769 |
| Within | 19.5019 | 658.0000 | 0.0296 | |
| Total | 23.8462 | 659.0000 | | |
| P Value | 0.0000 | | | |

| Table 5.3.2: ANOVA - 1 or more books | | | | |
| --- | --- | --- | --- | --- |
| Variation | SS | df | MS | F statistic |
| Between | 1.0416 | 1.0000 | 1.0416 | 30.0556 |
| Within | 22.8045 | 658.0000 | 0.0347 | |
| Total | 23.8462 | 659.0000 | | |
| P Value | 0.0000 | | | |

| Table 5.3.3: Predicting the Effect of Number of Books on the Average IDELA score | | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| Variable | Coefficient | 95% Confidence | Limits | Std Error | F-test | P-value |
| 3 or more books | 0.1620 | 0.1330 | 0.1920 | 0.0150 | 116.7347 | 0.0000 |
| 1 or more books | 0.0400 | 0.0040 | 0.0770 | 0.0190 | 4.6801 | 0.0309 |
| CONSTANT | 0.2970 | 0.2650 | 0.3280 | 0.0160 | 340.6199 | 0.0000 |

**Correlation Coefficient: $r^2 = 0.19$**

| Source | df | Sum of Squares | Mean Square | F-statistic | p-value | |
| --- | --- | --- | --- | --- | --- | --- |
| Regression | 2.0000 | 4.4822 | 2.2411 | 76.0384 | 0.0000 | |
| Residuals | 657.0000 | 19.3640 | 0.0295 | | | |
| Total | 659.0000 | 23.8462 | | | | |

Tables 5.3.1 and 5.3.2 present the Analysis of Variance (ANOVA). ANOVA compares the difference in means between the two groups. Table 5.3.1 compares the difference in average IDELA score between children whose caregivers have three or more books and children whose caregivers have less than three books, and table 5.3.2 compares the difference in average IDELA score between children whose caregivers have one or more books and if caregivers have no books. Both the ANOVA tables show that there is a significant difference in the average IDELA score between two groups in both scenarios. This finding is highly statistically significant as p values in both cases are less than 0.01.

Table 5.3.3 presents the Predictive Analysis using the Linear Regression Model predicting the effect of three or more books or one or more books on the average IDELA score and establishing the nature of relationship between the IDELA score, the outcome variable (Y) and two expository variables: 3 or more books (X1) and one or more books (X2). The nature of a relationship could be linear if increase in X Changes Y, or non-linear if increase in X Decreases Y. The relationships could be co-linear or curvilinear depending on the nature of our expository variables. In the table above the correlation coefficient ($r^2 = 0.19$), which is a small value indicating that there is a weak linear relationship between our expository variables and outcome variables. How good the model is will depend on how well it predicts Y, the linearity of the model and the behavior of the residuals. In our data, both the expository variables are binary, hence, it is impossible to establish perfect linearity unless the expository variables are continuous.

The Linear Regression Model that we used in our data set is: $\hat{Y} = \beta_0 + \beta_1 X_1 + \beta_2 X_2$ Where $\hat{Y}$ is our outcome variable, which is IDELA score, β, is the Regression Coefficients as calculated in the table above and X is the expository variables already discussed earlier. Technically, linear regression estimates how much Y changes when X changes one unit. A regression makes sense only if there is a sound theory behind it.

IDELA score ($\hat{Y}$) = 29.7 + 16.2 (3 or more books) + 4.0 (1or more books) What it means, if both the expository variables are constant, i.e. their values are zero, children will still be able to achieve an average IDELA score of 29.7%. If one or more books is constant (i.e. the value is zero), with every one-unit increase in three or more books increases the IDELA score by 16.2% i.e the average IDELA score is predicted to be 45.9%. Similarly, if we keep 3 or more books as constant, the IDELA score increases by 4.0% for every one-unit increase in one or more books i.e the average IDELA score is predicted to be 33.7%.

# Research Question 2: Is there a difference in scores when caregivers engage in regular learning activities?

The hypothesis is that the more the caregiver is engaged in learning activities, the higher the IDELA score should be. In graph 20, it is evident that children 5.5-6.5 years of age whose caregiver is not involved in any learning activity, the average IDELA score is 49%, which increases to 57% if the caregiver is engaged in one to three activities and further to 58% when a caregiver is engaged in four or more activities.

**Graph 20: Relationship between Caregivers with children 5.5 -6.5 years of age who are engaged in learning activities and the IDELA Score**



**Table 6.1: Association between caregivers with children aged 5.5 -6.5 years engaged in 1or more activities and the children achieving the mastery status in IDELA**

| | Point | 95% Confidence Interval | |
|---|---|---|---|
| | Estimate | Lower | Upper |
| PARAMETERS: Odds-based | | | |
| Odds Ratio (cross product) | 1.0722 | 0.2828 | 4.0643 (T) |

It is evident from table 6.1 that children aged 5.5 - 6.5 years of age whose caregivers are not engaged in any activities are just as likely to achieve mastery level (a score of 75% or more) as children whose caregivers are engaged in one or more activities. The finding is not statistically significant as the confidence interval crosses over one.
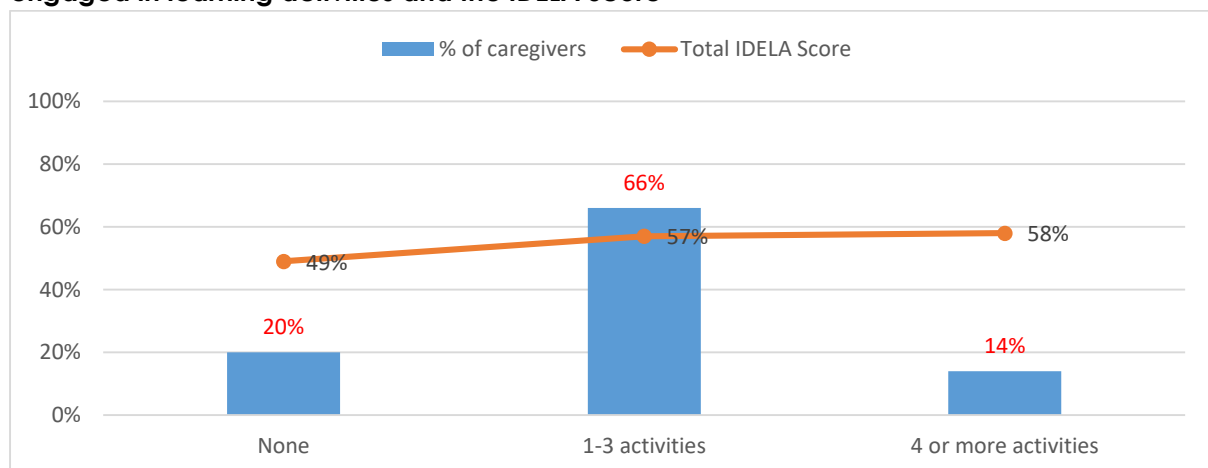
**Table 6.2: Association between caregivers with children aged 5.5 -6.5 years engaged in 4 or more activities and the children achieving the mastery status in IDELA**

| | Point | 95% Confidence Interval | |
|---|---|---|---|
| | Estimate | Lower | Upper |
| PARAMETERS: Odds-based | | | |
| Odds Ratio (cross product) | 0.8739 | 0.1822 | 4.1917 (T) |

It is evident from table 6.2 that children aged 5.5 - 6.5 years of age whose caregivers are not engaged in any activities are 87% as likely to achieve mastery level (a score of 75% or more) as children whose caregivers are engaged in four or more activities. The finding is not statistically significant as the confidence interval crosses over one.

**Table 6.3: Association between IDELA Score of children aged 3.5 -6.5 years and the number of activities caregivers are engaged in.**

| Table 6.3.1: ANOVA  -1 or more activities | | | | |
|---|---|---|---|---|
| **Variation** | **SS** | **df** | **MS** | **F statistic** |
| Between | 0.0802 | 1.0000 | 0.0802 | 2.1644 |
| Within | 19.7822 | 534.0000 | 0.0370 | |
| Total | 19.8624 | 535.0000 | | |
| P Value | 0.1418 | | | |

| Table 6.3.2: ANOVA  - 4 or more activities | | | | |
|---|---|---|---|---|
| **Variation** | **SS** | **df** | **MS** | **F statistic** |
| Between | 0.0300 | 1.0000 | 0.0300 | 0.8065 |
| Within | 19.8324 | 534.0000 | 0.0371 | |
| Total | 19.8624 | 535.0000 | | |
| P Value | 0.3696 | | | |

| Table 6.3.3: Predicting the Effect of Number of Activities on the Average IDELA score | | | | | | |
|---|---|---|---|---|---|---|
| **Variable** | **Coefficient** | **95% Confidence** | **Limits** | **Std Error** | **F-test** | **P-value** |
| 1 o more activities | 0.0270 | -0.0140 | 0.0670 | 0.0210 | 1.7077 | 0.1919 |
| 4 o more activities | 0.0140 | -0.0330 | 0.0620 | 0.0240 | 0.3535 | 0.5524 |
| CONSTANT | 0.3710 | 0.3360 | 0.4060 | 0.0180 | 434.0450 | 0.0000 |
| **Correlation Coefficient: r^2 = 0.00** | | | | | | |
| **Source** | **df** | **Sum of Squares** | **Mean Square** | **F-statistic** | **p-value** | |
| Regression | 2.0000 | 0.0933 | 0.0466 | 1.2576 | 0.2852 | |
| Residuals | 533.0000 | 19.7691 | 0.0371 | | | |
| Total | 535.0000 | 19.8624 | | | | |

Tables 6.3.1 and 6.3.2 present the Analysis of Variance (ANOVA). ANOVA compares the difference in means between the two groups. Table 6.3.1 compares the difference in average IDELA score between children whose caregivers are engaged in one or more activities and children whose caregivers are not engaged at all, and table 6.3.2 compares the difference in average IDELA score between children whose caregivers are engaged in 4 or more activities and if caregivers are engaged in less than 4 activities. The ANOVA tables show that there is a difference in the mean IDELA scores of the two groups, however this difference is not statistically significant.

Table 6.3.3 presents the Predictive Analysis using the Linear Regression Model predicting the effect of three or more books or one or more books on the average IDELA score and establishing the nature of relationship between the IDELA score, the outcome variable (Y) and two expository variables: 1 or more activities (X1) and 4 or more activities (X2). The nature of a relationship could be linear if increase in X Changes Y, or non-linear if increase in X Decreases Y. The relationships could be co-linear or curvilinear depending on the nature of our expository variables. In the table above the correlation coefficient ($r^2$ =0.00), which is a very small value indicating that there is a weak linear relationship between our expository variables and outcome variables. As mentioned earlier, how good the model is will depend on how well it predicts Y, the linearity of the model and the behavior of the residuals. In our data, both the expository variables are binary, hence, it is impossible to establish perfect linearity unless the expository variables are continuous.

The Linear Regression Model that we used in our data set is:

$$\hat{Y} = \beta 0 + \beta 1 X1 + \beta 2 X2$$

Where $\hat{Y}$ is our outcome variable, which is IDELA score, β, is the Regression Coefficients as calculated in the table above and X is the expository variables already discussed earlier. Technically, linear regression estimates how much Y changes when X changes one unit. A regression makes sense only if there is a sound theory behind it. How good the model is will depend on how well it predicts Y, the linearity of the model and the behavior of the residuals. In our data, both the expository variables are binary, hence, it is impossible to establish perfect linearity unless the expository variables are continuous.

IDELA score ($\hat{Y}$) = 37.1 + 2.7 (1 or more activities) + 1.4 (4 or more activities)

What it means, if both the expository variables are constant, i.e. their values are zero, children will still be able to achieve an average IDELA score of 37.1%. If 4 or more activities are constant (i.e. the value is zero), with every one-unit increase in 1 or more activities, the IDELA score increases by 2.7% i.e the predicted IDELA score will be 39.8%. Similarly, if we keep 1 or more activities as constant, the IDELA score increases by 1.4% for every one-unit increase in 4 or more activities i.e the predicted IDELA score will be 38.5%.

# Summary of IDELA analysis and recommendations for education programming

There are three types of Analytical Capabilities required in Monitoring and Evaluation to effectively support the programming team to make data based decisions. Moving towards data, informed decision making in FH programs is the entire purpose of this analysis. The first frontier in data analytical capability is called Descriptive Analytical Capability answering the question "what happened in the program and why?" This was part 1 of the Education Analysis. The second frontier is called Predictive Analysis answering the question "what might happen?" The cross analysis using odds ratio, ANOVA and Linear Regression Model in this report answered this predictive question. Finally, the last frontier in the data analytical capability is called Prescriptive Analysis answering the question "so what should we do?"

