



Foundational Literacy and Numeracy in Rural Afghanistan

Findings from a baseline learning assessment of accelerated learning centres

Sophia Kan, Mirwais Fahez and Marco Valenza

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List of acronyms

ALC	Accelerated learning centre
CBE	Community-based education
EGMA	Early Grade Mathematics Assessment
EGRA	Early Grade Reading Assessment
ICT	Information and communication technology

Foreword

The Convention on the Rights of the Child, adopted in 1989, clearly positioned education as one of the fundamental rights of children. Yet, three decades later, far too many children across the globe do not attend school or, even when they do, are not given an adequate opportunity to learn. Out-of-school children, girls, and children living in hard-to-reach or insecure areas face multiple barriers along their path to an education. In Afghanistan, the learning poverty rate is 93 per cent, meaning that 93 per cent of children cannot read a simple text by age 10 (World Bank, 2019b). To mitigate this learning crisis, innovative solutions are needed to bring all children into a learning pathway and to achieve the Sustainable Development Goals.

In Afghanistan, accelerated learning centres (ALCs) represent an effective education pathway providing education to girls and out-of-school children in remote areas of the country. In many of these areas, that were under the control of the current de-facto government, children must walk long distances to attend school, which is a concern for caregivers who worry about their children's physical safety, especially that of girls. Additionally, caregivers are often reluctant to send their daughters to school when instruction is delivered by male teachers – the norm in hard-to-reach areas where there is a shortage of female teachers. ALCs directly address these two issues. They are a form of community-based education that takes place in alternative classrooms such as in a teacher's home, and directly in the students' community. ALCs help children acquire six years of education in just three years and prioritize the hiring of female teachers. ALCs are a stopgap measure working in parallel with regular government schools to boost foundational literacy and numeracy skills for children who are not in the primary school system.

This research presents evidence on the learning outcomes of ALCs supported by the UNICEF Let Us Learn initiative. It analyses the literacy and numeracy learning achievement of both ALC students and students in the nearest standard government primary school using data collected in May 2021. Findings from the study show that ALCs have been an effective way to reach girls and out-of-school children in remote areas. Scores from the learning assessment indicate that ALC students are learning as much as their fellow students at standard government primary schools. This is a salient finding, showing that this alternative learning pathway can help girls and out-of-school children to gain basic foundational literacy and numeracy skills. At the same time, this baseline assessment confirms the gender gap, with girls underperforming compared with boys across subjects and school types. Moving forward, these findings will be used to inform local stakeholders and international collaborators in how to build more equitable education pathways for all girls and boys in Afghanistan.

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Executive summary

To date, considerable progress has been made in expanding access to primary school in Afghanistan. Enrolment has soared from 0.75 million in 2000 to 6.5 million in 2018 (World Bank, 2021). Despite this progress, around 44 per cent of all primary-school-aged children are still out of school (Islamic Republic of Afghanistan Ministry of Education, UNICEF, & Hall, 2018). Of these children, 1.1 million are girls in rural areas (UNICEF Regional Office for South Asia, 2019). School closures due to the COVID-19 pandemic have only heightened the importance of continuing to help children get to school and learn.

To expand school access and reduce the distance barrier in rural areas, community-based education (CBE), an alternative education delivery programme – has proliferated across Afghanistan over the past 20 years. In 2020, 4,351 CBE centres were operating across the country (UNICEF, 2020). CBE brings schooling directly to out-of-school children in remote areas, and has been shown to have a positive effect on student learning outcomes (Burde & Linden, 2013). Accelerated learning centres (ALCs) are a form of CBE that compacts six years of primary schooling into just three years and targets out-of-school adolescent girls (Islamic Republic of Afghanistan Ministry of Education, 2018). UNICEF currently supports 145 ALCs across seven provinces in Afghanistan. While ALCs have improved access to schooling little is known about its success in terms of learning outcomes. To address this knowledge gap, this study investigates the state of 110 ALCs supported by the UNICEF Let Us Learn (LUL) initiative. A baseline survey was conducted by QARA Consulting in May 2021 on literacy and math skills using the Early Grade Reading Assessment and Early Grade Mathematics Assessment. Additional student- and school-level characteristics were also collected to analyse factors that contribute to learning outcomes. The test and surveys were administered to a sample of UNICEF LUL-supported ALCs as well as the closest corresponding standard government school (known as a ‘hub’ school). This study is unique in that it provides a rigorous analysis of a novel alternative learning pathway in rural Afghanistan.

Results from the baseline survey reflect the current state of learning in Afghanistan, which suffers from high learning poverty. The learning poverty rate is the share of children at end-of-primary school age who do not meet minimum reading proficiency, unable to read a simple text by age 10. In Afghanistan, the learning poverty rate is 93 per cent, one of the highest in the world (World Bank, 2019b). Achieving foundational literacy and numeracy (FLN) in early years is critical as these skills yield many benefits such as later-life and lifelong learning and intergenerational gains in education, health, and income (Evans & Hares, 2021). For girls, attaining literacy is even associated with reductions in child mortality and fertility, and increased empowerment (Kaffenberger & Pritchett, 2020).

Findings from the current baseline survey indicate that learning outcomes for all students, both in ALC and regular government schools (hubs), are low. For example, 19 per cent of ALC students and 31 per cent of hub school students (grades 3-5) could not identify any letters with their correct sounds. Student performance in mathematics was also low for all students, especially for tasks that require higher-level skills such as advanced addition and advanced subtraction. However, despite the low levels of learning, results from the baseline survey show that ALC students perform as well as or sometimes better than their counterparts in regular government schools. The key findings from the baseline survey are:

Dari reading. ALC students scored higher, on average, on all reading tasks compared with hub school students at an equivalent grade level. ALC students could read an average of 44 words correctly from a passage in one minute, compared with 26 words for hub school students. ALC students could also identify 40 letter sounds per minute compared with 29 letter sounds among hub school students.

Pashto reading. ALC students scored higher, on average, on all reading tasks compared with hub school students. ALC students could correctly read an average of 42 words per minute, compared with 33 words per minute for hub school students. Similarly, ALC students could correctly identify 46 letter sounds per minute while hub school students averaged at 36 letter sounds.

Literacy. While the Dari and Pashto reading scores provide a nuanced view of reading levels, zero scores (not being able to answer a single question correctly), which are comparable across both languages, measure basic literacy skills. In terms of basic literacy, ALC students were less likely to get a zero score than hub school

students. Girls were more likely to get a zero score than boys, evidence of underlying gender gaps. Doing homework and reading aloud at home were the factors most strongly associated with reducing the likelihood of getting a zero score, suggesting the importance of familial support and teacher-intervention for learning.

Mathematics. On average, ALC students performed marginally but consistently better than hub school students across all math skills. In terms of basic addition and basic subtraction, ALC students were able to solve a single question about one second more quickly than hub school students.

Explanatory factors. Key factors that improve educational outcomes were different for Dari reading, Pashto reading and math. For Dari reading, having learning materials such as a notebook, reading aloud at home, receiving feedback from teachers, income (proxied by household assets), and having a separate toilet for girls and boys were associated with higher scores. For Pashto reading, key influencing factors were age, father's literacy, reading aloud at home, and income. For mathematics, the most important determinants of scores were age, doing homework, receiving feedback from the teacher, having a teacher who helps rephrase questions, and income. These findings are consistent with a nationally representative analysis of early-grade reading conducted in 2016 (USAID, 2016).

Gender. Results from this study point to a large gender gap in educational outcomes at the primary school level. At ALCs, 86 per cent of students are girls, helping to narrow the gender gap in school enrolment in remote areas. At hub schools, girls make up 46 per cent of the student population, which indicates that the gender gap in enrolment is narrowing. In terms of educational outcomes, however, there is a large and clear divide along gender lines. Girls, on average, scored consistently lower than their male counterparts in both ALC and hub schools, in both reading and mathematics.

Learning during COVID-19 school closures. Learning during the COVID-19 pandemic was limited, and most students studied for three or fewer hours per week. The remote learning modalities that were most utilized and linked to greater learning outcomes were having access to printed packs and to government-sponsored broadcasts (on radio, television or internet).

Recommendations. Findings from this study lead to four key recommendations for education stakeholders in Afghanistan. These recommendations speak directly to ALCs as well as to their associated hub schools, which share similar constraints.

1. Teachers play a critical role in improving learning outcomes. To support teachers, training opportunities should be expanded and should emphasize child-centred pedagogy. Examples of practices that are associated with improved outcomes are rephrasing a question when a student does not understand; emphasizing the importance of homework; and encouraging students to read aloud at home.
2. Providing learning materials such as reading packs, coupled with parental engagement, may encourage reading aloud at home, which is strongly associated with higher learning outcomes.
3. This study underscores the need for continued support of girls' education through CBE to overcome gender barriers of access and learning. This is especially important given the current context, which presents both opportunities to expand to areas where there are no schools, and concerns about the future of girls' education. Education in this context will also be affected by segregating boys' and girls' education. To support an expanded education system that benefits girls, continued efforts are needed to employ more female teachers and support government schools and alternative learning pathways (ALCs and CBE schools). Supporting vulnerable families will also be critical to reduce the supply- and demand-side obstacles to education for girls.
4. There is a need to increase the supply of qualified teachers to improve the shortage of teachers at both ALCs and standard government schools. Supporting vocational training programmes and teacher training programmes with recruitment and technical capacity may help.

1. Overview of accelerated learning centres

In Afghanistan, an estimated 25 per cent of primary school-age children (around 2.1 million) did not attend school in 2018. Of these, an estimated 60 per cent are girls (Islamic Republic of Afghanistan Ministry of Education, UNICEF & Hall, 2018).¹ Many of these children are out of school due to political insecurity, the long distance to the nearest school, the expectation that they should remain home to complete household chores, or the family's traditional beliefs (Human Rights Watch, 2006; Hunte, 2006; Mashwani, 2017; Noori, 2017; Shayan, 2015).

Education levels in Afghanistan are generally low (Lumley, Mendelovits, Stanyon, Turner, & Walker, 2015), and international assessments such as TIMSS place Afghanistan at levels similar to Sub-Saharan African countries such as the United Republic of Tanzania and Togo (Molina, Trako, Hosseini Matin, Masood & Viollaz, 2018). This means that, even among students who attend school, learning is limited. One study conducted by BRAC (Bangladesh Rural Advancement Committee) in 75 schools in Afghanistan in 2014 found that grade progression, especially for Grades 6-9 did not lead to gains in literacy and numeracy scores (Niaz Asadullah, Alim, & Anowar Hossain, 2019).

Accelerated learning centres (ALCs) can help these out-of-school children catch up with the curriculum and reintegrate into formal school, as well as close the gender gap in education. In ALCs, students are fast-tracked, completing six years of primary school (Grades 1-6) in just three years (two grade levels per year). ALCs are cohort-based so that when an ALC is established, all students begin at and progress through the same curriculum and grade level. In theory, students are assessed to be at Grade 1 when joining the inaugural cohort but in practice, students enter with various levels of education.² ALCs are specially designed for out-of-school children, particularly girls, who live far from the nearest government school, and for older children who have not yet entered the school system or have dropped out. Walking long distances is a particularly large barrier for girls in remote areas, and parents often report concerns about their children's safety on their way to school as a key obstacle (Zaeem & Shepherd-Johnson, 2017). Recruiting and training female teachers, who are very scarce in rural areas,³ is another practice that helped ALCs bring girls into education since social norms often prevent girls from being taught by male teachers (Hunte, 2006; Islamic Republic of Afghanistan Ministry of Education, 2016).

