Assessment of Early Childhood Education and Development 2022

A Report on Early Learning and Development Standards (ELDS)

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Preface

Proper early-year learning and growth of an individual offer a good basis for a person's overall development and well-being throughout his or her life. In view of this, the Government of Nepal has made investments and efforts in education focusing on early childhood learning and development. The government of Nepal has mainstreamed a yearlong ECED level into school education. This level of school education requires a lot of improvement to meet early learning and development standards. Therefore, strong and evidence-based recommendations and constructive feedback need to be provided to the government in order to further strengthen ECED centers. For this reason, only the accurate evaluation of children's early learning and development generates evidence to formulate sound policies, identify where additional interventions are needed and explore the issues. Moreover, the assessment is helpful in identifying children struggling for learning, either on individual or group level and preparing evidence for tracking equity and quality. In this context, this ELDS based assessment, 2022 was able to assess the level of preparation of ECED children as per the Early Learning and Development Standards (ELDS) after the ECED intervention. It has also tried to identify the present status of physical and infrastructure met by the ECED centers and generate the evidence-based information for monitoring the performance of ECED children over the period.

Assessment of ECED children was first administrated by Education Review Office (ERO) in 2017. In all assessments carried out previously, Early Learning and Development Standards endorsed by the government of Nepal and international practices were the foundation for developing the assessment framework and the tools. Report of 2018 was a breakthrough in reporting the development of children in three levels of learning – struggling, progressing and on-track. This report is further advanced in defining the learning level of students by using Bookmark method of benchmarking.

Throughout the process of tool development, test administration, data analysis and report writing, teachers, ECED experts and researchers have contributed in different ways. I would like to express my warm gratitude to UNICEF Nepal by providing financial and technical support. My sincere thanks go to the previous director generals of ERO. I would also like to highly appreciate Dr. Dipu Shakya and UN volunteer Shreya Shreeraman for the technical inputs to finalize the report. I further would like to appreciate ERO directors – Sarala Paudel, Narayan Prasad Jha, Kumar Basnet and Parshu Ram Tiwari as well as section officer Renuka Adhikari and all ERO staff for their efforts and contributions.

Finally, constructive suggestions and feedback of education policymakers, programme designers, teachers, educators, community members and researchers for improving the report is highly appreciated.

Chandra Kanta Bhusal

Director General

Executive Summary

Introduction and Context

Early Childhood Education and Development (ECED) programs are considered critical as they lead not only to individual benefits through proper support of early brain development, but also to significant social return. In Nepal, the government mainstreamed a yearlong ECED program into the basic education system in 2016 and has made significant investment in ECED, through initiatives such as the establishment and management of ECED centers, development of the Minimum Standards for ECED Centers, the ECED Curriculum and the Early Learning Development Standards (ELDS).

As the result of such efforts, high ECED access has been realized: the gross enrolment rate of children aged 3 and 4 was 85 % in the academic year of 2018/19. Given such high access as well as the increased awareness of the importance of quality education, the national focus has shifted to the quality of ECED programs and Early Childhood Development (ECD) outcomes. This report is the fourth in a series of annual reports focusing on the quality and outcomes of the ECED system in Nepal.

The objectives of the report are:

a) To better understand individual children's developmental and learning status as per the ELDS and identify the proportion and characteristics of children who are at developmental risk.

b) To identify the quality and characteristics of ECED programs as per the management standards.

c) To examine relationships between characteristics of ECED programs and children's development and learning status to generate evidence for program improvement.

Methodology and Sample

Assessment Tools

Two assessment tools were used for this report: the ELDS assessment tool (2021) and the ECED background survey. The ELDS assessment tool is a play-based assessment developed by the Education Review Office (ERO) based on the ELDS. The tool consists of 24 items with 53 sub-tasks, covering the following developmental domains: physical, language, cognitive and socioemotional/cultural domains. Based on the results of the assessment, children were classified into three development categories: On track (developmentally ready for grade 1), Progressing (falling slightly behind but can progress with support), and Struggling (falling far below the ELDS and requiring significant support).

Additionally, the ECED background survey was used to collect data from ECED teachers on various aspects of their respective programs. Based on the management standards for ECED in Nepal, these aspects include administrative processes, student enrollment, teacher trainings, community engagement, language of instruction, curriculum and textbook usage, the arrangement of classroom space to support learning, as well as safety and hygiene infrastructure.

Sampling

The sampling strategy for the study employed two stage cluster random sampling, with the primary sampling unit being the school. The target cluster size (i.e., the number of children to be sampled in each school), was set as 15. The required sample size for the cluster was 40 schools, calculated based on simple random sampling for a 9% margin of errors at the 95% confidence level. Once the sample size was determined, probability proportionate to size (PPS) sampling was employed to select the 40 schools from each province. To ensure that the sample represented the population as much as possible in terms of critical characteristics, the list of schools was sorted by implicit stratum. From the available information in the IEMIS, the following three variables were selected as the implicit strata: school types (community vs. institutional) , urbanicity (urban vs. rural), and Eco-zone

(Mountain, Hills, Terai).

In the second stage, the selection of students within each school was done through simple random sampling. Enumerators selected 15 eligible students based on random numbers generated in the Kobo tool (i.e., they referred to student's row number in the school registration to match the generated random numbers and students). In case there were less than 15 students in a school, all students were automatically selected for the sample. From the sampled 280 schools, enumerators reached 272 schools and sampled 3775 students in total. Of these 3775 children, 1413 students (37.4% of students sampled) did not complete the assessment and were considered as non-response cases. The primary reason for non-response was absence on the day of assessment.

Assessment Results

Overall, a large majority (77%) of children are developmentally on track in terms of composite ELDS score. More than three-fourths of the children were classified as on track in the physical and language domains, while the proportion of on track children was smaller (about 61.2%) in the socio-emotional domain. Other key findings are as follows:

- Children who spoke Nepali as a mother tongue were more likely to be on track than those who spoke other languages.

- Nearly all students (95%) in institutional schools were classified as developmentally on track. In contrast, 65.6% of students from community schools were on track. After accounting for age, mother tongue, and other characteristics of ECED classrooms, there was still a strong positive and statistically significant association between institutional schools and children's development levels.

- Urban regions were positively associated with development levels across domains, particularly in the cognitive and language domains.

Further, the following key findings emerged with regard to ECED class structure and overall management:

- A key finding in this section was that 25.6% of community ECED centers offer multiple classes (such as nursery, LKG, or UKG) in combination with the mandated year-long pre-primary class.

- 93% of institutional ECED centers are open for the required number of hours per day (4.5 or above), while 80.5% of community ECED centers do the same.

- 17% of schools reported not having toilets and 16% reported not having safe drinking water in the ECED center; this number was higher for community ECED than institutional.

Regarding ECED classroom characteristics, the following key findings emerged:

- More than half (57%) of the surveyed ECED centers use a curriculum in the classroom; among them, the majority (about 96%) use the national curriculum.

- 35% of teachers reported not using textbook or workbook materials in the classroom (this number was higher for community ECED centers than for institutional). Not using textbooks in the classroom had a positive association with children's overall development, although the relationship was not statistically significant.

- Availability of learning areas (subject-specific areas with learning materials) in the ECED center was positively associated with children's development, particularly in the physical domain.

Finally, the following key findings were highlighted regarding ECED teachers:

- All teachers in the sample met the minimum qualification (Grade 10). Teachers with higher qualifications (Grade 12, bachelor's, master's degrees) had a positive association with children's development in all domains but physical.

- 71.4% of teachers did not have any pre-service training.

- 42% of institutional ECED teachers and 25% of community ECED teachers report receiving no in-service training at all.

- Both pre-service and in-service training had slight positive associations with children's development, although the relationships were not statistically significant.

Conclusions

The following points summarize some important implications of the key findings:

- While a significant majority of the children are found to be on track, significant efforts are necessary to support progressing and struggling children, particularly among children in community schools and rural regions, as well as those who speak other languages other than Nepali at home.

- While a majority of sampled ECED centers have provisions for adequate physical space, toilets, first aid, and drinking water, there is still a sizeable proportion of ECED centers operating without one or all of these crucial components. Continued efforts to promote the minimum requirements from ECED centers are required.

- Training for ECED teachers is considered the main professional development mechanism in the current system but has a negligible relationship to children's development. Furthermore, the number and quality of trainings is varied across school types and region. Further research is required to develop more effective training programs in terms of content, implementation, and on-going support, alongside efforts to ensure equal access to quality trainings for all teachers.

Lastly, we provide the limitations of the study at the end of the report to ensure informed interpretation of our results and to guide our future work in generating more useful and rigorous evidence.

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List of Abbreviations

BS	: Bikram Sambat
CDC	: Curriculum Development Centers
CI	: Confidence Intervals
DoE	: Department of Education
ECD	: Early Childhood Development
ECED	: Early Childhood Education and Development
ELDS	: Early Learning and Development Standards
ERO	: Education Review Office
EFA	: Education for All
MoE	: Ministry of Education
MoES	: Ministry of Education and Sports
MoEST	: Ministry of Education, Science and Technology
NGOs	: Non-Governmental Organizations
SDG	: Sustainable Development Goal
SD	: Standard Deviation
SE	: Standard Error
SSDP	: School Sector Development Plan
SSRP	: School Sector Reform Plan
TPD	: Teacher Professional Development
UN	: United Nations
UNICEF	: United Nations Children's Fund
UNESCO	: United Nations Educational, Scientific, and Cultural Organization

1. Introduction

1.1 Background

From the human development perspective, the early years of a human being, particularly until the age of 5, are considered essential (UNESCO, 2007; UNICEF, 2014). Neuroscience and development psychology provide compelling evidence for the critical importance of early years. The brain develops as a result of interactions with the environment rather than mere influence by heredity (Shonkoff & Phillips, 2000; McCain et al, 2002). Brain development takes place most rapidly in the first few years of life, during which experiences either enhance or diminish innate potential, laying either a strong or a fragile platform for all further development and learning (Phillips & Shonkoff; Winter, 2010). Additionally, a lack of appropriate stimulation, positive relationships and involvement with children are associated with compromised brain development as well as increased risk for behavioral and emotional problems (Phillips & Shonkoff, 2000; Shonkoff et al., 2012). Across contexts and cultures, high-quality early childhood development (ECD) interventions are found to improve various domains of children's development and learning (Campbell et al., 2002; Heckman, 2008; Van Huizen & Plantenga, 2015).

ECD intervention is also considered critical from the social economic perspective. For instance, in the United States, high-quality early childhood education and development (ECED) intervention led not only to individual benefits, such as better school achievement, longer grade retention and higher earnings, but also significant social return, including higher tax revenues, lower criminal justice system expenditures and welfare payments (Belfield et al., 2006; Campbell et al., 2002; Heckman, 2006). Furthermore, the positive impacts of high-quality interventions are particularly significant among disadvantaged children (Heckman, 2008; Keys et al., 2013; Peisner-Feinberg et al., 2001; Van Huizen and Plantenga, 2015). As such, high-quality early childhood interventions can reduce poverty and inequity in society. From the human rights perspective, ECED programming is regarded as a part of the natural repertoire of services that countries owed their citizens. According to the United Nations Convention on the Rights of the Child, children are active social agents, who have a right to survival and development in all aspects of their lives (UN General Assembly, 1989). The convention states that childhood is a special, protected time, in which children must be allowed to grow, learn, play, develop and flourish with dignity (UN General Assembly, 1989). Thus, ECED services constituted a cornerstone of the social contract, and the government owns the fundamental obligation to serve all citizens so that they can thrive and realize their full developmental potential.

Recognizing the far-reaching implications of early childhood education from all these perspectives, ECED is among the most important developmental agendas globally. In the 2000 World Education Forum, one of the key goals for Education for All (EFA) was related to ECED: "expanding and improving comprehensive early childhood care and education"

(UNESCO, 2000, p. 15) with governments being considered to have the responsibility of promoting ECED programs. In the Sustainable Development Goals (SDGs), ECED is recognized as an important goal: Target 4.2 aims to ensure "access to quality early childhood development, care and pre-primary education so that they are ready for primary education" (United Nations General Assembly, 2015, p. 19). In addition, it is also identified as a pivotal element for achieving other proposed educational goals (Raikes, 2016). Thus, governments now have the increasing responsibility of serving young children well and are expected to be accountable for their policies.

1.2 Context of ECED in Nepal

In Nepal, the government has promoted and expanded ECED services since the 1950s (Kadel & Mahat, 2011). In the 1990s, the government accelerated efforts by implementing ECED programs through the Local Self-Governance Act of 1999, which gave the authority to local bodies to administer ECED programs with their own resources and grant permissions to establish and run such programs (World Bank, 2013). The government adopted the goals and strategies of the EFA and developed a strategy paper in 2004 (MoES, 2004). While ECED services had a strong emphasis on academic aspects since the early 1980s, they became more holistic with the adoption of the EFA framework.

In the School Sector Reform Plan (SSRP): 2009-2015, it is stated that the government will fund one-year ECED programs for children of four years of age, and communities may offer ECED services for children below the specified age, mobilizing their own resources (MoE, 2009). Consequently, under the 8th amendment of the Education Act, a year-long ECED program for four-year-old children was mainstreamed under the basic education system in 2016 (MoE, 2016). As the result of such efforts, Nepal has achieved high enrolment rates in ECED; the gross enrolment rate of children aged three and four was 84.7 percent in the academic year of 2018/19 (DOE, 2018).

With the aim of promoting a comprehensive approach to ECED programs for safeguarding the rights of young children, the strategy paper on early childhood development in 2004 emphasizes the full development of children's physical, socio-emotional, cognitive, spiritual and moral potentials (MoES, 2004). Aiming at creating a unified standard for ECED service and facilities, an operation and management guideline was developed by the Ministry of Education and Department of Education (DOE, 2067 BS). Furthermore, to ensure learning and development standards in all ECED centers; the ECED curriculum and the Early Learning Development Standards (ELDS) spell out what ECED children should know and be able to perform (DOE, 2062 BS; DOE, 2069 BS). The School Sector Reform Plan (SSRP) 2009-15 (MoE, 2009) and the School Sector Development Plan (SSDP) 2016-2023 have also repeatedly pointed out the need to improve the quality of ECED programs (MoE, 2016).

ECED programs in Nepal are either community or school-based in terms of manage-

ment and operation. Both are designed to meet the educational and developmental needs of children with funding and support from the government and/or community. Those managed and operated by the public sector or the government are called ECD or ECED centers. Further, these centers consist of those that are operated under the school system (school-based ECED centers), also called pre-primary education (PPE), and those run by the community (community-based ECED centers). ECED programs run by institutional schools are called institutional PPE. Out of 36,498 ECED/PPE services in the academic year of 2021/22, the vast majority (30450) of them were operated and/or supported through the government, while 6048 were operated through private institutions (DoE, 2022).

Regarding the terminology, two terms are found to have been used interchangeably for the pre-school program in Nepal. The former policy and plan documents, such as the Early Childhood Development Handbook (Curriculum) (DOE, 2062 BS), the Strategy Paper for ECD in Nepal (MoES, 2004) and the National Minimum Standards for ECD Centers (DOE, 2067 BS), used the term Early Childhood Development (ECD). The SSRP, SSDP and the SESP have referred to it as Early Childhood Education and Development (ECED) (MoE, 2009; MoE, 2016, MOE 2022). Following the latter documents and with the National ECD strategy defining ECD as overall development during conception to age 8, we will use the term ECED in this paper to focus on the ECED program. Further, for the sake of simplicity, we will refer to government-operated ECED centers as "community ECED centers" and privately operated centers as "institutional ECED centers."

1.3 Context of ECED Assessment in Nepal

To establish a national standard on expectations of what young children should know and be able to do, the government of Nepal began to develop the ELDS in 2008 and conducted validation from 2009 to 2011 (DOE, 2069 BS; UNICEF, 2017). Parallelly, the National Minimum Standards for ECED Centers was established in 2010 to regulate management and facilities of ECED centers (DOE, 2067 BS).

Despite the availability of these standards, the first systematic assessment of children's development levels and the management of ECED centers was not carried out until 2017. As one-year ECED was included in the free and compulsory basic education mandate in 2016 (MoE, 2016), it became crucial to understand the national status of young children's learning and development. Furthermore, under the SDGs, countries have the responsibility to monitor and report where they stand against the indicators for the established targets. One of the indicators for the SDG target 4.2 is "proportion of children under 5 years of age who are developmentally on track in health, learning and psychosocial well-being" (United Nations General Assembly, 2017, p. 5). Thus, there was an increasing demand for the assessment of early learning and development by globally accepted domains based on a standard framework. Given this context, the ERO initiated work on assessing ECED

management and children's learning and levels in 2017. This process of development and improvement is described in Section 2.1 in this report.

There have been four rounds of national studies on ECED utilizing these standards-based assessment tools. The first round of the study was conducted in 2017, with data collected from 1835 children and 150 ECED centers in 10 districts (ERO, 2017-b). In the following year, ERO conducted the second round of study and collected data from 3675 children and 44 ECED from 15 districts (ERO, 2018). The third round of the study was conducted in 2019 with data collected from 5229 children and 469 centers from 15 districts (ERO, 2021). The fourth round of the study was conducted using a shorter and improved version of the assessment tool with a nationally representative sample of 2312 children and 264 ECED from 31 districts. Marking a departure from the sampling methods used in previous rounds, the fourth round employed probability-proportionate-to-size sampling to identify schools across the country, within which students were randomly chosen, to create a nationally representative sample. This report is prepared for the fourth round of the study.

1.4 Objectives of Report

Considering the importance of ECED from the human development, socio-economic, and human rights perspectives, numerous stakeholders, including parents, teachers, and policy makers, have made a significant investment in the learning and development of young children in Nepal. Therefore, understanding what children are learning and how they are developing at ECED centers is an important concern for all parents, policy makers, and the public. This study is guided by an inherent interest in generating reliable and objective evidence on how the interventions designed for ECED have been working to meet the desired goals. More specifically, this assessment intends:

1. To better understand individual children's developmental and learning status as per the ELDS
2. To identify the proportion and characteristics of children who are at developmental risk.
3. To identify the quality and characteristics of ECED programs as per the management standards.
4. To examine relationships between characteristics of ECED programs and children's development and learning status to generate evidence for program improvement.

1.5 Structure of Report

This report is organized in eight chapters. The first chapter presents the background and sets the context of ECED assessment in Nepal, followed by the need for and objectives of this study. The second chapter deals with the methodology, describing the assessment tools, sampling and analysis process. This chapter also describes limitations so that readers

are informed about the quality of evidence. The third chapter describes the results of the ELDS assessment conducted by children currently in Grade 1. The ELDS results have also been presented in relation to some important children's characteristics, such as gender, age, and linguistic background. The fourth chapter presents the characteristics and management standards of ECED centers across Nepal. The fifth chapter presents information about ECED teachers' qualifications and training. The sixth chapter describes the relationships between ECED characteristics and children's learning/ development status. The seventh chapter summarizes the major findings and implications of the study, followed by the eighth and last chapter on the limitations of the study and future considerations.

2. Methodology

2.1 Assessment Tools

2.1.1 ELDS assessment framework and tool

In 2002, as international advocacy to support ECED gained momentum, UNICEF initiated work on ELDS through a project entitled Going Global with indicators of child wellbeing: using a standards approach (UNICEF, 2017). The ELDS reflects what children should know and be able to do with respect to various domains of child development, such as their physical, cognitive, social-emotional and language development (UNICEF, 2017).

In Nepal, ELDS was adopted in 2008 and validation workshops were conducted from 2009 to 2011 by a national working group (UNICEF, 2017). Focusing on children aged 48-60 months, which corresponds to the target age of the one-year ECED program in Nepal, the standards were developed around six domains stemming from the values emphasized by the country team: Physical, Social, Emotional, Cognitive, Language, and Cultural development. Despite the comprehensive standards available within the country, Nepal was not effectively utilizing the ELDS till 2017 (Shrestha et al., 2017).

In 2017, with support from UNICEF Nepal, the ERO led the development of the tool to assess the status of ECED children's development based on the ELDS. There were several rounds of consultations with key personnel involved in ECED planning and program implementation. Various national and international resources on assessment of early learning and development were reviewed to develop the assessment framework (ERO, 2017-a; Shrestha et al., 2017). The framework articulates domains of children's learning and development as well as more specific standards from subdomains through tasks relevant to the domain (see Appendix 1). Based on this assessment framework, the ELDS assessment tool was prepared through an expert and teacher workshop and initially had 44 items with some sub-tasks within items.

The initial version of the tool was piloted with over 500 children and analyzed to examine items' objectivity, feasibility, and relevancy, which led to some items being discarded (ERO-b, 2017). Subsequently, 44 subtasks were reduced to 28 subtasks through a consul-

tation workshop. In the national ELDS workshop held by ERO, UNICEF and Save the Children in 2019, where standard setting was conducted to establish cut scores on the assessment scale, the tool was also scrutinized by the measurement experts and ECED stakeholders. This resulted in minor revision of items and administration and scoring guidelines. The revised tool had 26 subtasks with 58 items and was used in the third round of data collection.

After undergoing further revision in 2021, based on a comprehensive analysis of the data collected in the third round (Kitamura and Acharya, 2022), the current version of the assessment tool has 24 subtasks with 53 items (see Appendix 2). This version of the tool was used in the fourth round of the study in June 2022. Children's performance on tasks was scored by trained enumerators based on observations with standardized administration and scoring procedures. Children scored 2 if they performed a task correctly, 1 if they performed it partially correctly, and 0 if they performed it incorrectly or did not respond. Domain scores were obtained by dividing the sum of task scores by maximum possible scores, which thus correspond to the percentage of subtasks that the child performed correctly.

In January 2023, a standard setting exercise was conducted to generate cut scores on the current version of the ELDS assessment scale to classify children into three development categories: On track, Progressing, and Struggling. These cut scores enable the country team to monitor to what extent children in Nepal are "developmentally on track", corresponding to the global call based on SDG Target 4.2 (Kitamura and Acharya, 2022). A detailed description of the standard setting procedure is available in Section 2.4.4, and analyses based on these cut-scores are presented in Section 3.