The whole purpose of Prescriptive Analytics (Summary Table 1, Summary Table 2, Summary Table 3 and Summary Table 4) is to allow the program staff to "prescribe" a number of different possible actions and guide them towards a solution. It is all about providing advice on which interventions to choose in order for best return of investment. Through Prescriptive analytics we are attempting to quantify the effect of future decisions in order to advise on possible outcomes before the decisions are actually made. At its best, through prescriptive analytics we can predict not only what will happen, but also why it will happen, providing recommendations regarding actions that will take advantage of the predictions. In order to do so, we are using Multiple Linear Regression for IDELA, because of the continuous nature of the Average IDELA Score as our variable of interest and Multinomial Logistic Regression for Literacy, Numeracy and both Literacy and Numeracy due to binomial nature of the variable if interest in CLA.

The Multiple Linear Regression Model that we will use for IDELA is: $\hat{Y} = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4$ Where $\beta$ is the Regression Coefficient for each of the expository variables, $X_1$ = 3 or more books, $X_2$ = 1 or more books, $X_3$ = 1 or more activities, $X_4$ = 4 or more activities. Results of Multiple Linear Regression Model for Average IDELA Score is presented in Summary Table 1.

| Summary Table 1: Prescriptive Analysis for Number of Books and Number of Activities and their Residual Effect on Average IDELA Score | | | | | | |
|---|---|---|---|---|---|---|
| Variable | Coefficient | 95% Confidence | Limits | Std Error | F-test | P-value |
| 3 or more books | 0.1620 | 0.1290 | 0.1940 | 0.0170 | 95.5321 | 0.0000 |
| 1 or more books | 0.0360 | -0.0080 | 0.0810 | 0.0230 | 2.5962 | 0.1077 |
| 1 o more activities | 0.0220 | -0.0140 | 0.0590 | 0.0190 | 1.4231 | 0.2334 |
| 4 o more activities | -0.0010 | -0.0440 | 0.0430 | 0.0220 | 0.0008 | 0.9778 |
| CONSTANT | 0.2880 | 0.2410 | 0.3350 | 0.0240 | 143.4308 | 0.0000 |
| **Correlation Coefficient: r^2 = 0.19** | | | | | | |
| Source | df | Sum of Squares | Mean Square | F-statistic | p-value | |
| Regression | 4.0000 | 3.6942 | 0.9236 | 30.3316 | 0.0000 | |
| Residuals | 531.0000 | 16.1681 | 0.0304 | | | |
| Total | 535.0000 | 19.8624 | | | | |

Therefore, Multiple Linear Model from our summary table 1 above is: Average IDELA Score ($\hat{Y}$) = 28.8 + 16.2 (3 or more books) + 3.6 (1 or more books) + 2.2(1 or more activities) – 0.1 (4 or more activities) Coming up with a prediction equation like this is only a useful exercise if the expository variables in our dataset have some correlation with our outcome variable? So in addition to the prediction components of our equation - the coefficients on our expository variables (betas) and the constant (alpha), we need some measure to tell us how strongly each expository variable is associated with our outcome variable. When running our regression model, we are trying to discover whether the coefficients on our expository variables are different from 0 (so the expository variables are having a genuine effect on our outcome variable) or if alternatively, any apparent differences from 0 are just due to random chance. The null (default) hypothesis is always that each expository variable is having absolutely no effect (has a coefficient of 0) and we are looking for a reason to reject this theory. The standard error (SE) in the summary table is an estimate of the standard deviation of the coefficient, the amount it varies for each expository variable. SE is a measure of the precision with which the regression coefficient is measured. If a coefficient is large compared to its standard error, then it is probably different from 0, which is true for all our expository variables in our model except 4 or more activities where the standard error is 0.022 and the coefficient is -0.001. Therefore, we conclude 3 or more books, 1 or more books, and 1 or more activities have a genuine effect on IDELA, but 4 or more activities does not have an effect on IDELA score. In simple or multiple linear regression, the size of the coefficient for each expository variable gives you the size of the effect that variable is having on your outcome variable, and the sign on the coefficient (positive or negative) gives you the direction of the effect. In regression with multiple expository variables, the coefficient tells you how much the outcome variable is expected to increase when that expository variable increases by one, holding all the other expository variables constant. Hence, from our Multiple Linear Regression Model, we conclude that if activities are treated as constant, with every one-unit increase in the books, the IDELA score increases by 19.8% and if number of books is constant, with every one-unit increase in the caregiver's engagement in activities the IDELA score increases only by 2.1%. We have merged the effect of one or more books and three or more books, as they are not independent of each other. Similarly, we have done the same with the activities merging the effects of one or more activities and four or more activities. The R-squared ($r^2 = 0.19$) is such a small value. This value represents the fraction of the variation in our outcome variable that is accounted for (or predicted by) our expository variables. This value is generally of secondary importance, unless our main concern is using the regression equation to make accurate predictions. The P value tells us how confident we can be that each individual variable has some correlation with the outcome variable, which is the important thing. Except for three or more books, p-values for each expository variable are greater than .05, so we can say that the effect of those variables on IDELA score is not statistically significant. Another number to be aware of is the P value for the regression as a whole. Because our expository variables may be correlated, a condition known as multi-collinearity, the coefficients on individual variables may be insignificant when the regression as a whole is significant. This modelling is without any interaction between the covariates. had we included interaction in the model, the regression values will be different and will also expose the correlation between the covariates. Our overall p value is 0.00, which is much less than .05 or even .01, indicating that the model as a whole is strongly associated with IDELA score.

# CLA Results

## CLA Results – Global KPI

| | | |
|---|---|---|
| **GLOBAL KPI :** | Percentage of children of the Nationally Recommended Age for Completion of Grade Three, who have Attained the Literacy and Numeracy Standards for Grade 3 | **5.2%** |

**Graph 21: Proportion of Children of the Nationally Recommended Age for Completion of Grade Three, who have Attained the Literacy and Numeracy Standards for Grade 3**
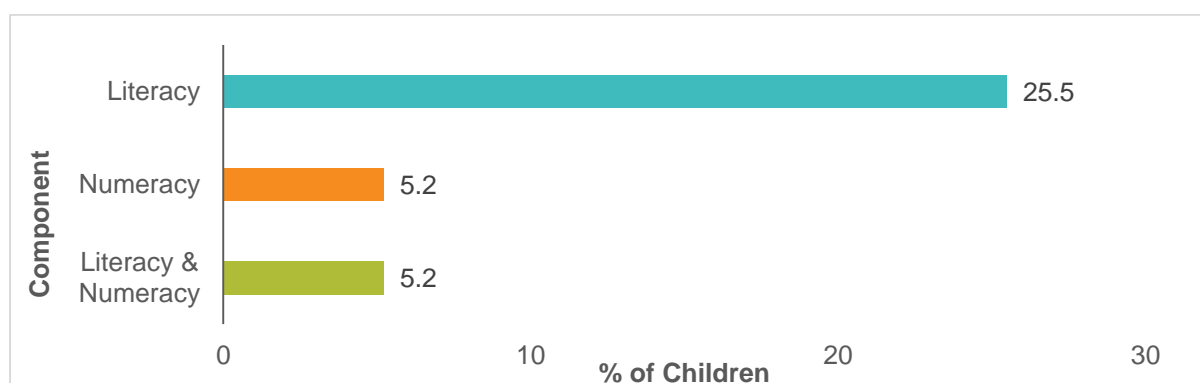


In Bangladesh, children enter primary grade 1 at age 6, plus 3 years is 9 years of age. As highlighted in the above graph, only 5.2% of nine years old were able to complete grade 3 standards for both literacy and numeracy. Fewer children were able to meet the numeracy standard at 5.2% compared to those who met the literacy standard at 25.5%.

## CLA results by gender

**Graph 22: Proportion of Children of the Nationally Recommended Age for Completion of Grade Three, who have Attained the Literacy and Numeracy Standards for Grade 3 by Gender**

Graph 22 shows that there is a substantial difference (16%) between girls and boys literacy scores. In numeracy, girls also scored slightly higher than the boys. On average, the difference is not more than 3% for both literacy & numeracy.
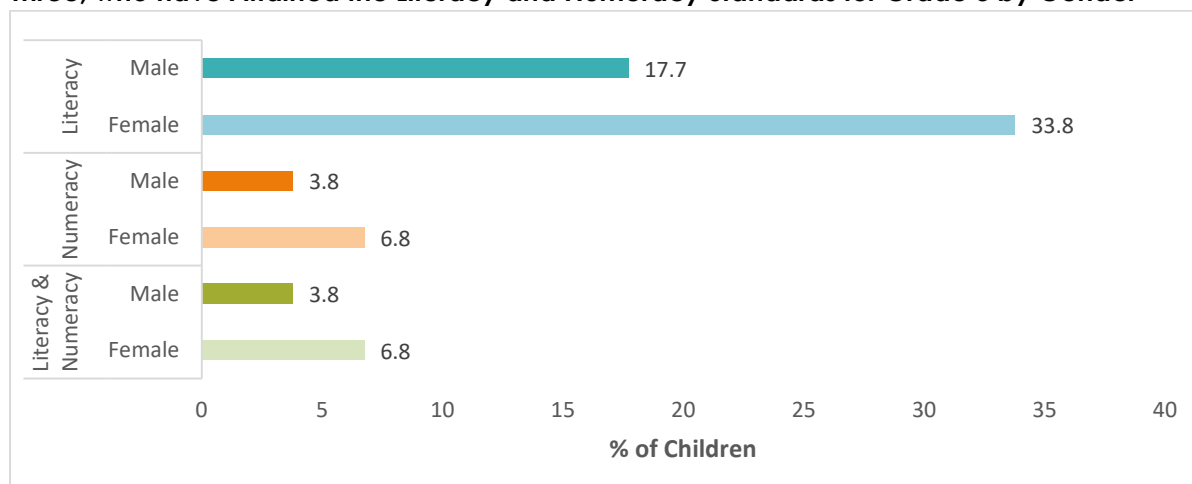
## CLA results by cluster

**Graph 23: Proportion of Children of the Nationally Recommended Age for Completion of Grade Three, who have Attained the Literacy and Numeracy Standards Required for Completion of Grade 3 Disaggregated by Clusters**
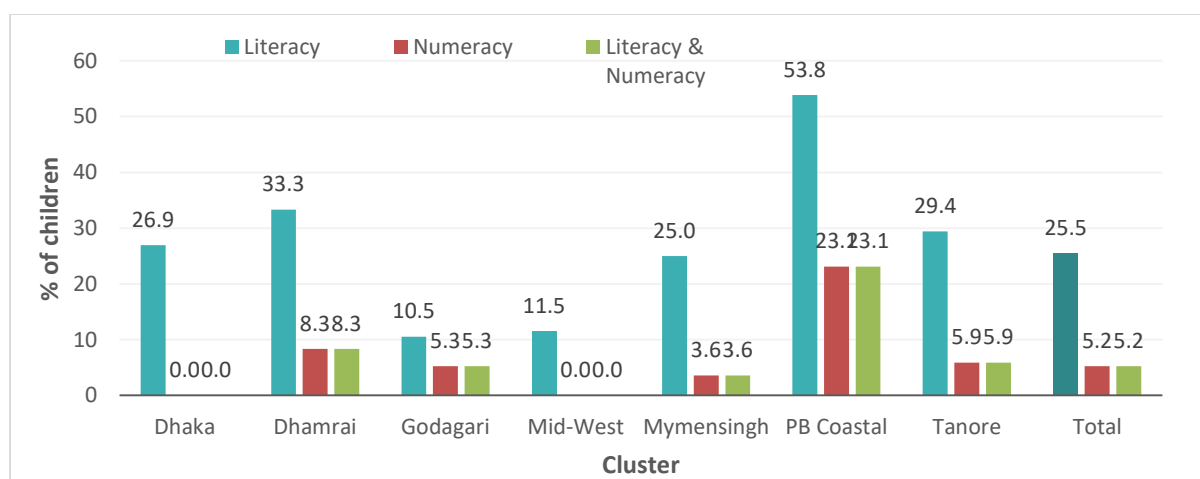


In the above graph: we can see the proportion of children achieving the literacy standard differs between clusters from 10.5 % up to 53 %. Godagari & Mid-West clusters have the lowest proportions, while PB Coastal cluster attained the highest proportion. In numeracy, no children in Dhaka cluster & Mid-west cluster were able to pass the final (division) level. Mymensingh, Godagari, Tanore & Dhamrai clusters also have a significantly low proportion achieving the numeracy standard. These low proportions impacted the total proportion on average, and thus the proportion of children achieving the standard is very low. Only 5.2 % of 9-year-old children are able to complete all the levels of CLA successfully.