ALCs follow the regular school calendar in their province. Each ALC is affiliated to a standard government primary school, called a hub⁴ school. Hub schools might have more than one ALC or community-based education (CBE) class affiliated with them. The academic school year for hub schools has two schedules, one for schools in cold-climate areas and another for schools in warm-climate areas. In cold-climate provinces, the academic year begins in early March and finishes in December. In warm-climate provinces, the school year begins in September and ends in June. ALCs follow a similar school calendar but do not incorporate long winter or summer holidays. Instead, the ALC school year runs over 12 full months up to the start of the following academic year (for example, in cold-climate provinces, ALCs run from March to February). Figure 1 provides a visual representation of the school year.

1 Population estimates in Afghanistan can wildly differ depending on method and year. For example, in 2015, the Afghanistan Central Statistics Organization (CSO) estimated the population at 27 million while the United Nations Population Division (UNPD) estimate was 34 million. The UNPD estimates that 2.6 million out of 6.0 million primary-school aged children are out of school. This compares with CSO estimates of 2.3 million out-of-school children out of 5.2 million. For further background on data sources and measuring census data in Afghanistan, see: Islamic Republic of Afghanistan Ministry of Education et al. (2018).

2 Expert interviews conducted for this analysis with regional and provincial education officials revealed that there is often heterogeneity in ALC students' education backgrounds, which can make it difficult for teachers to teach.

3 Across the country, there are no female teachers in almost 80 out of 364 districts (Islamic Republic of Afghanistan Ministry of Education, 2016).

4 The term 'hub school' refers to the nearest standard government school in the area, with which a community-based education (CBE) programme or ALC is associated. CBE programmes and ALCs are considered satellite classrooms of a hub school and, in theory, benefit from spillovers in administration and resources. CBE programmes and ALCs were designed with the intention to funnel students into hub schools upon graduation (Faizi, 2021).

Figure 1. Academic year by climate and school type

		Year 1										Year 2							
		Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
Cold climate	ALC	Start											End						
	Hub	Start								End									
Hot climate	ALC							Start											End
	Hub							Start									End		

Note: The schools sampled for the assessment are all cold-climate schools. While provinces generally define cold- or hot-climate schools, some provinces may have both cold- and hot-climate schools.

ALCs use a CBE model. CBE was popularized in the 1990s as a response to the halting or interruption of regular government schools.⁵ CBE schools are unique in that they are situated directly in the village, reducing distance as a barrier to education. Additionally, instead of creating a bricks-and-mortar school, CBE schools use existing infrastructure such as someone's home, community buildings or mosques as a classroom. CBE schools have been largely successful in improving enrolment, educational outcomes, and reducing gender gaps (Burde & Linden, 2013). Burde, Lisiecki, Middlreton, Okhidoi, & Samii (2019), for instance, found that CBE was able to increase 6- to 11-year-old girls' attendance rates by 16 percentage points in villages which previously did not have a CBE school (from 58 to 74 per cent).

A key difference between standard CBE schools and ALCs is that CBE schools cover only three years of education, from Grades 1-3. The aim of CBE is to provide alternative education and then help students transition to a standard government school beginning at Grade 4 (Pouras Consult Aps., 2016). The three-year duration of CBE schools fits naturally with Afghanistan's general education system, where learning is divided into two phases: Grades 1-3 and Grades 4-6. The first phase focuses on language, mathematics, religion, and moral education, and the second phase adds subjects such as natural science and history (Islamic Republic of Afghanistan Ministry of Education Compilation and Translation Department, 2003). Table 1 provides an overview of the differences between the school types.

Table 1. Hub school, standard CBE school and ALC characteristics

	Hub school	Standard CBE school	ALC
Duration	6 years	3 years	3 years
Grade levels covered	6	3	6
Months of schooling per year	9	9	12
Classroom location	Conventional school building	Private home, community building or religious building	Private home, community building or religious building

The UNICEF Let Us Learn (LUL) initiative⁶ currently supports 110 ALCs across 41 districts in seven provinces: Badghis, Bamyan, Daikundi, Ghor, Paktika, Paktya and Wardak. Nearly all ALCs were established in 2018 and, collectively, they have enrolled around 2,800 students, of which 64 per cent are girls. Communities typically request an ALC from a district-level school official, who then relays the request to the Ministry of Education. Various donors then work with the Ministry to provide financing for teacher salaries, teacher training, learning materials, and monitoring of both teachers and students.

5 CBE programs date back to the 1970s when the Afghanistan government supported Dehati (village) schools in rural areas for marginalized children (Islamic Republic of Afghanistan Ministry of Education, 2018). These were discontinued during Soviet intervention from 1979 to 1989.

6 Let Us Learn supports pre-primary, primary, and secondary education delivery to vulnerable children in five countries: Afghanistan, Bangladesh, Liberia, Madagascar, and Nepal. A full description of the programme can be found at: <https://www.unicef-irc.org/research/let-us-learn/>.

2. Research objectives

The expansion of alternative education pathways for vulnerable students, such as ALCs, has led to an increase in student enrolment rates, but enrolment alone does not mean that students are learning. In Afghanistan, after four full years of primary school, only 65 per cent of children—across both CBE schools and regular government schools—achieve Grade 1 learning skills (Molina et al., 2018). Children face structural obstacles to education – not only in terms of accessing school, but also having the opportunity to learn once they arrive at school. As Pritchett (2013) puts it, ‘schooling ain’t learning’. Challenges include teachers not showing up to teach, children being beaten by their teachers, a failure to implement child-friendly practices (even smiling) in the classroom, and a lack of teaching materials or resources (Pritchett, 2013).

To gain a better understanding of the progress of the ALCs, which were established in 2018, the Ministry of Education and UNICEF worked with QARA Consulting to conduct a reading and mathematics assessment of students in ALCs in seven provinces. The key research questions the study addresses are:

- What are the basic reading and numeracy skills of ALC students and the corresponding hub school students in the seven provinces where LUL operates?
- How do ALC students compare with hub school students of a similar grade level in terms of educational outcomes? What role, if any, does gender play?
- What are the main skills that students struggle with?
- What student, teacher, and school characteristics are associated with higher levels of reading and numeracy skills?
- COVID-19: have students continued to learn during school closures, and if so, were they able to access the government’s alternative learning channels (lessons broadcast on television, radio and online)?

3. Data

This study assesses the learning outcomes of 35 LUL-supported ALCs, established in early 2018, and 31 associated hub schools, chosen to be representative of all 110 LUL-supported ALCs and 83 associated hub schools across seven provinces in Afghanistan.⁷ The seven provinces are in cold-climate zones, where the academic year runs from 21 March until 20 March the following year. Since ALCs compact two grade levels of education into one year, the cohort beginning in 2018 covered the Grade 1 and 2 curricula in their first year and Grades 3 and 4 in 2019. In 2020, education in Afghanistan was interrupted when schools were closed in response to the COVID-19 pandemic. When schooling resumed in 2021, students were automatically promoted⁸ to the next grade level. Therefore, the ALC students evaluated for this study have completed four grade levels of education (in two years), but are considered to have completed five grades, and were officially promoted to Grade 6 status at the time of the assessment in May 2021. The same automatic promotion applies to hub school students, who at the time of assessment were in Grades 4 and 5. Table 2 illustrates the progression of students from 2018 to 2021 by school type and grade level, showing that ALC Grade 6 students and hub school Grade 4 students began their education at the same time. The table shows that it may be helpful to include the hub school Grade 5 cohort in the study as they have a comparable level of education.⁹

Table 2. Students' grade level by year and school type

	ALC (Grade 6 cohort)	Hub school (Grade 4 cohort)	Hub school (Grade 5 cohort)
Grade level in 2018	1 + 2	1	2
Grade level in 2019	3 + 4	2	3
Grade level in 2020	Promoted to Grade 5	Promoted to Grade 3	Promoted to Grade 4
Grade level in 2021	6	4	5

Note: Schools were closed for most of the 2020 school year and the Ministry of Education automatically promoted students by one year during the closure. Students at both ALCs and hub schools were assessed in May 2021. Therefore, ALC students at the time of the assessment were in Grade 6.

The sample was drawn from 110 LUL-supported ALCs and 83 associated hub schools. First, approximately 25 per cent of hub schools were randomly selected from each province. Then, all ALCs associated with the respective hub schools were selected. The final sample includes 31 hub schools and 35 ALCs. The sample is therefore drawn to be representative of all LUL-supported ALCs and their affiliated hub schools across 7 provinces.¹⁰ Appendix 1 shows the population and sample sizes by province. While it may be helpful to compare the educational outcomes of ALC students with out-of-school children, it is difficult to identify and

7 The study is weighted to be representative of all 110 ALCs and 83 hub schools in terms of gender and class size. Appendix 1 shows the number of ALCs and hub schools in the population, the number that was sampled, and how many schools were chosen by district. Between January and April 2021, three schools were closed so, while the study intended to evaluate 113 Let Us Learn-sponsored schools, the actual assessment, sample selection and weighting was adjusted to be based on 110 schools.

8 Automatic promotion, frequently referred to as 'social promotion' in the education literature, is the practice of promoting a student to the next grade level, irrespective of their academic performance. In general, learning content at a grade appropriate level is important, and social promotion may hinder learning because reading is a linear process (Niaz Asadullah et al., 2019).

9 For this analysis, Grade 4 and Grade 5 students are combined for two reasons. First, the ALC counterpart is formed of students of varying ages and education levels, so in practice, many students enter with some form of education, meaning a strict grade delineation is not very meaningful. Second, a robustness check was conducted using a sub-sample analysis of hub school students with grade as the main variable of interest. Results showed that grade level had an insignificant effect on educational outcomes, indicating that the curriculum and learning of students may not be a very linear process with clearly defined benchmarks. Instead, there is likely a high degree of variation in student background and abilities within a grade level, which is supported by findings from Molina et al. (2018).

10 The QARA Group developed the sampling strategy, built and validated the EGRA and EGMA tools, administered the assessments and demographic surveys, and managed the data collection. The QARA Group was given a list of all UNICEF LUL-supported ALCs (113) and their closest (associated) hub school (83). Due to three ALC closures, the total number of ALCs included was 110. The sampling strategy involved two stages. In stage one, 25 per cent of hub schools were sampled using simple random sampling by province. For each selected hub school, all associated ALCs were included in the sample. In stage two, students were the primary sampling unit, and the stratification included grade and gender. Stratification by rural/urban was conducted as ALCs are placed in rural hard-to-reach communities. A detailed report on the sampling method used by QARA Group is available upon request.

survey these children given that Afghanistan is largely rural, and the documentation of students and children is not fully formalized. Moreover, the objective of this assessment is not to measure achievement conditional on enrolment per se, but to measure the learning outcomes of ALCs using hub schools as a benchmark.

Within each school, students were sampled as follows. At the hub schools, the assessor grouped students by grade level (Grades 3 and 4) and gender. The students were lined up, and the n^{th} student was selected so that there would be five boys and five girls per grade.¹¹ For example, if there were 30 girls in Grade 3, every sixth girl was selected. At the ALCs, because all students are in the same grade, the target sample was ten boys and ten girls. However, because many ALCs enrol fewer students than this, and many include only girls (because the schools are designed to target girls), it was often not possible to survey ten boys and ten girls. Instead, all students in attendance were surveyed, up to 20 students. After data cleaning, 645 hub school students and 468 ALC students were included in the analysis.¹² Appendix 2 shows the final number of students sampled by province and school type.

