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Evidence from Eastern Nepal

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Abstract

Early childhood is a crucial period for the cognitive, social, emotional, physical, and language development of children. Of the 200 million children who do not reach their developmental potential worldwide, 66 percent live in South Asia. This paper explores gaps in knowledge among educators in Eastern Nepal about the importance of early childhood. The results of a survey headteachers and teachers show that teachers often do not place enough weight on the importance of behaviors that contribute to the growth and development of children in early childhood. There are also large gaps in teachers' understanding and practice of classroom accommodations for children with disabilities. The paper illustrates that educators, who play a large role in children's lives during early years, may be uninformed about the importance of early childhood development. The paper provides policy recommendations that can help policymakers target areas that lack understanding and improve early childhood development education and understanding among educators.

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Educator Knowledge of Early Childhood Development: Evidence from Eastern Nepal

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1 Introduction

By the time a child reaches the age of 5, 90% of their brain development has already occurred (First Things First (2020)), and it is during the ages of 0-5 that the foundations for the physical and mental health of children are laid (WHO (2007)). Early childhood development (ECD) interventions target children in a this critical period during their life time, and have shown profound effects.[2] Despite the importance of early childhood, there are large gaps in knowledge and understanding of this importance amongst parents, educators, and caregivers. While gaps exist in the developed world as well, some of the largest disparities are present in the developing world (Bridge International (2019)). In developing countries, 250 million children do not meet their potential every year, and developing countries significantly under invest in ECD education and resources (Brookings Institute (2013)). Teachers, who interact often with children at these critical ages, are often unaware of the brain development that occurs during early childhood, how to promote development in children, and the effects of ECD interventions on later life outcomes (Brookings Institute (2013)).

Teachers are a major focal point when it comes to delivering ECD, and they become more crucial when they deal with children with disabilities. Murray and Pianta (2007), Swanson and Hoskyn (1998), and Guralnick (2008) highlight the challenges and gaps when working with children with disabilities and the crucial role of teachers in delivering effective education and early childhood development. There is evidence that nudges in the form of information and incentives may result in short-term improvements. (Unicef (2017)) and (Levere et al. (2016)), in the context of South Asia, find significant short run impacts of such interventions on maternal knowledge, childhood nutrition and development, and maternal behavior. In order to design any effective intervention aiming at delivering information to educators, it is crucial to understand the existing gaps in knowledge. In this paper, we study

[2]Interventions that train parents on the importance of early childhood, promote children's skills through school programs, and give nutritional and educational content to children have been found to improve a variety of short-term outcomes including cognitive test scores (see Dean and Jayachandran (2019); Coffey et al. (2017); Attanasio et al. (2014)), school enrollment (Handa and Peterman (2007)), vaccination take-up (Unicef (2017)), and linguistic test scores and communication (Fernald et al. (2017)).

an important and open question from the research and policy perspective: To what extent do educators understand the importance of early childhood development in Nepal, and what obstacles stand in the way of delivering education that promotes growth for children ages 3-5? This issue is particularly relevant for Nepal where ECD provision has expanded rapidly (see section 2) in the past few years, but the quality of provision remains uncertain.

While studies have shown short run positive impacts of providing information and incentives, the long run sustainability of impacts observed in these studies still remains an open question. Another related issue is that of the studies showing the impacts of ECD interventions on various outcomes often being very small in scale and sample sizes,[3] leaving the replicability of these interventions at a large scale as an open question for researchers. In order to implement interventions that are effective in achieving long run impacts and delivering these impacts at a large scale, policymakers need to consider three important questions: (i) in what areas of early childhood development is educator knowledge most lacking? (ii) what do these gaps look like for children with disabilities, who often need special attention to promote their development? (iii) what are the largest constraints to addressing these gaps?

In this paper, we try to address these questions in Eastern Nepal using a survey of 206 teachers and 225 head teachers in early childhood education and development (ECED) centers in one district. ECED centers are devoted to early childhood development and work with children in the critical age range: 0-5. This paper discusses results from two surveys conducted in April-May 2020. Results from these surveys highlight the gaps in teachers' understanding of various domains of ECD and their understanding of disability in children. We also collect and report information on barriers the teachers face in providing effective education and early childhood development to their students.

The rest of the paper is organized as follows: Section 2 discusses background information on ECD in Nepal, section 3 discusses the data, section 4 discusses the results from the two

[3]See (Heckman and Karapakula (2019)) for impact on lifetime earnings; (Chinen and Bos (2016)) for impact on language, cognitive; (García and Heckman (2020)) for impacts on emotional skills, health behaviors and obesity; and (Masterov (2007)) for participation in crime and other risky behaviors.

surveys, and section 5 concludes.

2 Background on ECD in Nepal

Nepal has made large investments in early childhood education in recent years, with enrollment in early childhood education and development (ECED) centers increasing from 12% in 2000 to 86% in 2017 (Poudyal et al. (2019)). In Nepal, ECE centers are either privately run or government run. The government-supported centers are either community-based or school-based. Our sample includes teachers in school-based centers, which are located near and connected to primary schools in the area. These centers work to promote the cognitive, physical, emotional, social, and language development of children in them, as well as educate parents about these realms of development. The constitution of Nepal states that "every child shall have the right to early childhood development" and Nepal has adopted a goal for every child to receive education in an ECED center by 2030.

The number of ECED centers was over 36,000 in 2017, serving almost a million children (World Bank (2020)). The ECED gross enrollment ratio (GER) has increased from 63.4% in 2007 to 84.1% in 2017, and the percentage of grade 1 students with ECED experience has doubled from 33% in 2007 to 66.3% in 2017. While ECD expenditure has been increasing, the budget for ECD services is still less than 0.1% of GDP and is between 1-3% of Nepal's expenditure on education (Unicef (2019)). Despite the rapid expansion of ECED access, quality remains a concern. In 2014, less than one third of Nepalese children aged 36-59 months were developmentally on track in literacy and numeracy and only 64% were on track in the social-emotional domain according to UNICEF's Early Child Development Index (Unicef (2019)). ECED facilitators are required to have completed grade 10 and ECED customized teachers' training curriculum was released in 2018; this training was developed as a refresher curriculum targeting teachers who have already taken the basic ECED training in the past. However, the percentage of facilitators with one-month of training was only

10.4% in 2018/19 (World Bank (2020)). According to a recent UNICEF report, most of the trained ECE facilitators have attended only short courses, and the intensity of facilitator training is not adequate (Poudyal et al. (2019)).