Note: It has been seen that in IDELA score PBC also scored the highest among the others. PB is in Barisal, an administrative division of Bangladesh, where traditionally the literacy rate is higher than the others.

# CLA Literacy results by cluster

**Graph 24 A: Proportion of Children of the Nationally Recommended Age for Completion of Grade Three, who have Attained the Literacy Standards Required for Completion of Grade 3 Disaggregated by Clusters**
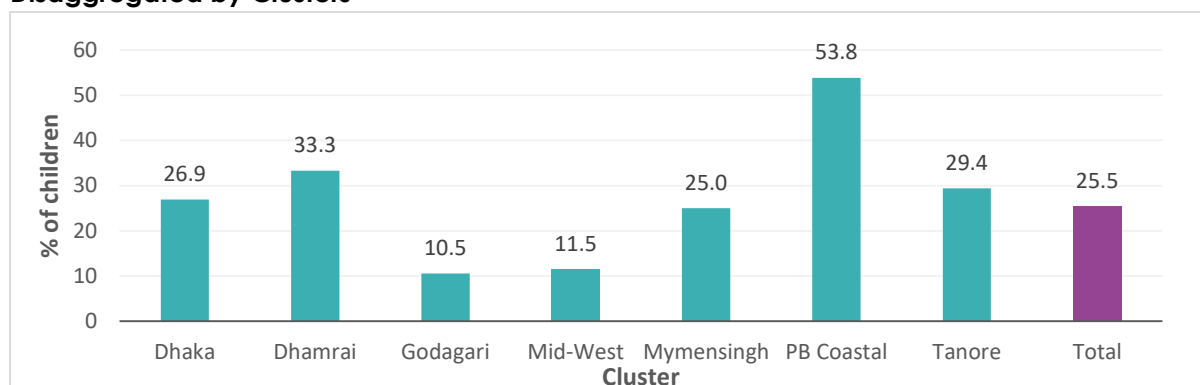


As we can see In the above graph the proportion of children achieving the literacy standard differs between clusters from 10.5 % up to 53 %. Godagari & Mid-West clusters have the lowest proportions, while PB Coastal cluster attained the highest proportion. The average literacy score is 25.5%.

# CLA Numeracy results by cluster

**Graph 24 B: Proportion of Children of the Nationally Recommended Age for Completion of Grade Three, who have Attained the Numeracy Standards Required for Completion of Grade 3 Disaggregated by Clusters**



In numeracy, from the above graph we can see no children in Dhaka cluster & Mid-west cluster were able to pass the final (division) level. This finding surprises us- no doubt. However, Mymensingh, Godagari, Tanore & Dhamrai clusters also have a significantly low proportion achieving the numeracy standard. Thus the average score is also very low, only 5.2%.

# CLA Literacy and Numeracy Results by cluster

**Graph 24 C: Proportion of Children of the Nationally Recommended Age for Completion of Grade Three, who have Attained the Literacy and Numeracy Standards Required for Completion of Grade 3 Disaggregated by Clusters**
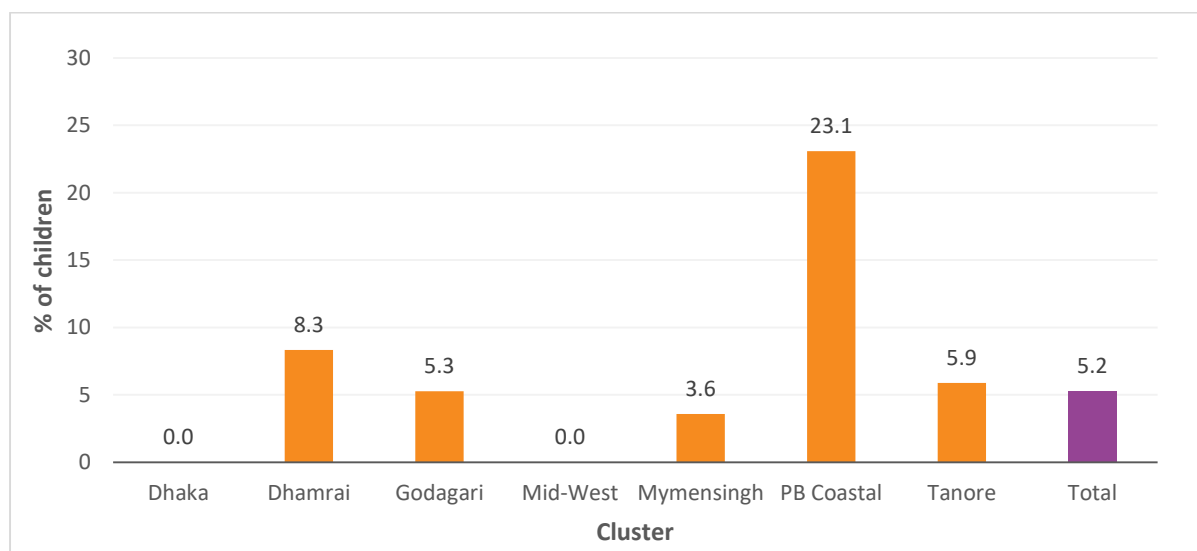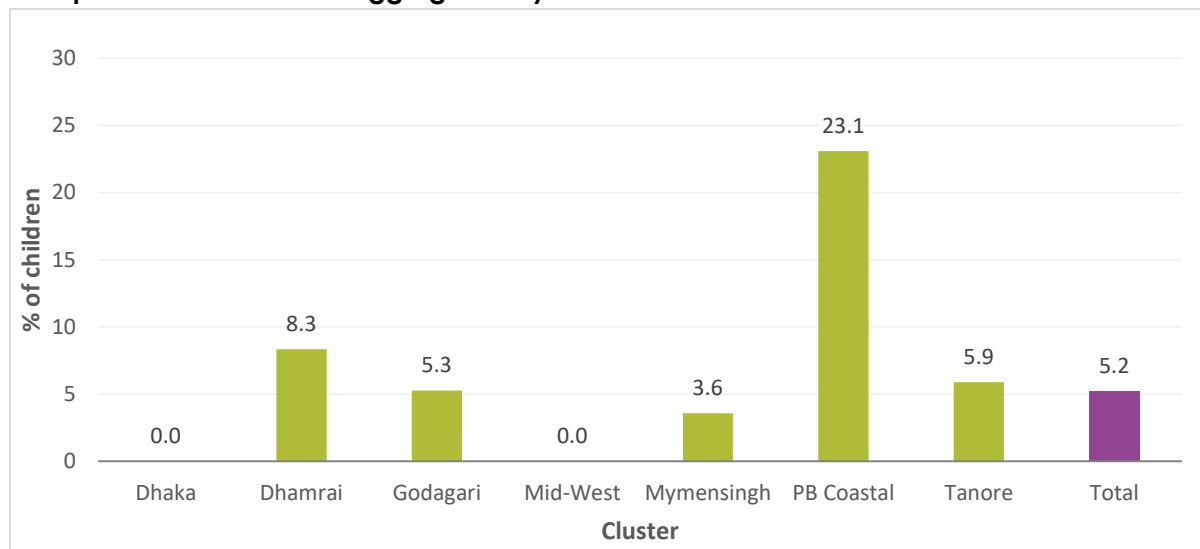


These low proportions we have seen in literacy & numeracy impacted the total proportion on average, and thus the proportion of children achieving the standard is very low. Only 5.2 % of 9 year old children are able to complete all the levels of CLA successfully. Among the clusters Dhaka, Midwest, Godagari & Mymensingh have lowest proportions, while PB has the highest proportion.

# Distribution of literacy results in grades 1-3

**Graph 25 A: Distribution of Literacy Skills of Children in Grades 1-3**
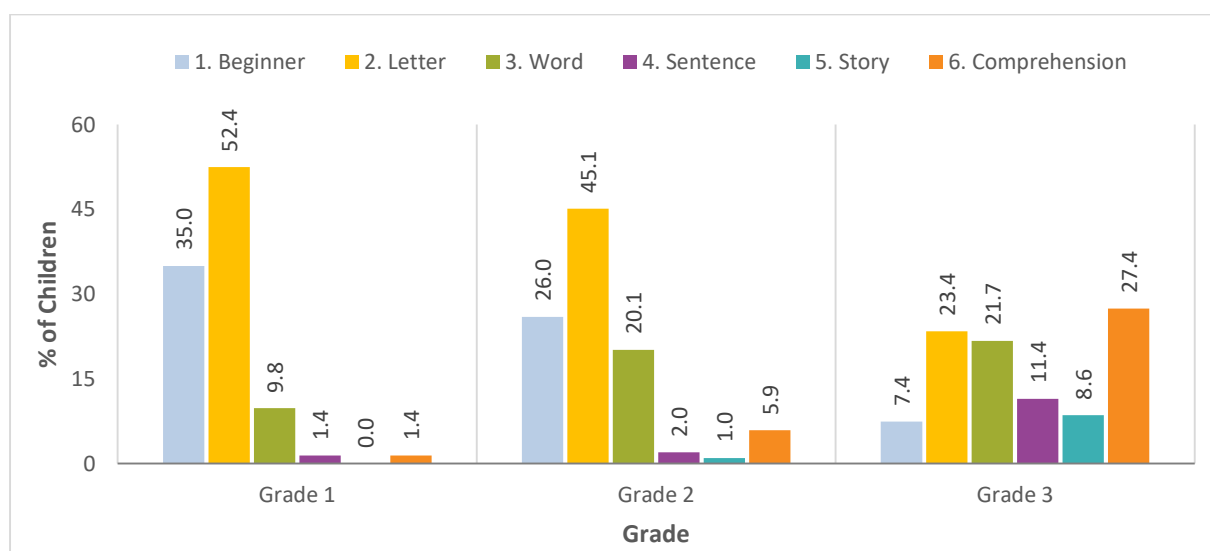


Graph 25 A demonstrates, in literacy skill most the grade 1 children are in the Beginner & Letter level, which is to be expected at this age. 9.8% of first graders are able to qualify in the word level. Grade 2 children also have scored similarly, but the

percentage to qualify the Word level is higher than Grade 1. On the other hand, grade 3 have average proportions in the comprehension level. However, a significant percentage (45%) of grade 3 children are still in the letter and word level. However, the overall ratio of grade 3 children is not very satisfactory in the expected level as the CLA items were selected based on the grade 3 standard.

## Distribution of literacy results in grades 4-8

**Graph 25 B: Distribution of Literacy Skills of Children in Grades 4-8**
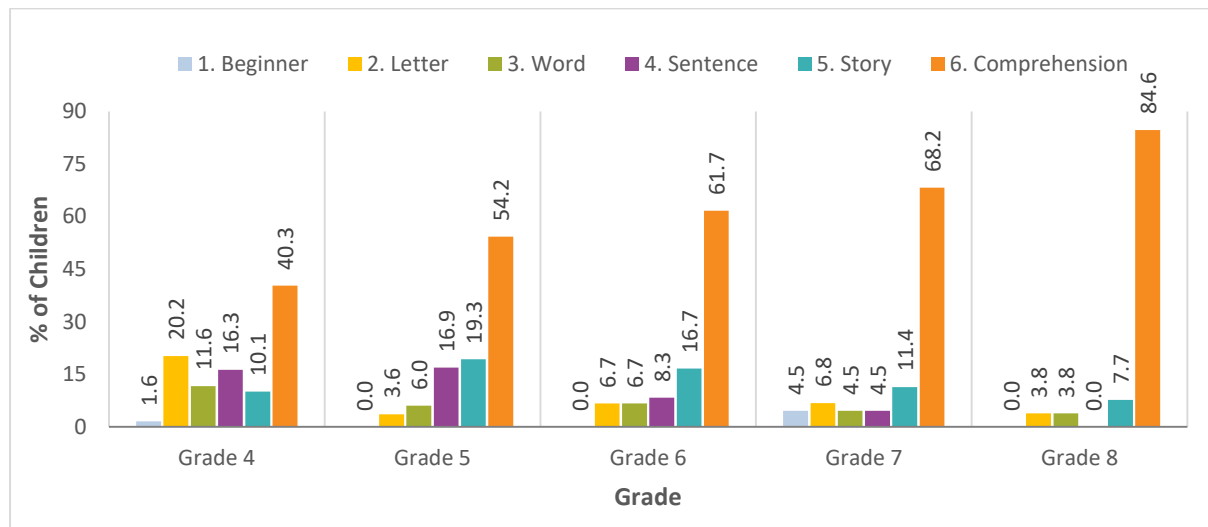


Graph 25 B demonstrates the gradual improvement in comprehension among children in grade 4 to grade 8. However, there are some children in these grades who are still struggling to pass the letter, word, sentence & story level.