There are several limitations of this study in addressing the outlined research questions. First, the data does not capture a random sample of students to which school status can be assigned. As such, there may be endogeneity bias: the reason why a student attends a certain school or ALC may be correlated with the learning outcomes that we want to measure. Such selection bias can challenge the internal validity of the study. Second, the analysis is based on baseline survey data, which is a cross section (a snapshot of student performance at just one point in time). Subsequent survey data may be collected, under the scale up of CBE programmes, which would allow for the use of techniques such as time-fixed effects to measure the difference of two groups over time. These two reasons make it difficult to infer causality.

Third, the factors that distinguish ALC students from hub school students are central to the baseline study. The associations between these factors (e.g., prior schooling, parents' education, level of parental support, household wealth, and access to remote learning modalities) and learning outcomes are important to understand in order to inform the design of future interventions. We therefore attempt to control for characteristics which could affect educational outcomes when analysing the effect of ALCs on student learning.

Fourth, for the reading assessment, two separate tools were administered, one in Dari and the other in Pashto. In four of the seven provinces, Dari tests were administered, and Pashto assessments were administered in the remaining three (see Figure 2). Because the two reading tests cannot be directly compared, they are evaluated separately, and the sample size is further decreased, which makes it difficult to measure the association between variables.¹³ While the reading test is a standardized tool, it does not mean that it can be used to compare children who speak different languages. This is because languages vary in their complexity and structure. A comparison of zero scores (instances when a student is unable to correctly respond to any question) is included, which is an exception to this rule. Zero scores can be used to compare students across languages and school systems because the total inability to read can be considered as comparable across different groups (Gove & Wetterberg, 2011). Finally, teacher characteristics are not included in the main analysis due to data limitations.¹⁴ Instead, a subsample of teacher characteristics is analysed separately to investigate linkages between teacher behaviours and student learning outcomes.

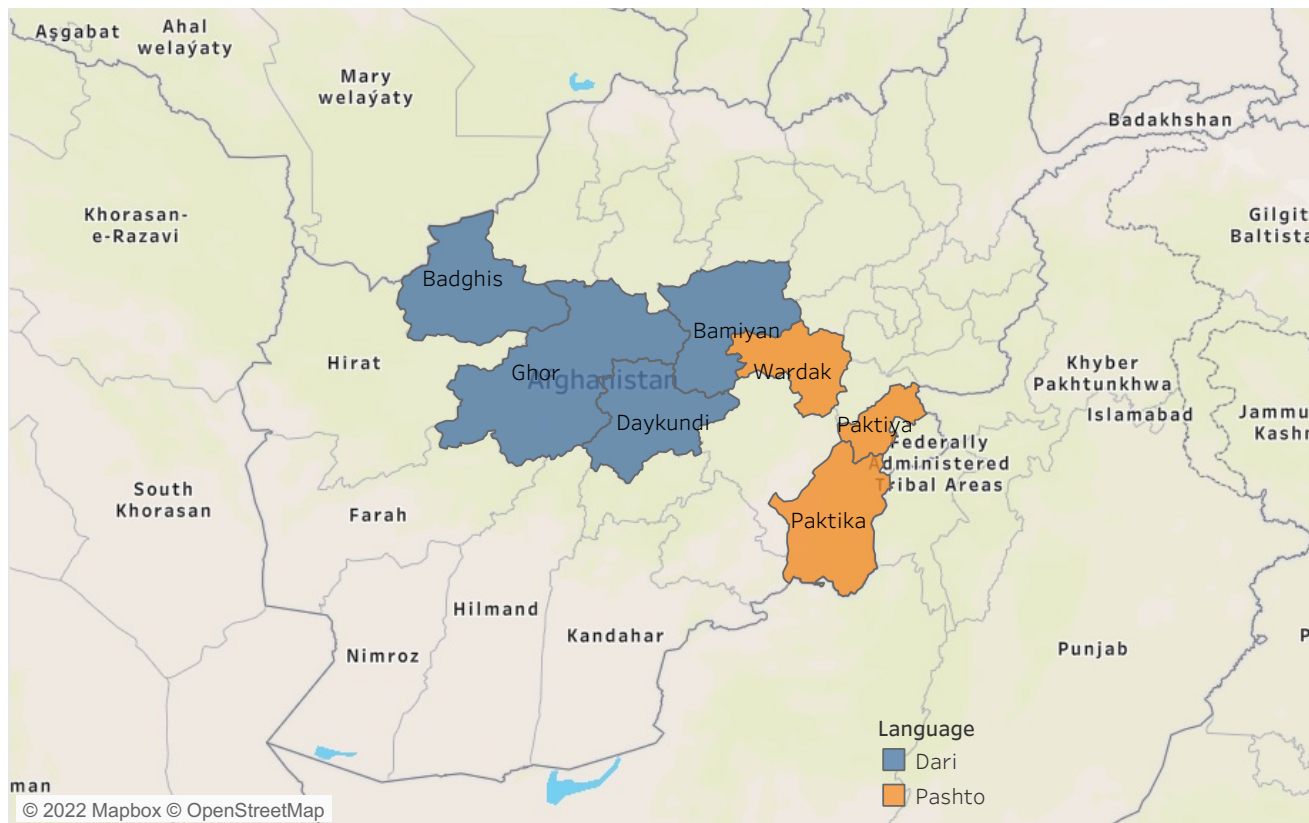
11 The final dataset weighted the sample to ensure it was representative of the population of the seven provinces where LUL-funded ALCs operate. As an example, if there were x ALCs in a province and y were surveyed, each school receives a weight of x/y . At the student level, if there are x females and y are selected, each student's response receives a weight of x/y . Details on the sample selection and weighting are available upon request.

12 In the final sample, the one ALC Grade 3 cohort that was surveyed is excluded. Given that all other students are Grade 6, Grade 3 is excluded for comparability reasons, and to minimize bias from adding a younger cohort with fewer years of education. This led to the exclusion of 20 ALC students. Also, to ensure that the sample compares similar-aged students, not for example, a 7-year-old with a 20-year-old student, outliers were removed. To identify the outliers, students were first separated by school type, because ALC students tend to be older. Then, students who were 2 standard deviations below or above the mean age were excluded, keeping ALC students between the ages of 8-18 and hub school students between the ages of 8-13. Removing outliers led to the exclusion of 18 ALC students and 15 hub school students from the analysis.

13 EGRA was not designed to compare different languages or countries. Instead, it "is meant to be tailored to the language and orthography of the assessment location" (Education International, 2015, p1). USAID and RTI recommend that comparisons are made only for zero scores (discussed above) or when using benchmarks (American Institutes for Research, 2019; Dubeck & Gove, 2015; USAID, 2021).

14 In hub schools, there are 32 Grade 3 classes and 32 Grade 4 classes, for a total of 64 classes. However, only 29 teachers were surveyed. In some instances, one teacher taught both grades. In most cases, however, even though a separate teacher was assigned to each class, only one teacher per school was surveyed. This missing data on teachers is significant for hub school students, and because this is likely not random, the missing information cannot be imputed. For ALCs, teacher data was not collected for three classes.

Figure 2. Map of Afghanistan and the seven provinces operating LUL-supported ALCs, by language



Note: The designations employed in this publication and the presentation of the material do not imply on the part of the United Nations Children’s Fund (UNICEF) the expression of any opinion whatsoever concerning the legal status of any country or territory, or of its authorities or the delimitations of its frontiers. The boundary and names shown on the designations used on the map do not imply official endorsement or acceptance by the United Nations.

4. Assessment and survey

Students were assessed in May 2021 using an Early Grade Reading Assessment (EGRA) and an Early Grade Mathematics Assessment (EGMA), designed to provide a simple and low-cost but meaningful assessment of literacy and numeracy (RTI International, 2014; RTI International, 2016). The EGRA is a 15-minute oral assessment administered to one student at a time and assesses five reading skills and one listening comprehension skill (see Table 3). The EGMA is an approximately 20-minute assessment, also administered to one student at a time, covering six numeracy skills: number identification, number discrimination, missing number, addition (level 1 and level 2), subtraction (level 1 and level 2), and word problems (see Table 4).

The Dari and Pashto reading subtasks were developed based on a previous EGRA administered by the General Directorate of Academic Supervision (GDAS). Both the reading and mathematics assessments were developed and adapted by a working group of local and international education experts from GDAS, the Learning Assessment Directorate, the Teacher Education Directorate, and the Curriculum Development Directorate facilitated by the QARA Group's technical team in September 2020. All three assessments (Dari EGRA, Pashto EGRA, and EGMA) were piloted in April 2021 at two urban schools and one rural school in Kabul. Psychometric analysis of both Dari and Pashto reading tests and math tests results showed a high degree of reliability (Rasch-based reliability estimated at, respectively, .93, .91, and .96).¹⁵ Assessments were administered electronically using Tangerine open-source software on tablets for Android.

Table 3. The EGRA assessment tests students' skills in the following competencies, at the Grade 2-5 level

Reading skill	Task	Timed/untimed	Skill
Phonological awareness	Phonemic awareness	Untimed	Respond correctly when the assessor reads aloud a set of three words and asks the student to identify the word that starts with a different sound
Alphabetic principle	Letter-sound identification	Timed (1 minute)	Identify the sounds of letters presented in random order
Phonics	Invented and non-word reading	Timed (1 minute)	Identify letters with sounds through the reading of simple nonsense words
Passage reading	Oral reading fluency	Timed (1 minute)	Read a text with accuracy and at a sufficient speed
Comprehension	Reading comprehension	Untimed	Respond correctly to five different types of questions, including literal and inferential questions about the text they have read
Oral language	Listening comprehension	Untimed	Respond correctly to different types of questions, including literal and inferential questions about the text the assessors read

¹⁵ The Rasch model measures the likelihood of an individual correctly responding to a test item. It is used to measure a latent trait such as ability. The model uses actual data and test items are organized by difficulty level with more difficult items to the right, based on the proportion of responses of each person on each test item. If the data fits the Rasch model, it is considered a suitable for measurement. Reliability tests for the Dari EGRA, Pashto EGRA, and EGMA assessments show that the test items robustly measure ability levels and capture, respectively, 93 per cent, 91 per cent and 96 per cent of the variation in student's true score. The full psychometric technical report and reliability test for the Dari EGRA, Pashto EGRA, and EGMA are available upon request.

Table 4. The EGMA assessment tests students' skills in the following competencies, at the Grade 2-5 level

Math Skill	Timed/untimed	Skill
Number identification	Timed	Number competence
Number discrimination	Untimed	Comparison of numerical magnitude
Missing numbers	Untimed	Detecting number patterns
Addition and subtraction	Timed (Level 1) Untimed (Level 2)	Arithmetic skills
Word problems	Untimed	Real-world problems

In addition to the assessment tools, questionnaires were administered at the student, teacher, school, and school director levels. These questionnaires included a range of questions about demographic variables as well as factors that affect both the supply and demand of education.¹⁶ To complement the quantitative data analysis, expert interviews were conducted with education directors at the provincial and district levels.¹⁷ These included open-ended questions to gain more details, as well as additional information that may not have been gathered from the questionnaire.

¹⁶ Questionnaires are available upon request.

¹⁷ Survey questions are listed in Appendix 3.