2.1.2 ECED Background Survey

Similar to the ELDS, the Minimum Standards for ECD Centers (DOE, 2067 BS) was not well utilized for systematic assessment despite its availability. However, various ECED stakeholders, such as policy makers, program planners and practitioners, needed a tool to measure the extent to which ECED programs meet the required quality and management standards. Such information holds providers of ECED programs accountable and assists them in improving ECED programs.

Further, there was a demand for an assessment tool to generate evidence that could support effective program improvement. To effectively support children's holistic learning and development, ECED stakeholders have long been interested in identifying the ECED factors that are associated with children's development. Recognizing these demands, the ERO developed a framework for the assessment of ECED management in 2017 (ERO, 2017-a) based on the National Minimum Standards for ECD Centers (DOE, 2067 BS) and the Early Childhood Development Handbook (Curriculum) (DOE, 2062 BS). The assessment framework for the ECED management has three major domains: Physical Infrastructure/ Facilities; Health, Sanitation, Nutrition and Security; and Operation. Within each domain,

there are a number of specific aspects. This framework provided the foundation to develop the assessment tool.

Although this tool was used in previous rounds of data collection, the management framework did not provide adequate information for the purposes of this study. Thus, in 2022, elements of the management framework tool were merged into a larger background survey (see Appendix 3). In the current study, this background survey was used to collect data from ECED teachers on various aspects of their respective ECED programs. These aspects include administrative processes, student enrollment, teacher trainings, community engagement, language of instruction, curriculum and textbook usage, the arrangement of classroom space to support learning, as well as safety and hygiene infrastructure. Sections 4 through 6 describe the results of this survey in detail.

2.2 Sample

2.2.1 Calculation of Sample Size

The sampling strategy for the study employed two stage cluster random sampling, with the primary sampling unit being the school. The target cluster size (i.e., the number of children to be sampled in each school), was set as 15. The required sample size for the cluster (CSS) was calculated based on the effective sample size (ESS) for simple random sampling for a 9% margin of errors at a 95% confidence level and design effect (deff) as follows:

$$CSS=ESS\times deff$$

where deff is computed based on cluster size (C) and intra-cluster correlation (ICC) as follows:

$$deff=1+C-1\times ICC$$

Using the information from the NASA study for grade 3 students in 2015, the ICC for this study was set as 0.25. The deff was accordingly calculated as 4.50. The expected proportion of the indicator of our interest (% of developmentally on track children) was set as 50%. Based on these parameters set, the ESS and CSS were calculated for each explicit stratum (i.e., provinces).

Table 1. Sample Size Calculation

Province	Grade 1 students in sampling frame	CSS for 9% ME	Required number of schools (PSU)	Final number of schools (PSU)
Koshi	82980	533	36	40
Madesh	145175	533	36	40
Bagmati	90611	533	36	40

Gandaki	43197	533	36	40
Lumbini	110650	533	36	40
Karnali	38518	533	36	40
Sudur Paschim	62747	533	36	40
Grand Total	573878	3730	252	280

As shown in Table 1, 36 schools were required to have enough students to meet the target accuracy of the estimations (i.e., 9 % margin of errors). Assuming 4% non-participation at both school and student levels and considering the presence of relatively small schools that have less than the required cluster size (i.e., 15), 4 extra schools were added to the sample in each province, leading to a total of 40 schools per province in the sample.

2.2.2 First stage sampling: Selecting schools

Once the sample size was determined, probability proportionate to size (PPS) sampling was employed to select the decided number of schools from each province. To ensure that the probability of students being selected was the same regardless of school size, larger schools had a higher probability of selection than smaller schools, but students in larger schools had a smaller within-school probability of being selected than students in small schools. The probability of a school being selected (Pi) was equal to the ratio of the school size (Ni) multiplied by the number of schools to be sampled (nsc=40) and divided by the total number of students in the sampling frame (N) as follows:

$$P_i = \frac{N_i \times n_{sc}}{N}$$

To ensure that the sample represents the population as much as possible in terms of critical characteristics (those that are associated with the indicators of our interest), the list of schools was sorted by implicit stratum. From the available information in the IEMIS, the following three variables were selected as the implicit strata: school types (community vs. institutional), urbanicity (urban vs. rural), and Eco-zone (Mountain, Hills, Terai). Furthermore, to keep the difference between the number of schools in the population and the sum of the school weights in the sample minimal, schools were sorted according to their size. From the sorted list of schools, 40 schools were systematically selected according to their PPS. We used the sampling package of R, specifically inclusionprobabilities (calculating PPS) function and UPsystematic function (randomly selecting schools based on the PPS through the systematic sampling).

2.2.3 School Replacement

The originally selected 280 schools were located across 200 municipalities and 63 districts. Traveling to 200 municipalities for data collection would make the cost enormous. Given

this practical concern, the ERO undertook a process to replace sampled schools in municipalities that had only one sampled school (low-frequency municipalities) in a systematic manner. Throughout this process, it was ensured that the size, school type, urbanicity, and Eco-zone of the replacement schools remained as close to the originally sampled school as possible. After the replacement of schools in low-frequency municipalities, the sampled schools were located across 99 municipalities and 44 districts. As traveling across 44 districts was still considered practically challenging, a second stage of the replacement was conducted: replacing sampled schools in districts that had four or less sampled schools (low-frequency districts) in a systematic manner resembling the first round.

After the second stage of systematic replacement of schools in low-frequency districts, the sampled schools in the sample were located across 92 municipalities and 35 districts. There are a few cases in which the originally sampled schools in low-frequency municipalities and low-frequency districts were not replaced due to the absence of schools that met the criteria for replacing schools: e.g., in Bagmati province, one of the originally sampled schools was from Sindhupalchok, and as it was the only school from the mountain region, this school was retained in the sample without being replaced.

After the two stages of replacement, the sample had the same distributions in school characteristics as the original sample: school types (community vs. institutional), urbanicity (urban vs. rural), and Eco-zone (Mountain, Hills, Terai). The sum of school size in the sampled schools was only slightly different between the original sample and the sample after the replacement (see Appendix 4). This finding served as confirmation that the systematic replacement was successfully conducted with minimal bias.

2.2.4 Second stage sampling: Selecting students

The selection of the students within the cluster was done through simple random sampling. Enumerators selected 15 eligible students based on random numbers generated in the Kobo tool (i.e., they referred to student's row number in the school registration to match the generated random numbers and students). In case there were less than 15 students in a school, all students were automatically selected for the sample. To ensure that this random selection was done correctly, enumerators sent photocopies of the student registration list along with the randomly selected 15 students. The ERO conducted daily monitoring of the random selection process by comparing the reported information against the data of the ELDS assessment conducted with students in each school.

2.2.5 Final sample and non-response

From the sampled 280 schools, enumerators reached 272 schools and 3775 students in total. Of these 3775 children, 1413 students (37.4% of students reached) did not complete the assessment and were considered as non-response cases. The primary reason for non-response was absence on the day of assessment (84%), followed by health concerns, rejection of participation, and other reasons.

Table 2 provides an overview of non-response rate (i.e., percentage of sampled students who did not complete the assessment) broken down by province, school type, urbanicity, and Ecozone. Karnali, Sudur Paschim, and Madesh provinces have particularly high rates of non-response. Additionally, there is a higher number of non-response cases in community schools (as compared to institutional), as well as in mountain areas (as compared with other Ecozones). It is also worth noting that rural areas have a higher rate of non-response than urban areas.

Table 2. Breakdown of non-response rate

Province	Non-response rate
Koshi	34%
Madesh	45.8%
Bagmati	23.1%
Gandaki	23.7%
Lumbini	40.1%
Karnali	50.1%
Sudur Paschim	45.4%
School Type	
Institutional	20.4%
Community	45.9%
Urbanicity	
Rural	42.6%
Urban	34.3%
Ecozone	
Mountain	53.5%
Hills	35.2%
Terai	37%

After removing observations that did not fulfil the random selection criteria, the final sample is comprised of 2312 children from 268 schools (see Appendix 5 for the distribution of the unweighted sample across provinces).

The sampling weights for each child were calculated as follows: student weights= school weights× within school weights, where school weights are the inverse of the probability of a school being selected (PPS) and within school weights are the inverse of the probability of a student being selected within the school. To minimize the bias introduced by non-response, the sampling weight student weights was multiplied by intended total ÷actual total, where intended total is the number of students originally sampled from the school, and actual total is the number whose responses were recorded. Thus, the final weight for each child was calculated as such:

student weights = (school weights × within school weights) × intended total ÷ actual total

2.2 Sample Characteristics

2.2.1 Sample representativeness

Table 3.1 shows the representation of the sample in terms of the proportion of grade 1 students in institutional schools (i.e., the first implicit stratum). Compared to the population, the sampling frame has larger proportions of grade 1 students in institutional schools (by 2-3 percentage points). However, in the final sample, the proportion of grade 1 students increases by around 9 percentage points, indicating a significant overrepresentation of students from institutional schools. Some provinces show a difference of up to 11 or 12 percentage points between the sampling frame and final sample. While the difference between the eligible population and sample could be attributed to the removal of small schools (<10 grade 1 students), which are typically community schools, from the sampling frame for efficiency in data collection, the larger differences in the final sample may be attributable to the high non-response rate among community school students.

Table 3.1 Sample representativeness for school type

	Eligible Population		Sampling Frame	Final Sample (weighted)
Provinces	% of institutional schools	% of grade 1 students in institutional schools	% of grade 1 students in institutional schools	% of grade 1 students in institutional schools
Koshi	19.8%	34.4%	39.5%	51%
Madesh	17.6%	16.2%	16.1%	20.6%
Bagmati	26.3%	45.4%	50.9%	58.9%
Gandaki	15.1%	33.8%	41.5%	49.1%
Lumbini	17.3%	26.2%	27.9%	29.2%
Karnali	6.1%	9.8%	10.9%	22%
Sudur Paschim	13.3%	21.6%	23.5%	34%
Total	17.9%	27.3%	29.6%	38.3%

Similarly, Table 3.2 shows the distribution of schools and grade 1 students across urban and rural areas. The sample is generally representative of the population at the national level, although there are some cases of overrepresentation of urban students at the provincial level (by about 5 percentage points), particularly in Karnali and Sudur Paschim. These differences are likely attributable to the high non-response rate in rural areas.

Table 3.2 Sample representativeness for urbanicity

	Eligible Population		Sampling Frame	Final Sample (weighted)
Provinces	% of schools in urban areas	% of grade 1 students in urban areas	% of grade 1 students in urban areas	% of grade 1 students in urban areas
Koshi	48.6%	58.9%	62.6%	68%
Madhesh	72.7%	71.6%	71.5%	67%
Bagmati	54.9%	72.6%	78.1%	74.5%
Gandaki	50.3%	61.2%	65.4%	63.3%
Lumbini	44.8%	51%	52.1%	45.6%
Karnali	44.3%	46.5%	47.1%	52.3%
Sudur Paschim	48.9%	56.3%	58.4%	62%
Total	52%	61.6%	64%	63.4%

Finally, Table 3.3 shows the representativeness of the sample across geographical Ecozones. Once again, while the overall proportions of sampled students in mountain, hill, and terai regions are similar to those in the sampling frame and eligible population, there are some significant discrepancies within certain provinces. In Karnali, for example, the proportion of sampled students in hill areas is 13 percentage points higher than in the sampling frame, indicating that students from mountain areas in Karnali are relatively underrepresented in the sample. Similarly, Gandaki and Koshi undersample students from mountain areas, with a simultaneous oversampling in terai areas. Overall, the sample overrepresents hill and terai areas in certain provinces, while under sampling students from mountain areas in others.

Table 3.3 Sample representativeness for ecozone

	Eligible Population		Sampling Frame		Final Sample (weighted)	
Provinces	% of grade 1 students in hill areas	% of grade 1 students in terai areas	% of grade 1 students in hill areas	% of grade 1 students in terai areas	% of grade 1 students in hill areas	% of grade 1 students in terai areas
Koshi	31.8%	59.9%	24.5%	68.4%	23.4%	76.5%
Madhesh	0%	100%	0%	100%	0%	100%
Bagmati	78.4%	12.7%	78.6%	14.1%	85.4%	12.8%
Gandaki	68.2%	30.8%	62.6%	30.8%	63.6%	36.3%
Lumbini	28.7%	71.2%	24.9%	75%	23.3%	76.6%
Karnali	69.3%	0%	68.7%	0%	81.7%	0%
Sudur Paschim	35%	42.9%	33.2%	45.7%	25.5%	53.6%
Total	37.4%	55%	33.7%	59.6%	38.1%	57.8%

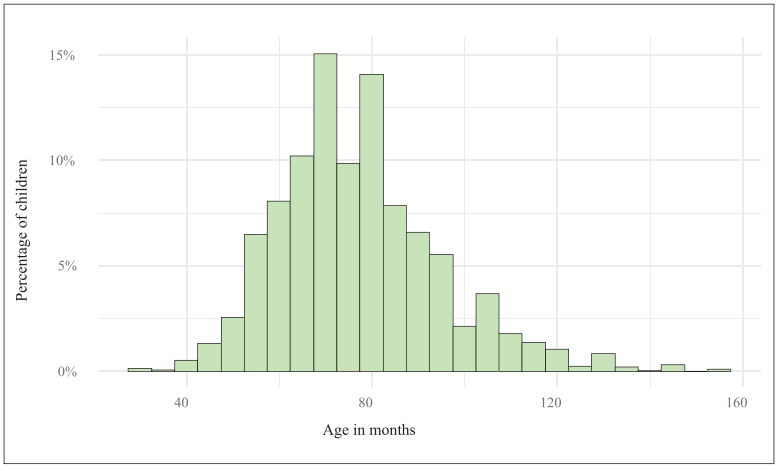
Based on the analyses above, it is important to highlight some limitations of the sample used in this study. First, the sample overrepresents students in institutional schools across all provinces. Further, there are some instances of oversampling among urban students, as well as some instances of significant underrepresentation of students from mountain areas, particularly in Karnali. Despite the addition of non-response weights to balance the sample, the study is still missing key data from children in more remote, rural areas, where developmental milestones and quality of ECED services may look different than in more accessible areas. Thus, the results of the study should be interpreted with care, particularly when considering policy implications that may apply at a federal level.

Nevertheless, the districts, schools, and students in the study were randomly sampled, while largely accounting for the critical regional differences between ECED programs (i.e., school type, urbanicity, and ecozone). Therefore, the results of the study can, with caution, be generalized to the larger population, i.e., children enrolled in grade 1 who were eligible to attend ECED programs in Nepal in the school year of 2021/2022. Further, the inclusion of both institutional and community ECED programs in the sample allows the study to paint a comprehensive picture of the quality of ECED services currently available to children in Nepal. Despite the limitations discussed above, the results of the study can shed valuable light on the overall learning and development levels of children across Nepal.

2.2.2 Descriptive Statistics of Sample

This section provides descriptive statistics of the studied sample. First, Figure 2.1 shows that the current sample includes children with ages ranging from 28 to 154 months with the average being 74.87 months. 26% of the children were in the target age range of Grade 1 as defined by the Free and Compulsory Education Act (i.e., 61-72 months or roughly 5 years), with 16.4% of the children being below 60 months of age. 56% of the children were overaged (i.e., 73 months and above, or roughly 6 years and above).

Fig 2.1 Age distribution of sample



In terms of gender, the proportion of female children (49.5%) is slightly smaller than that of male children (50.4%) in the sample. This information is largely consistent with the distribution of gender in the closest estimation of the population (i.e., children who attended ECED programs in Nepal in the school year of 2021/2022): 46.1 percent was female while 53.9 percent was male (DoE, 2022). The relative oversampling of female children might be due to sampling variation at school level and unreported cases of gender.

Regarding children's language, 69% of the children spoke Nepali as their mother tongue while the rest of children had other languages as their mother tongue. There is no available information on the mother tongue of the population, and thus, it is not possible to see how representative the sample is against the population in terms of mother tongue. Finally, among the studied sample, 97% of the children attended an early childhood education center in the previous year. This finding presents a significant departure from the population statistics, where only about 75% of children are reported to have ECED experience prior to entering Grade 1. This discrepancy may be due to the significant non-response rates in rural and mountain regions, where enrollment in ECED is expected to be lower. Nevertheless, it is important to ensure that the results of this study are interpreted while keeping in mind these discrepancies between the sample and population.

2.3 Assessment Administration

One of the most crucial aspects of robust data collection is the role of enumerators and their capacity to collect data reliably. To develop the enumerators' capacity for standardized assessment administration and scoring, the ERO conducted a two-day training for enumerators chosen as master trainers, followed by a weeklong training conducted jointly with master trainers for the larger group of enumerators.

The training program emphasized the goal of the assessment and explained its importance, its associated assessment frameworks, the tools, sampling strategies, and the data collection and submission process through the Kobo app in detail. Participants had the opportunity to practice assessing children's learning and development levels by visiting some ECED centers, followed by a review and discussion session with the larger group.

During the assessment period, the enumerators made sure to speak with the head or representative staff of each school where the assessment was to be conducted. Before the administration of the ECED management assessment, a short meeting was held with management/administration staff and/or teachers at the ECED programs to provide the information on the assessment, including its objectives and importance. Since some of the indicators in the assessment require information provided by the ECED programs in addition to enumerator's observations, enumerators requested management/administration staff and/or teachers from the ECED programs for as accurate data as possible. The observations were conducted by enumerators along with management/administration staff and/or ECED facilitators of the center.

As for the administration of the ELDS assessment, enumerators selected 15 eligible students based on random numbers generated in the Kobo tool (i.e., they referred to student's row number in the school registration to match the generated random numbers and students). To ensure that this random selection was done correctly, enumerators sent photocopies of the school registration list along with the randomly selected 15 numbers. The ERO conducted daily monitoring of the random selection process by comparing the reported information against the data of the ELDS assessment in each school.

Before starting the assessment, enumerators asked ECED teachers/facilitators for their support to establish a secure, comfortable, and distraction-free environment for the assessed children. Once such an environment was established, enumerators invited the child in and performed some ice-breaking activities with her/him to develop positive rapport. The ELDS assessment was conducted independently by enumerators without the presence of ECED facilitators and other staff. Props and stationery items were provided to the child as per the requirements of each test item. The data collection, done entirely through the Kobo app, was monitored by ERO officials in some centers to assure quality data collection.

2.4 Data Analysis Approach

2.4.1 Standard Setting: Approach and Procedure

In January 2023, the ERO and UNICEF jointly conducted the ELDS Assessment Workshop in Kathmandu, Nepal. The purpose of the workshop was to generate cut scores on the ELDS assessment scale to classify children into three development categories: On track, Progressing, and Struggling. Keeping the age variation of the sample in mind, the cut-scores were generated for three age groups: 48-60 months (4 years), 61-72 months (5 years), and 72+ months (6+ years). The cut scores are meant to enable the country team to monitor to what extent children in Nepal are "developmentally on track", corresponding to the global call based on SDG target 4.2 (Kitamura and Acharya, 2022).

The rationale for having three categories, rather than binary categories of on-track or not, is that having three categories would facilitate a better understanding of the developmental status of children, especially those who fall behind the expected development and learning as per the ELDS. This would further lead to adequate and sensitive intervention design. Conceptually, the three development categories are defined as follows:

- On track: children in this category are developing in accordance with the ELDS; they have achieved the skills and knowledge as expected in the ELDS and are ready to study in grade one.
- Progressing: children in this category fall behind but are close to meeting the developmental expectations in the ELDS. With some support, they can meet the standards of ELDS and will be ready to study in grade one.

- Struggling: children in this category fall far below the ELDS and need significant assistance to meet developmental expectations and study in grade one.

The 20 panelists invited to be part of the workshop were experts in various aspects of early childhood education. Following Kane's (1994) suggestion, a diverse group of panelists was selected to ensure the participation of everyone that had a say or stake in the results of the assessment. Therefore, our panelists included community and institutional school teachers, professors of early childhood development at local universities, as well as government officials and UNICEF officials working in the early childhood education sector.

Before the rating process began, the panelists were introduced to the concept of the "borderline child", who represents the threshold between children belonging to two separate performance levels. Once a common understanding of the performance and borderline levels was established, panelists worked in small groups to adapt the existing "borderline" level descriptors for ages 5 and 6 (months respectively). The purpose of this activity was to ensure that the panelists could use the adapted descriptors as reference material in the rating work for the Bookmark process (Kane, 1994). Furthermore, these adapted descriptors could be useful as documentation of age-wise differences for future work on the ELDS tool.

As for the method, the workshop facilitators employed a "modified" version of the Bookmark method as in Buckendahl et al (2002). The Bookmark method is a common test-centered standard setting method used in large-scale educational assessments since 1996 (Karantonis & Sireci, 2006). The method involves the use of a booklet containing a list of test items ordered by increasing difficulty, where the panelists place a "bookmark" at a particular item to indicate the cut-off point between two performance levels (Cizek & Bunch, 2007).

While the Bookmark method typically relies on IRT-based mapping procedures to produce the item difficulty values, the modified approach used Classical Test Theory item difficulties (p-values) that were generated from a nationally representative sample of 2312 students across Nepal. Additionally, instead of using IRT-generated ability estimates to compute cut-scores, scores were calculated by dividing the average "bookmark" rating across panelists by the total number of subtasks. The primary reasons for using this simplified version of the Bookmark method were the relatively simple rating task and the ease of working with classical item statistics, especially in terms of explaining the relationship of the individual rating and the final cut-score to the panelists.

To further simplify the method, the workshop facilitators did not choose a specific "response probability" value for the rating task, instead simply asking panelists to place a bookmark at the page where they felt that a child at the conceptual borderline of two performance levels would no longer be able to answer the remaining items correctly. Panelists repeated this process for two performance level cut-offs across three age groups,

submitting a total of six ratings in each round. Additional information (such as actual performance data, averages from previous round of rating, and consequence data) were presented to panelists to provide other perspectives as they revised their ratings.

2.4.2 Standard Setting: Results and Limitations

Results from the final round of the standard setting workshop are presented in Table 4.