## Distribution of numeracy results in grades 1-3

**Graph 25 C: Distribution of Numeracy Skills of Children in Grades 1-3**
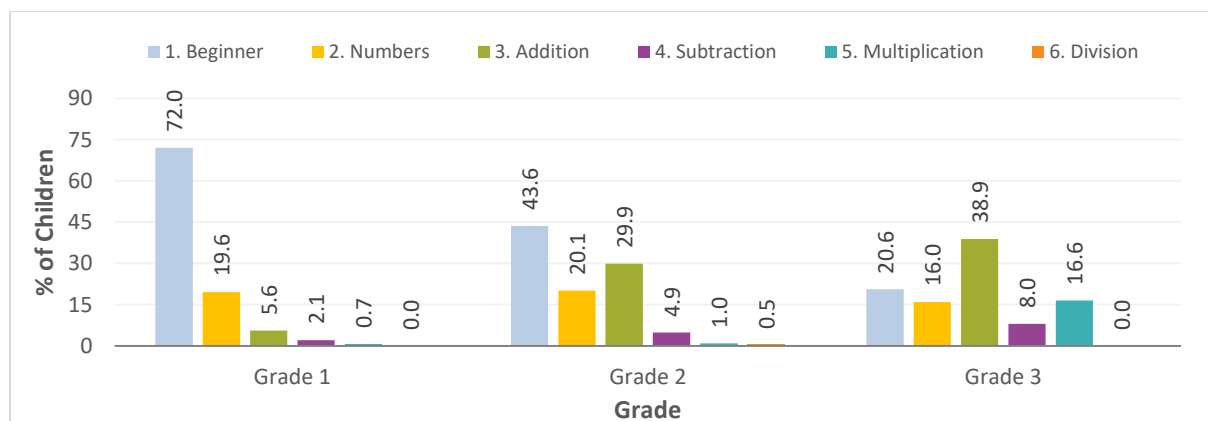


The above graph (25 C) demonstrates that most of the children of grade 1 & 2 are at the beginner level, and a significant percentage are at the number level. In grade 2, 29.9% of children are at the addition level. However, a substantial percentage (75.5%) of 3rd grade children are still at the beginner, number or addition level. 8% of children

have moved to the subtraction level, and 16.6% of children have moved to the multiplication level. Importantly, no children passed the division level, despite this level matching the difficulty of 3rd grade curriculum for mathematics.

## Distribution of numeracy results in grades 4-8

**Graph 25 D: Distribution of Numeracy Skills of Children in Grades 4-8**
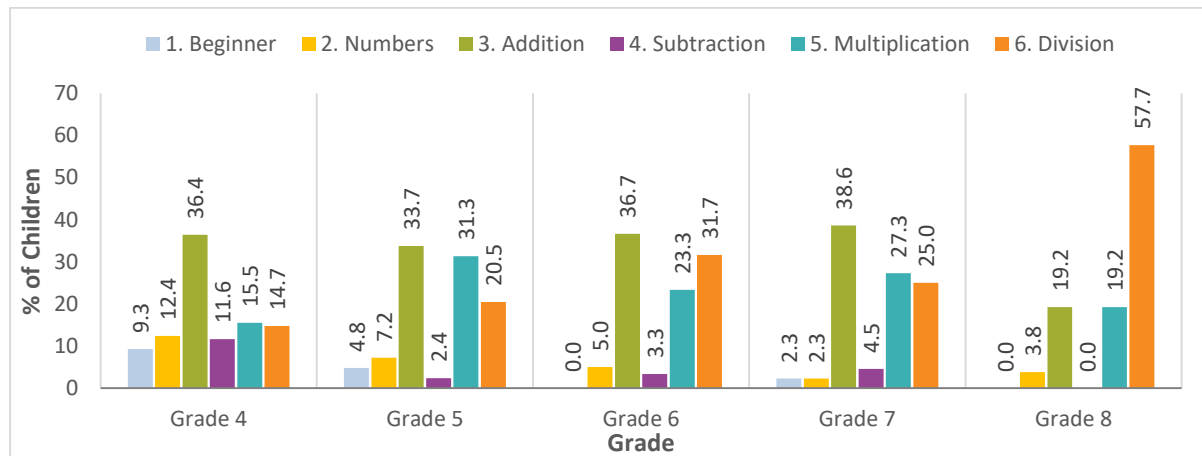


According to graph 25 D, the percentage of children qualifying at the addition level is similar for children from grade 4 to 7. Approximately 33% of the children from grades 4 to 7 are not able to pass the subtraction level. However, the other 50 % of children in these grades are able to qualify up to multiplication level & division level except in grade 4. The percentage of children qualifying at the division level was found to be highest for the 8th graders. Still there is a significant percentage of 8th grade children who did not qualify at the subtraction level (19%). Analyzing this graph, we can say that most of the children in the community are struggling with subtraction.

## CLA Literacy results – all grades

**Graph 26: Proportion of Children all grades who meet the standards for literacy cross tabulated by grades and cluster and disaggregated by gender**
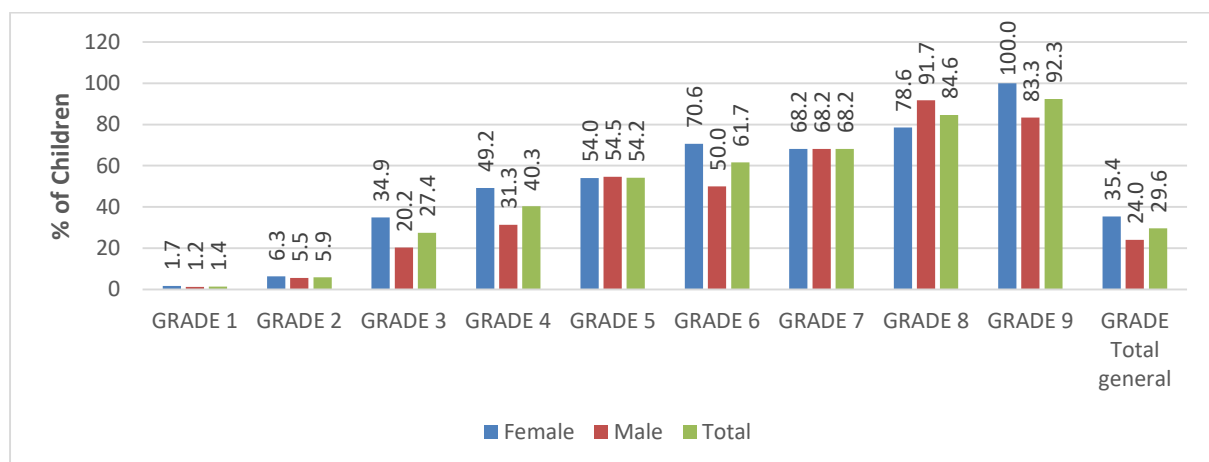


Based on the results of the survey shown in the graph above, children's literacy performance in grades eight and nine are satisfactory, but in other grades are not

satisfactory except the grade one & grade two. The total percentage of grade nine students who can meet grade three literacy standards is 92.3%. In the above graph, we have found a consistency between the grades. Gradually the proportion of children meeting 3rd grade standards has increased from grade one to grade nine.

## CLA Numeracy results – all grades

**Graph 27: Proportion of Children all grades who meet the standards for numeracy cross tabulated by grades and cluster and disaggregated by gender**
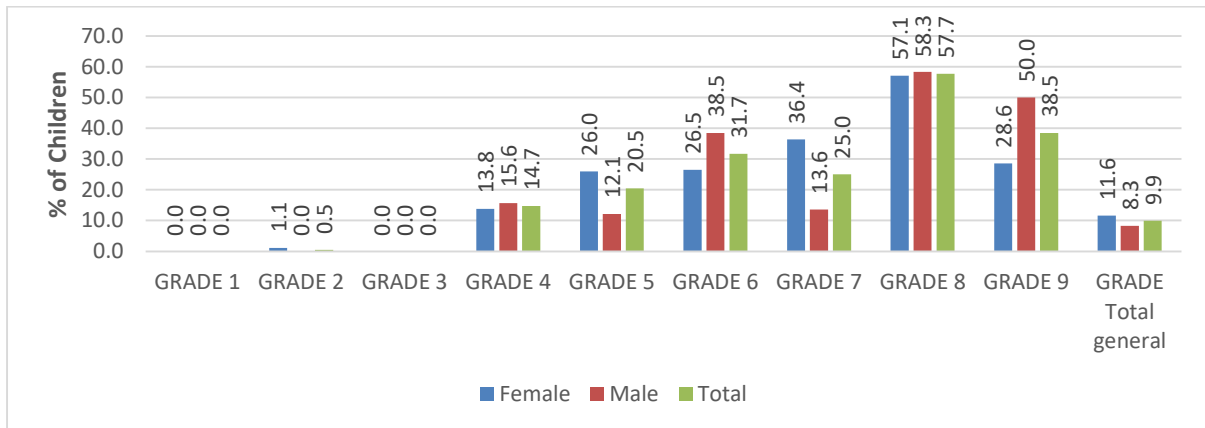


Based on the results of the survey shown in the graph above, children's numeracy performance in all grades is not satisfactory. The total percentage of grade nine students who can meet the grade three standards is 38.5%. Whereas the result is significantly higher in grade eight (57.7%) compared to grade nine.

## CLA Literacy and Numeracy results – all grades

**Graph 28: Proportion of Children all grades who meet the standards for both literacy and numeracy cross tabulated by grades and cluster and disaggregated by gender**
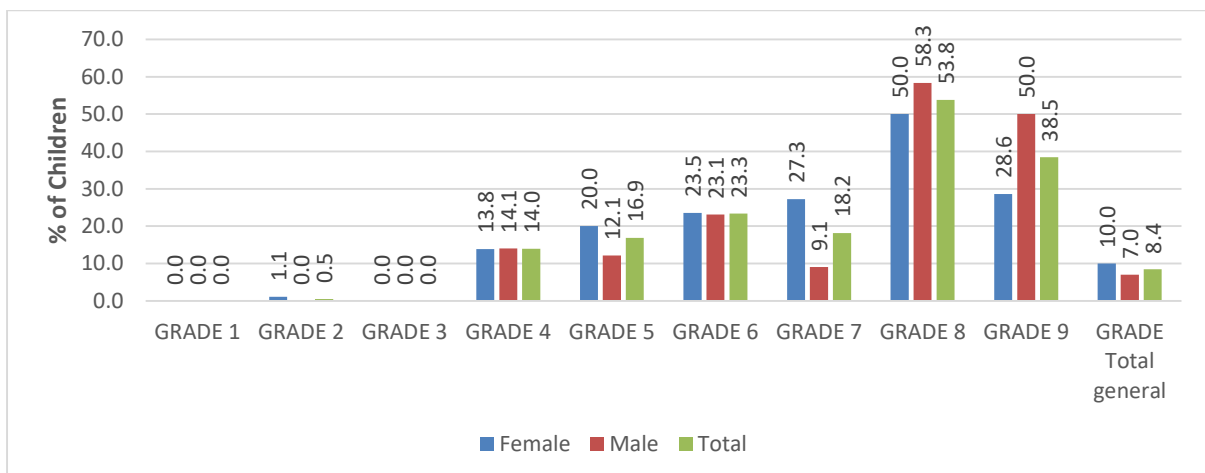


Based on the results of the survey shown in the graph above, children's literacy and numeracy performance in all grades is not satisfactory. The total percentage of grade nine students who can meet grade three standards for both literacy and numeracy is 38.5%.the result is significantly higher in grade eight (57.7%) compared to grade nine.

# Cross Tabulation Results – Home & Community Environments and CLA outcomes

## Research Question 3: How does preschool attendance affect whether the child is able to pass third grade literacy and numeracy standards?

As visible in graph 29, 26% of 9-year-old children who attended pre-school are able to meet grade 3 literacy standards compared to only 25% of children who did not attend the pre-school but were still able to meet the literacy standards. In terms of numeracy, 7% of children who did not attend preschool met the numeracy standards compared to only 6% who attended pre-school. Likewise, for both literacy and numeracy, 7% of children who did not attend preschool met the standard compared to 6% of children who attended preschool and met the standard.