5. Descriptive statistics

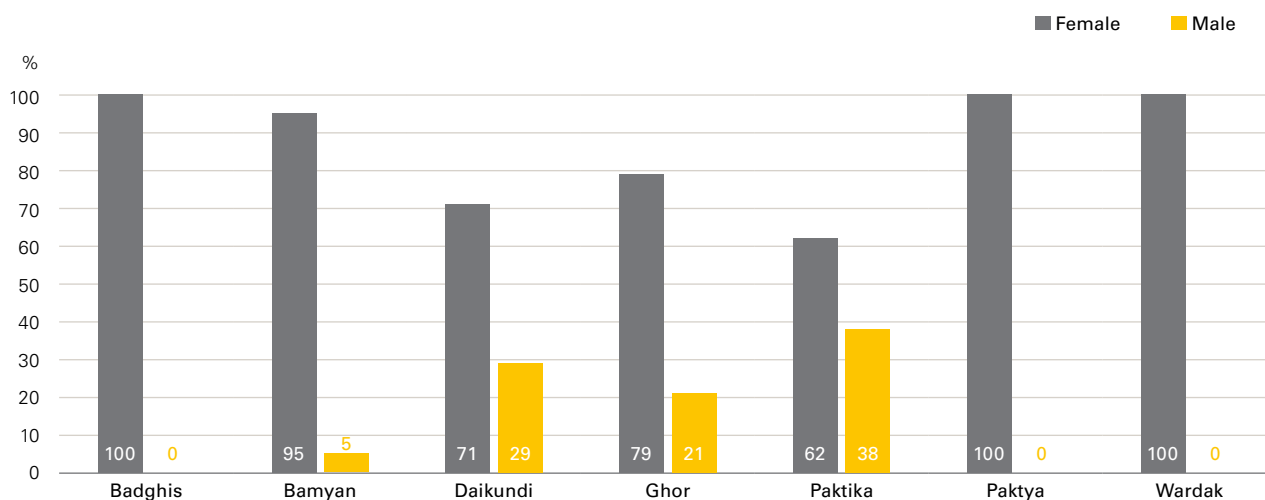
The following section describes the basic characteristics of students, schools and teachers collected from the quantitative surveys. Appendix 4 and Appendix 5 provide additional summary statistics tables.

5.1 Age and gender

ALC students tend to be older, with a higher girl-to-boy ratio than hub school students.

The nature of ALCs, which were established to target older out-of-school children and specifically, out-of-school girls, is reflected in the data. In the sample of ALCs, 86 per cent of students are girls and the average age is 12.8 years.¹⁸ At hub schools, girls make up 46 per cent of the students and the average age is 10.3 years. The official enrolment age for Grade 1 is 7 years (UNESCO Institute for Statistics, 2021) so Grade 3 and 4 students are 9 and 10 years old if they entered school at the official age and progressed through one grade per year. The age distribution among ALC students is more dispersed, with a standard deviation of 2.497 as opposed to 1.307 for hub school students. Figure 3 illustrates the percentage of girls at ALCs by province, showing that there are no boys at ALCs in Badghis, Paktya and Wardak. In total, the sample consists of 400 girls and 68 boys.

Figure 3. Percentage of female ALC students by province (N=468)



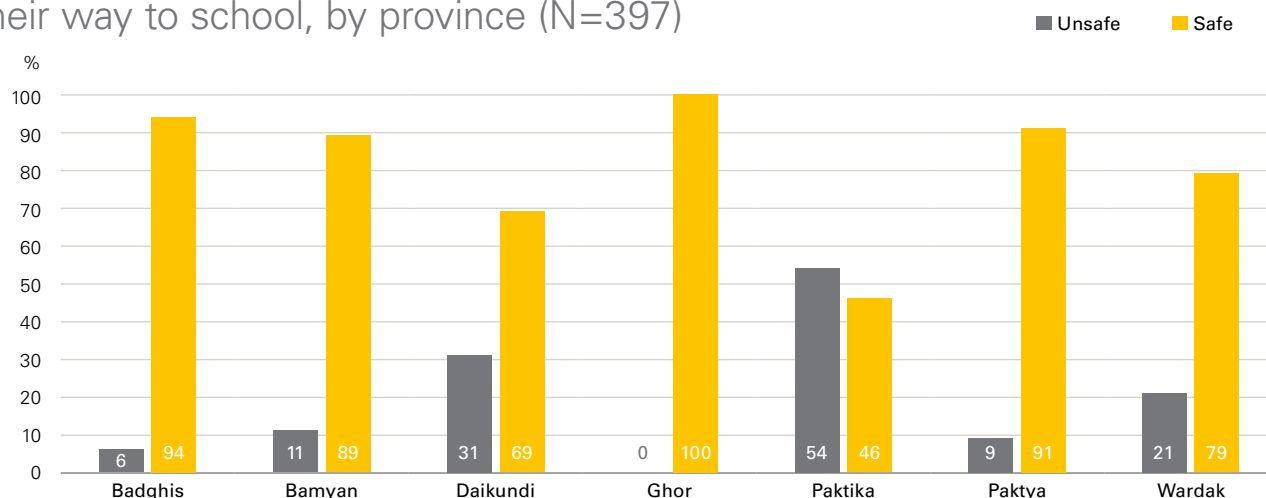
5.2 Safety

Physical insecurity is a barrier to education in Afghanistan. Survey results show that nearly 15 per cent of students do not feel safe on their way to school and while in school. Girls at ALC schools are particularly vulnerable.

At hub schools, 15 per cent of boys and 15 per cent of girls reported feeling unsafe on their way to school, compared with 6 per cent of boys and 18 per cent of girls at ALCs. Among ALC learners, Figure 4 shows that feelings of safety depended on the province, and girls in Paktika province felt the most vulnerable.

18 The high percentage of girls at LUL-supported ALCs is not necessarily representative of the gender balance at ALCs in general. For example, a review of 1,931 ALCs supported by USAID reveals that girls make up only 52 per cent of the ALC students (Jantzi, Lattimer, Jasim-Falher, Haroon, & Iqbal, 2019).

Figure 4. Percentage of female ALC students who report feeling unsafe on their way to school, by province (N=397)

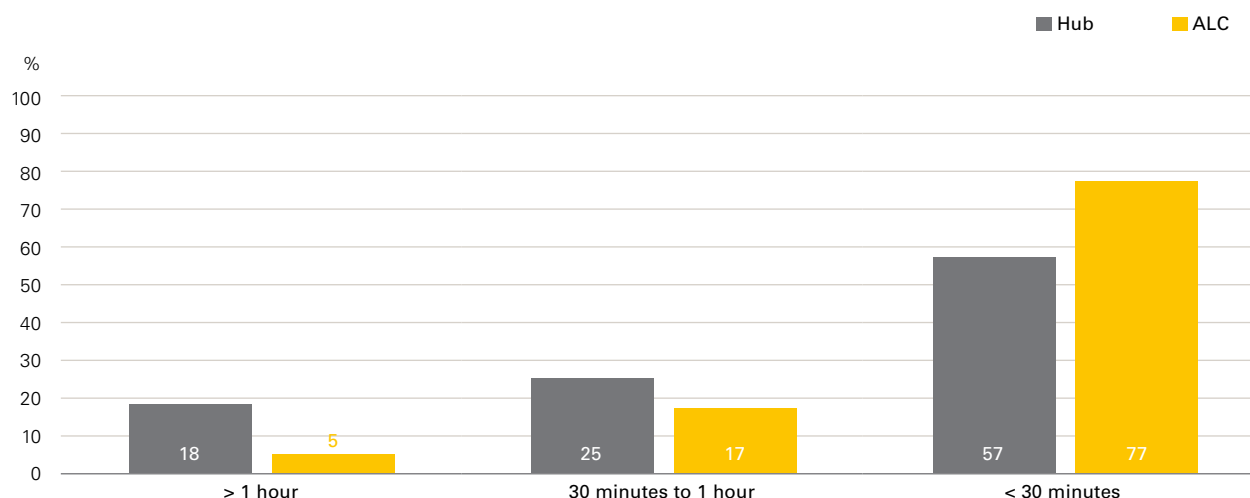


5.3 Distance to school

The data show that ALC students generally live much closer to their classroom than hub school students, with a commute time of less than 30 minutes.

Figure 5 shows that 57 per cent of hub school students live less than 30 minutes from their schools, while 43 per cent live more than 30 minutes away. For 18 per cent of students, the commute to school takes more than an hour. Among ALC students, 77 per cent commute less than 30 minutes to attend school. This reflects the community-based nature of ALCs and testifies to their effectiveness in reducing the distance to school.

Figure 5. Time it takes to walk to and from school each day, by school type (N=1,110)



5.4 Education at home and reading

Parents of ALC students have lower educational attainment than parents of hub school students. ALC students have fewer writing materials at home but read aloud at home more frequently than hub school students.

The self-reported literacy skills of both the father and mother are higher among hub school students. Around 62 per cent of fathers and 27 per cent of mothers of hub school students indicated that they could read, whereas this was the case for only 54 per cent of fathers and 19 per cent per cent of mothers of ALC students. These differences are significant at the 1 per cent level. More hub school students than ALC students (90 per cent, versus 86 per cent) reported having access to a notebook and pen. ALC students, however, reported that they read aloud at home every day more often than their hub school counterparts. They were also more likely to have access to a place to carry out homework at home.

5.5 Household assets

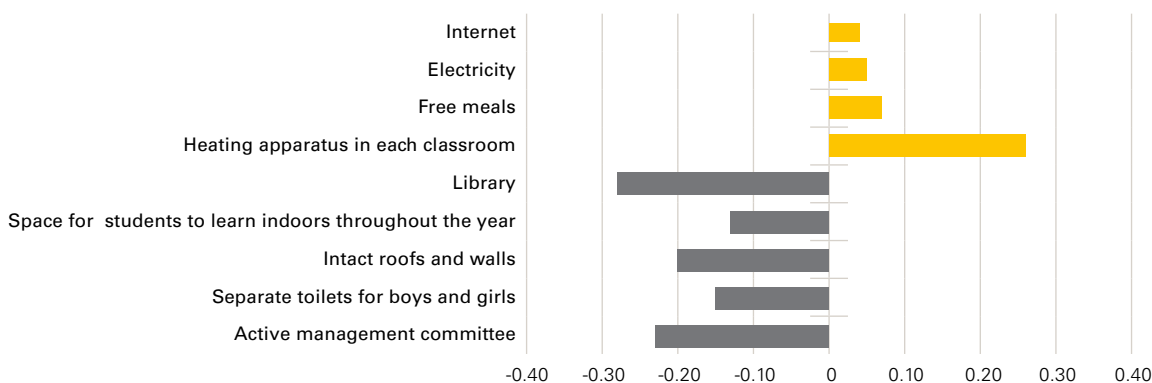
Students in ALCs and hub schools reported similar rates of asset ownership and remote learning tools (radios, televisions and computers) were limited for all.

Many students reported that their family has a mobile phone at home (88 per cent for ALCs and 92 per cent for hub schools). A large share of students (81 per cent of ALC students and 83 per cent of hub school students) reported that they have electricity at home. However, only about half or less of all students reported having a radio, television, computer or refrigerator in their homes. ALC students have a slightly higher rate of access to radios and refrigerators. While radios are relatively common (56 per cent of ALC, 51 per cent of hub school students), refrigerators are more expensive and scarcer (15 per cent of ALC, 9 per cent of hub school students).

ALCs are based in informal settings and tend to provide slightly more resources (e.g., heat, electricity and free food) but schools provide better traditional bricks-and-mortar infrastructure such as separate toilets for boys and girls.

At the school level, hub schools tend to have better school infrastructure while ALC schools have better resources (a comparison of mean scores by school type is included in Appendix 6). Figure 6 shows the different characteristics of ALCs and hub schools. Fewer ALCs have libraries than hub schools (by 28 percentage points). More ALCs, however, have access to the internet, electricity, free meals,¹⁹ and functional heating devices, perhaps because they take place in homes and religious buildings. Compared with hub schools, however, fewer ALCs have indoor space to learn in throughout the year, intact roofs and walls, separate toilets for boys and girls, and active management committees.