Table 4. Bookmark method round 3 results

Round 3	Average rating	Median rating	Range	Cut-score (% correct)
Age 4: MP	9.95	8	4-19	18.78
Age 4: MoT	21.29	21	14-35	40.16
Age 5: MP	19.71	20	6-33	37.20
Age 5: MoT	31.48	33	13-43	59.39
Age 6: MP	28.62	30	14-46	54
Age 6: MoT	41.41	42	23-52	77.63

Note: "MP" refers to "minimally progressing" and "MoT" to "minimally on track"

Overall, for both Round 1 and Round 2, the average and median scores increased with age, indicating higher expectations for older children which indicates that expectations are higher for older children. This is in line with the established understanding of children's increasing developmental capacity as they grow older.

After the first round, panelists discussed the appropriateness of the final cut-scores derived from their ratings, especially keeping the age differences in mind. One challenge articulated by the panelists was that using the borderline descriptors was difficult in practice, because the significant overlap in the abilities of the three ages made it harder to decide how differentiated the ratings should be for each age group. Additionally, in reviewing and discussing Round 2 results, the panelists noted that expectations for 4-year-olds seemed to be too low since such scores resulted in a high proportion of children who would be considered on track according to the impact data (see Appendix 6 for Round 1 and 2 scores). These discussions may have influenced the panelists' ratings in the final round. In Round 3, the boundaries between the age groups narrow and overlap, especially between the "minimally on track" cut score of a lower age group and the "minimally progressing" cut score of the next age group.

Table 5. Final cut-scores for all age groups

	4 years	5 years	6 years
Minimally Progressing	18.78%	37.20%	54.00%
Minimally On-Track	40.16%	59.39%	77.63%

To explore the internal consistency of panelists' ratings across three rounds, we computed

the standard error and resulting confidence intervals of the generated cut-scores (see Appendix 7 for full table).

The standard errors generated across the three rounds were relatively low, and the majority of SEs decrease from Round 1 to Round 3, which is expected and typical for standard setting exercises of this kind (Kane, 1994). However, there were some inconsistent patterns in progression of the SEs: for example, there is a relatively large increase in SE from Round 1 to Round 3 for the "minimally progressing" cut-scores in the 4 -year-old (48-60 months) and 5-year-old (61-72 months) age groups. Similarly, the "minimally on track" cut-score for 6-year-olds (72+ months) increased from Round1 to Round 3. Such inconsistencies may have been a result of panelists' varying opinions on how to handle the overlap in abilities across age groups. The confidence intervals were relatively narrow, indicating that a different group of judges conducting the same rating activity could reasonably produce a similar result. There was also no overlap between the intervals of the two borderline levels within age groups, which is necessary to distinguish children in the different development categories.

Further, in analysing procedural validity evidence, we found that the data collection procedure and panelist understanding of the workshop methodology were strong. However, panelist confidence data suggested that while a majority of the panelists were confident about their own ratings as well as the final cut-score, at least one panelist disagreed with the statement that they were confident about their rating, and two panelists strongly disagreed that they felt confident about the final cut-score. In the qualitative and verbal feedback, panelists expressed that they understood the Bookmark procedure in theory but faced difficulties in applying it, particularly given the confusion and overlap between age group abilities.

Overall, the procedural and internal validity analyses provided some evidence for the reliability of our generated cut-scores, but also shed light on how the exercise could have been more effective. In particular, there was a need for more agreement on the performance standard, different kinds of raw or impact data to be shown between rounds, and perhaps a different approach to facilitating the discussion in between rounds to better clarify the rating task.

Once the workshop was concluded, the results from the three rounds of rating as well as the validity and reliability evidence was reviewed by an internal technical team consisting of Education and Section Officers from UNICEF and the ERO. One point of discussion was the relative merit of using the age-differentiated cut-scores in the final analysis. After further exploring the validity evidence and consequence/raw data, and examining the performance trends of the various age groups in the population, the team decided to use the cut-scores generated for age 5 as the final set of cut-scores for the entire sample. The reasoning for this is partially rooted in the validity evidence, and the difficulty of relying on the age-differentiated cut scores generated in the workshop. However, the choice was also

made keeping in mind the goal of the ELDS, which is to ensure school-readiness among 5-year-olds in the population. One limitation of this choice is that older children (6-year-olds) would be largely classified as on track. While this makes sense given our general understanding of developmental growth, the low cut-off score prevents us from being able to see meaningful differences within the 6-year-old age group. There is also a threat to the reliability of this set of cut-scores, as the panelists generated them keeping age differences in mind, and since the final decision to use only one set of cut-scores was made based on a post-hoc review of the data. Keeping the time/resource constraints and policy stakes in mind, this final set of cut-scores satisfies many practical needs; however, it is important to note that they are not without issues in validity and reliability.

Table 6. Final selected cut-score

	4 years	5 years	6 years
Minimally Progressing	18.78%	37.20%	54.00%
Minimally On-Track	40.16%	59.39%	77.63%

2.4.3 Data Analysis Approach

After cleaning both datasets (from the ELDS assessment tool and ECED Background Survey, respectively), one of the analysts conducted data analysis using the software R and Microsoft Excel. Both the ERO and UNICEF team provided multiple rounds of feedback throughout the analysis process. Sections 3-5 present the results of descriptive analysis based on the individual datasets. In Section 6, to understand the relationship between ECED center characteristics and children's development levels, we provide the results of a multiple regression analysis.

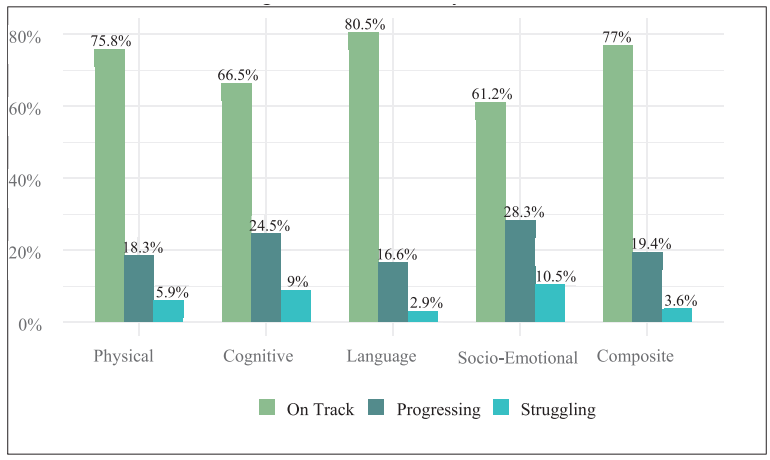
3. Overview of Children's Learning and Development Status

Figure 3.1 presents the proportion of children in each development category for four development domains as well as composite ELDS for summary. Since the standard setting workshop did not explicitly produce domain-level cut-scores, the cut-scores generated for the assessment overall have been used to analyze data at the domain level. As such, since these cut-scores were not generated specifically for each domain, they are not empirically validated for this purpose; nevertheless, they are useful to visualize the spread of performance within each domain.

Overall, a large majority (77%) of children are developmentally on track in terms of composite ELDS score. Approximately more than three-fourths of the children were classified as on-track in the physical and language domains, while the proportion of on-track children was smaller (about 61.2%) in the socio-emotional domain. In the socio-emotional domain, about 28.3% and 10.1% of children were in the progressing and struggling category, respectively. These results show a much larger proportion of children on track as

compared to the last study based on the ELDS in 2019 (ERO, 2021), where slightly more than half the students were developmentally on track overall.

Fig. 3.1. ELDS scores by domain



Below, we examine developmental status by three characteristics: children's gender, age, and mother tongue. With regard to gender, Fig 3.2 shows that the proportion of children in each development category based on the composite ELDS is quite similar between female and male children. This finding indicates that there is no specific gender-wise gap in development and learning status in the studied context.

Fig. 3.2 ELDS score distribution by gender

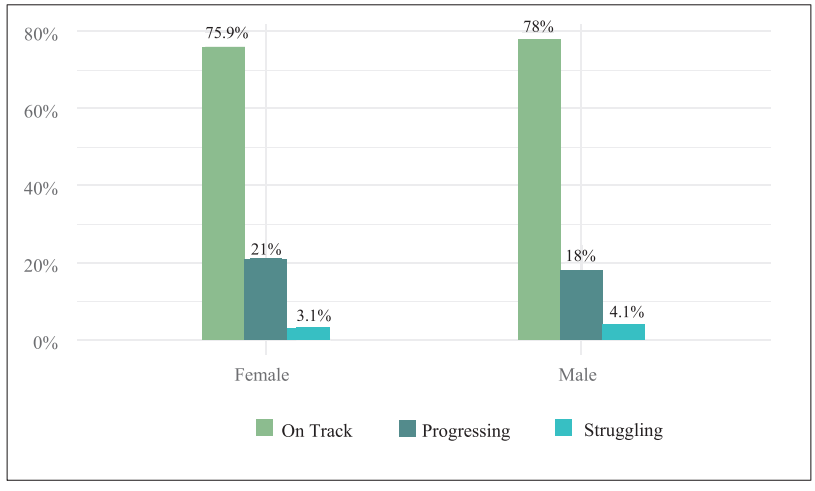
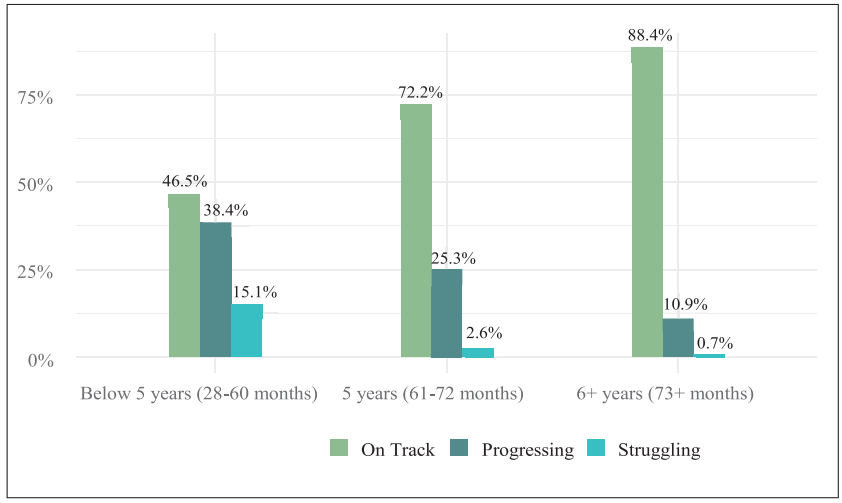


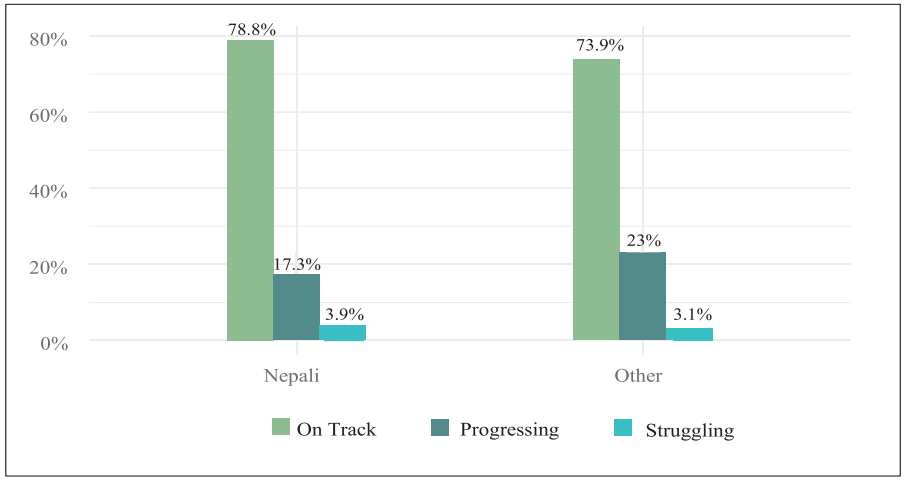
Fig 3.3 shows the distribution of developmental status by children's age. As expected, a large proportion of older children are developmentally on track, while a smaller proportion of children aged 5 and below are on track.

Fig. 3.3 ELDS score distribution by age



Further, Figure 3.4 shows the proportion of children in each development category based on the composite ELDS by mother tongue. The proportion of on-track children is larger among children with Nepali as their mother tongue than other languages, while the proportion of struggling children is similar between the two groups. This finding suggests that the gap in development and learning of children between mother tongue is likely to be filled by providing an adequate level of support to children whose mother tongue is not Nepali, so that progressing children can be brought up to the on-track group.

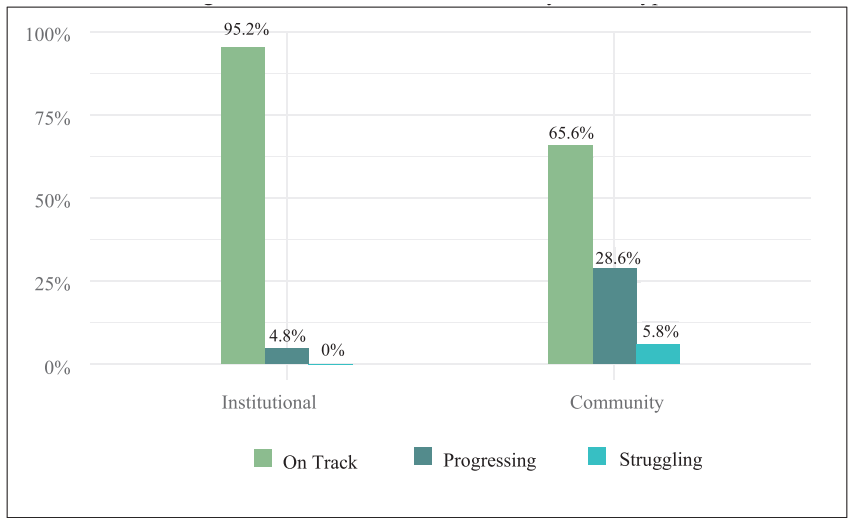
Fig. 3.4 Distribution of ELDS score by mother tongue



The next two graphs showcase performance on the ELDS by school type and province. As Fig. 3.5 shows, no students in institutional schools placed in the struggling category, and nearly all the students (95%) were on track. In contrast, 65.6% of students from communi-

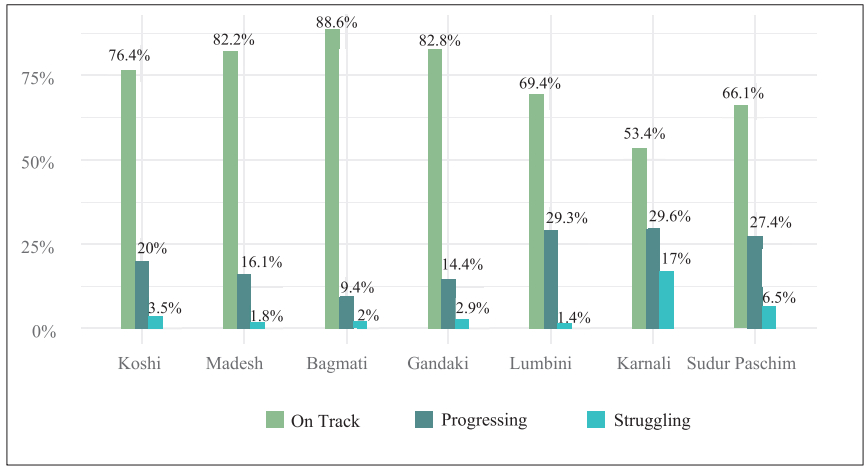
ty schools (where there was larger age variation in the sample) were on track. This finding, which will be explored in more detail in Sections 6 and 7, points to a large difference in development and learning levels between institutional and community school students.

Fig. 3.5 Distribution of ELDS score by school type



Finally, Figure 3.6 shows the proportion of children in each development category based on the composite ELDS by province. Bagmati has the largest proportion of on-track children (i.e., 88.6%) while Karnali shows the smallest proportion of on-track children (i.e., 53.4%). In Lumbini, Karnali, and Sudur Paschim, there are relatively large proportions of students in the progressing category, indicating that some support and intervention may be required – particularly in Karnali, which has the highest proportion of students in the struggling category.

Fig. 3.6 Distribution of ELDS score by province



4. ECED Centers: Characteristics and Management Standards

4.1 Class Structure

We begin this section with an analysis of ECED classes offered by ECED centers across Nepal. As per the eighth amendment to the Education Act in 2016, the government mandates at least one year of pre-primary education, for the target age group of 4-year-olds (48-59 months). While the government only funds one year of pre-primary education, a past ECD regulation (2004) allows communities to establish childcare centers (Sishu Syahar Kendra) for 3-year-olds (36-47 months). Further, there is also a growing number of institutional ECED centers, unaffiliated with the government, offering kindergarten and/or nursery services for young children across age groups starting as early as 30 months (DoE, 2022). Table 7 provides an overview of the various types of classes offered by ECED programs. Both pre-primary class and Bal Bikas Kendra now refer to the mandated year of pre-school education offered by the government.

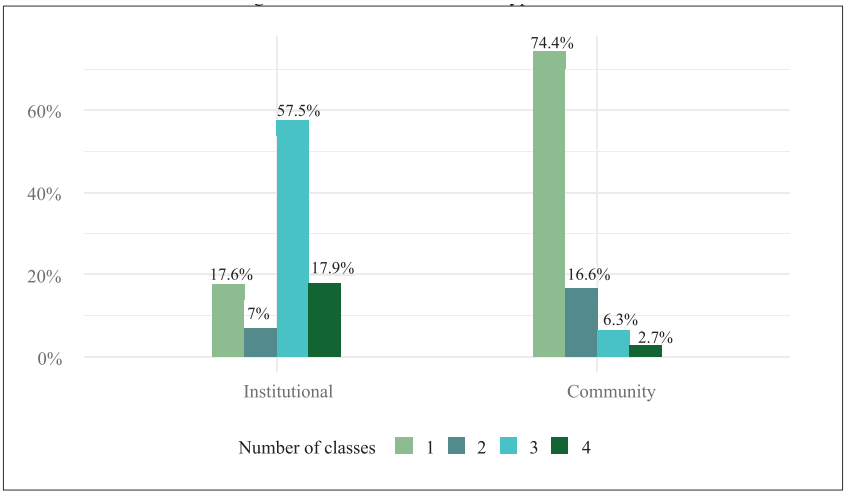
Table 7. Types of ECED classes offered

Type of Class	Target Age Group	Description
Play group	2-3 years (24-36 months)	Institutional/NGO childcare services for young children to play and socialize
Nursery	2.5-4 years (30-47 months)	Category utilized by institutional pre-schools for the target age group.
LKG (Lower Kindergarten)	2.5-4 years (48-59 months)	Category utilized by institutional pre-schools for the target age group.
UKG (Upper Kindergarten)	4-5 years (60-72 months)	Category utilized by institutional pre-schools for the target age group.
Sishu Kaksha / Syahar Kendra	3 years (36-47 months)	Community-operated childcare center, optional as per ECD regulation (2004).
Pre-primary class	4 years (48-59 months)	Government-funded pre-primary education that focuses on preparation for schooling and early socialization. These ECED classes are school-based rather than community-based.
Bal Bikas Kendra (ECED center)	4 years (48-59 months)	Government-funded pre-primary education which was previously community-based. A majority of these were merged with schools after 2016 amendment to the Education Act; however, there are still community-based ECED centers known by this name.

Across the sample, 58.8% of ECED centers offer one kind of ECED class, with the remain-

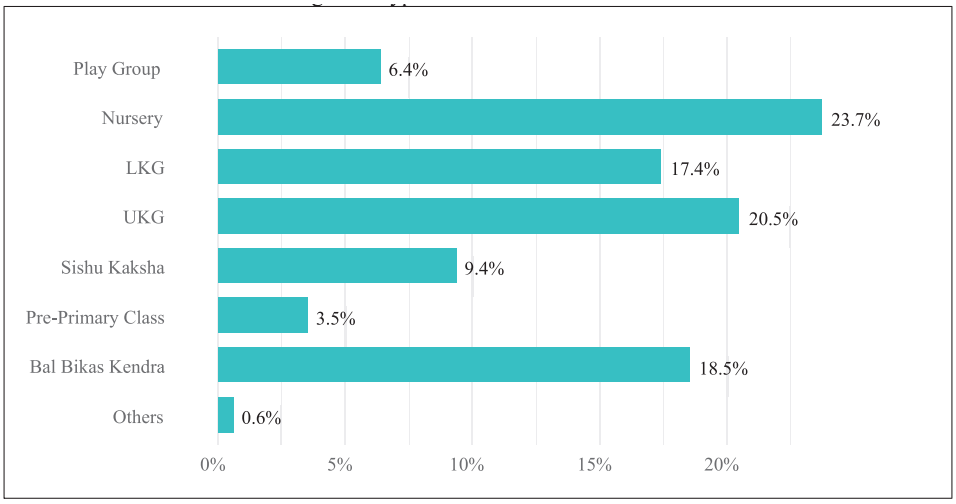
ing offering two, three or four separate classes. As Fig. 4.1 shows, a large majority (74.4%) of community ECED centers offer only one type of class, while 82.4% of institutional ECED centers/pre-schools tend to offer two or more. Approximately 25.6% of community ECED centers offer more than one type of ECED class, indicating that government operated ECED services are increasingly expanding their services despite the current regulation.

Fig. 4.1 Number of ECED class types offered



A closer look at the types of ECED classes offered shows that nursery (23.7%), UKG (20.5%), and Bal Bikas Kendra (18.5%) are the three most offered types of ECED classes across the sample (see Fig. 4.2). As we might expect, nursery and UKG are offered mostly by institutional ECED centers/pre-schools.

Fig. 4.2. Types of ECED classes offered



Furthermore, among the centers that offer more than one type of class (i.e., 41.2% of the sample), Fig. 4.3 shows the six most common combinations of classes offered. Nursery along with UKG and LKG is the most common combination (offered by 40.7% of centers in the sample), followed by nursery+UKG (17%) and playgroup+nursery+UKG+LKG (14.7%). As we might expect, these combinations are largely offered by institutional ECED centers/pre-schools (see Fig. 4.4); however, it is useful to note that community centers with more than one ECED class tend to offer nursery with either LKG (20.3%) or UKG (31.1%). This finding may indicate that community ECED centers, albeit an extremely small minority, are responding to a need for pre-primary education for children younger than four-year-olds.