**Graph 29: Relationship Between Preschool Attendance and the Ability of the Child to Pass Grade 3 Literacy and Numeracy Standards**
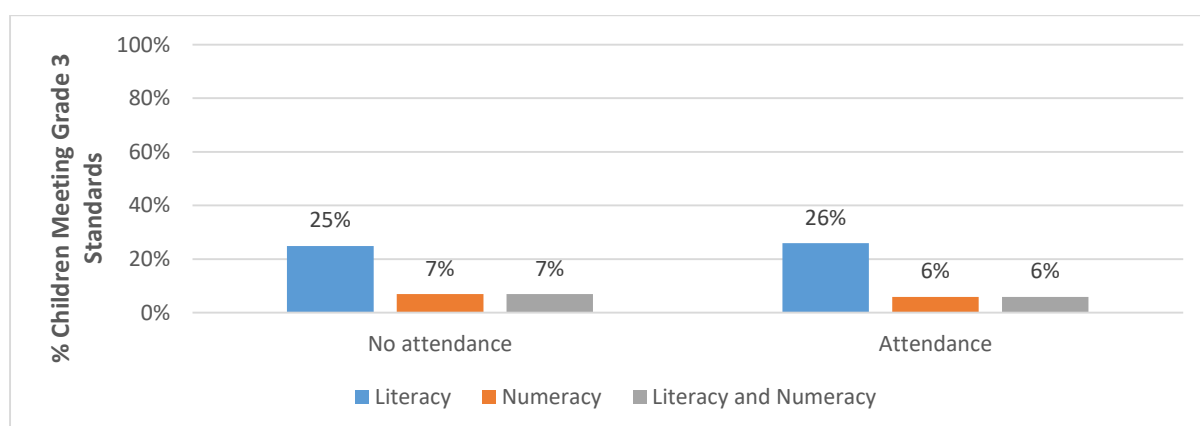


**Table 7.1: Association between Attendance in Preschool and Child's Ability to Pass Grade 3 Literacy Standards**

|  | Point | 95% Confidence Interval | |
| --- | --- | --- | --- |
|  | Estimate | Lower | Upper |
| PARAMETERS: Odds-based |  |  |  |
| Odds Ratio (cross product) | 1.0755 | 0.5091 | 2.2718 (T) |

As seen in table 7.1, children who have attended preschool are as likely to meet the literacy standard compared to the children who did not attend the preschool. The finding is not statistically significant as the confidence interval crosses over one.

**Table 7.2: Association between Attendance in Preschool and Child's Ability to Pass Grade 3 Numeracy Standards**

| | Point | 95% Confidence Interval | |
| --- | --- | --- | --- |
| | Estimate | Lower | Upper |
| PARAMETERS: Odds-based | | | |
| Odds Ratio (cross product) | 0.7882 | 0.2028 | 3.0632 (T) |

As seen in table 7.2, children who did not attend preschool are 78% as likely to meet grade 3 numeracy standards as children who attended the preschool. The finding is not statistically significant as the confidence interval crosses over one.

**Table 7.3: Association between Attendance in Preschool and Child's Ability to Pass Grade 3 Literacy and Numeracy**

| | Point | 95% Confidence Interval | |
| --- | --- | --- | --- |
| | Estimate | Lower | Upper |
| PARAMETERS: Odds-based | | | |
| Odds Ratio (cross product) | 0.7882 | 0.2028 | 3.0632 (T) |

As seen in table 7.3, children who did not attend preschool are 78% as likely to meet grade 3 literacy and numeracy standards as children who attended the preschool. The finding is not statistically significant as the confidence interval crosses over one.

The hypothesis is that if children attend pre-school, they are more likely to meet grade 3 literacy, numeracy and both literacy and numeracy standards. Based on the test of association as shown in the tables above, we can conclude that there is a strong association amongst the children aged 9 years who have attended preschool and their ability to meet grade 3 literacy standard. However, this association was weak for the numeracy and both literacy and numeracy standards.

# Research Question 4: How does caregiver knowledge of grade requirements affect child performance?

The hypothesis is that the greater the knowledge on grade requirements of caregivers of children 9 years of age, the more likely the child is able to meet the grade 3 standards. Graph 30, clearly shows that as the knowledge of grade 3 benchmarks of caregivers with children 9 years of age increases from none to 1 or 2, the proportion of children who are able to meet the grade 3 requirements in literacy, numeracy and both literacy and numeracy also increases. However, a smaller proportion of children met literacy standards, and no children met numeracy standards, whose caregivers had knowledge of 3 or more standards compared with caregivers who had knowledge of 1 or 2 standards.

**Graph 30: Relationship Between Caregiver's Knowledge of Grade Requirements and Child's Ability to Meet Grade 3 Standards**



**Table 8.1: Association Between Caregivers Knowledge of Grade Requirements and Child's Ability to Pass Grade 3 Literacy Standards**

| | Point | 95% Confidence Interval | |
| --- | --- | --- | --- |
| | Estimate | Lower | Upper |
| PARAMETERS: Odds-based | | | |
| Odds Ratio (cross product) | 2.5436 | 1.1701 | 5.5292 (T) |

As seen in table 8.1, children 9 years of age whose caregivers have knowledge of grade three requirements are 2.5 times more likely to meet the literacy standard compared to the children whose caregivers have no knowledge of grade 3 requirements. The finding is statistically significant as the width of the confidence interval is less than +-5 percentage.

**Table 8.2: Association Between Caregivers Knowledge of Grade Requirements and Child's Ability to Pass Grade 3 Numeracy Standards**

| | Point | 95% Confidence Interval | |
| --- | --- | --- | --- |
| | Estimate | Lower | Upper |
| PARAMETERS: Odds-based | | | |
| Odds Ratio (cross product) | 4.1210 | 0.8258 | 20.5658 (T) |

As seen in table 8.2, children 9 years of age whose caregivers have knowledge of grade 3 requirements are 4 times more likely to meet grade 3 numeracy standards as children whose caregivers have no knowledge of grade 3 requirements. The finding is not statistically significant as the confidence interval crosses over 1.

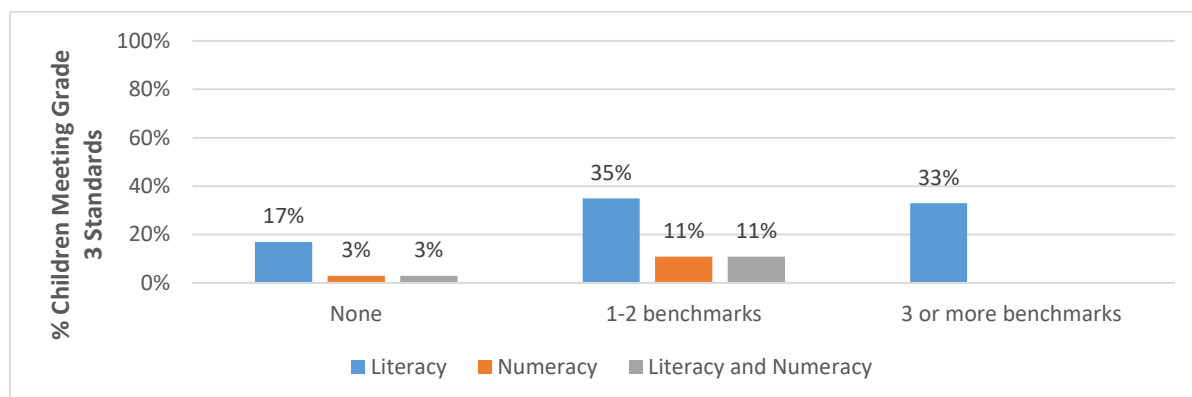**Table 8.3: Association Between Caregivers Knowledge of Grade Requirements and Child's Ability to Pass Grade 3 Literacy and Numeracy Standards**

| | Point | 95% Confidence Interval | |
| --- | --- | --- | --- |
| | Estimate | Lower | Upper |
| PARAMETERS: Odds-based | | | |
| Odds Ratio (cross product) | 4.1210 | 0.8258 | 20.5658 (T) |

As seen in table 8.3, children 9 years of age whose caregivers have knowledge of grade 3 requirements are 4 times more likely to meet grade 3 literacy and numeracy standards as children whose caregivers have no knowledge of grade 3 requirements. The finding is not statistically significant as the confidence interval crosses over 1.

The hypothesis is that if caregivers of children aged 9 years of age have knowledge of grade 3 requirements, the children are more likely to meet grade 3 literacy, numeracy and both literacy and numeracy standards. Based on the results shown in the tables above, we can conclude that children whose caregivers have knowledge of grade 3 requirements are more likely to meet grade 3 standards than children whose caregivers do not know grade 3 requirements.

# Research Question 5: How do out of school learning activities increase ability to pass the assessment?

The hypothesis is that the more the child is engaged in out of school learning activities, the higher the likelihood of the child meeting the grade 3 standards for literacy, numeracy and both literacy and numeracy. It is evident from graph 31 that if the child is not engaged in any activities, only 25% of children were able to meet literacy standards, however, if the children are engaged in at least one activities, the proportion of children meeting literacy standards increases to 33% and for 2 or more activities, literacy standards increases to 36%. It is also evident that for numeracy and both literacy & numeracy standards, a higher proportion of Children who participated in 2 or more out of school learning activities met the standards than did those who did not participate in any out of school learning activities.

**Graph 31: Relationship between attendance in out of school learning activities and child's ability to pass CLA assessment**
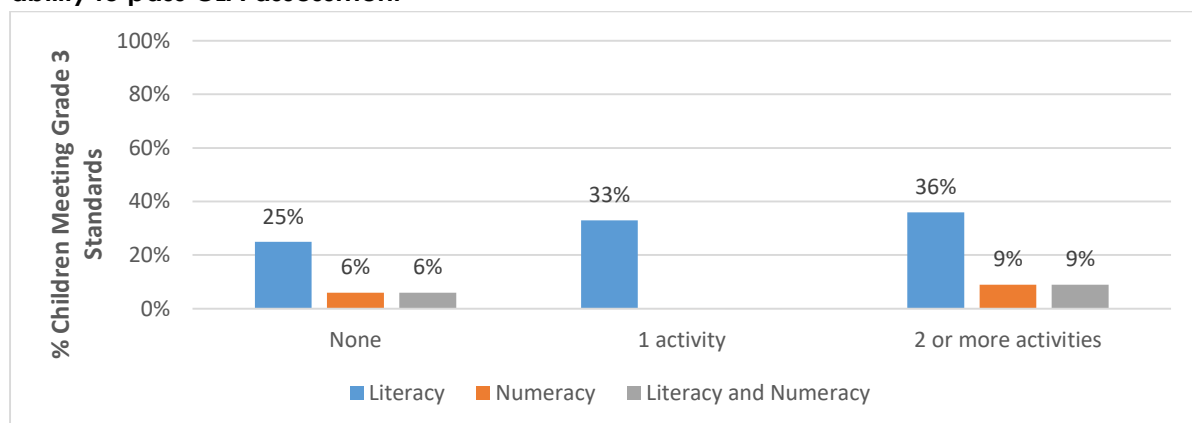
**Table 9.1: Association Between Engagement in Out of School Learning Activities and Child' Ability to Pass Grade 3 Literacy Standards**

| | Point | 95% Confidence Interval | |
| --- | --- | --- | --- |
| | Estimate | Lower | Upper |
| PARAMETERS: Odds-based | | | |
| Odds Ratio (cross product) | 1.6043 | 0.5513 | 4.6684 (T) |

As seen in table 9.1, children 9 years of age who are engaged in out of school activities are 1.6 times more likely to meet the literacy standard compared to the children who are not engaged in any out of school activity. The finding is not statistically significant as the confidence interval crosses over 1.

**Table 9.2: Association Between Engagement in Out of School Learning Activities and Child' Ability to Pass Grade 3 Numeracy Standards**

| | Point | 95% Confidence Interval | |
| --- | --- | --- | --- |
| | Estimate | Lower | Upper |
| PARAMETERS: Odds-based | | | |
| Odds Ratio (cross product) | 0.9844 | 0.1155 | 8.3917 (T) |

As seen in table 9.2, children 9 years of age who are not engaged in out of school activities are 98% as likely to meet the numeracy standard compared to the children who are engaged in any out of school activity. The finding is not statistically significant as the confidence interval crosses over one.

**Table 9.3: Association Between Engagement in Out of School Learning Activities and Child' Ability to Pass Grade 3 Literacy and Numeracy Standard**

| | Point | 95% Confidence Interval | |
| --- | --- | --- | --- |
| | Estimate | Lower | Upper |
| PARAMETERS: Odds-based | | | |
| Odds Ratio (cross product) | 0.9844 | 0.1155 | 8.3917 (T) |

As seen in table 9.3, children who are not engaged in out of school learning activities have the same likelihood of meeting literacy and numeracy standards as children who did engage in out of school learning activities. The finding is not statistically significant as the confidence interval crosses over one.