As it recovers from a war and devastating earthquake, Nepal has refocused on the importance of early childhood development in recent years. The national vision is to provide education, health, nutrition, water, sanitation, and hygiene to every child in Nepal (Unicef (2019)) However, despite the government's devotion to ECD education, many barriers and challenges remain. Lack of parental and teacher knowledge about the importance of early childhood, lack of quality training for teachers, and lack of resources are cited as the most common barriers that mitigate the effects of ECED centers in Nepal (Guras (2019)). There are large gaps in knowledge about early childhood development and the importance of the first five years of a child's life in Nepal. Beginning with pregnancy and childbirth, many parents are unaware that mothers need to eat a nutritious diet during pregnancy,that childbirth should occur in a healthcare facility, and that breastfeeding is important (Poudyal et al. (2019)).

Beyond infancy and pregnancy, parents and teachers are not informed about important factors for the cognitive and non-cognitive development of children in their early years. For instance, parents and teachers are unaware that water needs to be purified before children drink it, that providing children with local toys is important to their play and growth, and that both mothers and fathers should spend time with children (Unicef (2017)). Discriminatory practices towards girls and children with disabilities exist in both classrooms and homes and prevent these children from accessing quality early childhood education (Poudyal et al. (2019)).

While the quantity of ECD centers has expanded, it is not clear that quality has expanded alongside this. While access is important, it is not useful if under-trained teachers, lacking resources, are unable to provide quality education in these centers. Teachers in ECED centers in Nepal are largely responsible for the success of the children under their care; they interact

with these children during the most critical ages of their life and are charged with promoting their development. Thus, it is of vast importance to understand what these teachers know about childhood development and how to promote it. If there are misunderstandings about any of the domains of development among the teachers, there are large consequences for children. Without teachers who understand the importance of these early stages, children's future productivity, mental health, and success is at risk (Human Capital Index (2018)).

3 Data

During the months of March-May, 2020, we collected data on 225 head teachers and 206 teachers in ECED centers in Eastern Nepal. In our district in Eastern Nepal, there are 367 ECED centers. A large proportion of teachers have not received government ECD training, and this is what our sample focuses on. We selected 200 schools where teachers had not received government ECD training and then conducted a phone based survey that covered demographics, knowledge of early childhood development, and leadership skills of teachers and head teachers. [4] We also collected data on mental health using questions from the GHQ-12, a 12-item questionnaire that measures anxiety, depression, and general mental health (Goldberg and Hillier (1979)).

Head teachers of 200 randomly selected schools in an Eastern district in Nepal were called, and, once surveyed, asked for information about teachers in their schools. Most ECED centers have more than one teacher; we interviewed one teacher per school that met our selection criteria. There were three selection criteria that were used. Teachers in our sample cannot be assistant teachers, must not have government ECD training, and must be government employed teachers. Assistant teachers do not have as large of a role in ensuring student success; thus, we eliminated them from our sample. Teachers in our sample have lots of interaction with children in the most important time frame in their lives: ages 3-5. It

[4] Due to COVID-19 and school closures, we had to collect these data over the phone. Teacher and headteacher interviews were limited to 45 minutes.

is critical to understand how they view and enact important behaviors for the development of the children they teach.

4 Results

There are three questions that have important policy and research implications: (i) in what areas of early childhood development is educator knowledge most lacking? (ii) what do these gaps look like for children with disabilities, who often need special attention to promote their development? (iii) what are the largest constraints to addressing these gaps? In order to answer these questions, we conducted two surveys with teachers and head teachers across ECED centers in eastern Nepal. We measured teacher understanding of the five most important domains of development: cognitive, social, emotional, language, and physical development. We also measured teacher understanding and behaviors in promoting these types of development. We also looked at barriers such as teacher job satisfaction, teacher motivation, lack of resources, and teacher training.

A. Gaps in Knowledge

We answer our first question by looking at areas with the largest gaps in knowledge amongst the five domains of development. In our initial surveys, we asked teachers a variety of questions to learn about their understanding of the five different realms of early childhood development: physical development, language development, social development, emotional development, and cognitive development. The results are shown in tables 1 and 2. We first asked teachers which domains of development they believe occur during early childhood. Most teachers understand the types of development that occur during a child's first five years of life. Over 95% of teachers report that each domain occurs during early childhood. Most teachers in our sample have learned about ECD from three sources: books, training programs, and literacy programs. Still, over half report learning about ECD from friends, neighbors, and society. Very few report having learned anything about ECD from radio or

TV.

Baseline data reveal large gaps in knowledge and understanding of behaviors that are important for the development of children. Table 2 shows teacher reports of how important various behaviors are for child development, broken down by development domain. Teachers are able to select options from "very important" to "not important at all" when rating how important various behaviors are for child development. Figure 1 highlights the areas in Table 2 where there are the largest gaps in knowledge: cognitive, language, and social development. Most strikingly, only 31% of teachers agree that it is very important to encourage children to interact with others. The importance of child interaction with others is crucial for teachers to understand. Without lots of interaction, children do not develop social skills, self esteem, creativity, and imagination (Early Education Professionals (2018)). Less than half of teachers agree that practicing numbers and letters with children is very important. Also, less than half agree that it is very important that children be played with and that children should be encouraged to listen. While most teachers still select that these behaviors are important, they do not recognize that they are the most critical behaviors for development in each domain. These gaps reveal that teachers in ECED centers, who are partially responsible for the development of the children they teach, do not place enough importance on some behaviors that are critical for this development.

The largest gap in understanding in our sample comes in the realm of social development. As shown in figure 1, 31% of teachers agree that it is very important for child development for children to interact with others. Social development in children involves their ability to engage with their environment, maintain and create healthy relationships, and work with others; encouraging them to interact with others and make friends is crucial for this type of development. Still, only 50% of teachers agree that it is very important to encourage children to make friends. While it is heartening that most teachers still rate these activities as important, it is crucial to push teachers to recognize that these behaviors are critical. There is room for improvement in teacher understanding of social development in children, specifically

on the importance of social development, how to encourage this type of development in children, and how to make sure children are progressing in this domain.