Fig. 4.3. Six most common ECED class combinations among centers with >1 class

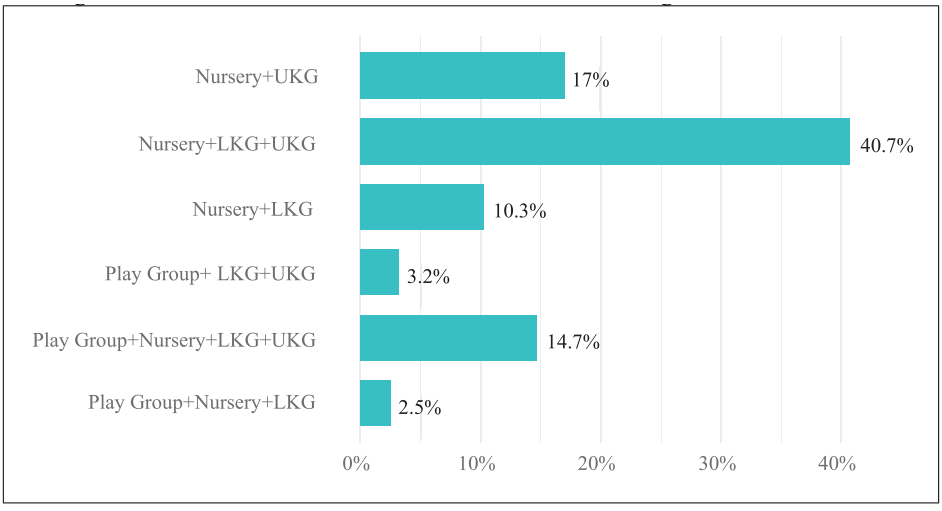
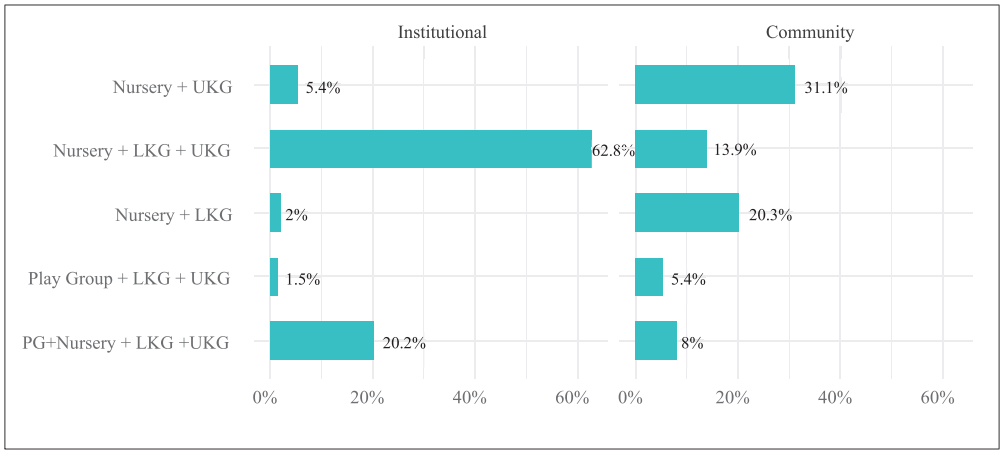


Fig. 4.4. ECED class combinations in institutional and community centers offering >1 class



4.2 Classroom Characteristics

As discussed in Section 2, the minimum standards for ECED centers, published by the Center for Education and Human Resource Development (2018), lay out a comprehensive list of minimum requirements for ECED centers/ pre-primary classes across the country. These requirements cover classroom arrangement, curriculum, and teaching quality as well as health, sanitation, nutrition, and security infrastructure for holistic development. Based on these standards, this section explores several aspects of ECED classrooms in Nepal: student enrollment and teacher/caretaker numbers, language of instruction, curriculum and textbook usage, and the arrangement of classroom space to support learning.

4.2.1 Student, Teacher and Caretaker Numbers

ECED centers across the country reported employing both teachers and caretakers. Although there is no official provision for caretakers in community schools, 15% of community ECED centers reported having one caretaker. Among institutional ECED centers, a large majority (64%) reported having one or more caretakers.

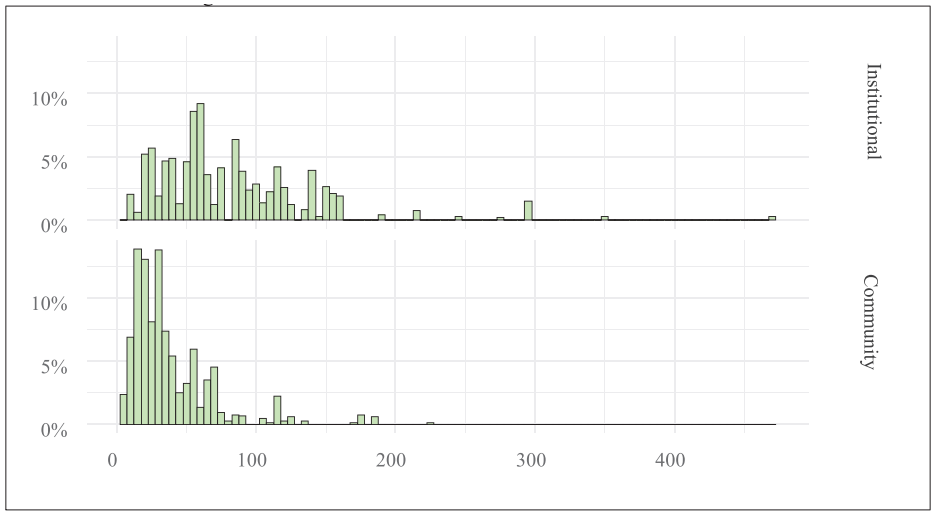
Table 8 shows that institutional ECED centers have higher teacher numbers (on average, there are four teachers in institutional centers and one teacher in community ECED). As for student enrollment, Fig. 4.5 shows that institutional school enrollment tends to be higher and more spread out than enrollment at community ECED centers; that is, there is a mix of low and high enrollment across institutional schools, while community ECED enrollment numbers tend to be similar (around 30 students) across most schools.

There is a strong and statistically significant bivariate relationship between the number of students and caretakers in ECED programs. That is, a caretaker is more likely to be available in ECED programs that have more students ($t = 11.8$, $df = 262$, $p < .05$), although we cannot mitigate the possibility that this association is due to other factors.

Table 8. Student, teacher, and caretaker numbers across ECED centers

	Institutional			Community		
	Teachers	Caretakers	Students	Teachers	Caretakers	Students
Mean	4	2	81	1	0	38
Median	4	2	64	1	0	30
SD	2.7	1.8	57	1.1	0.8	31
Min	1	0	9	1	0	6
Max	17	11	470	7	5	225

Fig. 4.5. Distribution of student enrollment across ECED centers



Further, Table 9 shows the mean age of students at each class level. Surveyed teachers were asked to estimate the main age group (in years) of students enrolled in each individual class to provide a rough understanding of age distribution across enrollment in different ECED classes. The enrollment appears to be largely age-appropriate in classes targeted for younger children, with playgroup classes consisting of the youngest children (around 2-3 years old) and nursery classes consisting mainly of 3-year-olds. However, given that the data is collected at the beginning of the academic session, children in UKG classes who are close to age 5 should be enrolled in Grade 1 rather than pre-school, as per the Free and Compulsory Education Act. Furthermore, it is important to keep in mind that these estimates do not calculate age in months, meaning that a significant variation in developmental ability may still exist among students within each of these classes. Therefore, while Table 9 provides a rough estimation, more detailed data is required to confirm that enrollment is age appropriate across ECED in Nepal.

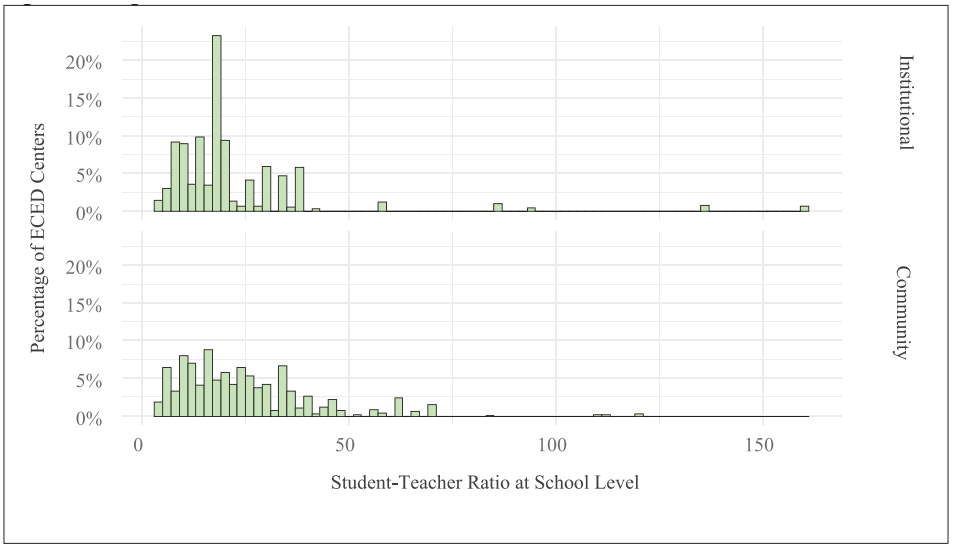
Table 9. Age distribution across class type

ECED class type	Estimated mean age (in years)
Play group	2.74
Nursery	3.25
LKG	4.18
UKG	4.95
Sishu Kaksha	3.55
Pre-primary Class	4.03
Bal Bikas Kendra	4.04

Additionally, about 13% of the surveyed schools reported having one or more children with disabilities in the ECED center, with six being the highest reported number of children with disabilities in a single ECED center. There were more children with disabilities in community ECED centers than in institutional ECED centers, corresponding to the finding from the latest flash report (DoE, 2022).

Finally, Fig. 4.6 shows the ratio of teachers to total student enrollment in ECED centers. It is important to note here that this ratio is calculated at the school-level rather than the classroom-level, and thus does not provide information about how many students a teacher manages in the classroom. However, it is still a helpful indicator of the proportion of total student enrollment and the number of teachers at a school.

Fig. 4.6. Histogram of student-teacher ratio at school level



4.2.2 Language of Instruction

Language of instruction is an important consideration in early childhood education, particularly in Nepal, where there are 122 recognized national languages with regional variations and dialects. Figs. 4.7 and 4.8 shows the distribution of languages of instruction across ECED centers.

Fig. 4.7 Primary language of instruction across ECED centers

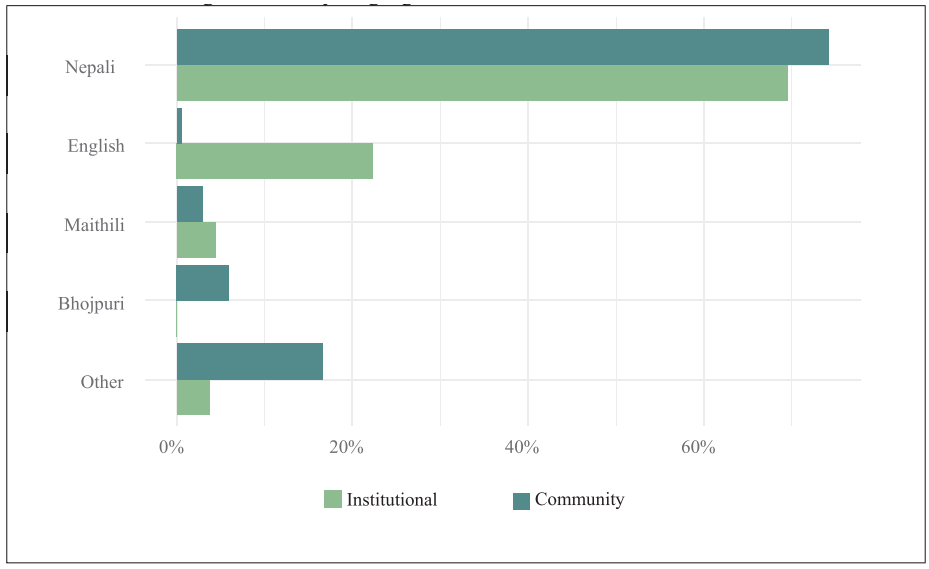
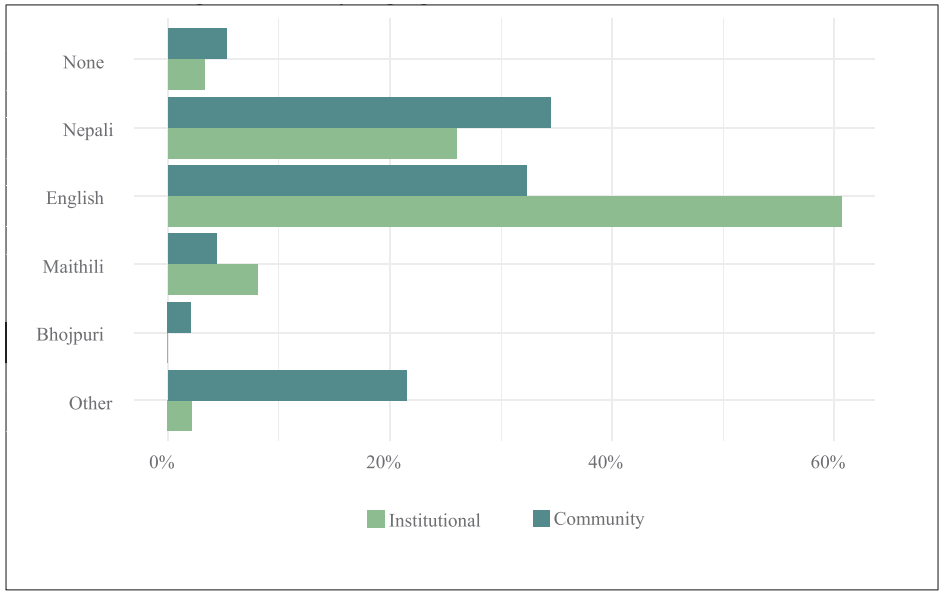


Fig. 4.8 Secondary language of instruction across ECED centers



The majority of both community and institutional ECED centers primarily use Nepali as a language of instruction. The proportion of ECED centers using English as the primary language of instruction is negligible for community ECED centers, but relatively higher for institutional centers (around 22%). Similarly, English is a more common secondary language of instruction among institutional ECED centers than community centers. In

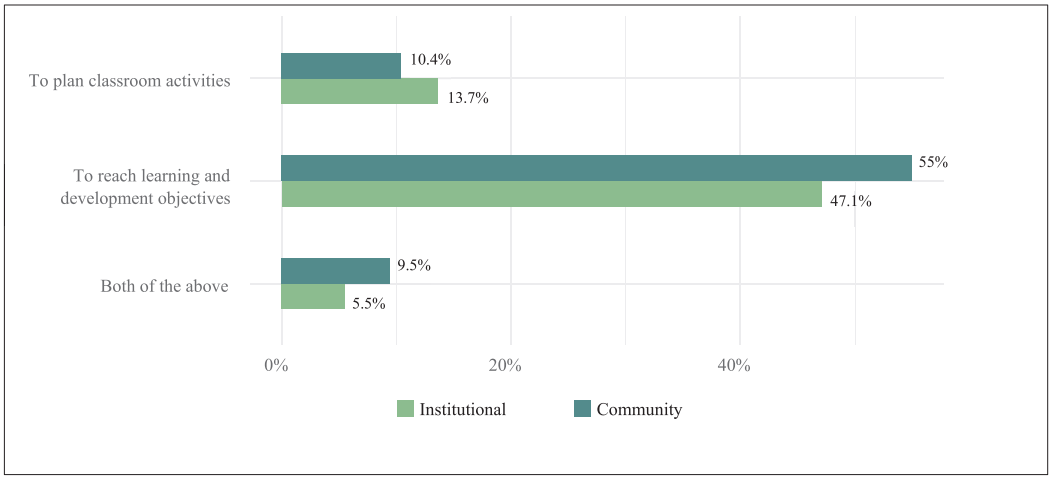
general, community ECED centers have a more diverse variety of languages in use, especially as a secondary language, while institutional centers typically use Nepali and English. Additionally, most ECED centers report using both a primary and secondary language of instruction, with only a small proportion not using a secondary language of instruction at all.

4.2.3 Curriculum and Textbook Usage

In this section, we look at the curriculum usage across ECED centers in Nepal. More than half (57%) of the ECED teachers surveyed use a curriculum in the classroom. Among them, the majority (about 96%) use the national curriculum, with the remaining using various institutionally published materials. These patterns vary by school type, with 69% of institutional centers and 53% of community centers reporting curriculum usage. However, this number is much lower in the latest flash report published by the education ministry in Nepal, which reports that 15.9% of community ECED centers have a curriculum (DoE, 2022). This discrepancy could potentially be attributed to some of the limitations of the high non-response rate among community schools (see Section 2); alternatively, since the flash report only records the physical availability of curriculum in the classroom, it may also be possible that some teachers using curricula available online are not counted in the flash report, thus explaining the difference.

For those centers that use a curriculum, Fig 4.9. shows how the curriculum is used within classrooms. The majority of ECED centers use the curriculum in order to reach learning and development objectives.

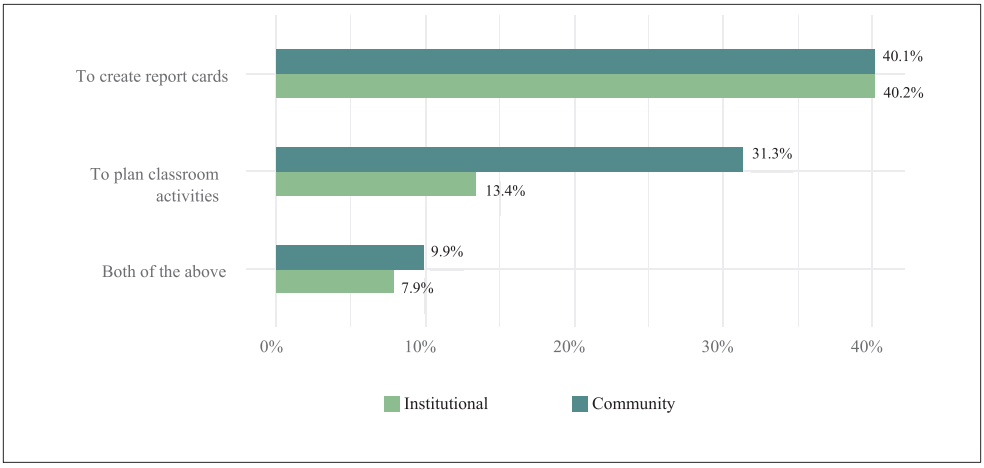
Fig. 4.9. Curriculum usage



Note: the graph does not include the proportion of schools who reported no specific purpose of usage

Furthermore, about 53% of the surveyed institutional ECED teachers¬ and 39% community center teachers reported using the ELDS (Early Learning and Development Standards), with the purpose breakdown as in Fig. 4.10.

Fig. 4.10. ELDS usage



Note: the graph does not include the proportion of schools who reported no specific purpose of usage

Finally, about 51% of the surveyed teachers reported using the all-in-one textbook (a commonly used textbook with all subject areas covered together), while 35% reported not using textbook or workbook materials in the classroom. Table 10 shows these results disaggregated by school type.

Table 10. Textbook usage

	Institutional	Community
Does not use textbooks	16%	42.5%
Uses “all-in-one” as textbook	61.5%	47.6%
Uses other materials (e.g. from institutional publishers)	22%	9%

4.2.5 Using Classroom Space: Learning Areas

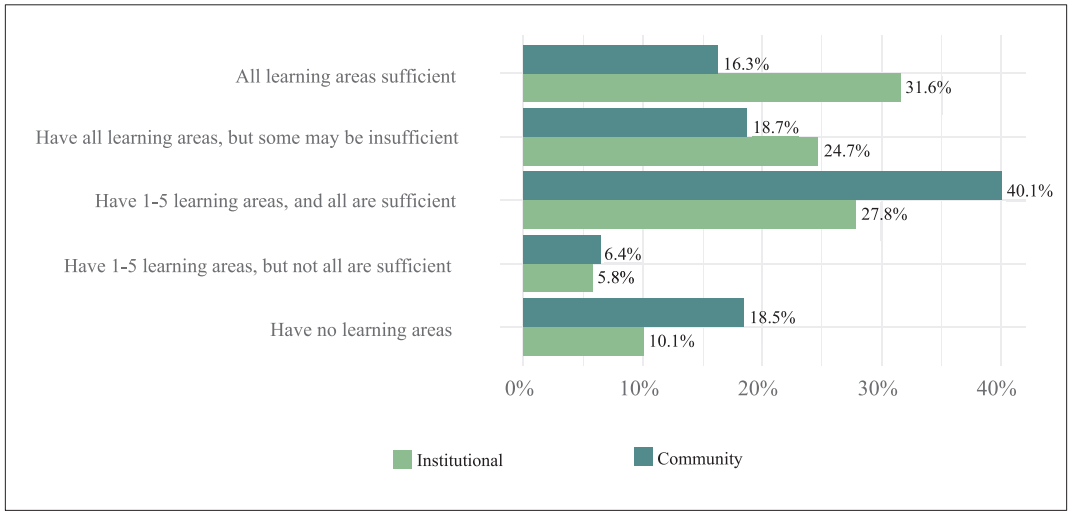
The minimum standards recommend that ECED classrooms should be arranged to accommodate specific designated areas for learning materials across subjects. The following table provides information about the six learning areas included in the standards:

Table 11. Overview of learning areas

Subject Area	Description
Language	Relevant children's books and other pre-/reading materials
Mathematics	Materials such as number boards, counting charts, abacus, etc.
Role Play	Materials such as dolls, puppets, animal sets, etc.
Science	Materials such as plants, colorful objects, animal sets, etc.
Creativity	Materials such as musical instruments, crayons, pictures, etc.
Construction	Materials such as building blocks and puzzles

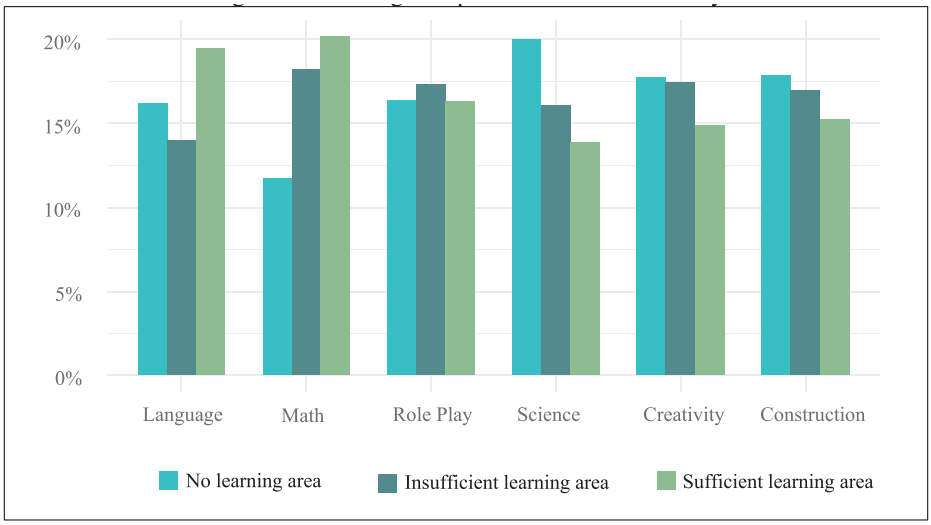
Each learning area is considered sufficient if it contains 10 or more relevant items. Overall, 20.4% of the surveyed ECED centers have all six learning areas with sufficient items. Fig. 4.11 shows the prevalence of these learning areas across the sampled ECED centers. Institutional ECED centers tend to cover more learning areas with more sufficiency; however, a significant proportion (about 36%) of both institutional and community centers have between 1-5 learning areas with full sufficiency. 18% of community ECED centers do not have any learning areas (i.e., they do not have any designated spaces for subject-specific materials).