The hypothesis is that if children aged 9 years of age are engaged in out of school activities, they are more likely to meet grade 3 literacy, numeracy and both literacy and numeracy standards. Based on the test of association as shown in the tables above, we can conclude that there is a moderately strong association between the children aged 9 years who are engaged in out of school activities and their ability to meet the grade 3 literacy standard. However, this association was weak for the numeracy and both literacy & numeracy standards.

# Research Question 6: How does a supporting reading environment increase ability to pass the assessment?

The hypothesis is that the more the child is provided with a supportive reading environment, the higher the likelihood of the child meeting the grade 3 standards for literacy, numeracy and both literacy and numeracy. Graph 32 shows that this hypothesis may be true as 27% of the children provided with a supportive reading environment meet the literacy standards compared to only 26% of children who are not provided the reading environment. The difference between the proportion meeting the literacy standards is only 1%. The difference between the proportion meeting the numeracy and both literacy and numeracy is 3%. So, there does not appear to be a large difference for any of the standards.

**Graph 32: Relationship Between home reading environment and child's ability to pass CLA assessment**



**Table 10.1: Association Between Caregivers Supporting Reading Environment and Child' Ability to Pass Grade 3 Literacy Standards**

|  | Point | 95% Confidence Interval | |
| --- | --- | --- | --- |
|  | Estimate | Lower | Upper |
| PARAMETERS: Odds-based |  |  |  |
| Odds Ratio (cross product) | 1.0060 | 0.4716 | 2.1459 (T) |

As seen in table 10.1, As the odds ratio value is 1, there is no difference between the groups and both groups have the same likelihood of meeting literacy standards. The finding is not statistically significant as the confidence interval crosses over one.
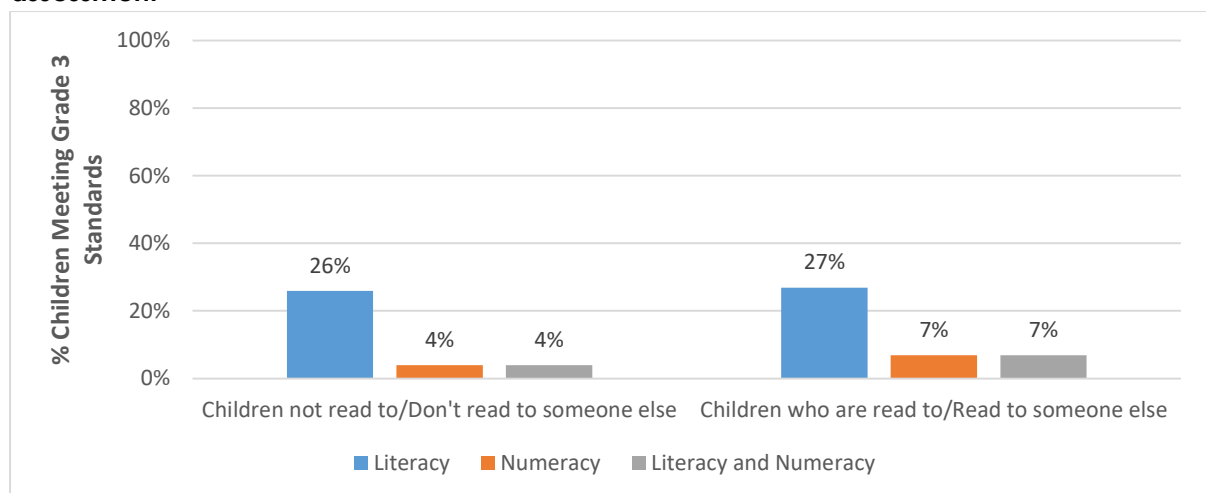
**Table 10.2: Association Between Caregivers Supporting Reading Environment and Child' Ability to Pass Grade 3 Numeracy Standards**

| | Point | 95% Confidence Interval | |
| --- | --- | --- | --- |
| | Estimate | Lower | Upper |
| PARAMETERS: Odds-based | | | |
| Odds Ratio (cross product) | 1.9615 | 0.3927 | 9.7981 (T) |

As seen in table 10.2, children 9 years of age whose caregivers support the reading environment are 2 times more likely to meet numeracy standards as children whose caregivers do not support the reading environment. The finding is not statistically significant as the confidence interval crosses over 1.

**Table 10.3: Association Between Caregivers Supporting Reading Environment on Child' Ability to Pass Grade 3 Literacy and Numeracy Standards**

| | Point | 95% Confidence Interval | |
| --- | --- | --- | --- |
| | Estimate | Lower | Upper |
| PARAMETERS: Odds-based | | | |
| Odds Ratio (cross product) | 1.9615 | 0.3927 | 9.7981 (T) |

As seen in table 10.3, children 9 years of age whose caregivers support the reading environment are 2 times more likely to meet both the literacy and numeracy standards compared to the children whose caregivers do not support the reading environment. The finding is not statistically significant as the confidence interval crosses over 1.

The hypothesis is that if caregivers of children aged 9 years of age support the reading environment, the children are more likely to meet grade 3 literacy, numeracy and both literacy and numeracy standards. Based on the test of association as shown in the tables above, we can conclude that there is a strong association between the caregivers who support the reading environment and their children's ability to meet grade 3 numeracy standards and both literacy & numeracy standards. However, this association was weak for the literacy standards.

# Research Question 7: How does school absenteeism affect ability to pass the assessment?

The hypothesis is that if the child is attending school, the likelihood of the child meeting the grade 3 standards for literacy, numeracy and both literacy and numeracy is higher. In the sample there were not enough children found to be absent from the school, so meaningful cross tabulation was not possible, especially for numeracy and for both literacy and numeracy.

**Graph 33: Relationship Between school absenteeism and child's ability to pass CLA assessment**
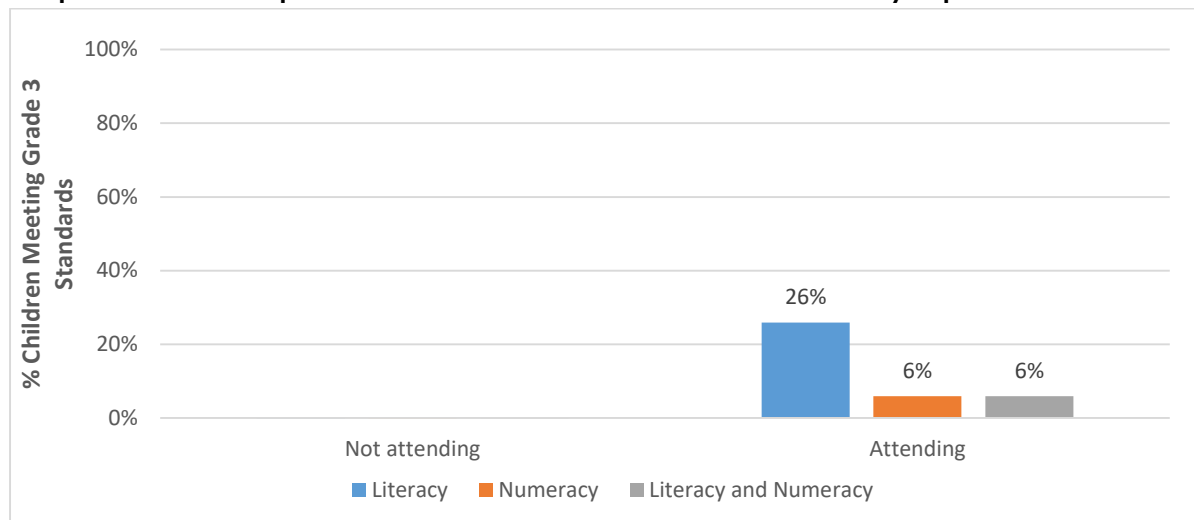


**Table 11.1: Association Between School Absenteeism and Child' Ability to Pass Grade 3 Literacy Standards**

|  | Point | 95% Confidence Interval | |
| --- | --- | --- | --- |
|  | Estimate | Lower | Upper |
| PARAMETERS: Odds-based |  |  |  |
| Odds Ratio (cross product) | Undefined | Undefined | Undefined (T) |
| Risk Ratio (RR) | NaN | NaN | NaN (T) |

**Table 11.2: Association Between School Absenteeism and Child' Ability to Pass Grade 3 Numeracy Standards**

|  | Point | 95% Confidence Interval | |
| --- | --- | --- | --- |
|  | Estimate | Lower | Upper |
| PARAMETERS: Odds-based |  |  |  |
| Odds Ratio (cross product) | Undefined | Undefined | Undefined (T) |
| Risk Ratio (RR) | NaN | NaN | NaN (T) |

**Table 11.3: Association Between School Absenteeism and Child' Ability to Pass Grade 3 Literacy and Numeracy Standards**

|  | Point | 95% Confidence Interval | |
| --- | --- | --- | --- |
|  | Estimate | Lower | Upper |
| PARAMETERS: Odds-based |  |  |  |
| Odds Ratio (cross product) | Undefined | Undefined | Undefined (T) |
| Risk Ratio (RR) | NaN | NaN | NaN (T) |

# Research Question 8: How does on time entry into grade 1 affect ability to pass the assessment?

The hypothesis is that if the child enters school at the right age, it is more likely that the child will be able to meet the grade 3 standards for literacy, numeracy and both literacy and numeracy. The hypothesis is clearly proven in graph 34 as it is evident from the graph that 54% of children who entered grade 1 on time met the grade 3 literacy standards, as compared to 21% of children who entered grade 1 late. 31% of children who entered school on time met the grade 3 numeracy standards, as compared to 1% of children who entered school late.

**Graph 34: Relationship Between on time entry into grade 1 and child's ability to pass CLA assessment**



**Table 12.1: Association Between On Time Grade 1 Entry and Child' Ability to Pass Grade 3 Literacy Standards**

|  | Point | 95% Confidence Interval | |
|---|---|---|---|
|  | Estimate | Lower | Upper |
| PARAMETERS: Odds-based |  |  |  |
| Odds Ratio (cross product) | 4.4423 | 1.8356 | 10.7507 (T) |

As evident in table 12.1, children who enter on time into grade 1 are 4.4 times more likely to meet grade 3 requirements in literacy compared to children who did not enter grade 1 on time. Since the width of the confidence intervals is more than 5%, the finding is not statistically significant.
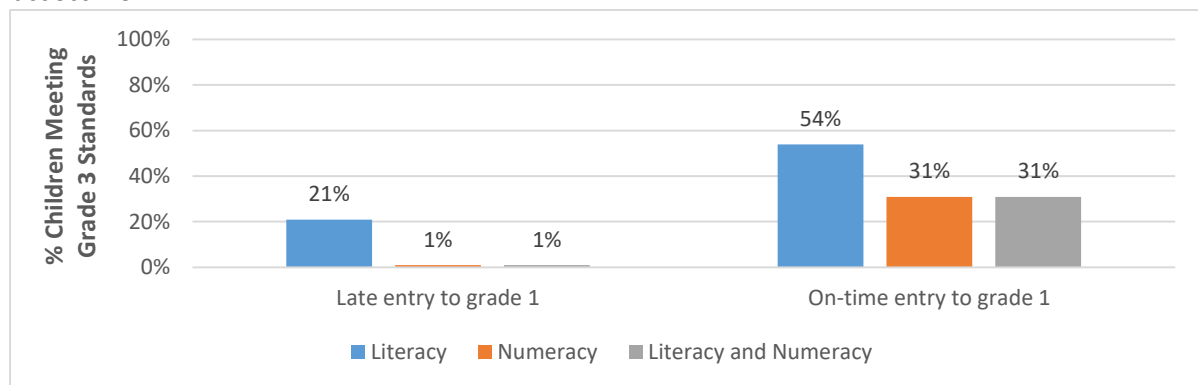
**Table 12.2: Association Between On Time Grade 1 Entry and Child' Ability to Pass Grade 3 Numeracy Standards**

|  | Point | 95% Confidence Interval | |
|---|---|---|---|
|  | Estimate | Lower | Upper |
| PARAMETERS: Odds-based |  |  |  |
| Odds Ratio (cross product) | 55.1111 | 6.5044 | 466.9485 (T) |

As evident in table 12.2, children who enter on time into grade 1 are 55 times more likely to meet grade 3 requirements in numeracy compared to children who did not enter grade 1 on time. Since the width of the confidence intervals is more than 5%, the finding is not statistically significant.