Figure 6. ALC characteristics (relative to hub schools), percentage point difference in mean scores



¹⁹ Receiving free meals is shown to have a positive effect on Dari EGRA scores, so having even 7 percentage points greater access to free meals is not trivial (USAID, 2016).

5.6 Teachers

The educational background of teachers, across school types, is relatively similar but there tend to be younger and more female teachers at ALCs.

ALC teachers are selected based upon qualifications but those who live in the location of the ALC and are female are prioritized. This study examined data for 31 ALC teachers and 28 hub school teachers.²⁰ Figure 7 shows that most teachers across the two school types are at least high school graduates, and many have a bachelor’s degree. Around half (16 out of 31) of the ALC teachers are female, while only three out of 27 teachers are female at the hub schools. Figure 8 shows that ALC teachers also tend to be younger on average, with a mean age of 28 years for ALC teachers and 35 years for hub school teachers.²¹

Figure 7. Teachers’ highest level of education by school type (hub=27, ALC=31)

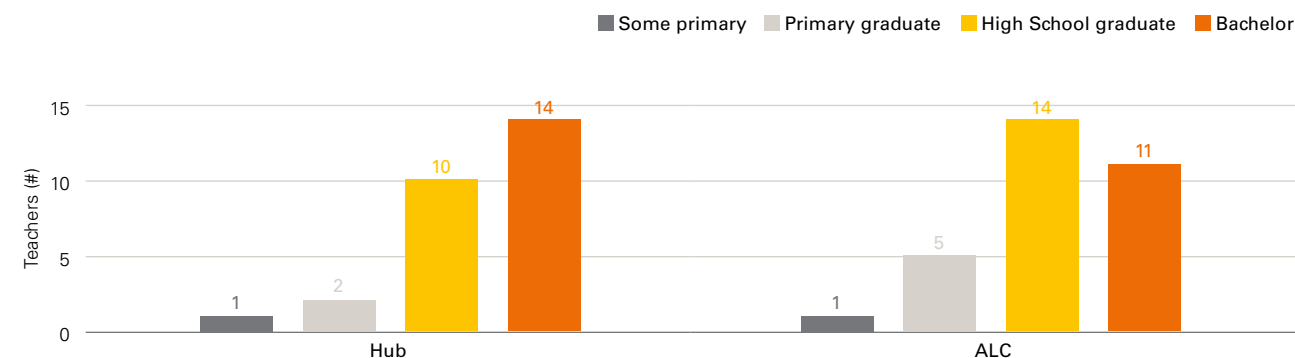
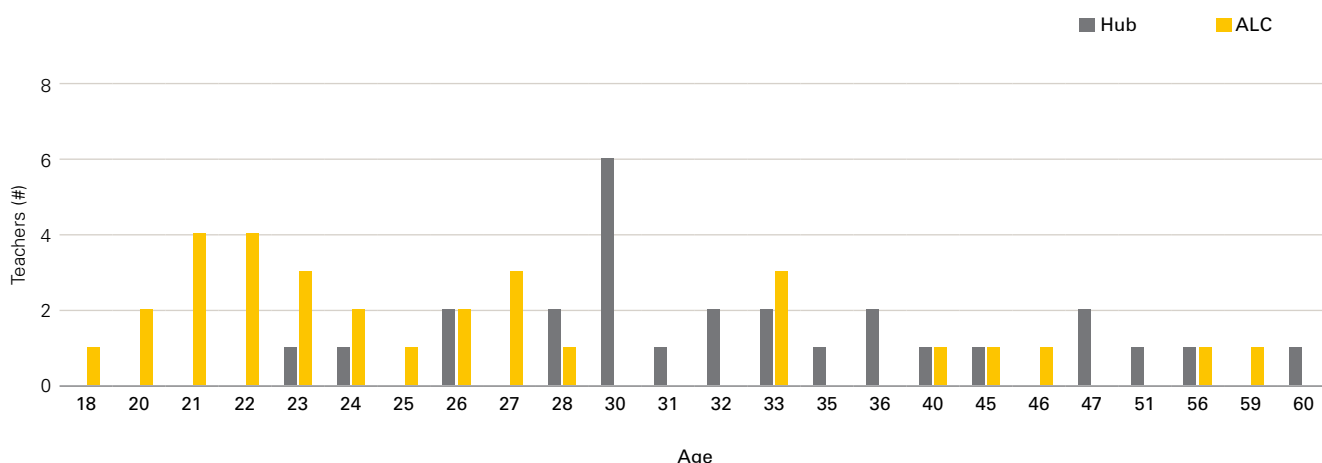


Figure 8. Teacher’s age (N=58)



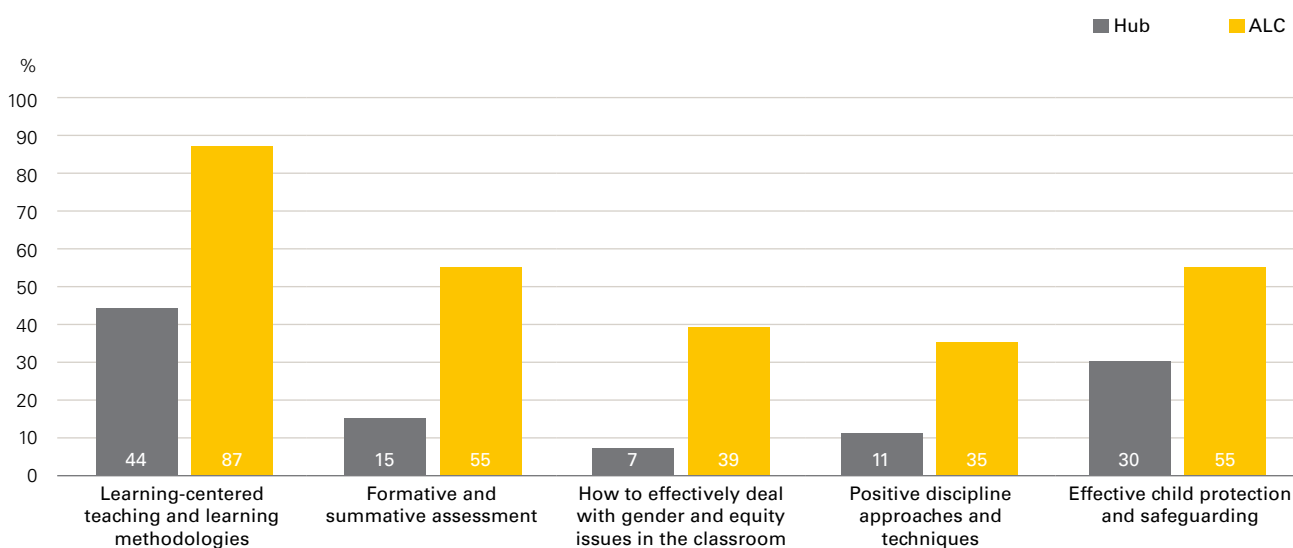
20 The classroom to teacher ratio is not always 1:1, but this data was not captured in the survey. In some cases, there are multiple teachers assigned per class.

21 The age of ALC teachers ranges from 18-59 years, with a standard deviation of 10.48. Hub school teachers are between 23-60 years old, with a standard deviation of 9.71. Hub school teachers tend to be around 6.8 years older, significant at the 5 per cent level.

ALC and hub school teachers differ in the type of training they receive but receive similar monitoring and feedback from school directors or other education officials, mostly academic supervisors.

Figure 9 shows that ALC teachers reported receiving training more than hub school teachers on learning-centred teaching and learning methodologies, formative and summative assessments,²² effectively dealing with gender and equity issues in the classroom, positive discipline approaches, and effective child protection. This finding is consistent with expert interviews conducted with education officials who reported that an advantage of ALC programmes was the formal teacher training as part of the onboarding of teachers (see Section 8 for additional details).

Figure 9. Percentage of teachers who reported receiving training, by topic and school type (N=58)²³



There were no significant differences among ALC and hub school teachers in terms of the frequency of reported training in competency-based curriculum and the use of information and communication technology (ICT) in the classroom. There was also no statistically significant difference in terms of reported access to sufficient textbooks. Across both school types, more than half of the teachers (56 per cent at ALC and 65 per cent at hub schools) felt that they did not have enough textbooks at the beginning of the school year. This finding is surprising given that textbooks are included in the establishment of an ALC, and it shows a discrepancy between teacher experience and the perception of educational officials that ALCs have sufficient textbooks (see Section 8). Further investigation into understanding the textbook needs of teachers could be helpful in establishing and improving ALC programmes.

Most teachers in both ALCs and hub schools reported that their teaching was observed over the past year (respectively, 77 per cent and 70 per cent) by either a school principal or an official from the district, province or Ministry. While observation and monitoring are a component of ALCs, there was no significant difference in the observed frequency of monitoring between ALC and hub school teachers. The quality and frequency of interactions with education supervisors remain to be assessed.

22 Formative assessments are used to help inform and enhance learning by students and teachers. Summative assessments are intended to evaluate students against a benchmark.

23 A t-test of the mean scores shows that differences between the teachers of ALC and hub schools are significant: the first three factors are significant at the 1 per cent level, the fourth at the 5 per cent level, and the last at the 10 per cent level.

6. Schooling during COVID-19

In response to the COVID-19 pandemic, the Ministry of Education closed all schools from March 14 to August 21, 2020, and partially closed schools from August 22 to October 2, 2020. When already 3.7 million children are estimated to be out of school, the addition of 7.3 million students (6.3 million in Grades 2-12, and 1 million who were about to enrol) exacerbated the outreach needed for alternative and remote learning modalities. To address the need for remote schooling, the Ministry created a COVID-19 Alternative Education Plan, which outlined a multi-targeted path to teach core primary school subjects through remote learning modalities including television (4.5 months of airtime), radio, literate parents, religious leaders, upper secondary school students, and mobile applications (Islamic Republic of Afghanistan Ministry of Education, 2020).

Many of the students assessed for this study were not attending school in 2019, even prior to the COVID-19 outbreak. Figure 10 shows that around 23 per cent of ALC students and 21 per cent of hub school students had not been attending school for two years prior to enrolling in 2021. Of the students who had attended school in 2019, very few spent time on education²⁴ during the school closures. Figure 11 shows that **only 7 per cent of hub school and 5 per cent of ALC students reported spending more than four hours per day on education during school closures**. Most students spent one hour or less per day on education, compared with around 15 weekly hours²⁵ of classes during normal times.