Fig. 4.11. Learning area distribution across ECED centers



Further, Fig. 4.12 examines the prevalence and sufficiency of each learning area for all ECED centers. Across the board, learning areas for language and mathematics have the highest prevalence with sufficiency, while science and creativity have the least.

Fig. 4.12. Learning area prevalence and sufficiency



4.3 Infrastructure and Other Resources

In this section, we examine the availability of physical infrastructure, safety resources, and community support in ECED centers. Overall, most ECED centers report meeting the minimum safety and hygiene requirements at their schools, but a small minority of schools do not have clean drinking water (16%) or toilets (17%). Among those centers with toilets, more than half (57%) reported having child-sized toilets. Table 8 shows the availability of toilets, first aid, and other infrastructure in institutional and community ECED centers.

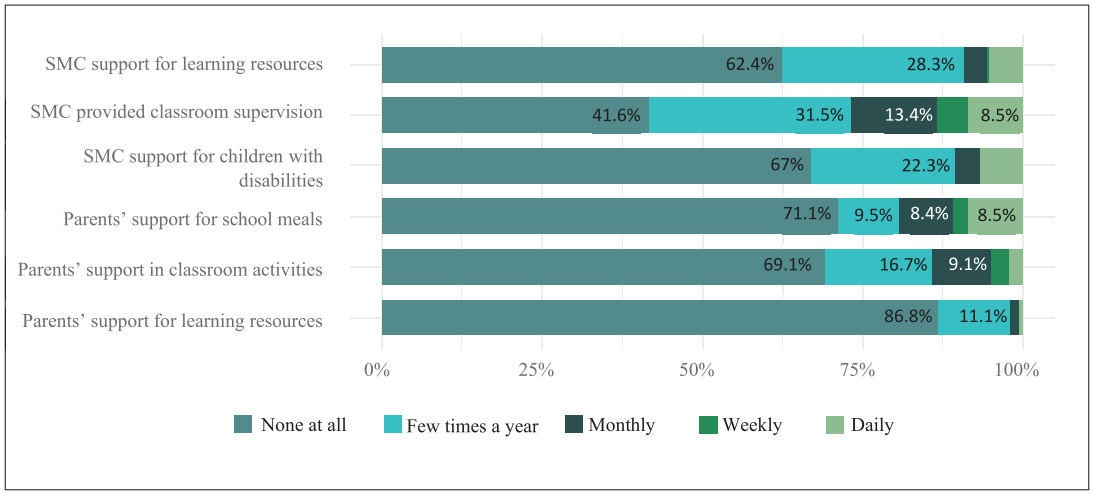
Table 12. Physical infrastructure and safety resources in ECED centers

SAFETY	Institutional	Community
Availability of first aid box for basic treatment for injury/accident in the last school year	88%	66%
Provision of safe water for drinking in the last school year	95%	80%
Availability of toilets in the last school year	93%	79%
Availability of separate toilets for boys and girls (if toilets available)	95%	80%
Availability of child-friendly (small-sized) toilets (if toilets available)	79%	47%
PHYSICAL SPACE AND INFRASTRUCTURE		
Availability of playground outside	6%	19%

Sufficiency of space for all children inside the room	78%	66%
OTHER		
Center is open for at least 4.5 hours per day as required by minimum standards	93%	80.5%

Additionally, Fig. 4.13 shows the availability of support from SMC and parents across all sampled ECED centers. Overall, while both institutional and community ECED centers generally receive little material support from parents and the SMC, resources and supervision were more commonly reported from SMC than from parents. Additionally, institutional schools receive a slightly larger amount of support from parents for school meals, and from SMC for classroom materials and resources in particular.

Fig. 4.13 Community support for ECED centers



5. ECED Teachers: Qualifications and Training

The following section presents insights on the qualification and training levels of ECED teachers across Nepal.

As per an ECD regulation in 2004, candidates are required to complete Grade 10 in order to qualify as candidates for ECED teacher positions. While there is no mandated pre-service training offered by the government, several institutional institutions offer pre-service training packages to teachers from both community and institutional schools. In some cases, these trainings are aligned with the government-endorsed Teacher Professional Development (TPD) package, which (while not mandatory) is strongly recommended for teachers in their initial years of service. As such, teachers across the country have varied access to training resources and packages.

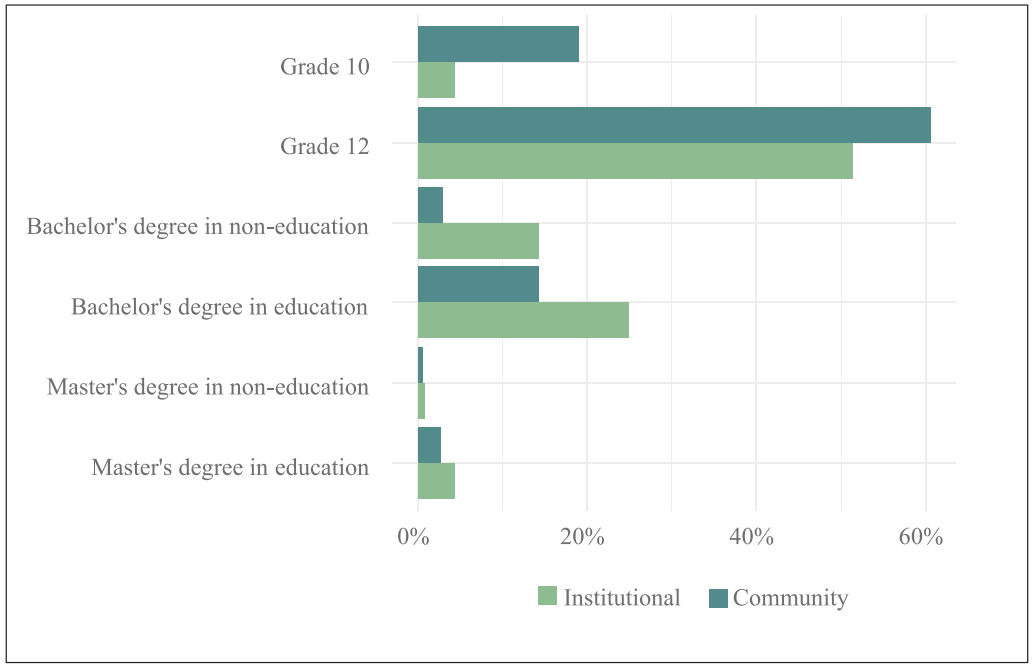
Before the TPD was formalized by the government, trainings offered to ECED teachers

came largely from INGOs and NGOs in the region, who provided a "basic" training in the first year of service and a "refresher" training as a follow-up in later years. Over time, elements of these trainings were included and formalized into what exists today as the TPD. Given that this is a relatively recent development (the package was formalized in 2018), many teachers currently in the system may have received the basic and refresher training, while others may have received TPD, with additional services depending on access to institutional institutions and universities.

5.1 Teacher Qualifications

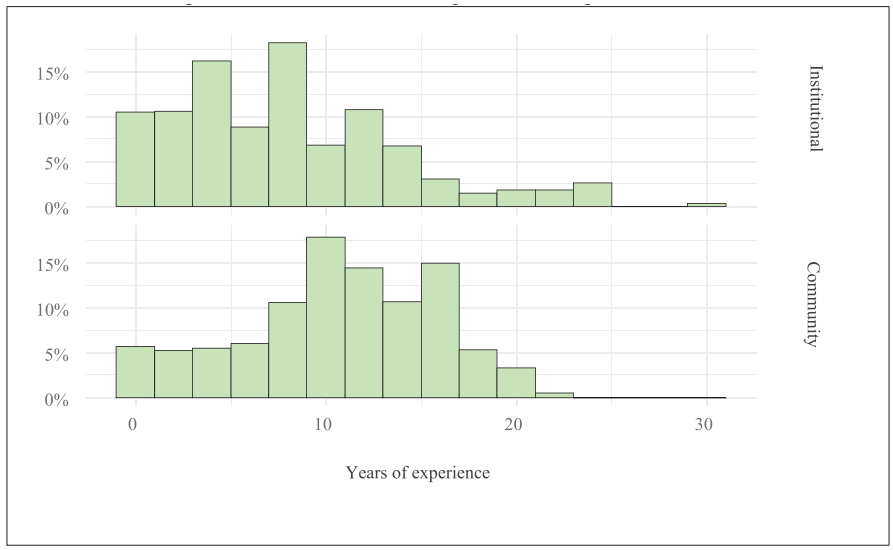
All facilitators in the sample meet the minimum qualification criteria of Grade 10 completion, with 58.1% having completed Grade 12 and 17.1% holding a bachelor's degree in education. This finding lines up with the latest flash report, where about 95% of teachers were reported as meeting the Grade 10 qualification requirement (DoE, 2022). Generally, qualification levels are higher among institutional ECED teachers, as seen in Fig. 5.1.

Fig. 5.1. ECED teacher qualification levels



Further, Fig. 5.2 shows the distribution of work experience across the sample. Most of the surveyed teachers have around 8-12 years of work experience, with community ECED teachers generally having more years of work experience than those in institutional centers. The mean work experience across the sample is 11.1 years for community ECED teachers, and 8.3 years for institutional teachers.

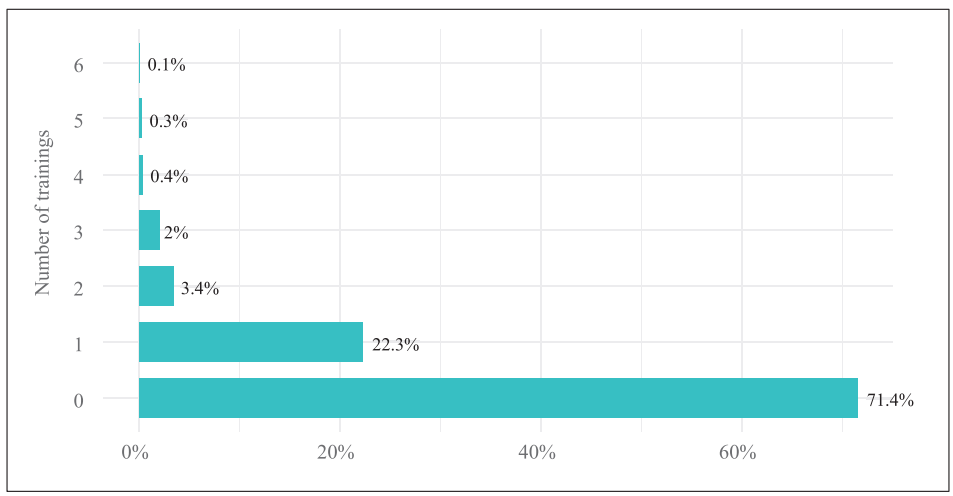
Fig. 5.2. Distribution of work experience among ECED teachers



5.2 Pre-Service Training

As Fig 5.3 shows, 71.4% of surveyed teachers received no pre-service training, indicating that a substantial proportion of teachers enter the system without any ECED-specific training. This number is similar for both institutional (73%) and community (71%) ECED centers.

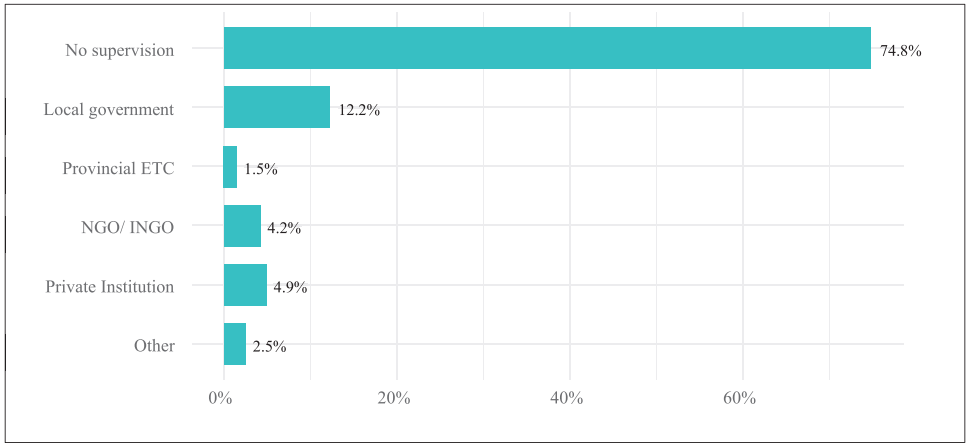
Fig 5.3. Number of pre-service trainings



For the minority (28.6%) of teachers who received pre-service trainings, Fig. 5.4 shows the duration of training received in days. For both institutional and community teachers, the typical length of training received is between 1-14 days (i.e. two weeks or less). There is

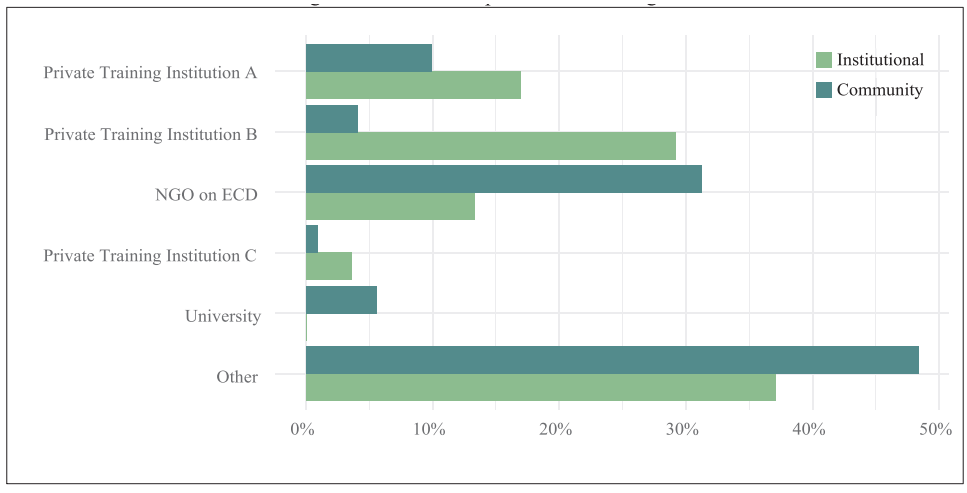
also a small proportion of teachers who received longer trainings (three months or more), which are typically offered by institutional training institutions.

Fig. 5.4. Duration of pre-service training (in days)



Finally, Fig. 5.5 shows the providers of pre-service training for institutional and community ECED centers. A large majority of the teachers received pre-service training from one of the three big private teacher training institutions in Nepal (anonymized in this graph as A, B, and C), as well as from a collection of smaller private and non-governmental organizations under "other".

Fig. 5.5. Providers of pre-service training.



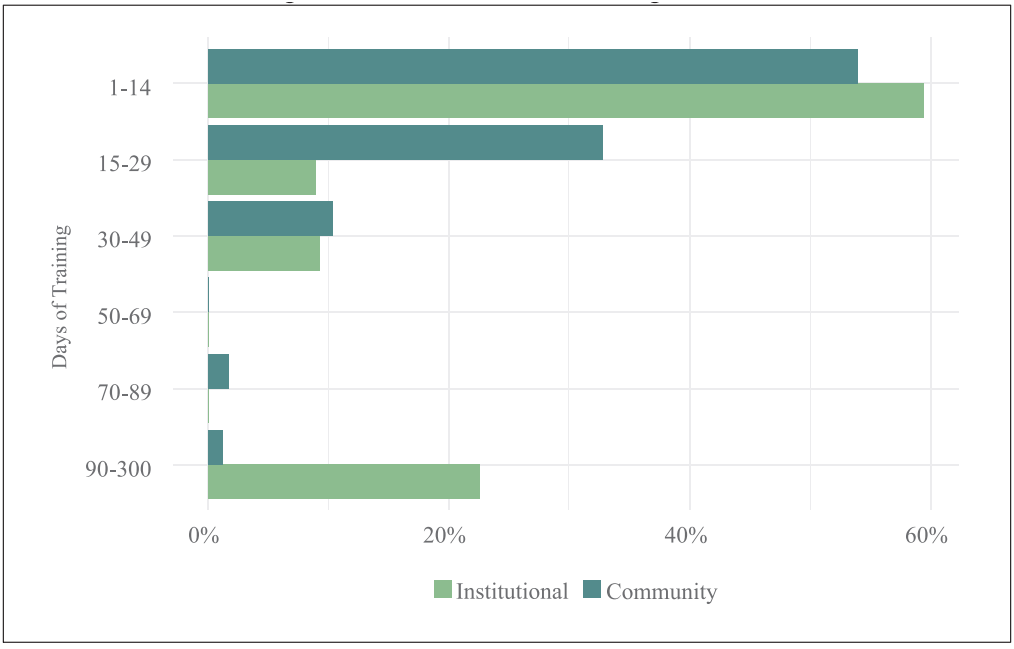
5.3 In-Service Training

As discussed in the introduction to Section 5, in-service training is available in different forms and packages to teachers, including the government-endorsed TPD package and

trainings from various institutional institutions. There is a fair amount of variation in the number of in-service trainings received by teachers, with some differences among institutional and community ECED teachers. 42% of institutional ECED teachers and 25% of community ECED teachers report receiving no in-service training at all, indicating that a larger proportion of community ECED teachers received in-service training as compared to institutional teachers. Furthermore, only community ECED teachers reported receiving more than 5 separate in-service trainings, while institutional ECED teachers largely reported receiving between 1-3 trainings. This finding speaks to the fact that community ECED teachers have combined access to the government-endorsed TPD as well as other trainings, while institutional teachers' access may be limited to trainings by institutional institutions.

For those who received in-service training, Fig. 5.6 shows the duration of training received in days. For both institutional and community teachers, the typical length of training received is between 1-14 days (i.e., two weeks or less). There is also a small proportion of institutional ECED teachers who received longer trainings (three months or more), which are typically offered by private training institutions.

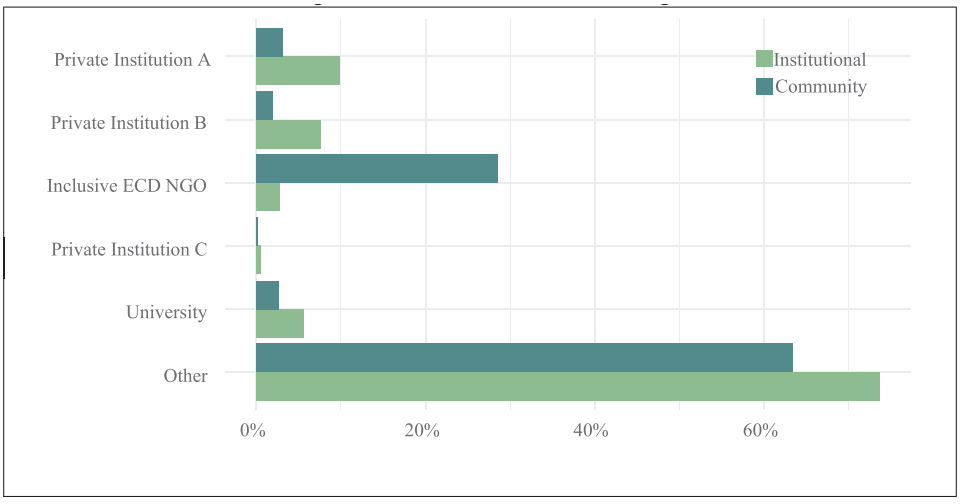
Fig.5.6. Duration of in-service training received



Finally, Fig. 5.7 shows the providers of in-service training for institutional and community ECED centers. Most of the teachers received pre-service training from sources classified as "other": smaller private organisations, NGOs, and various branches of local government (i.e., TPD). As per the latest flash report, about 20% of teachers reported receiving the

TPD package as part of their in-service training (DoE, 2022). A relatively small proportion of teachers receive in-service training from the three big private teacher training institutions in Nepal (anonymized in this graph as A, B, and C).