Surprisingly, cognitive development also reveals gaps in teacher knowledge. Cognitive development is development of the ability to problem solve, think critically, analyze, make decisions, and remember things. There are many stages of cognitive development throughout life. During ages 2-7, our target ages, children are in what is called the "pre-operational stage" of cognitive development (Piaget (1952)). This is where children learn memory, imagination, and to understand symbols. Thus, playing with children, teaching them letters and numbers, and answering their questions are crucial behaviors for these ages. Though teachers are responsible for the classroom environment that children learn in, only about half of teachers agree that providing a stimulating learning environment and stimulating toys is very important. Less than half believe that practicing numbers and letters with children and playing with children are very important. Cognitive development is especially important for school readiness, educational performance, drop out, and labor market success. Teacher gaps in knowledge can have large adverse effects if children are not receiving cognitive stimulation in the classroom.

The third area that shows the largest gaps in our sample is that of language development. There are two important types of language development that are measured in our surveys: expressive vocabulary, which involves a child's entire lexicon and can be evaluated by the number of words that he or she is able to produce, and receptive vocabulary, which is vocabulary necessary for the reception and processing of information (Armonia et al. (2015)). Listening and talking to children, encouraging them to listen, describing pictures to them, and telling them stories and singing songs all contribute to both expressive and receptive vocabulary in children. However, less than half of the teachers in our sample believe that encouraging children to listen is very important, and only about 58% believe that describing pictures and singing songs are very important. Language development affects how children interact with others and communicate their needs. Without these critical activities, children

may be unable to learn how to express themselves, communicate with others, and read and write well (Armonia et al. (2015)). Teachers still rate these activities as important, but it is essential that teachers attach more importance to these activities.

Emotional development, a child's ability to manage and express emotions well, shows lower levels of understanding for teachers in our sample as well. Children who are developing well emotionally should be able to understand and properly express their own emotions, as well as understand and show sympathy towards the emotions of others. Praising and encouraging children, teaching them good morals, ensuring they get equal opportunities, and giving them love and care are all crucial to their emotional development. While 86.74% of teachers agree that teaching children good morals is very important, only 58.74% agree that ensuring gender equitable opportunities for children is very important. This statistic is staggering and provides evidence that the widespread gender discrimination that exists in Nepal infiltrates classrooms as well. Nepalese women suffer from lower levels of literacy and health, higher levels of poverty, and higher levels of discrimination than their male counterparts (Kathmandu Post (2019)). Teachers in our sample may be enacting this discrimination as early as ages 3-5.

The domain of physical development shows the most understanding and agreement among teachers in our sample. Physical development in children begins during conception and lasts throughout childhood. It is comprised of two important areas: fine motor skills and gross motor skills. Fine motor skills involve the use of smaller muscles – examples include buttoning shirts, holding spoons, and picking up small objects. Gross motor skills represent more important, bigger movements – examples include the ability to walk and run without falling, sitting, and rolling over. In order to help children develop physically, regular health checkups, healthcare when children are sick, immunizations, and nutritious diets for children are all important factors. Teachers seem to place higher weight on physical development than other forms of development. Among the teachers, 65.63% say that regular health checkups are very important for children and 87.86% agree that providing healthcare when children

are sick is very important. Overall, teachers seem to understand the importance of various behaviors for the physical development of children.

Data show that teachers in our sample have the biggest gaps in understanding in three realms: social development, language development, and cognitive development. While most teachers rate behaviors in these realms as important, it is crucial that teachers understand that these behaviors are very important for the future success of children. All of these realms contribute to the future success of children. Cognitive and language development are important for future educational and schooling outcomes, ability to communicate, and ability to understand. Social development is important for interactions, friendships, and relationships. If teachers are not actively promoting these forms of development, children may suffer from poor educational outcomes, low productivity (Dean and Jayachandran (2019); Heckman and Karapakula (2019)), and impaired relationships and mental health in the future (Human Capital Index (2018)).

B. Disability Understanding

While behaviors that encourage development are crucial for all children, they are even more crucial for children with disabilities. In order to answer our second question, we asked teachers many questions about promoting the development of children with all types of disabilities. Of teachers in our sample, 36.89% have a child with a disability in their classroom. Thus, measuring teachers' understanding of ways to help children with disabilities in the classroom is very important. Of children with disabilities in Nepal, 30.6% (approximately 56,000 children ages 5-12) did not attend school in 2011 (Human Rights Watch (2018)). Even if children with disabilities do attend school, they face issues of discrimination and segregation; children with disabilities in school are often segregated in separate spaces from other children (Human Rights Watch (2018)). Schools in Nepal also do not have the appropriate resources and training for the education of children with disabilities. For example, there is to date no academic curriculum in Nepal that meets the needs of children with intellectual disabilities such as Down syndrome (Human Rights Watch (2018)). Accessible

learning materials, such as materials in braille for blind children, are not present in most classrooms.

Figure 2 shows teachers' beliefs about what types of disabilities can occur in children. The disability with the highest level of awareness was physical disability; the lowest was hemophilia. Less than half of teachers believed that children could have hemophilia. Beyond hemophilia, autism and mental health disability had the lowest levels of understanding amongst teachers. For each disability, around one-fifth of teachers were unaware that it could occur in childhood.

Table 3 shows the results of asking the full sample of teachers ways that they believe they can accommodate children with disabilities in their classrooms. While providing stimulation, seeking help from health facilities, ensuring appropriate education (age and disability appropriate), giving special attention to children with disabilities (such as extra time and help), and providing alternative learning materials (such as braille materials) all promote the development of children with disabilities, there are large gaps in teachers' knowledge about these accommodations. Strikingly, only 38.12% of teachers thought of providing alternative learning materials as a way to assist children with disabilities and less than half thought of ensuring appropriate education. This statistic reveals that teachers are unaware of some of the most important behaviors in ensuring the success of children with disabilities. Without alternative learning materials and appropriate education, children with disabilities in Nepal often drop out of school early and lag behind on educational outcomes such as literacy and test scores (Poudyal et al. (2019)).