Figure 10. Attending school before COVID-19 school closure (N=1,090)

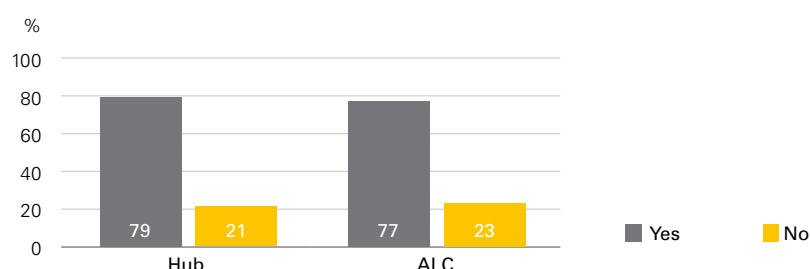
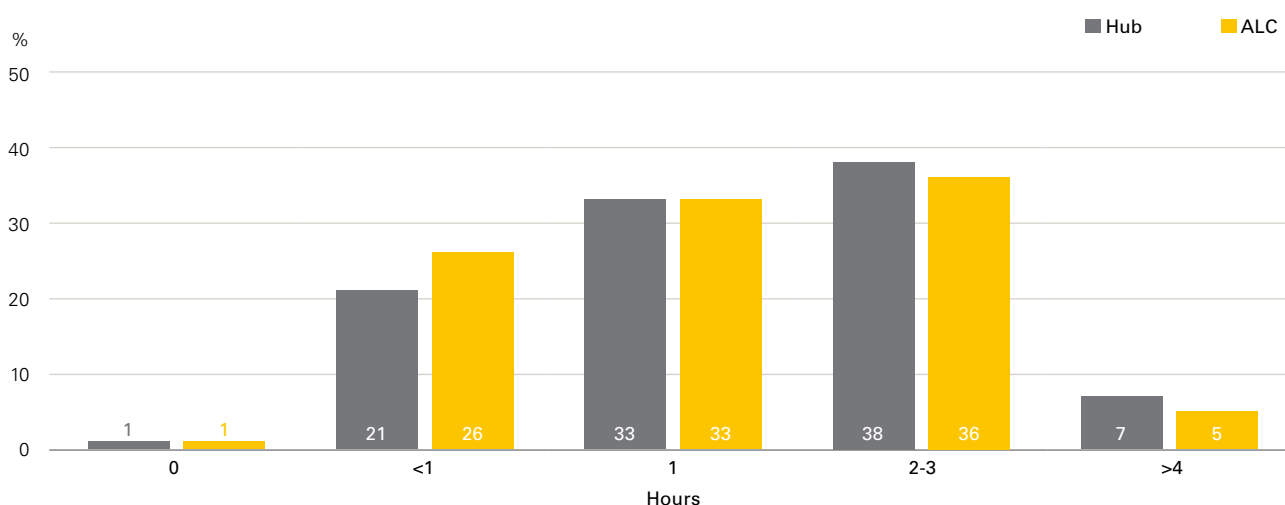


Figure 11. Daily hours spent on education during school closure, among students who had been in school prior to the closure (N=1,017)

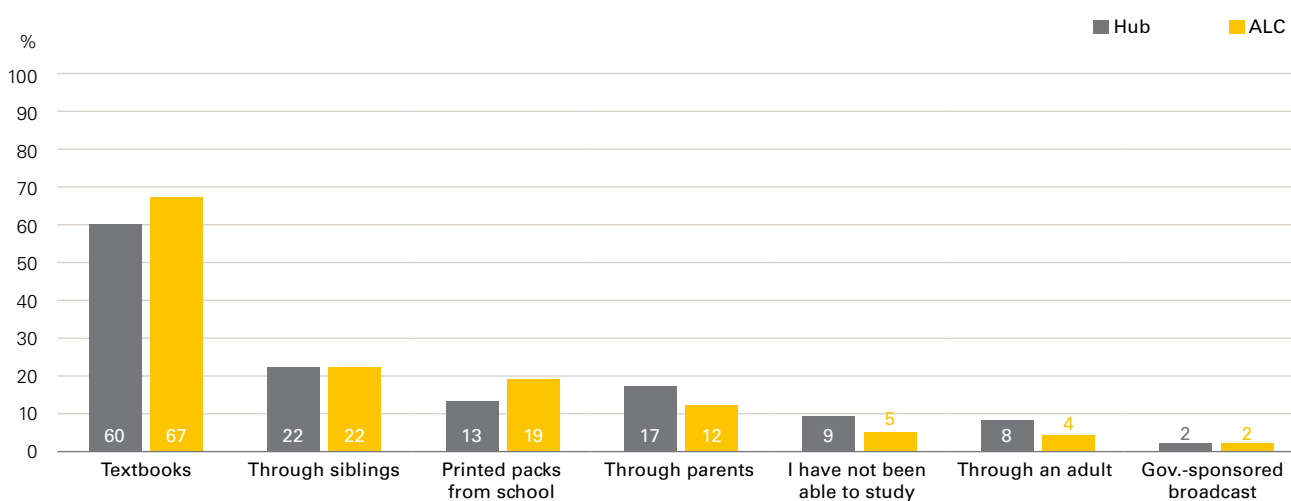


24 The survey asked students, “On average, while schools were closed, how many hours a day have you spent on education?,” where education includes but is not limited to activities such as learning through printed packs from school, textbooks, parents, siblings, other adults in the community, and participating in government-sponsored remote-learning programmes on radio and television.

25 The daily and weekly hours of class vary by ALC. However, ALCs generally operate a minimum of three hours per day from Sunday to Thursday (Zaem & Shepherd-Johnson, 2017).

During school closures, as shown in Figure 12, the most common form of remote learning was studying with textbooks (60 per cent of hub school and 67 per cent of ALC students).²⁶ The next most used method of learning at home was from siblings, followed by learning through parents, and finally, using printed packs²⁷ from school. The least used method of learning was through government-sponsored broadcasts that were offered through radio, television and internet. In terms of the figures for remote learning, the usage of government-sponsored broadcasts was low (2 per cent for both ALC and hub school students). This low take-up is striking given that around half of both ALC and hub school students had access to televisions and radios. Data were not collected on how many students owned printed packs or textbooks. Therefore, it is possible that while students had these study materials at home, they did not use them.

Figure 12. Remote learning modalities used during school closure by school type (frequency)



Note: The bars represent the percentage of students in each school type who responded that they have used the given learning method (students could select multiple options).

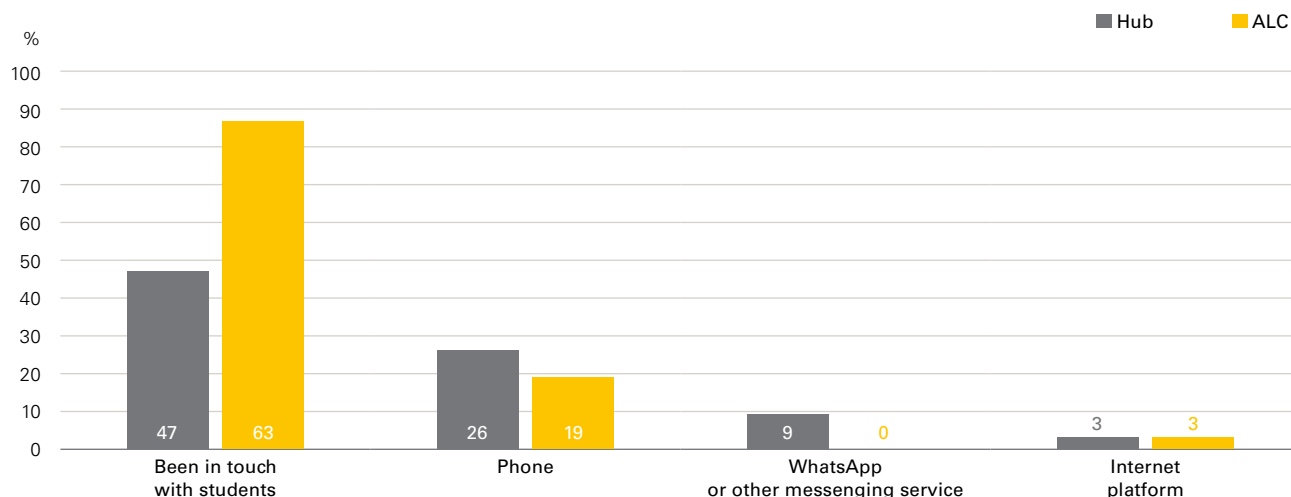
Teaching during the COVID-19 pandemic

During the school closures, many teachers reported staying in touch with their students (63 per cent of ALC and 47 per cent of hub school teachers), and around 80 per cent of all teachers reported helping students in their communities learn. However, no data was available on how often teachers interacted with their students. In terms of using ICT, Figure 13 shows that the most common channel to keep in touch with learners was phones, with very few teachers using WhatsApp or the internet.

26 Most students in this study also had access to a notebook and pen or pencil to write in the classroom (90 per cent of hub school and 86 per cent of ALC students). These numbers are significantly higher than national averages where only one-third of students are estimated to have access to exercise books, pens, or pencils (Molina et al., 2018). This divide could stem from self-reported errors, or changes to the distribution of education materials during or post-COVID-19.

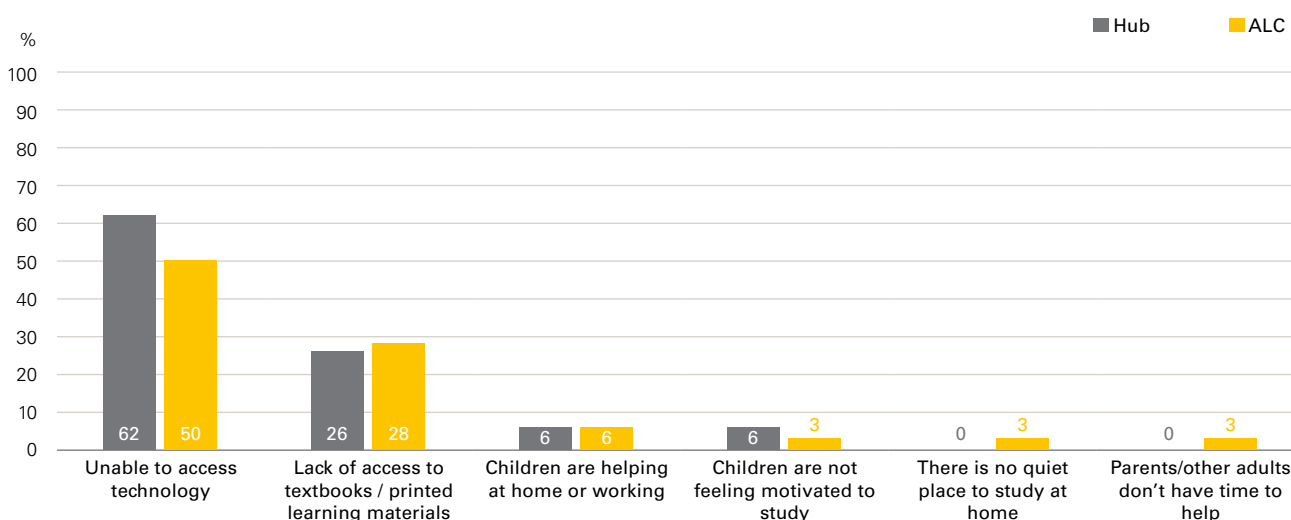
27 Printed packs are a combination of curriculum textbooks (seven subjects are covered, including art, handwriting, Islamic education, life skills, math, Quran learning, and either Pashto or Dari) and early-grade reading materials (this is a reading book designed for a 28-week period with many child-friendly pictures).

Figure 13. Communication channels used by teachers to stay in touch with students during school closure, by school type



Teachers were asked about the main difficulties their students faced in terms of learning during school closures. The most cited problem was lack of technology, followed by a lack of access to textbooks and printed learning materials, as shown in Figure 14.

Figure 14. Teacher-reported obstacles faced by students during school closures, by school type (frequency)



Despite the everyday challenges brought on by the pandemic, lack of learning materials, and students' lack of access to technology, 68 per cent of ALC and 62 per cent of hub school teachers reported that they informally taught throughout the school closures, one to two hours per day. This may have implications in terms of equity if only those students who were able to overcome these barriers had access to instruction at home.