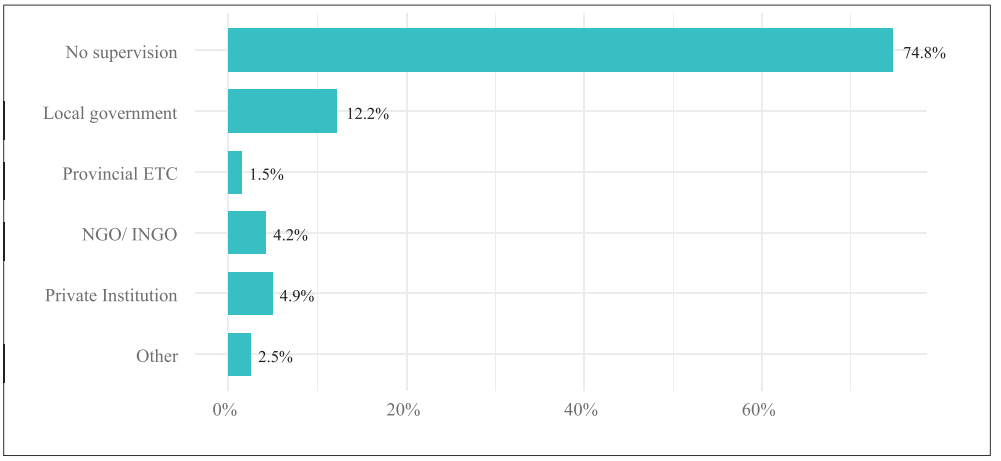
Fig. 5.7. Providers of in-service training



5.4 Other Training and Support

Fig 5.8 presents the providers of in-class supervision of ECED teachers. These numbers are largely similar for institutional and community ECED teachers, with the following minor and expected differences: a larger proportion of community ECED teachers received supervision from the local government, while a larger proportion of institutional ECED teachers received the same from private organisations. Overall, a significant majority of teachers did not receive any in-class support or supervision.

Fig. 5.8. Providers of in-class supervision



Finally, Table 13 summarizes the other types of training received by ECED centers. While the overall levels are low, institutional ECED centers have slightly higher rates of ECED training at management level and inclusion training for teachers.

Table 13. Other trainings received by ECED centers

	Institutional	Community
Training on ECED for principals	45.3%	38.2%
Training on ECED for SMC	37.3%	19.4%
Training on including children with disabilities for teachers	6.9%	4.7%

6. Relationship between ECED Characteristics and Development

In this section, we present the results of a multiple regression analysis to analyze how ECED classroom and teacher characteristics are associated with the ELDS domain scores when accounting for children's characteristics and other factors. Using the survey package in R, we fit a generalized linear model with inverse-probability weighting and design-based standard errors. We accounted for three important children's characteristics (age, gender and mother tongue) as well as other factors such as school type, ECED attendance, and urbanicity.

Table 14 shows the results of the regression analysis. Each coefficient represents the difference in score associated with the variable in the first column: for example, in the gender variable, being male is associated with a difference of 0.003 in the physical domain score, indicating a slight positive association. However, the lack of asterisks indicates that this association is not statistically significant, i.e., it is not generalizable to the whole population. Table 15 supplements this information by showing the other category in the binary variable: in the example of gender, the other category analysed is female.

Table 14. Multiple regression analysis

	Physical Score	Cognitive Score	Language Score	SE/Cultural Score	Composite Score
Age	0.006***	0.006***	0.007***	0.006***	0.006***
Gender (Male)	0.003	-0.011	-0.039*	-0.024	-0.014
Language (Other)	0.024	-0.011	-0.119**	-0.038	-0.032
ECED Attendance (Yes)	0.189*	0.055	0.106	0.091	0.099*
School Type (Community)	0.116**	-0.288***	-0.122**	-0.242***	-0.156***
Urbanicity (Urban)	0.052	0.078*	0.096**	0.001	0.064*
Teacher's Qualification (Grade 10 only)	0.019	-0.033	-0.049	-0.012	-0.019
Pre-Service Training (Received)	-0.005	0.012	0.033	0.032	0.013
In-Service Training (Received)	-0.015	0.045	0.016	0.028	0.014

Availability of Learning Areas (Have one or more learning areas)	0.125*	0.072	0.038	0.009	0.066
Availability of Caretaker (Yes)	0.097*	0.163**	0.138**	0.104**	0.116***
Student-Teacher Ratio at school level	0.001	0.002**	0.001*	0.001	0.001**
Usage of textbook (Yes)	-0.015	0.006	-0.023	0.000	-0.009
Usage of curriculum (Yes)	0.003	-0.020	0.068	-0.000	0.015
Usage of ELDS (Yes)	0.033	0.014	-0.025	-0.005	0.006

*Note: p-value codes: 0 ='***'; 0.001 ='**'; 0.01= '*'*

Table 15. Reference categories for variables in regression model

Variable	Reference
Gender	Female
Language	Nepali
ECED Attendance	Did not attend ECED
School Type	Institutional
Urbanicity	Rural
Teachers' Qualification	Above Grade 10 (Grade 12, bachelor's, master's)
Pre-service training	Did not receive
In-service training	Did not receive
Availability of Learning Areas	No learning areas
Availability of Caretaker	No caretaker
Usage of textbook	No textbooks used
Usage of curriculum	No curriculum used
Usage of ELDS	ELDS not adopted

Below is an analysis of the results in Table 14, organized by the different kinds of variables analyzed in the model. It is important to keep in mind that none of the associations analyzed below are causal in nature; nevertheless, the findings can give us an understanding of factors that may be influencing children's development.

Children's characteristics:

As reflected in Section 3, children's age is positively associated with their ELDS composite scores; this association is notable and statistically significant across all domains. Each additional month of age is associated with an average increase of 0.006 on a child's composite score, indicating that older children are better able to perform the developmental tasks set out by the ELDS.

As for children's mother tongue, the analysis shows that children whose mother tongue is Nepali had higher ELDS scores compared to those who spoke Nepali as a mother tongue.

This finding is especially relevant for the language domain, where the relationship is statistically significant, and echoes a similar finding from previous year's study (ERO, 2021). Finally, while male children scored lower than female children across all domains, this relationship was not statistically significant (except for the language domain). Barring this finding, based on both this and last year's results, it appears that gender does not have a strong association with performance on the ELDS assessment in general.

Other factors:

Children who attended ECED programs before entering Grade 1 had higher ELDS composite scores than those who did not; this association is also statistically significant, indicating that experience of pre-primary education is associated with children's development, particularly in the physical domain.

Looking at characteristics of the ECED center and classroom, urbanicity and school type show strong and statistically significant relationships with children's development: students from institutional schools had higher domain and composite scores on average than those from community schools; students from urban areas had higher scores than those from rural regions.

For both of these findings, it is important to note that the model already accounts for factors that may influence these results, such as age, gender, and language. Thus, the model provides a clear indication that there is a strong association between school type and development across domains, with a particularly strong association in the cognitive and socio-emotional domains. Interestingly, students from community schools had higher scores than institutional school students in the physical domain, but this relationship does not exist for any other domain.

Similarly, students from urban areas had higher scores in the language development domain (as well as overall) in comparison to students from rural areas.

ECED classroom characteristics:

Within the classroom, the availability of a caretaker was positively associated with development in all domains. This is not a causal relationship, and it is possible that this relationship is influenced by variables unaccounted for in this model; nevertheless, it is an important consideration in ensuring that a child at ECED is receiving adequate care and attention.

Additionally, the student-teacher ratio has an unexpected positive association with children's development (i.e. a higher ratio is associated with higher scores), which contradicts the common understanding that lower student-teacher ratios help provide a better learning experience for children. However, once again, we must exercise caution in interpreting this finding as the variable does not provide a class-level estimation of student-teacher ratio and thus may not be an accurate representation of the relationship.

Next, although not statistically significant, textbook usage in the classroom has a negative relationship with development – while we should interpret this finding with caution, given that it is not statistically significant, it is an indication that classroom approaches involving other materials (play-based, for example) may potentially have a better association with children's development. However, it is also possible that there are other factors mitigating this relationship.

Further, usage of curriculum and the adoption of ELDS (i.e., designing classroom activities according to the Early Learning and Development Standards) both appear to have a mixed relationship with children's development. Using a curriculum in the classroom tends to have an overall positive relationship with the child's development, but a negative association particularly in the cognitive and social-emotional domains. Similarly, while using ELDS in the classroom has a positive association with the overall development score, there is a negative association in the language and socio-emotional domains. These findings, while not statistically significant, merit further exploration of domain coverage and implementation fidelity across the different kinds of curriculum used in ECED classrooms.

Finally, the availability of learning areas in the classroom is associated with physical development. This relationship is notable (having one or more learning areas, regardless of sufficiency, is associated with a difference of 0.13 in the physical domain score) and statistically significant. It also has positive associations with other domains, although those relationships are not statistically significant. This finding may indicate that the physical arrangement of a classroom in a certain way and/or the availability of certain kinds of items have an influence on physical development in particular. It is useful to keep in mind that there is some variation in subject area coverage as well as item sufficiency among schools that do have learning areas.

Teacher's characteristics:

Looking at the variable for teacher qualification, it appears that there is a positive relationship between higher teacher qualifications (above the required Grade 10) and children's development. For teachers who have higher qualifications than Grade 10 (i.e., Grade 12, bachelor's, and master's degrees), there is a positive association with children's development in all domains but physical, where the association is negative.

Finally, receiving pre-service and in-service training has a positive but statistically insignificant relationship with children's development: i.e., while there is an indication that training is associated with higher ELDS scores, this finding cannot necessarily be generalized to the larger population. There is also a negative relationship between teacher training and physical development, indicating that there is potential to explore the contents of ECED trainings on concepts of physical development.

7. Major Findings and Implications

This section summarizes the key highlights of the analyses presented in Sections 3-6 and discusses some potential implications and related takeaways. This section is divided into four parts, mirroring the organization of the overall report: first, we discuss the overall development levels of children in Nepal, followed by ECED class structure, ECED classroom characteristics, and ECED teacher's characteristics.

7.1 Children's development across ELDS domains

Key findings on children's development and learning levels are as follows:

- Overall, 77.1% of children were developmentally on track. The highest proportions of on-track children were in the language and physical domains, and the lowest was in the socio-emotional domain.
- Children who spoke Nepali as a mother tongue were more likely to be on track than those who spoke other languages. There is a strong and statistically significant association between speaking Nepali and development in the language domain.
- No students in institutional schools were placed in the struggling category, and nearly all students (95%) were on track. In contrast, 65.6% of students from community schools were on track. After accounting for age, mother tongue, and other characteristics of ECED classrooms, there was still a strong positive and statistically significant association between institutional school type and children's development levels.
- In terms of geography, Karnali had the smallest proportion of on-track children (53.4%) and highest proportion of children in the struggling category (17%).
- Urban regions were positively associated with development levels across domains, particularly in the cognitive and language domains.

Beginning with the overall proportion of children classified as on track in this study (77.1%), it is worthwhile to recall that the decision the use a single set of cut-scores rendered it difficult to see meaningful differences in the performance of older children. Given that a majority of the sample is over the target age group, it is possible that the selection of cut-scores may be leading to some overestimation of children on track (e.g., a more stringent and age-appropriate cut-score for 6-year-olds may have decreased the overall proportion of on-track children). While the result of this study seems to indicate an improvement in the proportion of on track children from the last study, the differences in sampling and standard setting render the two studies incomparable. Further, while the numbers themselves are higher, the patterns of performance across age, language, and geography remain strikingly similar to those in the previous study (ERO, 2021). Therefore, we must exercise caution in using these results to directly make policy decisions regarding ECED.

Further, as the proportion of children in the struggling category is small in the language and physical domains, it is expected that the majority (more than 80%) of children are likely to achieve skills and knowledge expected in the ELDS with adequate support. Meanwhile, given the relatively larger proportion of children in the struggling and progressing category in the socio-emotional domain, some amount of intervention may be necessary at a larger scale to continue to improve development in the socio-emotional domain.

In terms of language, we see that speaking Nepali as a mother tongue is positively associated with language development. There is a potential concern that this gap reflects children's familiarity with the language of assessment, Nepali, rather than an actual difference in developmental outcome. However, given that this association is statistically significant only for the language domain (where the gap is more expected), and not the remaining domains, it seems plausible that conducting the assessment in Nepali does not greatly affect how children with different mother tongues perform on the assessment. Even so, it is important for policymakers and researchers to continue studying how language policy can be formulated so that children with local or regional languages do not face disadvantages in ECED.

With regard to school type, there is a significant difference in the development levels at institutional and community schools. This association is strong and statistically significant even after accounting for factors such as children's age, mother tongue, teacher training, and curriculum usage. While there are other variables that could be underlying this association, it is still important to acknowledge the gap and work towards bridging it so that all children have equitable access to quality ECED.

Finally, looking at the difference in the average learning and development status in general across provinces, the gap is notable. The proportion of on-track children in Bagmati is more than that of Karnali. At the national level, this province-wise difference in children's development and learning status needs to be an important consideration in future policy design.

7.2 ECED Class Structure

A key finding in this section was that 25.6% of community ECED centers offering multiple classes (such as nursery, LKG, or UKG, in combination with the mandated pre-primary class). While such a structure is typical for institutional ECED centers, most community ECED centers (74.4%) only offer one year of pre-primary education despite having mixed-age enrollment. While the Education Act encourages community-funded childcare centers for children below 4 years of age, which could potentially allow for separate and age-appropriate ECE, it appears that not many community ECED centers offer such a class alongside the mandated one-year class.

This finding potentially indicates that offering multiple ECED classes for young children

of different ages, particularly in schools with high enrollment, could be an option for further policy consideration. This is supported by the finding that a few community ECED are already offering multiple classes, although they are a small minority of the community ECED in the sample.

7.3 ECED Classroom Characteristics

Beginning with student enrollment and teacher/caretaker numbers, the following were the key findings in Section 4.1:

- Institutional ECED centers tend to have higher student enrollment as well as a higher number of teachers and caretakers.
- The availability of caretakers in an ECED center was found to have a significant positive association with children's development across all domains.
- Student-teacher ratio, calculated here at the school level rather than the classroom level, was positively associated with children's development, particularly in the cognitive and language domains.

One major takeaway from the findings above is the disparity in enrollment across institutional and community ECED. It may be worthwhile to explore the factors that affect parents' decisions to send their children to institutional ECED: potential reasons include working parents' needs for childcare catering to children younger than 4 years, prioritizing English language education, or certain negative perceptions about government education in general.

Another takeaway is the association between caretakers and children's development. While this is not a causal relationship, it may still be worthwhile to consider what a caretaker may be bringing to a classroom, especially in ECED centers with high student enrollment. On the other hand, given that caretakers are more likely to be available at ECED centers with higher numbers of teachers, it is also possible that they may not be playing a significant supplementing role in supporting overburdened teachers. Nevertheless, understanding the caretaker's role and contribution in the classroom may help better train teachers or advocate for provision of general staff at ECED.

Finally, while the results of the regression analysis show an unexpected positive association between higher student-teacher ratios and children's development, we should exercise caution in interpreting this relationship. Since classroom-level data was unavailable, we calculated this ratio by dividing the total student enrollment by the total number of teachers in the ECED center. Thus, it is possible that this relationship may be mitigated by other factors (such as larger student enrollment in general) and does not necessarily tell us whether having a certain number of students under one teacher influences children's development.

Next, the key findings on curriculum and textbook usage are summarized below:

- More than half (57%) of the surveyed ECED teachers use a curriculum in the classroom; among them, the majority (about 96%) use the national curriculum. Curriculum usage was positively associated with children's development in some domains and negatively associated in others, although the associations were not statistically significant.
- 35% of teachers reported not using textbook or workbook materials in the classroom (this number was higher for community ECED). Not using textbooks in the classroom had a positive association with children's overall development, although the relationship was not statistically significant.

With regard to curriculum, it is notable that a significant number of ECED centers across the country do not use any curriculum. It is important to continue to advocate for the use of curriculum across ECED so that children's learning and development activities can be based on a robust, standardized, and structured framework. Widespread curriculum usage would also help in strengthening the implementation of the curriculum and understanding where it may need improvement. Furthermore, as the regression analysis shows, curriculum usage in the classroom can have a positive association with children's development; however, the slight negative associations with certain domains may be an indicator to look more closely at curriculum coverage, quality, and implementation across all developmental domains.

Similarly, while textbook usage does not have any statistically significant associations with children's development, there is a positive relationship between not using a textbook and overall ELDS score. While this is not a particularly strong or causal link, this finding may be an indication that using other kinds of teaching materials (e.g. activity-based items) may be more helpful for development in the early ages. This conclusion cannot be substantiated purely based on the current analysis, but it provides a direction for future policy and advocacy on the use of textbooks in ECED classrooms.

Next, on the prevalence and sufficiency of learning areas, the key findings are summarized as follows:

- 20.4% of the surveyed ECED centers have all six learning areas with sufficient items, meaning that 79.6% of ECED centers do not meet the minimum requirement. A higher number of community ECED (about 18%) compared to institutional ECED centers have no learning areas at all.
- Availability of learning areas in the ECED center was positively associated with children's physical development.

While a large majority of ECED do not meet the requirement of six sufficient learning areas, a significant proportion (about 36%) have between one to five learning areas with full

sufficiency. This finding indicates that about half the surveyed schools have some arrangements for learning areas, even if they are unable to meet the complete requirement. However, given that learning areas are positively associated with development, it is worthwhile to continue to endorse the arrangement of classroom space and items in this manner, and potentially explore reasons why the prevalence of learning areas in classrooms remains low.

Finally, following are the key findings on the operational and infrastructure aspects across ECED centers in Nepal:

- 17% of schools reported not having toilets and 16% reported not having safe drinking water in the ECED center; this number was higher for community ECED than institutional.
- 93% of institutional ECED centers are open for the required number of hours per day (4.5 or above), while 80.5% of community ECED centers do the same.

While a majority of sampled ECED centers have provisions for adequate physical space, toilets, first aid, and drinking water, there is still a sizeable proportion of ECED centers operating without one or all of these components. These findings have significant implications on the overall safety and health of the child. Thus, it is important to continue efforts to ensure that the minimum standards are met at all ECED centers across the country.

7.4 ECED Teachers' Characteristics

Key findings about ECED teachers' characteristics are as follows:

- All teachers in the sample met the minimum qualification (Grade 10). Teachers with higher qualifications (Grade 12, bachelor's, master's degrees) had a positive association with children's development in all domains but physical.
- 71.4% of teachers did not receive any pre-service training. Pre-service training was found to have slight positive associations with children's development, although these relationships were not statistically significant.
- 42% of institutional ECED teachers and 25% of community ECED teachers report receiving no in-service trainings at all, indicating that a larger proportion of community ECED teachers received in-service training as compared to institutional teachers. Similar to pre-service training, in-service training also had a slight positive association with children's development.

With regard to teachers' educational qualification, the results show that compared to children taught by facilitators with Grade 10 qualification, those taught by Grade 11 and 12 and higher education qualification show positive associations with all domains of development but physical. However, most of these differences are very small and not statistically

significant. Thus, as the previous study concluded, educational qualification may be an important factor to ensure the capacity of ECED teachers but raising the required qualification from Grade 10 (i.e., the current recommendation in the SSDP (MoE, 2016)) to a higher level of education, such as Grade 12, may not directly lead to the improvement of ECED quality and enhance children's learning and development status.

As for training, the findings show that receiving pre-service and in-service training have slight positive associations with children's development, aligning with the larger body of literature on the subject (Howes, 1997; Burchinal et al., 2002; Clarke-Stewart et al., 2002; Ghazvini & Mullis, 2002; Fukkink & Lont, 2007; Raver et al., 2008; Pianta et al., 2014; Early et al., 2017). However, both kinds of training were found to have a negative association with development in the physical domain. This may indicate that the current body of trainings does not cover the domain of physical development as thoroughly as other domains; therefore, similar to assessing domain coverage and implementation quality of the national curriculum, it could also be fruitful to assess the contents of the TPD to ensure that all domains are emphasized and covered adequately. However, given the complicated landscape of training available to teachers, it may be difficult to conduct such an exercise in a manner that includes the variety of training received by teachers.

It should also be noted that the associations between training and development status are small and not statistically significant. One of the reasons for the relative lack of strength in these relationships could be that there are no official mechanisms and policies in Nepal which encourage and support ECED facilitators to apply training content to the classroom or enable them to receive support in the classroom whenever necessary.

8. Limitations of the Study and Future Considerations

Limitations

In order to ensure that the results of this study are interpreted in an informed and transparent way, it is important to acknowledge the limitations of the study. These limitations primarily fall within issues with the assessment tool and data collection.

The ELDS assessment tool has undergone much revision in the past few years, most notably based on the analysis by Kitamura and Acharya (2022). These improvements have resulted in an assessment tool that has stronger content relevancy and representativeness, as well as a domain structure that largely explains the variance in item responses. However, the primary issue in the validity and reliability of its usage in this study stems from the standard setting exercise, where cut-scores were determined to classify children as developmentally on track. As explained in Section 2, the decision to choose a single set of cut-scores may have resulted in misrepresenting the proportion of older children who are "on track", who make up a majority of the sample. Additionally, the lack of domain-specific cut-scores may prevent us from understanding the true differences in domain-level

development categories. While the standard setting exercise was appropriately chosen for the audience and well understood by the panelists, additional work is required to explore how the question of age differences can be integrated suitably into the next standard setting exercise.

Another limitation was the significant non-response rate in the study. Given the significant rates of absence during the period of assessment, it may be worthwhile to consider either increasing the sample size or finding another way to account for non-participation. As mentioned in Section 2, the non-response rate resulted in an overrepresentation of institutional school students and urban students, as well as some instances of significant underrepresentation of students from mountain areas, particularly in Karnali. Despite the addition of non-response weights to balance the sample, the study is still missing key data from children in more remote, rural areas, where developmental milestones and quality of ECED services may look different than in more accessible areas. Thus, the results of the study should be interpreted with care, particularly when considering policy implications that may apply at a federal level.

Finally, although the revised version of the ECED Background Survey specifically asked about enrollment and other information for the year that the children were enrolled in ECED (2078), several questions (such as enrollment and student ages) were based on teachers' estimations. Thus, it may be preferable to collect data from children at the time when they are still in ECED programs. This way, we may be able to achieve a better connection between children's data and ECED data, which makes more analysis possible with less bias.