Table 4 reports the results of asking the sample of 79 teachers with students with disabilities in their classroom what they do to accommodate these children. The gaps between knowledge and behavior are even more prevalent and striking. While some teachers report knowing that schools should be engaging in these behaviors, no teachers in our sample say that they are providing stimulation, seeking help at a health facility, or ensuring appropriate education for children with disabilities. The barriers for children with disabilities in Nepal

are illustrated in these statistics: Teachers are not providing them with the stimulation, encouragement, learning materials, and accommodations that they need. Without teachers engaging in these critical behaviors, children's development, future health, and future productivity are at risk (Poudyal et al. (2019)).

C. Barriers: Teachers

We look at what barriers cause the large gaps that we find, and answer our third question, by asking teachers and head teachers questions about job satisfaction, motivation, and training. Tables 5 and 6 show characteristics for teachers and head teachers in our sample. Table 5 shows that teachers spend an average of 9 hours per week preparing for class and are absent a little over two days per month. Only about 14% of teachers in our sample have completed a bachelor's degree, and less than 7% have completed any ECD certification. Lack of training and resources for teachers is likely a large reason that we find such huge disparities in knowledge about ECD.

Figure 3 shows characteristics of teacher job satisfaction. While many teachers report that they feel successful with students in their class (i.e. that they are able to help students succeed and learn) and that their workload is manageable, a lower proportion (63%) report being satisfied with their job. Teachers often cite lack of high pay and lack of resources and training as reasons why they are not satisfied with their jobs. Looking past job satisfaction, we also ask teachers questions about their levels of mental health and happiness. Over 61% of teachers in our sample report feeling depressed and unhappy. Thus, there may be considerable motivational barriers to the promotion of ECD. Teachers may lack the motivation to carry through on behaviors that are important to childhood development; if they are not satisfied with their jobs, this may lead to discouragement. Beyond this, if teachers often feel unhappy and depressed, this may translate into low performance. We explore two possible reasons that teachers show low levels of understanding about ECD: motivational barriers and resource constraints.

We explore whether there are motivational and job satisfaction barriers to teacher knowl-

edge in Table A-7. First, we create an index of job satisfaction from three variables: teachers reported level of job satisfaction, teachers reported level of success with students, and teachers reported level of workload manageability. Then, we look at the four behaviors that show the largest gaps in knowledge by whether teachers are above or below the median job satisfaction level in our sample. The importance of each behavior is rated on a scale of 0-4, 0 meaning that teachers do not believe the behavior is important, and 4 meaning that teachers believe the behavior is very important. Results are shown in Table A-7 and indicate that there are no differences for teachers above and below median job satisfaction levels. For instance, the mean for both groups is around 3.3 for encouraging children to listen and practicing numbers and letters with children. Results of T-tests of means show that there are no statistically significant differences in knowledge between those above and below the median for job satisfaction. We interpret these results to mean that while there is some teacher dissatisfaction, it is unlikely that this is the largest barrier to ECD understanding.

Out of our 206 teachers, 191 have received some form of ECD training. While the Government of Nepal recommends a 16 day training in ECD for all teachers, only 36.7% have had more than 5 days of training in ECD. This may be due to large constraints to accessing education on ECD in Nepal. Ability to access training varies across districts and often facilitators of these trainings have little knowledge themselves (Unicef (2011)). ECD centers are often underfunded and there are not accountability measures for teachers (Unicef (2019)). Of the teachers in our sample, 10% work in a school that has not received any ECD education for teachers or head teachers. We interpret these results to mean that teachers in our sample are not under motivated, but rather are constrained by lack of resources on ECD.

Overall, these results indicate that knowledge levels about the importance of behaviors do not vary among teacher job satisfaction levels. Teacher motivation and job satisfaction may not be the most important barriers to ECD knowledge. Rather, lack of resources, training, and critical infrastructure may play a bigger role.

D. Barriers: Head Teachers

Lack of knowledge and motivation in head teachers is also frequently reported as a huge barrier to ECD education in Nepal (Guras (2019)). Table 5 shows that about 79% of head teachers in our sample report that they understand and have been informed about their role in early childhood development work. With 20% unsure of their role, this suggests a huge gap to be filled. Head teachers are responsible for teacher management, teacher encouragement, and leadership practices and policies at their school. Roughly 11% of head teachers think that ECD takes up too much of their time and resources.

Figure 4 shows additional important characteristics of head teachers. In our sample, head teachers report high levels of leadership skills with 97% reporting that they encourage their teachers frequently and stress competing with other schools, and 80% reporting that they frequently act as spokespeople for their schools. However, only 61% of head teachers in our sample report that they allow teachers to solve problems using their own judgement; this suggests that some head teachers may be inflexible. These data reveal that head teacher motivation may be part of the reason that huge gaps in ECD exist in Nepal.

We explore whether leadership skills are a barrier to head teacher knowledge by looking at ECD knowledge by an index of leadership skills. The leadership index looks at teacher flexibility, competitiveness, encouragement, and spokesman-ship. We look at whether teachers who have higher leadership skills are more likely to be informed of their role in ECD, more likely to think ECD takes up too much of their time, more likely to understand that ECD is important for the five domains of development, and more likely to understand that ECD is important for school readiness. Table A-8 shows results. There are no significant differences for teachers above and below median leadership levels. Thus, we explore further what obstacles may exist.

Figure 5 shows that the biggest obstacles to providing learning cited by head teachers are student absenteeism, lack of resources, and other constraints such as lack of infrastructure and language barriers. These results, combined with those of table A-8, reveal that barriers to

ECD education may be the result of lack of training, resources, and critical infrastructure in schools. Head teachers may not have the resources and training to understand the importance of the five domains of development and how ECD contributes to these domains. They may also not be informed of their role due to lack of training, resources, and government education in schools.

Ultimately, data from our baseline indicates large gaps in knowledge about important practices for cognitive, emotional, physical, language, and social development of children. There are also large gaps in understanding of accommodations for children with disabilities. The first five years of a child's life are crucial to their growth and development; still, it seems that many teachers in ECED centers in Nepal do not understand the importance of various behaviors for promoting development in children. Beyond this, while many have children with disabilities in their classrooms, they do not understand the best ways to ensure development of children with special needs. Head teachers may also be under-informed; many do not understand their role in ECD education. By training teachers and head teachers, and filling in gaps in knowledge about the domains of development and their importance, policymakers can encourage the growth and development of all children, regardless of gender and ability status.