7. Learning outcomes and factors associated with literacy and numeracy skills

The key findings from the baseline study of student learning outcomes are presented in three steps. First, a general overview of learning outcomes in reading (separately by language group, for the reasons stated above) and math is presented. Results are shown separately for ALC and hub school students, and mean scores for EGRA and EGMA assessments are shown by each subtask. Mean scores provide a snapshot and do not establish whether the scores are influenced by the type of school attended.

Second, to investigate whether the learning effect of attending an ALC is different from attending a hub school, statistical analysis is conducted to examine the association between attending an ALC and learning outcomes. This step explores numerous factors – at the learner, teacher and school level – associated with educational outcomes. To do this, a regression analysis is used to estimate assessment scores as a function of school type (ALC or hub) and student- and school-related characteristics, such as family background, and availability of learning materials.

Third, interviews with local education officials were conducted to provide additional insight into the factors that help students learn, and the challenges and opportunities faced by ALCs. Expert interviews provide additional context and information that a quantitative analysis may fail to capture. They also help to validate, challenge or further explain the results from the quantitative analysis.

7.1 EGRA results for Dari speakers

Initial results from the reading assessment show that **Dari-speaking ALC students performed similarly to or better than their counterparts at hub schools**. Figure 15 shows mean scores and boxplots across subtasks and school type on the EGRA for Dari speakers.²⁸ A further breakdown of scores by age and gender are included in Appendix 7 and Appendix 8.²⁹

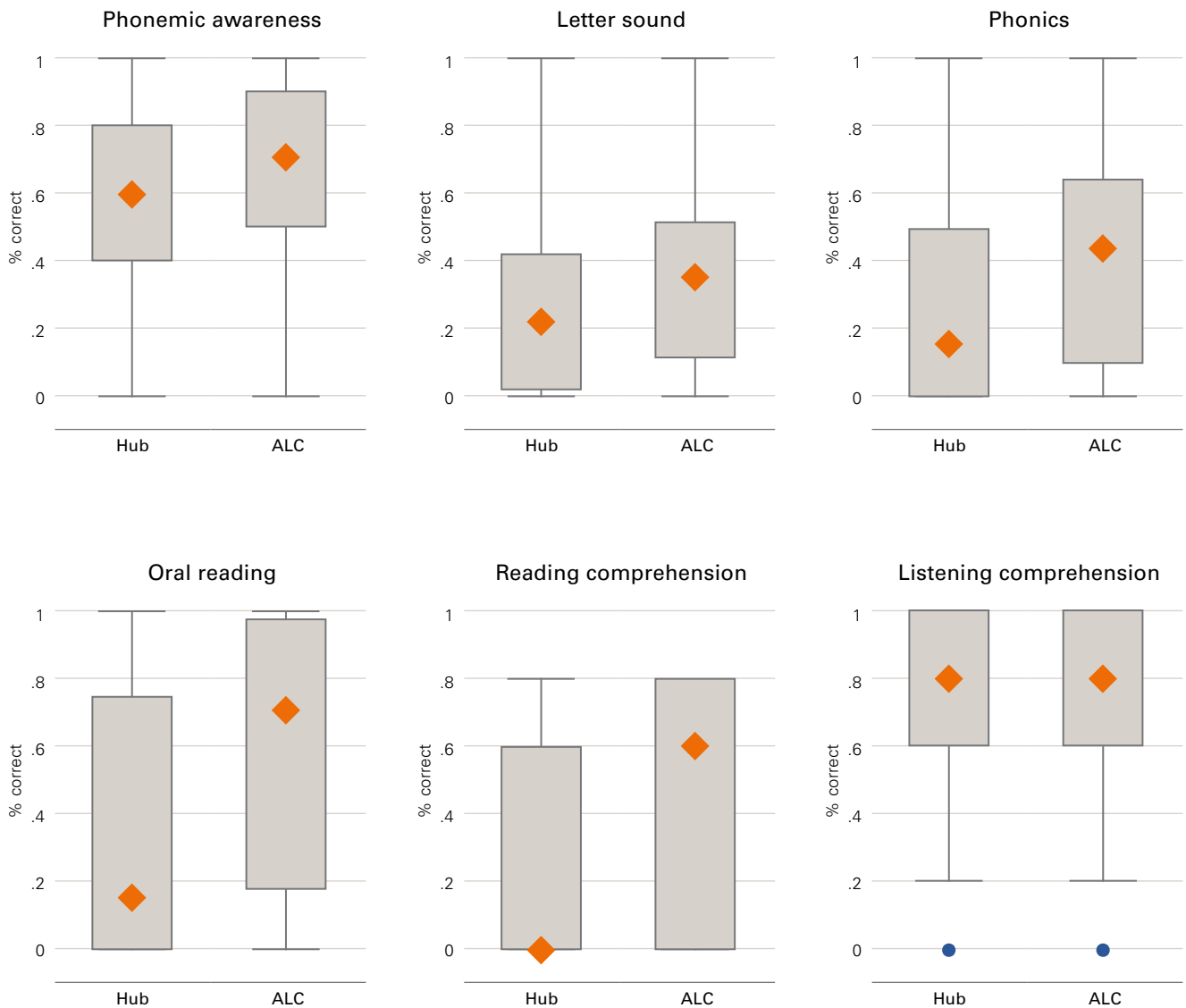
Figure 15. EGRA for Dari speakers: mean scores and boxplots

	Mean % of questions answered correctly		Mean score		Range	
	Hub	ALC	Hub	ALC	Min	Max
Phonemic awareness	60%	71%	6.0	7.1	0	10
Letter sound	29%	40%	29.1	39.9	0	100
Phonics	31%	44%	15.4	22.2	0	50
Oral reading	41%	68%	26.4	43.7	0	64
Reading comprehension	28%	49%	1.4	2.5	0	5
Listening comprehension	70%	75%	3.5	3.7	0	5

Note: The far-right columns (range) show the minimum and maximum scores possible for each subtask. For the oral reading subtask, reading every word correctly within one minute receives 64 points. N=379 for hub school students, and N=232 for ALC students.

²⁸ To assess whether differences in mean scores between ALC and hub schools are statistically significant, an independent samples t-test was conducted for each subtask. To correct for error rate inflation due to conducting multiple comparisons, a Bonferroni correction was used, and the familywise type I error rate was set at 0.05 for the assessments. The magnitudes of the effect sizes were compared across subtasks to understand for which subtask(s) these two types of schools differ the most.

²⁹ Appendix 7 shows the mean score (percentage of questions answered correctly) of each reading subtask by age for hub school students and ALC students. It shows that the association between age and score, for Dari-speaking students appears linear for hub school students but is non-linear for ALC students. In the regression analysis, we control for age and school type. Appendix 8 shows average reading subtask score by gender, showing that for Dari-speaking students at hub schools, girls underperform relative to boys in every subtask. At ALCs, girls underperform relative to boys on some subtasks, but outperform boys on others. An analysis of the association between age and gender with subtask scores is completed in the main regression analysis in the subsequent paragraphs.



Note: To construct the boxplot, scores were sorted and ranked into four groups (quartiles). This means that the middle 50 per cent of observations are represented in the grey box, with the diamond symbol representing the median. The lines above and below the box are called whiskers and represent scores outside the middle 50 per cent, showing the minimum and maximum, excluding outliers. A short box means that the scores for that subtask are relatively similar, while a tall box represents greater variation in scores. Where boxes are higher or lower than their adjacent box, this indicates a difference between scores at the hub schools and ALCs. A box in which 25 per cent or more of the observations equal the minimum shows the lower quartile as equal to the minimum. If 50 per cent or more of the observations score the maximum, the top quartile will equal the median. Blue dots represent outliers.

ALC students outperformed hub school students, to varying degrees, across all reading subtasks. For basic reading tasks such as phonemic awareness (the ability to identify words starting with different sounds) and correct listening comprehension, differences between ALC and hub school students were minimal (Figure 15). These skills also measure foundational literacy skills that are the building blocks for more advanced reading skills such as fluency and reading comprehension. For phonemic awareness, ALC students responded correctly to an average of 7.1 out of 10 items, compared with 6 items for hub school students. For listening comprehension, the scores from the two school types are very similar. This may be attributed to students having had enough time to practice and develop this basic skill, which is usually developed between birth and the start of primary school (Gove & Wetterberg, 2011).

For the letter-sound task, a decoding subtask where students identify the sounds of letters presented in random order, ALC students outperformed hub school students by 10 letters per minute, being able to accurately identify the sound of 39.9 letters out of 100 letters within one minute. This task, as well as the phonics task (identifying letters with sounds through the reading of simple nonsense words), assesses a student's decoding skills and their ability to correctly link letters to names and sounds (grapheme-phoneme correspondence rule).³⁰ ALC students had a higher mean score in phonics: 22.2 words compared to 15.4 words for hub school students.

The difference between Dari-speaking ALC and hub school students was most pronounced for higher order reading skills (reading a text with accuracy and at a sufficient pace). On average, ALC students read 43.7 words correctly from a passage within one minute, which is two-thirds more than for hub school students (26.4 words). In the reading comprehension task, ALC students responded correctly to half of the five questions correctly about a text they read, compared to 1.4 correct answers for hub school students.

Factors associated with EGRA performance for Dari speakers

This section analyses student and school-level factors associated with learning outcomes. The full methodology employed to investigate the association between student and school factors and learning outcomes is outlined in Appendix 11. The methodology focuses on identifying causal linkages (using a two-stage least-squares approach) to estimate the association between student and school characteristics on the one hand and reading outcomes on the other. Results from the analysis (Appendix 13) confirm the findings from the descriptive statistics that attending an ALC improves learning outcomes more than attending a hub school. Moreover, attending an ALC is likely the main driver behind the better reading scores, rather than the individual characteristics of ALC students.³¹ Attending an ALC leads to better scores on all reading subtasks except for listening comprehension. Listening comprehension is an oral knowledge skill, involving responding to questions read aloud, and likely requires fewer school-learned skills in literacy. Given that ALC students are older, it may first seem that better scores are linked to age, but the analysis conducted for this study finds that age does not play a significant role for Dari-speaking students.

Results from the Dari EGRA analysis also point to gender gaps in education, with girls in both ALCs and hub schools consistently underperforming relative to boys on reading tasks.

Individual and school-level factors play different roles across the EGRA subtasks. Key highlights by subtask are presented below:

- **Phonemic awareness.** On the phonemic awareness subtask, attending an ALC leads to higher scores (average 37 percentage points higher), relative to attending a hub school. Interestingly, there is no effect of gender or age. Additionally, reading aloud at home every day, as opposed to not reading at all leads to an 18.4 percentage point increase.
- **Letter sound.** For the letter-sound subtask, attending an ALC is again associated with higher scores (average 37 percentage points higher), relative to attending a hub school. Other key factors associated with success in this task were having learning materials such as a notebook at home (7 percentage point increase) and learning through government-sponsored broadcasts (20 percentage point increase). Having electricity at home was also positively related to scores (14 percentage point increase). Our findings also show that being a girl was associated with 11 percentage points less on average, relative to being a boy.

30 Grapheme-phoneme correspondence rules are how a grapheme (the way a phoneme is written) is linked to a phoneme (small sounds that can be linked to make words, e.g., in the English language, "sh").

31 This finding is supported by a robustness check that uses regression analysis to estimate the association between literacy (zero scores) and school type (ALC or hub). The full description of the analysis is included in Appendix 12.