Further Considerations

For future iterations of this study, some future considerations would be to improve the standard setting process in its effectiveness and reliability, so that the proportion of developmentally on-track children is estimated keeping age and other important differences in mind. Additionally, given that enumerators failed to reach all the sampled schools and provided verbal feedback about the length of the assessment tool, it might be a worthwhile next step to reduce the length of the tool while keeping its difficulty and statistical properties intact. This would also help make the standard setting process easier and simpler.

For other studies that may further our understanding of ECED in Nepal, one direction that the report indicates is training. As mentioned in the previous study, it would be valuable to investigate the effects and experiences of ECED teacher training programs. The preliminary findings from past ERO reports (ERO, 2017-b; ERO, 2018, ERO, 2021) consistently imply the ineffectiveness of the existing training programs. This is an important topic to investigate, particularly with the introduction of the TPD and the rise of several institutional organizations offering trainings. As suggested in the previous report, evidence on the causal effects of training and their mechanisms, with a certain degree of internal and

external validity, would not only attract more attention to the question of effective training but also guide effective decision-making at the policy level.

In conclusion, we hope that this report builds on the work done so far and raises various ECED stakeholders' awareness of the current quality and obstacles facing ECED in Nepal. In particular, we hope this report provides an insight into the learning and developmental levels of young children across the country. We encourage and welcome researchers to conduct further research so that we can accumulate more evidence and knowledge to ultimately ensure that all children in Nepal are developmentally on track.

Appendix 1. Assessment Framework for ELDS

Domains	Subdomains	Aspects	Standards	Tasks
Physical development	Physical development	Gross motor skills	• Demonstrate coordination of body parts	• Walk along straight line balancing the whole body • Stretch, bend and touch own feet • Move some steps backward • Jump some steps with both feet • Hop turn by turn on one foot • Crawl on the ground • Climb up/down ladder, slopes, and steps • Lift and carry a small char of their size • Throw and catch small objects from short distance
		Fine motor skills	• Coordinate and use fine motor body-parts • Demonstrate hand-eye coordination • Use tool, instruments, objects with control	• Tear paper or leaves into pieces • Thread various small objects, such as beads • Do up buttons • Click fingers • Color within a boundary • Do simple weaving • Draw lines, circles, and patterns • Fold paper • Cut and paste small objects • Mold and manipulate wet sand, dough or clay
		Sensory motor skills	• Show reactions and responses to something using senses	• Identify and imitate various sounds • Follow given rhythm • Show a reaction to things with various feelings (smooth vs. rough, hard vs. soft, etc.) • See and distinguish objects far and near using each eye in turn • Respond to different tastes (sweet, sour, bitter, etc.)

	Health and hygiene	Personal hygiene	• Demonstrate health and hygiene behaviors and practices	• Maintain their body, including nose, hand, nail, feet and teeth, neat and clean • Show awareness of dirt vs. clean objects and food • Follow proper toilet practice
		Safe place	• Have understanding of safe practices • Avoid harmful and dangerous objects	• Show awareness of danger of fire, electricity, sharp objects and poisons • Show familiarity with signs of danger and poisons and avoid them
		Food habit	• Have some understanding of health and hygienic food habits and practices	• Follow healthy and hygienic food habits • Avoid bad food habits
Language development	Communication	Listening	• Listen to and respond to properly	• Listen and distinguish common sounds, such as human voices and animal voices • Listen and follow instructions in familiar language • Listen and respond in familiar language • Listen to short story
		Communicating with others	• Speak simple short sentences • Communicate with others, such as familiar peers and adults	• Speak fluently in familiar language using appropriate words with respect to geography, caste and ethnicity, cultures, and community • Participate in conversation in small groups • Ask and respond to questions • Express views and opinions • Talk with elders and younger children according to local norms and values • Wait for their turn and listen to others

	Literacy	Pre-reading	• Demonstrate pre-reading skills	• Interpret the picture and pictorial story • Match letters and words with pictures • Recognize alphabets in Nepali and mother tongue
		Pre-writing	• Demonstrate pre-writing skills	• Draw pictures • Draw and copy patterns • Draw some basic shapes, such as line, half/full circle • Form some basic alphabets
Cognitive development	Intellectual development	Cognitive skills and learning processes	• Explore and investigate • Reflect on their learning	• Use puzzles for explanation and investigation • Use previous knowledge and skills for various day to day situation
		Classification and ordering	• Recognize and describe basic geometric and other shapes	• Describe familiar geometric shapes, such as squares, triangles, circles
	Cognitive knowledge	Scientific exploration (weather related)	• Describe sun, moon, and sky	• Name and draw picture of sun, moon, star, and sky
		Living and non-living beings	• Know the parts of boy and their functions	• Name the parts of boy • Differentiate the living and non-living beings
		Scientific knowledge (materials)	• Identify and describe everyday materials	• Identify utensils of everyday use • Identify materials by their quality and property
		Scientific exploration (technology)	• Differentiate some technological materials and tools	• Name technological devices available in the context

		Scientific exploration (transportation)	• Describe type of transportation	• Name types of transportation available in the context
		Distance and direction	• Recognize and describe distance and direction	• Describe distance • Properly name direction
		Concept of time	• Recognize the concept of time	• Name the days of week and months of year
	Mathematics	Numeracy	• Recognize and write basic numbers (i.e., 1 to 9)	• Recognize and write numbers 1 to 9
		Measurement	• Differentiate objects with different length and size	• Measure and compare objects with different lengths and size
	Creativity	Creative arts	• Create and draw shapes • Sketch objects	• Draw and describe pictures
		Imagination (i.e., drama and role play)	• Use imagination in drama and role play • Create music instrument	• Create scenario in drama and role play • Create rhythm
Social development	Social develop-men	Relationship with peers and adults	• Demonstrate relationship with peers and unfamiliar adults	• Greet and interact with peers and adults

		Cooperation and coordination	• Seek and provide support from/to others	• Perform task in collaboration with others
		Responsibility	• Take responsibility for own belongings	• Involve in ECD center's chores and activities • Put own belongings in proper places
		Social behavior	• Demonstrate appropriate behaviors with peers and adults	• Get along with others while performing tasks
		Self-concept	• Demonstrate sense of self • Show pride of own existence	• Express own likes and dislikes with a reason in choosing things
Emotional development	Emotional development	Emotional expressions	• Express emotions according to the situations • Show appreciation to others	• Recognize and describe own and others' emotions • Show appreciations to others with expression, such as clapping hands
		Emotional security and confidence	• Demonstrate confidence in new experience	• Demonstrate independence in individual and group work
		Self-control and balancing	• Demonstrate balances over the emotions	• Modify behaviors and expressions of emotions for different situations
Cultural development	Values	Family and community	• Follow and value routines and norms of own class and family	• Demonstrate an understanding on basic dos and don'ts of their own family/community

		Natural and cultural heritage	• Show an appreciation to local rules and cultures • Demonstrate respect for natural and cultural heritage	• Know particular festivals celebrated in their family and local community • Know costumes of Nepali people of their locality • Know dome don'ts of in temple, mosques, monastery of the locality
		Nation and nationality	• Show respect to Nepali emblems	• Identify national flag • Knows Nepal's national anthem

Appendix 2. ELDS Assessment Tool

Education Review Office

Early Learning and Development Standard Assessment Tool

S. no. 1. Social Development: Self-concept Activity: Expressing oneself Materials: None

Procedure and Instruction

- Ask the name of the child, age and address.
- Now I will ask you some questions. Are you ready? …….. Thank you.
  - What is your name?
  - How old are you?
  - Where do you live?
- Score according to child's performance.
  - In the first question, if the child only says his/her first, last, or nick name, then you may probe by asking about the child's full name (what is your full name?).
  - In the second question, child can verbally say their age or show it with their fingers.
  - In the third question, If the child points and says 'over there' or something similar you may prompt and ask if they know the name of the place (e.g., street/community/palika) (what is the name of the place?).

Question	Answer full name (2)	Answer only first name, last name, or nick name (1)	Do not response (-)
A. What is your name?			
	Answer age (2)		Do not response (-)
B. How old are you?			
	Answer the name of the place (2)	Answer unclearly: NOT the name of place (1)	Do not response (-)
C. Where do you live?			

S. no. 2. Cognitive Development. Activity: Arranging puzzle

Materials: Picture of Dog and its 4 equal dimensional puzzles

Procedure and Instruction

- Attract the child's attention and show the picture of the dog. Then hand over the pieces of puzzle to the children and ask them to arrange the puzzle according to the picture. Give them 1 minute to complete.
- **Today we will play several games. First, let's play puzzle. Look at me.** (show the picture of Dog) **This is dog. Now, I will give you these pieces of puzzle. You have to make a dog from these pieces.**
- Score according to child's performance.
  - What is important in the scoring is how many pieces are in the right/appropriate place in relation to the whole image (how the parts relate to the whole)
  - If the child completes the puzzle upside down, that is scored as correct.

Materials	Arrange all pieces correctly (2)	Arrange two or three pieces correctly (1)	Could not arrange (0)	Do not re-sponse (-)
Puzzle				

S. no. 3. Cognitive Development **Activity:** Knowledge of numbers **Materials:** Separate cards of the different pictures of objects with numbers 1, 4, 3, 6

Procedure and Instruction

- Show the pictures to the children and consequently ask them how many …… are there in order.
- **Look at these papers. Here are some pictures.** (Showing them pictures) **How many cars are there?** (Showing second picture) **How many fish are there?** Ask continuously.
- Score according to child's performance.

Materials	Correct answer (2)	Wrong answer (0)	Do not response (-)
First (Car)			
Second (Fish)			
Third (Cow)			
Forth (Cat)			

S. no. 4. Language Development **Activity:** Copying shapes

Materials: Pencil and A4 sheet

Procedure and Instruction

- Provide a pencil and A4 sheet to each child to write. Enumerators will write the following shapes and ask the child to copy these in the given paper on by one: 1) Half circle, 2) Slanting line, 3) Plus, 4) Full circle, 5) U-shape
- **Look, here is something written in the paper** (half circle). **Can you see it? ……. Thank you. Now, copy it as shown in the paper.** (Continue for the rest of shapes)
- Score according to child's performance
  - If the child draws the shapes in wrong directions (i.e., half circle, slanting line, U-shapes), that is considered as not correct.

	Shape	Written correctly (2)	Not written correctly (0)	Do not response (-)
A	Half circle:			
B	Slanting line: /			
C	Plus: +			
D	Full circle:			
E	U-shape: U			

S. no. 5. Cognitive Development **Activity:** Creative Art

Materials: A card with five circles.

Procedure and Instruction

- Attract the attention and provide the card with five circles. Ask children to complete the circles by coming up with different items.
- Provide 2 minute for the activity.

Look at this paper. Here are five empty circles. Please come up with and draw different objects which you see every day or you imagine, using these circles.

- Score according to child's performance.

Aspect	Draw 4 or 5 objects (2)	Draw 1-3 objects (1)		Do not draw (-)
D. Fluency: how many responses				
	Draw 4 or 5 different objects (2)	Draw 2-3 different objects (1)	Draw all the same objects (0)	Do not draw (-)

E. Flexibility: how many types of responses				
	Draw 4 or 5 unreal / imaginary objects or connecting circles to create something original (2)	Draw 1-3 unreal / imaginary objects (1)	Draw all real objects (0)	Do not draw (-)

S. no. 6. Language Development: Pre-reading **Activity:** Naming objects and initial letters

Materials: A card with the picture of Pigeon (Pareva), Makai (corn), Kalam (pen) and Jhanda (flag)

Procedure and Instruction

- Start with the demonstration of the activity by showing the picture of Pareva and saying "this is a pigeon and its first letter is p". Then, show the picture of Makai, Kalam and Jhanda one by one as listed in the assessment tool below and ask children to name the object and identify its first letter. When the child cannot correctly answer the name of object, enumerators should tell the name of object before asking its first letter ("This is Makai. What is the first letter of Makai?")

Now, we will play another game. I will show you a picture of an object one by one and ask you to name the object and its first letter. First, let's do a practice. (Show Pareva). **This is 'Pareva' and its first letter is 'P'. Now, it's your turn.**

- **Please tell me the name of the object** (Show Makai)**……. What is the first letter of 'Makai'? …….. Thank you.**
- **Then, please tell me the name of the object** (Show Kalam) **…… What is the first letter of 'Kalam'? …….. Thank you.**
- **Lastly, please tell me the name of the object** (Show Jhanda)**……. What is the first letter of 'Jhanda'? …….. Thank you.**
- Score according to child's performance

Object		Correct name/ letter (2)	Incorrect name/ letter (0)	Do not response (0)
Makai (corn)	Naming			
	Initial letter			
Kalam (pen)	Naming			
	Initial letter			
Jhanda (flag)	Naming			
	Initial letter			

S. no. 7. Language Development: Pre-reading **Activity:** Identifying alphabet

Materials: Alphabet card

Procedure and Instruction

- Show the Nepali alphabet cards (ख, घ) in order and let the child identify them.

Now, let's identify alphabets. I will show alphabets. You answer what those alphabets are. (show ख) ……. Thank you. (show घ) ……. Thank you.

- Score according child's performance.

Shown alphabets	Correct answer (2)	Incorrect answer (0)	Do not response (-)
First Nepali alphabet ख			
Nepali alphabet घ			

S. no. 8. Language Development: Listening Comprehension **Activity:** Comprehending story

Materials: Short story

Procedure and Instruction

- Read aloud the short story slowly, clearly and in a fair and neutral rhythm. Then, sequentially ask the questions, and score as mentioned in the assessment tool.
- Make sure the child can hear you - if you are in a very noisy area get closer to the child
- The story cannot be repeated
- Ask each question slowly and clearly. Each question may be repeated ONCE if needed.
- **Now I am going to tell you an interesting story. After I have told you the story I will ask you some questions. I will just read once, so listen carefully, okay?**

There was a fat cat. He always wore a red hat. One day when he was sleeping, a small mouse came silently and stole the hat. The cat woke up to find his hat gone. He got very angry and started chasing the mouse.

d) "Who stole the cat's hat?"

e) "What color was the hat?"

f) "Why did the cat chase the mouse?"

- Score according to child's performance

Questions	Correct answer (2)	Incorrect answer (0)	Do not response (-)
F. **"Who stole the cat's hat?"** (Correct: the mouse)			
G. **"What color was the hat?"** (Correct: red)			
H. **"Why did the cat chase the mouse?"** (Correct: because the mouse took/stole its hat)			

S. no. 9. Physical Development: Gross motor **Activity:** Hopping on one-foot

Materials: None

Procedure and Instruction

- First, show the activity by hopping for 5 times with any one foot. Ask children to hop 5 times with lifting one foot.

Now, we will play lifting one foot up game. First, I will perform. Observe carefully. First, I will hop five times by lifting foot (hop five times). Now, you also hop for 5 times by lifting one foot at one place.

- Score according to child's performance
  - Count the number of continuous hops (hops during which the child doesn't put his foot down or hold onto something) the child makes.
  - If children put both of his/her feet down, hold onto something, or moving around while hopping, score 0.

Performed activity	Hop 5 times correctly (2)	Hop less than 5 times correctly (1)	Hop incorrectly (0)	Do not response (-)
Hop				

S. no. 10. Physical Development: Fine motor **Activity:** Folding paper

Materials: A4 size paper

Procedure and Instruction

- Give A4 sized papers and conduct the activity by letting children fold the paper along with you (first horizontal fold and then vertical fold).

Children now, fold the paper with me. Look at me. Now, along with me you have to fold

the paper as I do.

- Score according to child's performance.
  - While folding paper, differences up to 1 cm could be considered as proper.

Performed Activity	Fold straightly in 4 equal parts (2)	Fold properly in 2 equal parts (1)	Could not fold properly in equal parts (0)	Do not perform (-)
Folding Activity				

S. no. 11. Physical Development: Fine motor **Activity:** Forming shape

Materials: Pencil and the dotted picture of the flag (one fourth of A4 size)

Procedure and Instruction

Provide children with a dotted flag picture in quarter sized A4 sheets and a pencil. Then ask them to shape by joining dots. Give 1-minute time.

I will give you a paper. The paper has a dotted figure of flag. Draw the flag by joining the dots properly with strait lines.

- Score according to child's performance based on the two scoring dimensions
- In dimension A, if the corners are little rounded, there is a tiny little space between the two lines making the corner or the child extends/overshoots the lines past the corners, you can still accept them as closed corners.
- In dimension B, score the performance based on the reference.

Scoring dimensions	3 closed corners (2)	1-2 closed corners (1)	No closed corners (0)	Do not perform (-)
A. Number of closed corners, no gaps				
	Resemble flag by joining dots properly (2)	Resemble flag by joining dots improperly (1)	Do not join dots completely (0)	Do not perform (-)
B. Resemble closely the picture (form flag by joining dots)				

S. no. 12. Physical Development: Gross motor **Activity:** Throwing and catching ball

Materials: Soft ball with 6 to 8 centimeter dimension

Procedure and Instruction

- You and the child should be in two-meter distance facing each other. You will throw the ball to the child, and the child catches it. Then, the child will throw it back to you. Repeat three times.

Child, I will throw this ball towards you. Catch properly. Then you too throw the ball toward me similarly, I will catch.

- Score according to child's performance.
  - Throwing properly means that children throw the ball in front of the enumerators' body.

Performed Activity	Throw 3 times properly (2)	Throw less than 3 times properly (1)	Throw 3 times improperly (0)	Do not perform (-)
I. Throwing task				
Performed Activity	Catch 3 times properly (2)	Catch less than 3 times properly (1)	Could not catch all 3 times (0)	Do not perform (-)
B. Catching Task				

S. no. 13. Physical Development: Sensory motor **Activity:** Sensory identification

Materials: Soft ball, hard sticks, smooth and rough papers, and record of high and low tone sounds

Procedure and Instruction

- Let the child hold the soft ball and hard sticks in order on his/her hand one by one without allowing the child to see the objects. (E.g., by having his/her hands behind the back). Ask the child to identify which is soft. Then, let the child touch the smooth and rough papers in order without seeing and ask him/her to identify which is smooth. Lastly, play the recorded high and low tone sounds in order and ask him/her to identify which is low.

Now, let's do another game.

- I will let you touch two things with your hands behind your back. Please try not to see them (pass the ball and sticks one by one). Ok, please tell me, which was soft, the first one or the second one?

- Next, I will let you touch two other things with your hands behind your back. Please try not to see them (pass the smooth paper and rough paper one by one). Ok, please tell me, which one was smooth, the first one or the second one?
- Ok, lastly, I will play two sounds, and once you hear them, I will ask you which is in low pitch/tone (play the sounds one by one). Ok, please tell me, which was low pitch/tone, the first one or the second one?
- Score according to child's performance.

Performed Activity	Identify correctly (2)	Identify incorrectly (0)	Do not perform (-)
A. Identify soft ball			
B. Identify smooth paper			
C. Identify low tone sound			

S. no. 14. Cognitive Development **Activity:** Sorting shapes and colors

Materials: Picture cards of stars and circles (two red stars and one yellow star, two yellow circles and one red circle)

Procedure and Instruction

- Place the picture cards in front of the child and say:

We're going to play a game where we group pictures together that are similar. Look at these cards and try to arrange all of them in two groups with others that are alike. Use all the cards and put one group here and one group here (physically show with the hands).

- Once the child has completed sorting by one criterion, do NOT move the piles back together and say,

Ok now look at the cards again and try to find another/different way to group these cards.

- Be patient and wait as the child tries to examine how to arrange the cards.
- Score according to child's performance.

Performed Activity	Sort all cards correctly into the two groups (2)	Sort some but not all cards correctly into the two groups (1)	Not sort cards correctly into the two groups at all (0)	Do not respond (-)

Sort by first criterion				
Sort by second criterion				

S. no. 15. Cognitive Development **Activity:** Concept of Time **Materials:** None

Procedure and Instruction:

- Tell the day of the assessment. Ask them in order; Which day was yesterday? Which day is tomorrow?

Today is ……. day. Now tell me which day yesterday was. Thank you. Which day is tomorrow?

- Score according to child's performance

Materials	Correct answer (2)	Incorrect answer (0)	Do not respond (-)
Yesterday			
Tomorrow			

S. no. 16. Cognitive Development **Activity:** Identification of means of transportation and communication

Materials: Picture of television and mobile phone and picture of bus and airplane.

Procedure and Instruction:

- Show the paper with the picture of bus and airplane and another paper with the picture of television and mobile phone, then ask about their usage.

Children look here. There are two pictures in the paper.

(Showing picture of bus and airplane) **For what purpose these are the use? What can we do with them?**

(Showing picture of television and mobile phone) **For what purpose these are the use? What can we do with them?**

- Score according to children's responses.
  - ◊ Correct answers can be anything one can do with the objects and are not limited to the main usage: e.g., correct answers for 'mobile phone' can include but not be limited to talking to someone, sending and receiving messages, watching videos and cartoons, and playing games.

Materials	Correctly answer both (2)	Correctly answer any one (1)	Incorrect answer (0)	Do not respond (-)
J. Mode of Transportation				
K. Mode of communication				

S. no. 17. Cognitive Development **Activity:** Identifying direction

Materials: Soft ball.

Procedure and Instruction

- Ask the child to place a ball 1) on right-hand side and 2) behind the child.

Can you put this ball on your right-hand side? ……. Thank you. Now, can you put the ball behind you? ……. Thank you.

- Score according to child's performance.

Direction	Perform correctly (2)	Perform incorrectly (0)	Do not perform (-)
L. Right			
M. Behind			

S. no. 18. Cognitive Development **Activity:** Knowledge of length

Materials: Sticks of different lengths (long (20 cm), medium (15 cm), and short (10cm)).

Procedure and Instruction

- Show the child three sticks of different lengths. Ask him/her to place the sticks according to their length (starting from shortest to longest).

Here are three sticks of different length. Please arrange them according to the length, starting with the shortest one (physically show the direction with a hand). ……. Thank you.