5 Conclusion

Early childhood development interventions can have important implications for test scores, vaccinations and health of children, school enrollment, and more. However, when scaling up or thinking about interventions, it is important that policymakers understand the domains of development that show the largest gaps in understanding. Three important questions were addressed in this paper: (i) in what areas of early childhood development is educator knowledge most lacking? (ii) what do these gaps look like for children with disabilities? (iii) what are the largest barriers to addressing these gaps?

When addressing the first question, we found large gaps in teacher understanding and practice of behaviors important for early childhood development. Three areas had the largest gaps in knowledge among educators: social development, cognitive development, and language development. While many teachers were aware that behaviors such as encouraging children to make friends and interact with others, encouraging children to listen and telling them stories, and playing with children and practicing numbers and letters are important for development, teachers did not place enough weight on the importance of these behaviors. While these three areas showed the largest gaps, there were also gaps in understanding in the realms of physical development and emotional development. For instance, many educators did not recognize the importance of ensuring gender equitable opportunities and getting regular health checkups.

Addressing our second question, we found that teachers also did not place enough weight on many practices that help the development of children with disabilities. While teachers were aware of disabilities that occur in children, they were largely unaware of ways to aid children with disabilities. Many did not know that they should be ensuring appropriate education, using alternative learning materials, and adjusting their classroom environments to accommodate disabilities. Of the sample of teachers who had children with disabilities in their classrooms, none was working to provide a stimulating learning environment, seek help at a health facility, or ensure appropriate education for children in their classrooms. Very few were providing alternative learning materials or making their classroom environments more accommodating.

The gaps in teacher knowledge and practice for children with and without disabilities led us to look at barriers that may exist and cause such wide gaps. We looked at head teacher and teacher understanding of their role in ECD, their leadership skills, and more. Ultimately, the largest barrier that we found was lack of resources. Teachers lack training in ECD, training in accommodating disabilities, and resources for providing children a learning environment that promotes their development.

Policy Implications

Although Nepal has made significant investments in early childhood education ad development in recent years, there is still much to be done. Many ECD trainings in Nepal take place only once or twice a year, and despite training, many facilitators in ECD centers have struggled to perform their daily work (Unicef (2019)). The quality and consistency of trainings is unclear, as they are provided by many different organizations. Resource constraints provide another large barrier across Nepal. For instance, many teachers have complained about low pay, lack of clear guidelines, and insufficient resources (Unicef (2019)). Nepal has made clear its intent to focus on ECD, but while the number of ECD centers has expanded, quality remains a large challenge.

There are two important policy implications that arise from the results of this paper. Firstly, lack of training for educators is a huge obstacle in the promotion of early childhood development. Policymakers should work to create comprehensive trainings for teachers and headteachers that provide specific goals and tasks for children. For instance, these trainings should specify milestones to monitor in the five domains of development, how to identify disabilities in children, and what teachers should be doing to promote growth in children. It is important that these trainings stress the importance of the five domains of development and encourage teachers to engage in behaviors that promote these types of development. Trainings should also focus on areas that show large misunderstandings, such as cognitive, social, and language development. Trainings and refresher trainings should be required for teachers every year, and should be streamlined into a universal design.

While teacher trainings are important, it is also important that headteachers, parents and other staff at schools are included in ECD training. Training that includes all adults who interact with children at critical ages can benefit these children, provide additional resources for discussion, and encourage teachers and headteachers to do their part.

Inclusive educational training is also important. Our results show that teachers are unaware of how to accommodate and include children with disabilities in their classrooms.

Trainings that show teachers how to accommodate, stimulate, and treat children with disabilities in the classroom are very important. All children in the classroom benefit when inclusive education and access is emphasized.

Secondly, beyond training, policymakers should work on increasing physical and monetary investments in early childhood centers and schools. For instance, providing learning materials that help accommodate disabilities, such as braille materials or audio materials for deaf and blind children, can vastly improve classroom environments for children with disabilities. Investing in the infrastructure of schools and classrooms so that they are accessible for students with physical disabilities can also help improve the learning outcomes of such children. Universal designs that are accessible and inclusive should be emphasized. Providing training materials, classroom materials for teachers and students, and higher salaries for teachers is also very important for motivating teachers and students in the classroom.

Focusing on inclusive, frequent, and targeted trainings, and providing guidelines, resources, and investment in ECD centers can vastly raise the quality of education that many children in Nepal receive. Ages 3-5 are critical for the cognitive, language, physical, social, and emotional development of children. Thus, they are some of the most important ages to invest in.

In this paper we find that there is substantial room to improve the practice and knowledge of teachers and head teachers who work with children in these critical age periods. This paper illustrates how crucial gaps in knowledge are; worldwide, there are over 200 million children who do not reach their developmental potential due to lack of stimulation, healthcare, and social engagement (WHO (2007)). Children in Nepal are at risk. A child born in Nepal today will only be 49% as productive when she grows up as she could be if she had complete education and full health (Human Capital Index (2018)). Lack of resources for head teachers and teachers is a huge barrier to these children reaching their potential. Knowledge, behavior, and practice of educators must be addressed in order to encourage growth and development for all children in Nepal.

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Tables and Figures

Table 1: Teacher Knowledge about Early Childhood Development

Variable	Mean	Standard Deviation
Panel A: Types of Development that Occur During Ages 0-5		
Physical	1	0
Motor	0.981	0.138
Cognitive	0.966	0.182
Social	0.981	0.138
Language	0.985	0.120
Emotional	0.995	0.07
Panel B: Sources of Learning About ECD		
Radio	0.068	0.252
TV	0.083	0.276
Book	0.762	0.427
Training Program	0.694	0.462
Literacy Program	0.898	0.303
Neighbor/Friend/Society	0.558	0.498

Notes: This table reports the means and standard deviations on a variety of questions about early childhood development for 206 teachers. Panel A shows the types of development that teachers believe occur in ages 0-5 and Panel B shows the different sources where teachers in the sample learned about ECD.