**Table 12.3: Association Between On Time Grade 1 Entry and Child's Ability to Pass Grade 3 Literacy and Numeracy Standards**

| | Point | 95% Confidence Interval | |
| --- | --- | --- | --- |
| | Estimate | Lower | Upper |
| PARAMETERS: Odds-based | | | |
| Odds Ratio (cross product) | 55.1111 | 6.5044 | 466.9485 (T) |

As evident in table 12.3, children who enter on time into grade 1 are 55 times more likely to meet grade 3 requirements in both literacy & numeracy compared to children who did not enter grade 1 on time. Since the width of the confidence intervals is more than 5%, the finding is not statistically significant.

Based on the results shown in the tables above, we can conclude that children who enter school at the right are more likely to meet grade 3 standards than those who do not enter school at the right age.

# Research Question 9: Does having caregivers of Children 7-15 years engaged in learning activities influence a child meeting literacy and numeracy standards

The hypothesis is that the more learning activities a caregiver is engaged in, the higher the likelihood of the child meeting the grade 3 standards for literacy, numeracy and both literacy and numeracy. It is evident from graph 35 that only 31% of children meet literacy standards if their caregiver is not engaged in any activity. The proportion increases to 58% if the caregiver is engaged in 4 or more activities.

**Graph 35: Relationship Between the Caregiver Engaged in Learning Activities and Child's ability to pass CLA assessment**
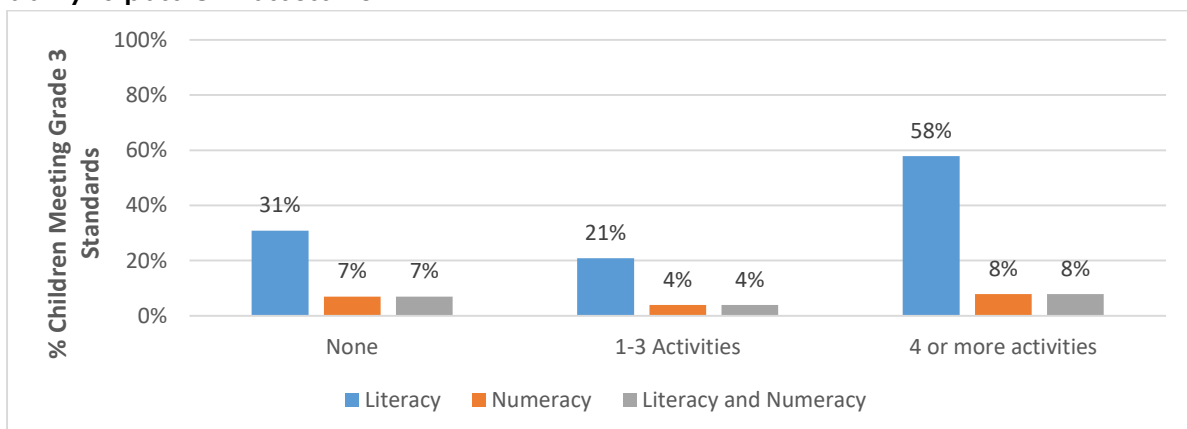
**Table 13.1: Association Between Caregiver's Engagement in Learning Activities and Child' Ability to Pass Grade 3 Literacy Standards**

| | Point | 95% Confidence Interval | |
| --- | --- | --- | --- |
| | Estimate | Lower | Upper |
| PARAMETERS: Odds-based | | | |
| Odds Ratio (cross product) | 0.8995 | 0.3418 | 2.3672 (T) |

It is evident from table 13.1 that children whose caregiver is not engaged in a learning activity are 90% as likely to meet the literacy standards compared to the children whose caregiver is engaged in any activity. The finding is not statistically significant as the confidence interval crosses over one.

**Table 13.2: Association Between Caregiver's Engagement in Learning Activities and Child' Ability to Pass Grade 3 Numeracy Standards**

| | Point | 95% Confidence Interval | |
| --- | --- | --- | --- |
| | Estimate | Lower | Upper |
| PARAMETERS: Odds-based | | | |
| Odds Ratio (cross product) | 0.7232 | 0.1140 | 4.5867 (T) |

It is evident from table 13.2 that children whose caregiver is not engaged in a learning activity are 72% as likely to meet the numeracy standards compared to the children whose caregiver is engaged in any activity. The finding is not statistically significant as the confidence interval crosses over one.

**Table 13.3: Association Between Caregiver's Engagement in Learning Activities and Child' Ability to Pass Grade 3 Literacy and Numeracy Standards**

| | Point | 95% Confidence Interval | |
| --- | --- | --- | --- |
| | Estimate | Lower | Upper |
| PARAMETERS: Odds-based | | | |
| Odds Ratio (cross product) | 0.7232 | 0.1140 | 4.5867 (T) |

It is evident from table 13.3 that children whose caregiver is not engaged in a learning activity are 72% as likely to meet the both literacy & numeracy standards compared to the children whose caregiver is engaged in any activity. The finding is not statistically significant as the confidence interval crosses over one.

The hypothesis is that children aged 9 years of age whose caregivers are engaged in learning activities, are more likely to meet grade 3 literacy, numeracy and both literacy and numeracy standards. Based on results shown in the tables above, we can conclude that there is no association between the children aged 9 years whose caregivers are engaged in learning activities and their ability to meet the grade 3 literacy, numeracy and both literacy & numeracy standards.

# Research Question 10: Does having caregivers of Children 7-15 years meeting teachers regularly influences a child meeting literacy and numeracy standards

The hypothesis is that more times the caregiver meets the teacher, the higher the likelihood of the child meeting the grade 3 standards for literacy, numeracy and both literacy and numeracy. Graph 36 shows that there is only a 3% difference between children of caregivers who have never met the teacher or those who met once regarding achievement of literacy standards. For both groups, about 20% of the children are able to meet literacy standards. This proportion increases to 36% when a caregiver meets the teacher two or more times. The proportion of children meeting numeracy and both literacy & numeracy is significantly low in all the three categories especially when a caregiver meets the teacher once.

**Graph 36: Relationship Between the Caregiver Meeting Teachers Regularly and Child's ability to pass CLA assessment**



**Table 14.1: Association Between Caregiver's Meeting with Teachers and Child' Ability to Pass Grade 3 Literacy Standards**

|  | Point | 95% Confidence Interval | |
| --- | --- | --- | --- |
|  | Estimate | Lower | Upper |
| PARAMETERS: Odds-based |  |  |  |
| Odds Ratio (cross product) | 1.8141 | 0.7973 | 4.1274 (T) |

It is evident in table 14.1 that children whose caregivers meet the teacher are 1.8 times more likely to meet the literacy standards compared to children whose caregivers never meet the teachers. The finding is not statistically significant as the confidence interval crosses over 1.
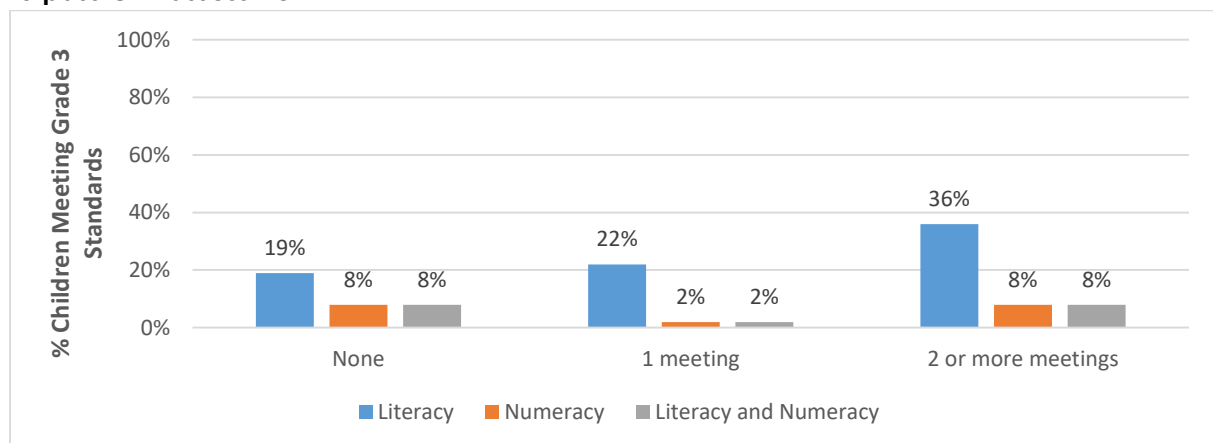
**Table 14.2: Association Between Caregiver's Meeting with Teachers and Child' Ability to Pass Grade 3 Numeracy Standards**

|  | Point | 95% Confidence Interval | |
| --- | --- | --- | --- |
|  | Estimate | Lower | Upper |
| PARAMETERS: Odds-based |  |  |  |
| Odds Ratio (cross product) | 0.7122 | 0.1826 | 2.7771 (T) |

It is evident in table 14.2 that children whose caregivers do not meet the teachers are 71% as likely to meet the numeracy standards as children whose caregivers meet the teachers. The finding is not statistically significant as the confidence interval crosses over one.

**Table 14.3: Association Between Caregiver's Meeting with Teachers on Child' Ability to Pass Grade 3 Literacy and Numeracy Standards**

| | Point | 95% Confidence Interval | |
| --- | --- | --- | --- |
| | Estimate | Lower | Upper |
| PARAMETERS: Odds-based | | | |
| Odds Ratio (cross product) | 0.7122 | 0.1826 | 2.7771 (T) |

It is evident in table 14.3 that children whose caregivers do not meet the teacher are 71% as likely to meet the both literacy & numeracy standards as children whose caregivers meet the teachers. The finding is not statistically significant as the confidence interval crosses over one.

The hypothesis is that children aged 9 years whose caregivers meet teachers on a regular basis are more likely to meet grade 3 literacy, numeracy and both literacy and numeracy standards. From the results shown in the tables above, we found children whose parents meet the teacher are slightly more likely than those whose parents do not meet the teacher to meet the literacy standard. However, this difference in likelihood was not present for numeracy and both literacy & numeracy standards.

# Research Question 11: Does having caregivers of Children 7-15 years providing a specified place for study influence a child meeting literacy and numeracy standards?

The hypothesis that if a specified place for study is provided to a child, the higher the likelihood of the child meeting the grade 3 standards for literacy, numeracy and both literacy and numeracy. The hypothesis is only true for literacy but not for numeracy and both literacy & numeracy as evident in graph 37. It is evident that 33% of children whose caregivers provided the designated space met the literacy standards, compared to 21% children whose caregivers did not provide them any space. The proportion of children meeting numeracy and literacy & numeracy standard are significantly low in both the groups.

**Graph 37: Relationship Between the Caregiver Providing Specified Place for Study and Child's ability to pass CLA assessment**
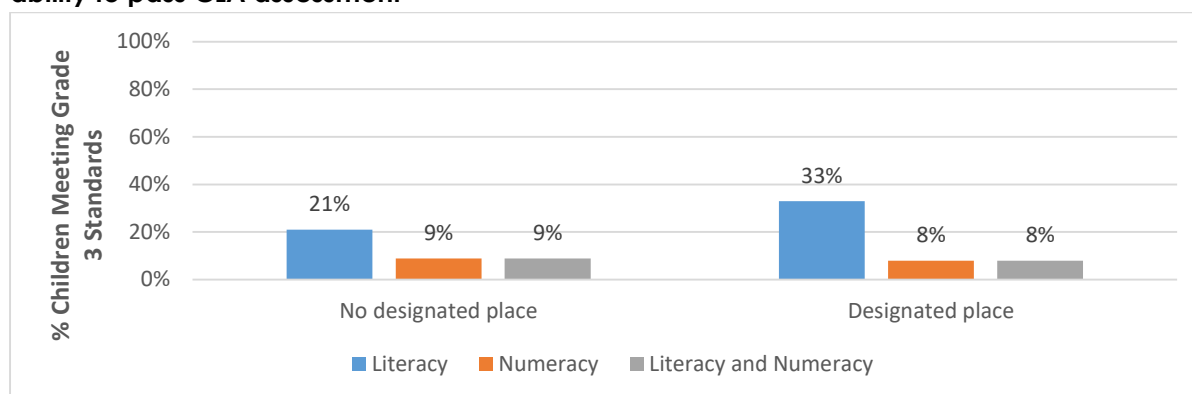


**Table 15.1: Association Between Caregivers Providing Specified Space to Child for Study and Child' Ability to Pass Grade 3 Literacy Standards**

| | Point | 95% Confidence Interval | |
| --- | --- | --- | --- |
| | Estimate | Lower | Upper |
| PARAMETERS: Odds-based | | | |
| Odds Ratio (cross product) | 1.8189 | 0.6767 | 4.8890 (T) |

As evident in table 15.1, the children aged 9 years of age whose caregivers provide them designated space for study are 1.8 times more likely to meet grade 3 literacy standards compared to children whose caregivers do not provide them any space. The finding is not statistically significant as the confidence interval crosses over 1.