- Score according to child's performance.
  - ◊ Arranging the sticks in the opposite order (i.e., longest to shortest) is considered incorrect.

Performed Activity	Perform correctly (2)	Perform incorrectly (0)	Do not perform (-)
Arranging sticks according to their lengths			

S. no. 19. Social Development **Activity:** Identifying relationship with friends

Materials: None

Procedure and Instruction

- Ask the child to name any three friends.

Children, tell me the names of three of your friends?

- Score according to child's performance
  - ◊ Friends can be from school, community, or other peer network.
  - ◊ Animals or imaginary friends/cartoons don't count.
  - ◊ If child repeats the same name don't count it twice unless it is clear that they are referring to two different people.

Tell name of 3 friends clearly (2)	Tell name of 2 or 1 friends clearly (1)	Tell that he/she has no friend (0)	Do not respond (-)

S. no. 20. Emotional Development **Activity:** Empathy

Materials: A picture of crying child lying on the ground

Procedure and Instruction

- Show the picture of crying child lying on the ground. Ask the following two questions in order. When the child cannot correctly identify the feeling in the first question, enumerators should provide the answer before asking the second question. (The child is feeling sad, hurt, or upset. What will you do if your friend cried as shown in the picture?)

Now let's look at this picture.

N. How do you think this child is feeling right now?

O. What will you do if your friend cried as shown in the picture?

- Score according to child's performance.
  - ◊ In the question A, acceptable answers: upset, frustrated, unhappy, in pain, sad, scared
  - ◊ A correct response for identifying feelings means the child was able to use an emotion word to describe how the boy is feeling. Responses that describe the picture such as "child is crying" does not show a feeling awareness and would require a prompt: How do you think the child is feeling?.
  - ◊ In the question B, appropriate responses are actions that may help the friend feel

better: ask how he is doing, hug him, tell him he will be OK, find out if he needs medicine, play with him, hold him hand, get an adult to help him or other acceptable answer.

	Correctly identify the feeling (2)	Incorrectly identify the feeling (0)	Do not response (-)
A. Identifies that friend is feeling sad/hurt/upset			
	Give a correct response for how to make friend feel better (2)	Give an incorrect response for how to make friend feel better (0)	Do not respond (-)
B. Gives one response for how to make friend feel better			

S. no. 21. Emotional Development **Activity:** Emotional awareness/regulation

Materials: None

Procedure and Instruction

- Ask the child what makes him/her feel scared (question A). If the child can properly answer, ask him/her what he/she would do to feel better when he/she is feeling scared (question B). If the child provides one response (whether appropriate or inappropriate), probe to get a second response. Then, ask the child what makes him/her feel happy (question C).

P. **Now I have some questions about feelings. Think for a moment and tell me what makes you feel scared.** *(Wait for the child to respond and if answer is unclear ask, "How/why does that make you scared?")*

If child cannot name something that makes them scared, skip to question c) about happiness).

Q. *Then ask,* **What do you do to feel better when you are feeling scared?** *(Wait for the child to respond and if answer is unclear ask, "How/why does this make you feel better?")*

If child cannot name something that makes them feel better, skip to question c) about happiness.

Continue and ask: **What else do you do to feel better when you are feeling scared?** *(Wait for the child to respond and if answer is unclear ask, "How/why does this make you feel better?")*

R. Finally, ask: Now tell me what makes you feel happy." (Wait for the child to respond and if answer is unclear ask, "How/why does that make you happy?")

- Score according to child's responses.
  - ◊ In question B, coping responses are correct if they display that child is trying to self-sooth: e.g., trying to call someone, run away from a scaring situation. Crying is an acceptable response.

	Clearly identify something that makes them scared (2)		Try to identify something that makes them scared but not clear (0)	Do not response (-)
Question A				
	Gives two appropriate responses (2)	Gives one appropriate response (1)	Gives only inappropriate responses (0)	Do not response (-)
Question B				
	Clearly identify something that makes them happy (2)		Try to identify something that makes them happy but not clear (0)	Do not response (-)
Question C				

S. no. 22. Social Development **Activity:** Solving conflict

Materials: None

Procedure and Instruction

- Tell the situation and ask the child how he/she would solve the problem. If the child provides one response (whether appropriate or inappropriate), probe to get a second response.

Now I will ask you to imagine a situation where you are playing with a toy that you like when another child wants to play with that same toy, but there is only one toy. What would you do in this situation? (Prompt ONCE by asking after the first response) Is there anything else you would do?

- Score according to child's performance.
  - ◊ Appropriate answers for solving conflict convey that child understands concept and can identify concrete strategies for solving the problem. Some examples could be: talk to the child and ask him to wait, take turns, share, get another toy, and play together with the toy. An "appropriate response" is one where the child demonstrates an ability to negotiate the situation favorably, in a way that the other child is not hurt or left upset. This often involves sharing of some kind.
  - ◊ Inappropriate response: push the child away, tell him it's mine and he can't have it. An "incorrect" includes responses that do not to solve the situation favorably or at all. That is, the child who wants to play is left crying, hurt, or neglected.

Gives two appropriate responses (2)	Gives one appropriate response (1)	Gives only inappropriate responses (0)	Do not response (-)

S. no. 23. Cultural Development **Activity:** National values and norms (national anthem)

Materials: Recording of the national anthem

Procedure and Instruction

- Play the recorded national anthem and ask the child to show you what he/she usually does when hearing the song.

I am going to play one song. I am going to observe what you do, so please show me what you usually do.

- Score according to child's performance.

Response	Stand up (and sing along) (2)	Sing along without standing (1)	Do not response (-)
National Anthem			

S. no. 24. Cultural Development **Activity:** Festival **Materials:** None

Procedure and Instruction

- Ask the child his/her favorite festivals celebrated in his/her home or neighborhood/community? Do not probe or give hints when the child cannot elaborate.

What is your favorite festivals celebrated at home or neighborhood/community? ….. How do you celebrate it?

- Score according to child's performance.
  - ◊ Festivals include but not limited to national festivals, local festivals, family events (e.g., Marriage and birthday).
  - ◊ Elaboration of how to celebrate the festival include but not limited to eating special food, wearing special clothes, visiting special places, and dancing.
  - ◊ Whether the answer seems to correctly reflect the usual way of celebration does not matter as far as the child can elaborate how to celebrate it.

Elaborate how to celebrate (2)	Tell the favorite festival but do not elaborate (1)	Do not response (-)

Thank you for Today.

Appendix 3. ECED Center Background Questionnaire

	1. Target ECED Centre/School Basic Information		
BI1.	Province	01 = Koshi 02 = Madhes 03 = Bagmati 04 = Gandaki 05 = Lumbini 06 = Karnali 07 = Sudur Paschim	
BI2.	District		
BI3.	Name of (mother) school		
BI4.	School code of (mother) school	_____ (code)	
BI5.	Type of ECD centre	01 = Attached to the mother school 02 = Not attached to the mother school	If 01, skip BI6
BI6.	Name of ECD centre		
BI7.	School type	01 = Community (community) school/centre 02 = Institutional (private) school/centre 98 = Other (specify)	
BI8.	Establish date of the center (year and month):	_____ (Year) _____ (Month)	
BI9.	Center Operation Timing (In a year)	…… months a year …… days a week From (Morning) …… to (Afternoon) ……	
BI10.	School head teachers/Principal has completed training or orientation on ECD	00 = No 01 = Yes	
BI11.	School management committee (SMC) has received training or orientation on ECD	00 = No 01 = Yes	
BI12.	ECD class structure		

	BI12_A. How many ECD classes did the school/centre have in the academic year 2078?	BI12_B. What was the type of ECD class? (For each class)	BI12_C. What was the main age group of ECD class? (For each class)	BI12_D. How many children were enrolled in ECD class? (For each class)	
		01 = Playgroup (PG) 02 = Nursery 03 = LKG 04 = UKG 05 = Sishu kaksha (infant class) 06 = Pre-primary class 07 = Bal bikas kendra (ECD centre) 98 = Others (Please specify)			

2. Target class enrollment information			
Detail of the children enrolled in the target ECD class (in the academic year 2078)			
Note: Please put 0, if there is no child fallen in the respected category			
EI1. Age Group	Boys	Girls	Total
EI1_A. Less than 3 years (35 months or less)			
EI1_B. 3 years (36-47 months)			
EI1_C. 4 years (48-59 months)			
EI1_D. 5 years (60-71 months)			
EI1_E. 6 years or above (72 months or more)			
EI2. Estimated number of children with moderate to severe additional needs/disabilities			
EI3. The number of ECD teachers			
(Note: do not count caretakers (aaya))			

3. ECD Teachers' Information (in the target ECD class)								
TI1. Gender 01 = Male 02 = Female 98 = Others	TI2. Year of Birth (Note: in Nepali calendar)	TI3. Educational qualification	TI4. Working Period as ECD teachers (Note: Round off in years)		TI5. Pre-service training (training before starting the ECD teacher career)			
			TI4_A. Total period	TI4_B. At the current ECD centre	TI5_A. Number of training 00 = Not taken (skip TI5_B-D)	TI5_B. Provider (For each training)	TI5_C. Year of training (For each training) (Note: in Nepali calendar)	TI5_D. Duration of training (For each training)
		01 = Less than grade 8 02 = Grade 8 03 = Grade 10 04 = Grade 12 05 = Bachelor's degree in education 06 = Bachelor's degree in non-education 07 = Master's degree in education 08 = Master's degree in non-education 98 = Others (please specify)				01 = Organisation A 02 = Private Organisation B 03 = Inclusive ECD NGO 04 = Private Organisation C 05 = University (specify from the following list) 05_a = A University 05_b = B University 05_c = C University 05_d = Others (please specify) 98 = Others (please specify)		

TI6. Induction ECD training (in the first year)			TI7. Continuous supervision or coaching (visit classroom and provide feedback) in the last year (2078)		TI8. In-service training (training after starting the ECD teacher career)				TI9. Training to address the needs of children with moderate to severe additional needs/disabilities	TI10. Does the teacher identify as a person with disabilities?
TI6_A. Training record (If 00 skip TI6_B-C)	TI6_B. Provider	TI6_C. Year of training (Note: in Nepali calendar)	TI7_A. Provider 00 = None (skip TI7_B)	TI7_B. Length (in days)	TI8_A. Number of training 00 = Not taken (skip TI8_B-D)	TI8_B. Provider (For each training)	TI8_C. Year of training (For each training)	TI8_D. Duration of training		
00 = Not taken 01 = Partially taken 16 days training 02 = Fully taken 16 days training 03 = Partially taken 30 days training 04 = Fully taken 30 days training	01 = Local Government 02 = Provincial ETC 03 = NGO/INGO 04 = Private institution (please specify) 98 = Others (please specify)		Response code same as T16_B			Response code same as T15_B			00 = No 01 = Yes	00 = No 01 = Yes

	4. Characteristics of the target class		
TC1_A.	What was the primary language of instruction in class in the last school year (2078)?	01 = Nepalese 02 = English 03 = Maithili 04 = Bhojpuri 05 = Tharu 06 = Tamang 07 = Magar 08 = Newari 09 = Bajjika 10 = Dotyal 98 = Other, Specify ……..	
TC1_B.	What was the secondary language of instruction in class in the last school year (2078)?	0 = None 01 = Nepalese 02 = English 03 = Maithili 04 = Bhojpuri 05 = Tharu 06 = Tamang 07 = Magar 08 = Newari 09 = Bajjika 10 = Dotyal 98 = Other, Specify ……..	
TC2.	Was the ECD class operated alone in the last school year (2078)?	00 = No 01 = Yes	If 01, skip TC2_B.
TC2_B.	With which grades or classes was the ECD class operated in the last school year (2078)?	01 = With primary school early grades 02 = With other ECD classes, such as nursery or play groups for younger children	
TC3.	Did the ECD facility have a playground outside available for all children?	00 = No 01 = Yes	

TC4.	Did the ECD class have sufficient space for all children (2 square meter space per child) inside the room in the last school year (2078)?	00 = No 01 = Yes	
TC5.	Did the ECD class have chairs/bench and table/desks of appropriate size for children in the last school year (2078)?	00 = No 01 = Yes, but insufficient number 02 = Yes, and sufficient number for all children	
TC6_A.	Did the ECD class have learning area for reading with relevant children's books in the last school year (2078)?	00 = No 01 = Yes but insufficient (less than 10 items) 02 = Yes and sufficient (10 or more items)	
TC6_B.	Did the ECD class have learning area for mathematics with relevant learning/play materials (number board, counting chart, abacus, etc.) in the last school year (2078)?	00 = No 01 = Yes but insufficient (less than 10 items) 02 = Yes and sufficient (10 or more items)	
TC6_C.	Did the ECD class have learning area for role play with relevant learning/play materials (dolls, puppets, animal sets) in the last school year (2078)?	00 = No 01 = Yes but insufficient (less than 10 items) 02 = Yes and sufficient (10 or more items)	
TC6_D.	Did the ECD class have learning area for science with relevant learning/play materials (plants, colorful objects, animal sets) in the last school year (2078)?	00 = No 01 = Yes but insufficient (less than 10 items) 02 = Yes and sufficient (10 or more items)	
TC6_E.	Did the ECD class have learning area for creativity with relevant learning/play materials (music instruments, crayons, pictures) in the last school year (2078)?	00 = No 01 = Yes but insufficient (less than 10 items) 02 = Yes and sufficient (10 or more items)	
TC6_F.	Did the ECD class have learning area for construction with puzzles and building blocks in the last school year (2078)?	00 = No 01 = Yes but insufficient (less than 10 items) 02 = Yes and sufficient (10 or more items)	
TC6_G.	Did the ECD class have other learning areas (specify) in the last school year (2078)?	00 = No 01 = Yes but insufficient (less than 10 items) 02 = Yes and sufficient (10 or more items) Specify the area _____	If 00, skip TC6_H. If 01 or 02, specify the area

TC6_H.	Did the ECD class have other learning areas (specify) in the last school year (2078)?	00 = No 01 = Yes but insufficient (less than 10 items) 02 = Yes and sufficient (10 or more items) Specify the area _____	If 01 or 02, specify the area
TC7.	Did the ECD class have curriculum in the last school year (2078)?	00 = No 01 = Yes	If 00, skip TC7_B and TC7_C.
TC7_B.	Was it the national ECD curriculum?	01 = Yes 98 = Others (Specify)	
TC7_C.	How did you use the curriculum in the last school year (2078)? (multiple options)	00 = Not using it for any purposes 01 = Using it to plan classroom activities 02 = Using it to reach learning and development objectives 98 = Others (Specify)	
TC8.	Did the ECD class have the Early Learning and Development Standards in the last school year (2078)?	00 = No 01= Yes	If 00, skip TC8_B.
TC8_B.	How did you use the ELDS in the last school year (2078)? (multiple options)	00 = Not using it for any purposes 01 = Using it with report cards (assessing each child's developmental status and share it with parents) 02 = Using it to plan classroom activities 98 = Others (Specify)	
TC9.	Did the ECD class maintain portfolio/record for individual children in the last school year (2078)?	00 = No 01 = Yes	
TC10.	Did the ECD class have first aid box for basic treatment for injury/accident in the last school year (2078)?	00 = No 01 = Yes	
TC11.	Did the ECD facility provide safe water for drinking in the last school year (2078)?	00 = No 01 = Yes	
TC12.	Did the ECD facility have toilets in the last school year (2078)?	00 = No 01 = Yes	If 00, skip TC12_B and TC12_C

TC12_B.	Were the toilets available for boys and girls separately in the last school year (2078)?	00 = No 01 = Yes	
TC12_C.	Were the toilets child-friendly (i.e., smaller size) in the last school year (2078)?	00 = No 01 = Yes	
TC13.	Was lunch provided at the ECD facility in the last school year (2078)?	00 = No 01 = Yes. Provided by the facility free of charge 02 = Yes. Provided by the facility with charge to families 03 = Yes. Brought from home	
TC14.	Was snack provided at the ECD facility in the last school year (2078)?	00 = No 01 = Yes. Provided by the facility free of charge 02 = Yes. Provided by the facility with charge to families 03 = Yes. Brought from home	
TC15.	Did the ECD class use any textbooks or workbooks in the last school year (2078)??	00 = No 01 = All in One 98 = Others (Specify)	
TC16.	How many caretakers (aaya) did this ECD class have in the last school year (2078)??	00 = None Specify numbers……..	
TC17_A.	How often did the ECD class receive support from the SMC for providing resources, such as learning and play materials and funds in the last school year (2078)?	00 = Not at all, 01 = Occasionally (a few times a year) 02 = Monthly (every month) 03 = Weekly (every week) 04 = Daily (every day or almost every day)	
TC17_B.	How often did the ECD class receive support from the SMC for providing supervisions of classroom activities in the last school year (2078)?	00 = Not at all, 01 = Occasionally (a few times a year) 02 = Monthly (every month) 03 = Weekly (every week) 04 = Daily (every day or almost every day)	

TC17_C.	How often did the ECD class receive support from the SMC for addressing needs of children with moderate to severe disabilities in the last school year (2078)?	00 = Not at all, 01 = Occasionally (a few times a year) 02 = Monthly (every month) 03 = Weekly (every week) 04 = Daily (every day or almost every day)	(skip if EI2 = 0)
TC18_A.	How often did the ECD class receive parents' involvement in class management for supporting school meals in the last school year (2078)?	00 = Not at all, 01 = Occasionally (a few times a year) 02 = Monthly (every month) 03 = Weekly (every week) 04 = Daily (every day or almost every day)	
TC18_B.	How often did the ECD class receive parents' involvement in class management for supporting classroom activities in the last school year (2078)?	00 = Not at all, 01 = Occasionally (a few times a year) 02 = Monthly (every month) 03 = Weekly (every week) 04 = Daily (every day or almost every day)	
TC18_C.	How often did the ECD class receive parents' involvement in class management for providing teaching and learning materials in the last school year (2078)?	00 = Not at all, 01 = Occasionally (a few times a year) 02 = Monthly (every month) 03 = Weekly (every week) 04 = Daily (every day or almost every day)	

Appendix 4. Sampled Schools After Replacement

Provinces	Sample	Private	Urban	Mountain	Hill	Terai	Sum of school size
Koshi	Original	16	26	3	8	29	1535
	After replacement	16	26	3	8	29	1532
Madesh	Original	7	28	0	0	40	2278
	After replacement	7	28	0	0	40	2270
Bagmati	Original	21	31	1	32	7	1842
	After replacement	21	31	1	32	7	1830
Gandaki	Original	17	26	0	25	15	1536
	After replacement	17	26	0	25	15	1549
Lumbini	Original	11	21	0	9	31	1944
	After replacement	11	21	0	9	31	1856
Karnali	Original	5	19	12	28	0	1039
	After replacement	5	19	12	28	0	1054
Sudur Paschim	Original	10	23	8	13	19	1601
	After replacement	10	23	8	13	19	1331
Total/ Average	Original	12	25	3	16	20	11775
	After replacement	12	25	3	16	20	11422

Appendix 5. Distribution of Final Unweighted Sample Across Provinces

Province Name	Koshi	Madesh	Bagmati	Gandaki	Lumbini	Karnali	Sudur Paschim	Total
# districts	4	5	5	3	6	4	4	31
# schools (out of 40)	36	40	40	40	39	35	38	268
# children assessed	342	305	438	397	315	220	295	2312

Appendix 6. Results from Standard Setting Exercise

	Average Rating	Median Rating	Range	Cut-Score (% correct)
Round 1				
Age 4: MP	10.16	9	5-15	19.17
Age 4: MoT	20.68	19	11-42	39.03
Age 5: MP	22.74	23.5	14-30	42.90
Age 5: MoT	34.84	33	20-50	65.74
Age 6: MP	38.53	39	20-49	72.69
Age 6: MoT	47.47	49	30-53	89.57
Round 2				
Age 4: MP	10.5	10.5	6-24	19.81
Age 4: MoT	20.45	21	11-28	38.58
Age 5: MP	23.95	24	16-30	45.19
Age 5: MoT	32.1	30.5	18-44	60.57
Age 6: MP	36.35	38	20-38	68.58
Age 6: MoT	45.55	47.5	34-53	85.94
Round 3				
Age 4: MP	9.95	8	4-19	18.78
Age 4: MoT	21.29	21	14-35	40.16
Age 5: MP	19.71	20	6-33	37.20
Age 5: MoT	31.48	33	13-43	59.39
Age 6: MP	28.62	30	14-46	54
Age 6: MoT	41.41	42	23-52	77.63
Age 6: MP	36.35	38	20-38	68.58
Age 6: MoT	45.55	47.5	34-53	85.94
Round 3				
Age 4: MP	9.95	8	4-19	18.78
Age 4: MoT	21.29	21	14-35	40.16
Age 5: MP	19.71	20	6-33	37.20
Age 5: MoT	31.48	33	13-43	59.39
Age 6: MP	28.62	30	14-46	54
Age 6: MoT	41.41	42	23-52	77.63

Appendix 7. Validity Evidence for Cut-Scores (Standard Errors & Confidence Interval)

	SE First round (n=20)		
Age Group	48-60 months	61-72 months	72+ months
Minimally progressing	0.79	1.23	1.81
Minimally on track	1.57	1.86	1.50

	SE Second round (n=20)		
Age Group	48-60 months	61-72 months	72+ months
Minimally progressing	0.92	1.00	1.76
Minimally on track	1.10	1.39	1.24

	SE Third round (n=21)		
Age Group	48-60 months	61-72 months	72+ months
Minimally progressing	0.91	1.41	1.73
Minimally on track	1.19	1.73	1.66

	Final recommended cut scores [Confidence interval]	
Age group	Minimally progressing	Minimally on track
48-60 months	18.78 [17.23, 20.33]	40.16 [37.08, 43.24]
61-72 months	37.20 [34.79, 43.24]	59.39 [55.74, 63.04]
72+ months	54.00 [50.45, 57.55]	77.63 [74.69, 80.69]

Note: Confidence intervals (CI) are calculated as follows: CI=CS±z*SE, where CS is computed cut scores, z is a z-score at the 95% of confidence level (i.e., 1.96), and SE is standard errors from the first round of item rating.

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