Table 2: Teacher Understanding of Important Behaviors for Child Development

Behavior	Very Important	Important	No Opinion	Less Important	Not Important
Physical Development					
Get Regular Health Checkups for Children	65.63%	33.50%	0%	0.97%	0%
Get Healthcare When Children are Sick	87.86%	12.14%	0%	0%	0%
Immunize Children	73.30%	26.21%	0%	0.49%	0%
Give Children Nutritious Food	75.53%	24.27%	0%	0%	0%
Emotional Development					
Give Children Praise/Encouragement	61.67%	38.35%	0.49%	0%	0%
Give Children Love/Care	67.48%	32.04%	0%	0.48%	0%
Ensure Gender Equitable Opportunities for Children	58.74%	37.38%	2.43%	1.46%	0%
Teach Children Good Morals	86.41%	12.62%	0.49%	0.49%	0%
Cognitive Development					
Answer Children's Questions	52.91%	42.72%	.97%	3.4%	0%
Play With Children	46.12%	52.91%	0.49%	0.49%	0%
Provide Children With Stimulating Environment	50.49%	48.06%	0%	1.46%	0%
Provide Children with Stimulating Toys	50.00%	48.06%	0.49%	1.46%	0%
Practice Letters/Numbers with Children	41.26%	52.43%	1.46%	4.85%	0%
Language Development					
Listen/Talk to Children	64.08%	35.44%	0.49%	0%	0%
Encourage Children to Listen	42.23%	52.91%	0.97%	3.88%	0%
Show/Describe Pictures to Children	58.25%	38.83%	0%	2.91%	0%
Tell Children Stories/Sing Children Songs	58.25%	40.29%	0.97%	0.49%	0%
Social Development					
Encourage Children to Make Friends	50.00%	48.54%	0%	1.46%	0%
Encourage Children to Interact with Others	31.07%	59.71%	3.88%	4.85%	0.49%

Notes: This table shows results from questions asked to 206 teachers about the importance of various behaviors for early childhood development. Teachers rated how important they thought various behaviors were on a Likert scale.

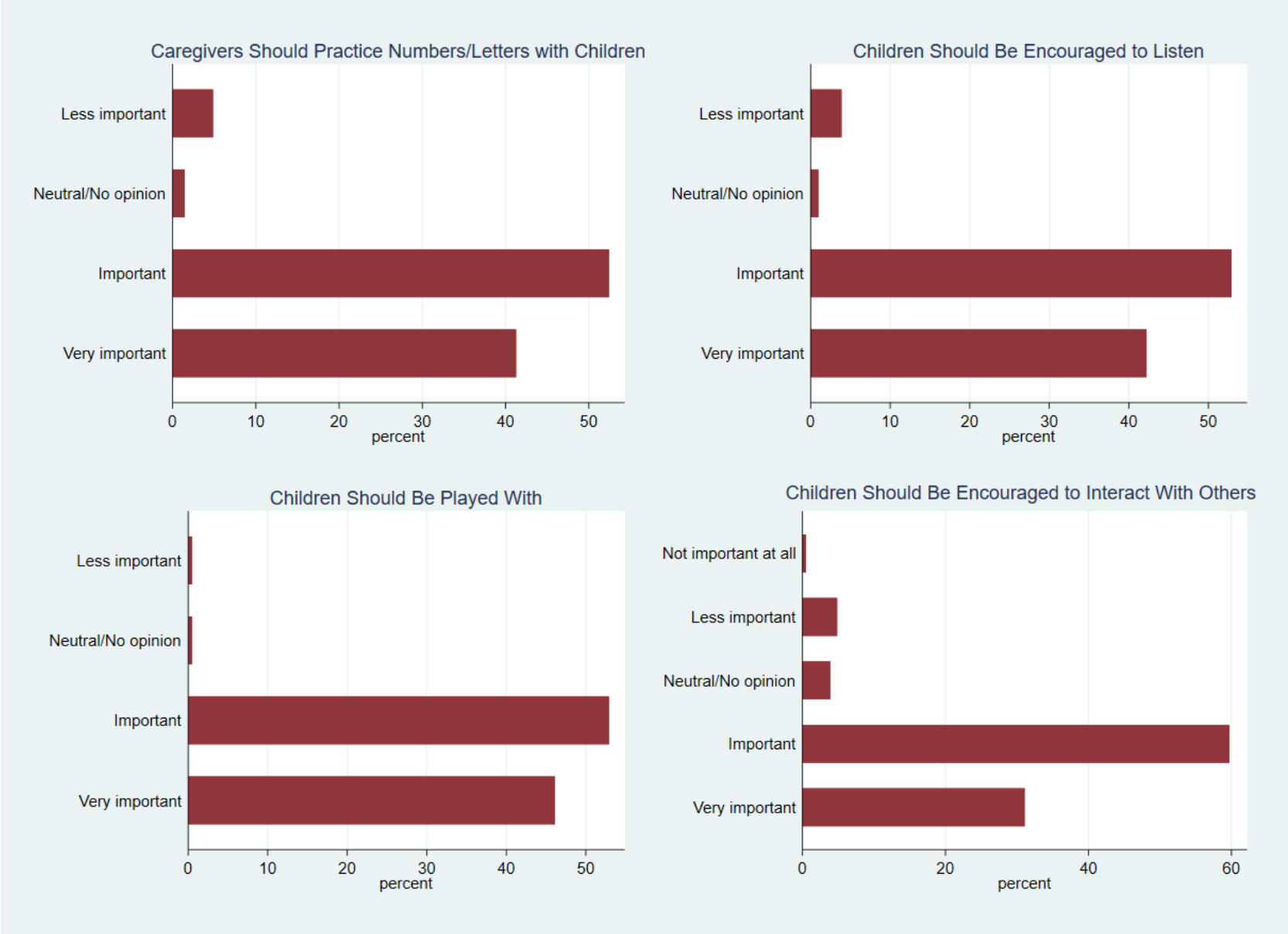

Figure 1: Gaps in Knowledge

Figure 1 shows teacher agreement with the importance of four different behaviors for early childhood development. This figure shows the four behaviors with the largest gaps in understanding of their importance.