**Table 15.2: Association Between Caregivers Providing Specified Space to Child for Study on Child' Ability to Pass Grade 3 Numeracy Standards**

| | Point | 95% Confidence Interval | |
| --- | --- | --- | --- |
| | Estimate | Lower | Upper |
| PARAMETERS: Odds-based | | | |
| Odds Ratio (cross product) | 0.7905 | 0.1656 | 3.7737 (T) |

As evident in table 15.2, the children aged 9 years of age whose caregivers do not provide them designated space for study are 79% as likely to meet grade 3 numeracy standards as children whose caregivers do provide them space. The finding is not statistically significant as the confidence interval crosses over one.

**Table 15.3: Association Between Caregivers Providing Specified Space to Child for Study on Child' Ability to Pass Grade 3 Literacy and Numeracy Standards**

| | Point | 95% Confidence Interval | |
| --- | --- | --- | --- |
| | Estimate | Lower | Upper |
| PARAMETERS: Odds-based | | | |
| Odds Ratio (cross product) | 0.7905 | 0.1656 | 3.7737 (T) |

As evident in table 15.3, the children aged 9 years of age whose caregivers do not provide them any space for study are 79% as likely to meet both literacy & numeracy standards as children whose caregivers provide them the designated space for study. The finding is not statistically significant as the confidence interval crosses over one.

The hypothesis is that children aged 9 years of age whose caregivers provide them designated space for study, are more likely to meet grade 3 literacy, numeracy and both literacy and numeracy standards. Based on the results as shown in the tables above, we can conclude that children whose caregivers provide them designated space for study are almost twice as likely than children whose caregivers do not provide them with a place to study to meet the literacy standards for grade 3. However, this difference in likelihood was not present for numeracy and both literacy & numeracy standards.

# Summary of CLA analysis and recommendations for education programming

| Summary Table 2: Logistic Regression to determine association between the ability of children of age 9 meeting grade 3 standards for literacy and different interventions | | | | | | | |
|---|---|---|---|---|---|---|---|
| Term | Odds Ratio | 0.95 | C.I. | Coefficient | S.E. | Z-Statistic | P-Value |
| Pre School Attendance (Yes/No) | 0.5478 | 0.1607 | 1.8675 | -0.6018 | 0.6257 | -0.9618 | 0.3361 |
| Grade Requirement (Yes/No) | 1.6622 | 0.4634 | 5.9618 | 0.5081 | 0.6517 | 0.7797 | 0.4356 |
| Out of School Learning (Yes/No) | 1.2783 | 0.2521 | 6.4832 | 0.2455 | 0.8284 | 0.2964 | 0.7669 |
| Reading Environment (Yes/No) | 0.4193 | 0.1234 | 1.4251 | -0.8692 | 0.6242 | -1.3925 | 0.1638 |
| On-Time Grade 1 Entry (Yes/No) | 5.8337 | 1.1674 | 29.1521 | 1.7637 | 0.8209 | 2.1485 | 0.0317 |
| Learning Activities (Yes/No) | 0.3337 | 0.0816 | 1.3648 | -1.0975 | 0.7186 | -1.5272 | 0.1267 |
| Meeting with Teachers (Yes/No) | 1.2682 | 0.2968 | 5.4187 | 0.2376 | 0.7410 | 0.3207 | 0.7485 |
| Designated Place for Study (Yes/No) | 1.2766 | 0.3963 | 4.1128 | 0.2442 | 0.5969 | 0.4092 | 0.6824 |

From the summary table 2 above, we can conclude that when compared to other interventions, on time entry in grade 1 will likely have the strongest residual effect on literacy. Promoting on time entry in grade 1 will likely have 5.8 times more the residual effect on children meeting literacy standards compared to the other interventions. The next largest residual effect of 1.66 is for children of caregivers who have r knowledge of grade requirements, i.e. it is 1.66 times more likely that children of caregivers who have knowledge of grade requirements will be able to meet the literacy standards compared to other interventions. After next largest residual effect of 1.28 is of children engaged in out of school learning activities, i.e. it is 1.28 times more likely that children who are engaged in out of school learning activities will be able to meet literacy standards compared to other interventions. Finally, children of caregivers providing designated space for study also has a residual effect of 1.27 i.e. when a caregiver provides a designated space; it is 1.27 times more likely that children will be able to meet literacy standards than other interventions.

| Summary Table 3: Association between the ability of children of age 9 meeting grade 3 standards for numeracy and different interventions | | | | | | | |
|---|---|---|---|---|---|---|---|
| Term | Odds Ratio | 0.95 | C.I. | Coefficient | S.E. | Z-Statistic | P-Value |
| Pre School Attendance (Yes/No) | 0.2818 | 0.0387 | 2.0496 | -1.2667 | 1.0124 | -1.2512 | 0.2109 |
| Grade Requirement (Yes/No) | 1.8268 | 0.2562 | 13.0264 | 0.6026 | 1.0023 | 0.6012 | 0.5477 |
| Out of School Learning (Yes/No) | 0.5648 | 0.0527 | 6.0490 | -0.5713 | 1.2098 | -0.4722 | 0.6368 |
| Reading Environment (Yes/No) | 0.2120 | 0.0295 | 1.5265 | -1.5510 | 1.0071 | -1.5400 | 0.1236 |
| On-Time Grade 1 Entry (Yes/No) | 68.2650 | 4.6043 | 1012.1305 | 4.2234 | 1.3757 | 3.0699 | 0.0021 |
| Learning Activities (Yes/No) | 0.0588 | 0.0050 | 0.6860 | -2.8333 | 1.2533 | -2.2606 | 0.0238 |
| Meeting with Teachers (Yes/No) | 0.2536 | 0.0229 | 2.8090 | -1.3720 | 1.2270 | -1.1182 | 0.2635 |

For the regression model on literacy, we included eight interventions in the regression model. However, for numeracy, we have to remove some of the interventions for which we could not calculate the odds ratio in the 2x2 tables. We know from 2x2 tables, that those interventions did not interact in the model. Therefore, from the above summary table 3, we observe that On-time Grade 1 entry has the strongest residual effect when compared to other interventions in the regression model for meeting numeracy standards. It is 68 times more likely that children whose caregivers enroll them in grade 1 on time will be able to meet the numeracy standards compared to other interventions. Also we observe that caregiver knowledge of grade requirements has the next strongest residual effect when compared to other interventions in the regression model for meeting numeracy standards. It is 1.8 times more likely for children whose parents know the grade requirements to meet the literacy numeracy standards compared to children of caregivers who do not have the knowledge of grade requirements.

| Summary Table 4: Association between the ability of children of age 9 meeting grade 3 standards for numeracy and different interventions | | | | | | | |
|---|---|---|---|---|---|---|---|
| Term | Odds Ratio | 0.95 | C.I. | Coefficient | S.E. | Z-Statistic | P-Value |
| Pre School Attendance (Yes/No) | 0.2818 | 0.0387 | 2.0496 | -1.2667 | 1.0124 | -1.2512 | 0.2109 |
| Grade Requirement (Yes/No) | 1.8268 | 0.2562 | 13.0264 | 0.6026 | 1.0023 | 0.6012 | 0.5477 |
| Out of School Learning (Yes/No) | 0.5648 | 0.0527 | 6.0490 | -0.5713 | 1.2098 | -0.4722 | 0.6368 |
| Reading Environment (Yes/No) | 0.2120 | 0.0295 | 1.5265 | -1.5510 | 1.0071 | -1.5400 | 0.1236 |
| On-Time Grade 1 Entry (Yes/No) | 68.2650 | 4.6043 | 1012.1305 | 4.2234 | 1.3757 | 3.0699 | 0.0021 |
| Learning Activities (Yes/No) | 0.0588 | 0.0050 | 0.6860 | -2.8333 | 1.2533 | -2.2606 | 0.0238 |
| Meeting with Teachers (Yes/No) | 0.2536 | 0.0229 | 2.8090 | -1.3720 | 1.2270 | -1.1182 | 0.2635 |

Similarly, for the regression model on both literacy and numeracy we also removed some of the interventions for which we could not calculate odds ratio in the 2x2 tables. We know from 2x2 tables, that those interventions did not interact in the model.

From the above summary table 4, we can see that on-time entry to grade 1 has the largest residual effect followed by caregiver's knowledge of grade requirements. We can conclude that if caregivers enroll children on time in grade 1, it is 68 times more likely that children will be able to meet both the literacy & numeracy standards compared to children or caregivers engaged in other interventions. Also we observe that caregiver knowledge of Grade Requirement has the next strong residual effect when compared to other interventions in the regression model for meeting both the literacy & numeracy standards that is 1.8 times more likely to meet both the literacy and numeracy standards compared to if caregivers have the knowledge of grade requirements.

# Recommendations

**IDELA- Pre-literacy & numeracy**

The findings of this survey clearly indicate that the number of books in the households has an impact on child learning. It also narrates that if the caregiver does several activities with their child, it has an important impact on the child's early learning performance. Therefore, here are some recommendations based on the findings:

➢ We need to ensure households have at least 1 to 2 books in order to enhance child learning.

➢ We need to start and continue (where already started) CFCT Education Module-1 with the CGV- caregivers, encourage them to involve their children in daily activities; like- counting their chicken, duck or cow or comparing big-small, thick-thin, less-more etc.

➢ We need to install some information and awareness board containing educational messages and set them in different key points (crowded location) of the communities

➢ We have to add several new program activities in order to enhance the capacity of children's motor skills, especially, gross motor skills, such as: Puzzle solving games, Problem solving games/tasks etc.

➢ Need to initiate different social emotional activities. Train the teachers on this issue, make the caregivers aware of it.

**CLA- Literacy & Numeracy skills**

From the CLA findings we have noted that many elder children in the community couldn't fulfil the minimum grade requirements of their previous grades. They are lagging behind to demonstrate basic literacy & numeracy skills such as reading a passage, solving easy subtraction, multiplication etc. Based on these findings of CLA, here are some recommendations:

➢ To improve the literacy skills (especially reading & writing skills) we have to initiate some activities like- reading day, book reading competition, easy competition etc. in the community. These will be organized by FH community libraries in the community level.

➢ To improve the numeracy skills among the children of early grades we need to arrange some special math skill development sessions/ workshops.

➢ To initiate some communication with the school teachers aiming to have teacher interventions in future for supporting the children in reducing learning gaps.

➢ In some cases, there were substantial differences between the scores of boys & girls. Hence, the boys need to be addressed more on those particular cases,[2] as the boys are lagging behind in terms of learning. We need to aware the caregivers more on this issue to address this learning gap, also need to take some initiatives through child & adolescent club activities.

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[2] Boys' dropout highest in seven years
Link: https://www.thedailystar.net/frontpage/news/boys-dropout-highest-seven-years-1700446#

**Caregiver's (CG) role**

Caregiver engagements with a child's study has shown clear impact in the study. So, we need to encourage our caregivers in the community through different sessions or cascade group meetings regarding these matters mentioned below:

- To make them aware about engaging more in their child's study matters in order to improve learning outcomes.
- To make awareness about the importance of on time entry in preschool & as well as in grade 1 to enhance early grade success
- To make them conscious about the grade requirements of their children
- To engage with their children in several activities at home, such as playing with their kids, telling stories etc.
- To facilitate in child's learning by creating learning environment at home
- To provide a designated place for the child to study at home

**Caregiver/parents & Teacher meeting**

The study shows that caregiver & teacher meetings have an impact on children's early grade success. The more the caregiver has meetings with the teachers, it improves the child's performance in the assessment. So, we need to encourage the caregivers & teachers to attend more meetings on looking after their child's learning, whether they are improving or not.

# Conclusion

The IDELA, CLA & Caregiver assessments provide us information about early learning performance & early grade success performance of children in different age groups, as well as caregiver's influence on education. The findings of this education assessment helps us to measure the learning gaps in our working areas & to determine the next steps for programming in this sector. The FH Bangladesh survey team carried out this survey in different regions nationwide & came across many wonderful experiences. At the same time, we have some other experiences that we did not expect. Many school goers in the upper grades couldn't fulfil the minimum grade requirements of their previous grades. It pointed out the gaps in our teaching-learning process, assessment & evaluation, overall gaps in our education sector. With the recommendations we have drawn here, we hope this survey finding will help to bring about some positive changes in our communities. In order to achieve the SDG goal-4 "Ensure equitable & quality education for all" we need to emphasize quality education. Along with the government, the private sector (especially NGOs) are working in this sector to improve the quality of education as well as to ensure equitable access to education.

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