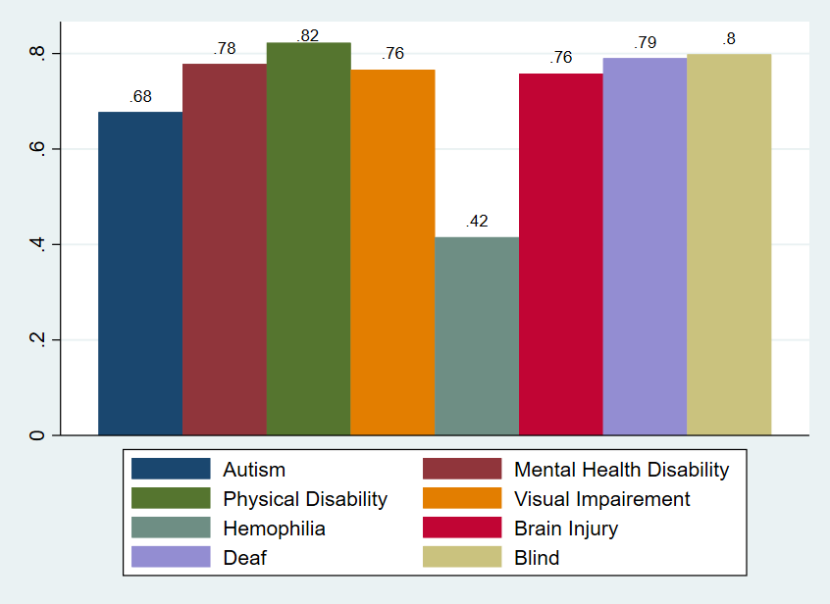

Figure 2: Teacher Knowledge of Disabilities in Children

Figure 2 shows the percentage of teachers who believe each disability can occur in early childhood.

Table 3: Helping Children with Disabilities:
Full Sample

Variable	%
Providing Stimulation	64.56%
Seeking Help at Health Facility	11.65%
Ensuring Appropriate Education	48.06%
Giving Special Attention	68.32%
Providing Alternative Learning Materials	38.12%
Making an Accommodating Environment	57.43%

Notes: This table provides summary statistics on teachers' understanding of how to help children with disabilities in classrooms. This reports results from 206 teachers.

Table 4: Helping Children with Disabilities:
Teachers with Students With Disabilities

Variable	%
Providing Stimulation	0%
Seeking Help at Health Facility	0%
Ensuring Appropriate Education	0%
Giving Special Attention	86.84%
Providing Alternative Learning Materials	15.79%
Making an Accommodating Environment	31.58%

Notes: This table provides summary statistics on teachers' understanding of how to help children with disabilities in classrooms.

Table 5: Teacher Characteristics

	(1)	(2)
Variable	Mean	SD
Bachelors Degree	0.141	0.349
Government Certified	0.063	0.244
Days Absent in Last Month	2.752	2.653
Hours Spent Preparing Class Per Week	9.180	3.841

Notes: This table provides summary statistics of key variables for a sample of 206 teachers in ECED Centers in eastern Nepal.

Table 6: Head Teacher Characteristics

	(1)	(2)
Variable	Mean	SD
Informed About Their Role in ECD	0.787	0.411
Observe Class Often	0.978	0.148
Received ECD Training	0.107	0.309
Think ECD Takes Up Too Many Resources	0.111	0.315

Notes: This table provides summary statistics of key variables for a sample of 225 head teachers in ECED Centers in eastern Nepal.

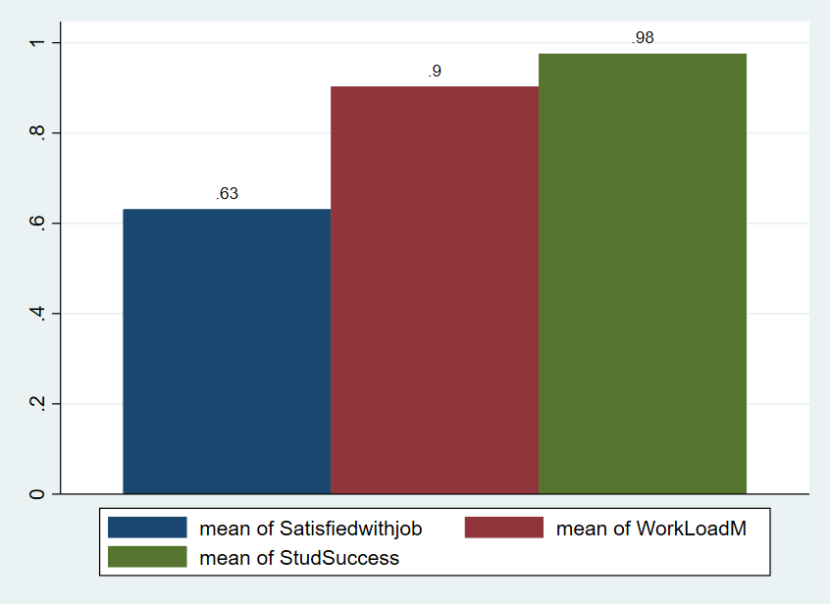

Figure 3: Teacher Job Satisfaction

Figure 3 shows means for different elements of reported teacher job satisfaction for a sample of 206 teachers.

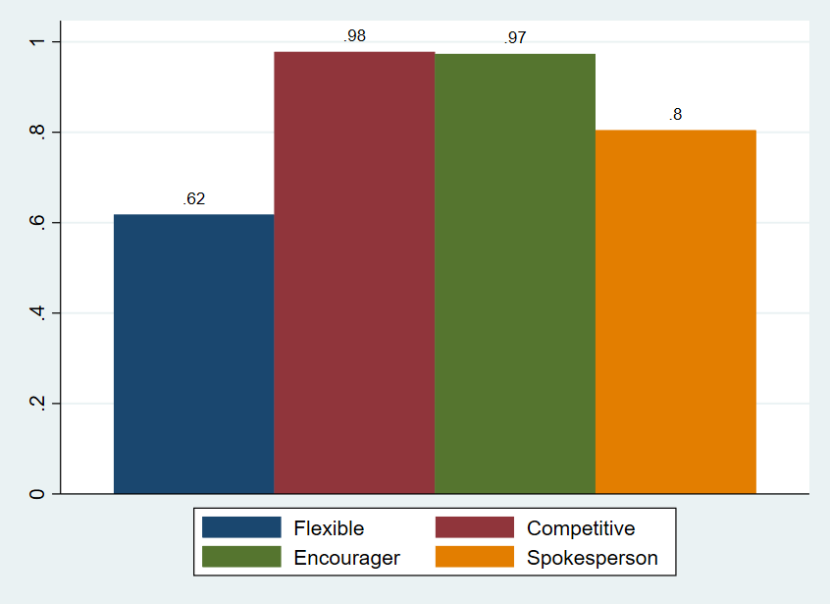

Figure 4: Head Teacher Leadership Characteristics

Figure 4 shows the means of self reported characteristics for a sample of 225 head teachers in ECED Centers.

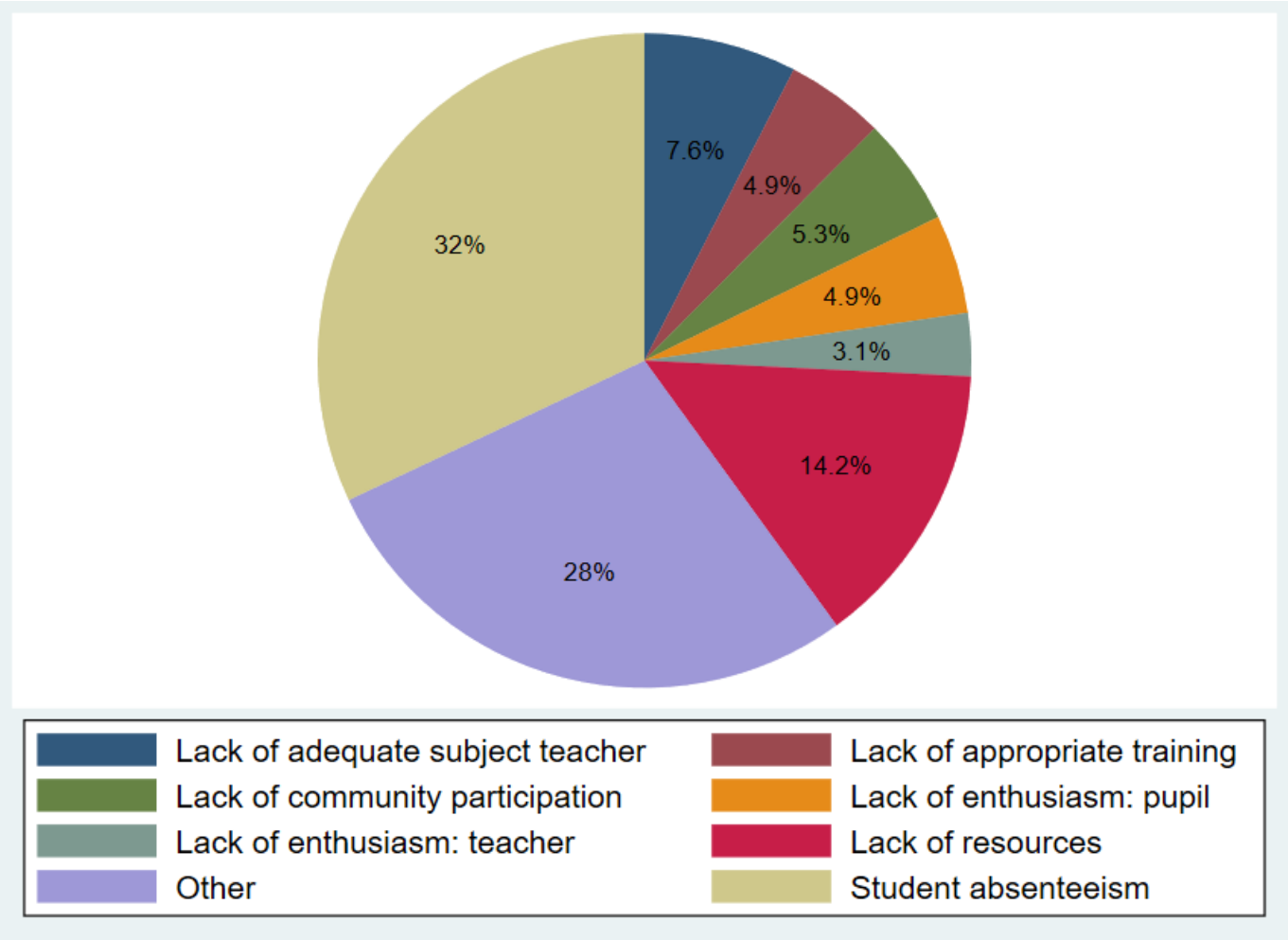

Figure 5: Obstacles in Schools

Figure 5 shows the biggest obstacles in efforts to provide learning in schools as reported by head teachers.

6 Appendix

Table A-7: Gaps in Knowledge by Job Satisfaction Level: *Teachers*

	Above Median Job Satisfaction			Below Median Job Satisfaction		
Variable	Mean	Standard Deviation	Observations	Mean	Standard Deviation	Observations
Practice Numbers/Letters with Children	3.282	0.759	103	3.32	0.703	103
Play With Children	3.398	0.511	103	3.495	0.558	103
Encourage Children to Interact With Others	3.146	0.72	103	3.175	0.785	103
Encourage Children to Listen	3.34	0.694	103	3.33	0.692	103

Notes: This table reports the means and standard deviations of teacher understanding of various behaviors for child development. Means and standard deviations are reported for teachers above and below the median on an index of job satisfaction. The importance of behaviors is rated on a Likert scale from 0-4. This table shows results for four behaviors that show the largest gaps in knowledge overall. Those at the median are reported in the "above median" category.

Table A-8: Gaps in Knowledge by Leadership Skills: *Head Teachers*

	Above Median Leadership Level			Below Median Leadership Level		
Variable	Mean	Standard Deviation	Observations	Mean	Standard Deviation	Observations
Informed About Their Role in ECD	0.829	0.379	76	0.765	0.425	149
Think ECD Takes Up Too Many Resources	0.118	0.325	76	0.107	0.311	149
Thinks ECD Important for Five Domains	0.645	0.482	76	0.611	0.489	149
Thinks ECD Important for School Readiness	0.934	0.25	76	0.919	0.273	149

Notes: This table reports the means and standard deviations of head teacher understanding by leadership skill levels. Means and standard deviations are reported for teachers above and below the median on an index of leadership skills. Those at the median are included in the "above median" category.