- **Phonics.** Like the letter-sound subtask, attending an ALC (rather than a hub school), having learning materials at home, engaging in remote learning modalities, and having electricity at home all had a positive association with scores, corresponding to 44, 10, 13 and 12 percentage point increases respectively. Having attended school prior to the COVID-19 lockdown also had a positive association with scores, indicating that for this subtask, previous learning and continued learning are important. As in the letter-sound subtask, this subtask also pointed to gender inequities, with girls scoring 12 percentage point less on average than boys.
- **Oral reading.** Attending an ALC, compared with attending a hub school, had a positive effect on oral reading scores, as did attending school prior to the COVID-19 school closures, and learning through government-sponsored broadcasts. These factors were associated with percentage point increases of 65, 20, and 20 respectively. For this subtask, scores were higher (13 percentage points) when there were separate toilets for boys and girls. As in the two previous subtasks, there was evidence of a gender gap in education: being a girl is associated with 14 percentage points less, on average, than boys.
- **Reading comprehension.** For this task, attending an ALC and other factors were associated with higher grades. These factors include having a notebook at home, receiving feedback from teachers, having a telephone at home, having previously engaged in learning (attending school prior to the COVID-19 closures), and having access to remote learning modalities during the pandemic, such as printed packs and government-sponsored broadcasts (tv, radio, internet). Having access to a separate toilet for boys and girls also had a positive impact.
- **Listening comprehension.** Attending an ALC was not associated with a statistically significant difference in listening comprehension scores. One explanation is that factors outside of school may play a key role in the development of listening comprehension skills. Moreover, students from both types of schools scored highly on this task (median score was ~80 per cent), suggesting that hub school and ALC students are comparable on this task. For this subtask, the key factor associated with higher scores is reading aloud at home (both sometimes and every day), relative to not reading aloud at all.
- **Learning during school closures due to COVID-19.** During the COVID-19 school closures, most children in Dari-speaking provinces studied at home (92 per cent of ALC students and 94 per cent of hub school students). The most widely used method of learning was textbooks, followed by printed packs and learning through family members. Of these methods, printed packs had a significant positive (17 percentage point) association with reading comprehension scores. While learning through government-sponsored broadcasts (radio, television and online) were least commonly used methods, students who had access to them and used them for studying scored higher in four of the six subtasks (letter-sound, phonics, oral reading, and reading comprehension).

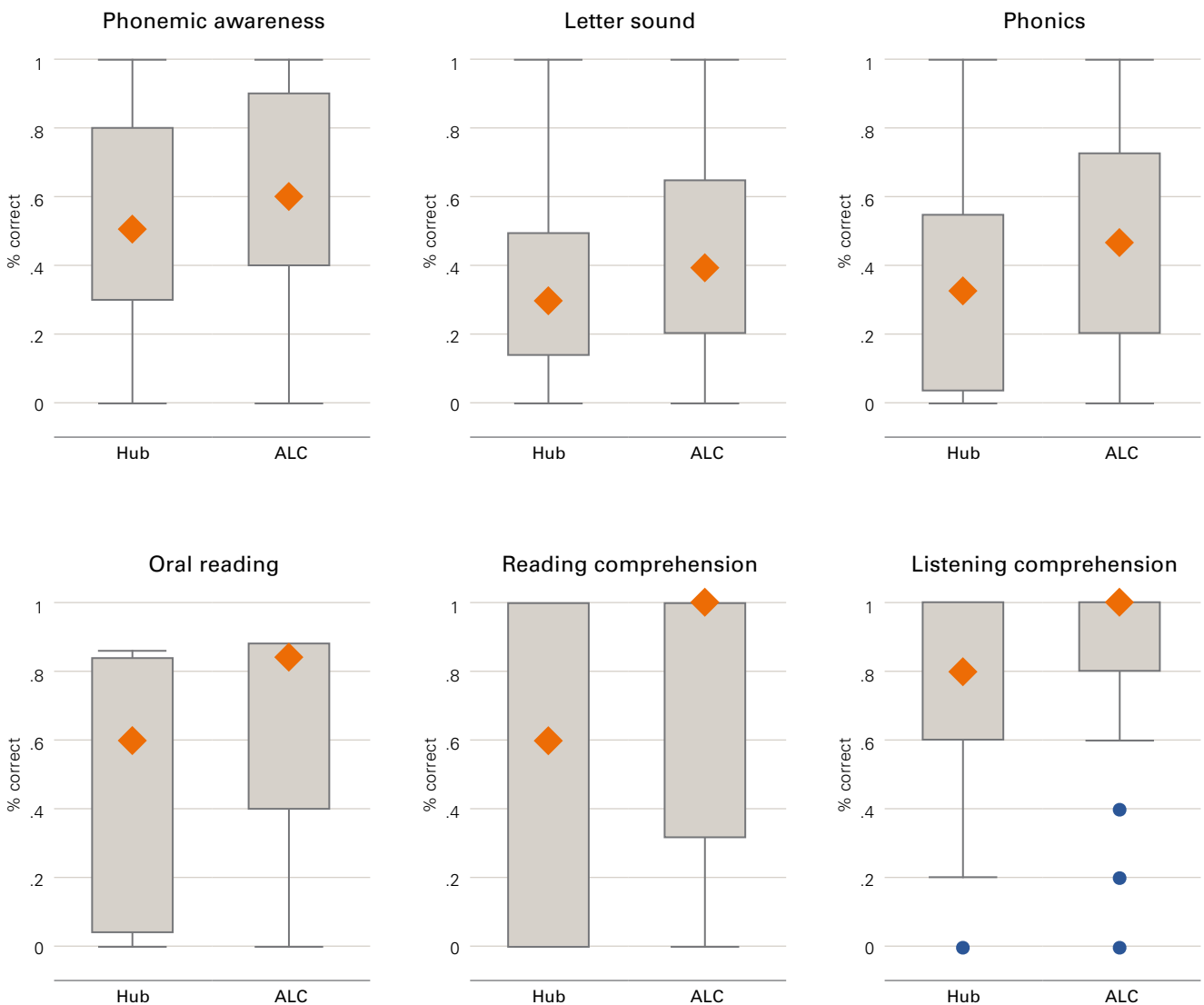
7.2 EGRA results for Pashto speakers

In Pashto-speaking areas, a similar pattern emerges of ALC students performing similarly or better than hub school students across all subtasks. Figure 16 shows mean scores and boxplots for the EGRA for Pashto speakers, indicating that for tasks measuring fundamental reading skills, such as phonemic awareness and listening comprehension, ALC students outperformed hub school students by a large margin. For phonemic awareness, ALC students identified 6.5 out of 10 sets of words beginning with different sounds, on average, as opposed to 5.2 for hub school students. Listening comprehension, a more rudimentary skill, was again similar for both groups. In terms of letter-sound decoding tasks, ALC students, on average, correctly matched 45.9 out of 100 letters with their sounds and read 25.1 out of 50 simple nonsense words based on grapheme-phoneme correspondence rules. ALC students also outperformed hub school students, on average, on higher order skills such as reading 42.4 words of a passage in one minute and being able to answer more questions correctly about a passage, 3.7 questions out of 5.

Figure 16. EGRA for Pashto speakers: mean scores and boxplots

	Mean % of questions answered correctly		Mean score		Range	
	Hub	ALC	Hub	ALC	Min	Max
Phonemic awareness	52%	65%	5.2	6.5	0	10
Letter sound	36%	46%	36.2	45.9	0	100
Phonics	38%	50%	19.1	25.1	0	50
Oral reading	52%	66%	33.2	42.4	0	64
Reading comprehension	59%	74%	2.9	3.7	0	5
Listening comprehension	75%	87%	3.7	4.4	0	5

Note: The far-right columns (range) show the minimum and maximum scores possible for each subtask. For the oral reading subtask, reading every word correctly within one minute receives 64 points. N=266 for hub school students, and N=236 for ALC students.



Note: To construct the boxplot, scores were sorted and ranked into four groups (quartiles). This means that the middle 50 per cent of observations are represented in the grey box, with the diamond symbol representing the median. The lines above and below the box are called whiskers and represent scores outside the middle 50 per cent, showing the minimum and maximum, excluding outliers. A short box means that the scores for that subtask are relatively similar, while a tall box represents greater variation in scores. Where boxes are higher or lower than their adjacent box, this indicates a difference between scores at the hub schools and ALCs. A box in which 25 per cent or more of the observations equal the minimum shows the lower quartile as equal to the minimum. If 50 per cent or more of the observations score the maximum, the top quartile will equal the median. Blue dots represent outliers.

Factors associated with EGRA performance for Pashto speakers³²

Results from the Pashto EGRA analysis of the association between individual and school characteristics and outcomes (*see Appendix 14*) are consistent with the descriptive statistics. Findings indicate that **attending an ALC versus a hub school has a positive association with learning outcomes for the more difficult subtasks** (letter-sound, phonics, oral reading, and reading comprehension).

Gender gaps are visible for Pashto-speaking students, too, with girls achieving lower scores than boys. Age additionally influences test scores, albeit only to a small degree. Other factors are also associated with higher reading scores, but none is as consistent nor as large as attending an ALC. Key individual and school-level factors associated with reading are outlined by subtask below:

- **Phonemic awareness.** Attending an ALC has no discernible association with grades for this subtask. Being a year older, however, led to a 3-percentage point increase in scores. Other factors positively associated with test scores are having a radio at home and access to printed packs during the COVID-19 school closures.
- **Letter sound.** For this subtask, attending an ALC and being older were associated with higher scores, respectively 11 and 3 percentage points. The impact of attending an ALC was much larger than the effect of age. Having homework and having attended school prior to the COVID-19 school closures were both associated with a 14-percentage point increase in scores).
- **Phonics.** Factors positively associated with this subtask were attending an ALC, age, having a father who can read and write, reading aloud at home sometimes, and reading aloud at home every day, respectively, 12, 5, 7, 10, and 13 percentage points. Being a girl had a negative impact on scores, evidence of a gender gap in education.
- **Oral reading.** Oral reading scores had a positive association with attending an ALC, students' age (respectively 15 and 2 percentage points) and coming from a wealthier family. Students from families who own a refrigerator and telephone (used as proxies of wealth) outperformed those without, by 10 and 11 percentage points respectively.
- **Reading comprehension.** For this subtask, attending an ALC, age, owning a radio, owning a telephone, and learning through government-sponsored broadcasts all had a strong positive association with scores, increasing scores respectively by 18, 3, 9, 7, and 12 percentage points. School-level factors such as having an active management committee, separate toilets for boys and girls, or electricity had no significant association with scores.
- **Listening comprehension.** For this subtask, in contrast to the previous four, there was no association between attending an ALC and scores. Factors positively associated with listening comprehension were age, whether the father can read and write, reading aloud every day (as opposed to not reading at all), and access to remote learning modalities. For this subtask, learning materials were strongly associated with scores: access to printed packs, textbooks, and government-sponsored broadcasts corresponded with an increase in scores of 12, 14, and 18 percentage points, respectively.
- **Learning during school closures due to COVID-19.** During the COVID-19 school closures, 97 per cent of ALC students and 91 per cent of hub school students engaged in learning at home. Among Dari-speaking learners, the most used remote learning modality was textbooks, followed by printed packs and learning through family members. Of these learning methods, printed packs had a significant positive association with phonemic awareness and listening comprehension. Learning through textbooks and government-sponsored broadcasts (television, radio, and internet) also had a positive effect on reading comprehension and listening comprehension.

32 For the analysis of the Pashto EGRA, a straightforward OLS regression is used to estimate the association between test scores and student and school factors. In an ideal setting, quasi-experimental methods could be applied to attempt to identify causal effects. Due to limitations in the data for the Dari EGRA sub-sample, this study is limited to exploring determinants of educational outcomes as correlations between various student and school level factors and assessment scores. This analysis shows the strength of the association between variables but not necessarily causal associations.

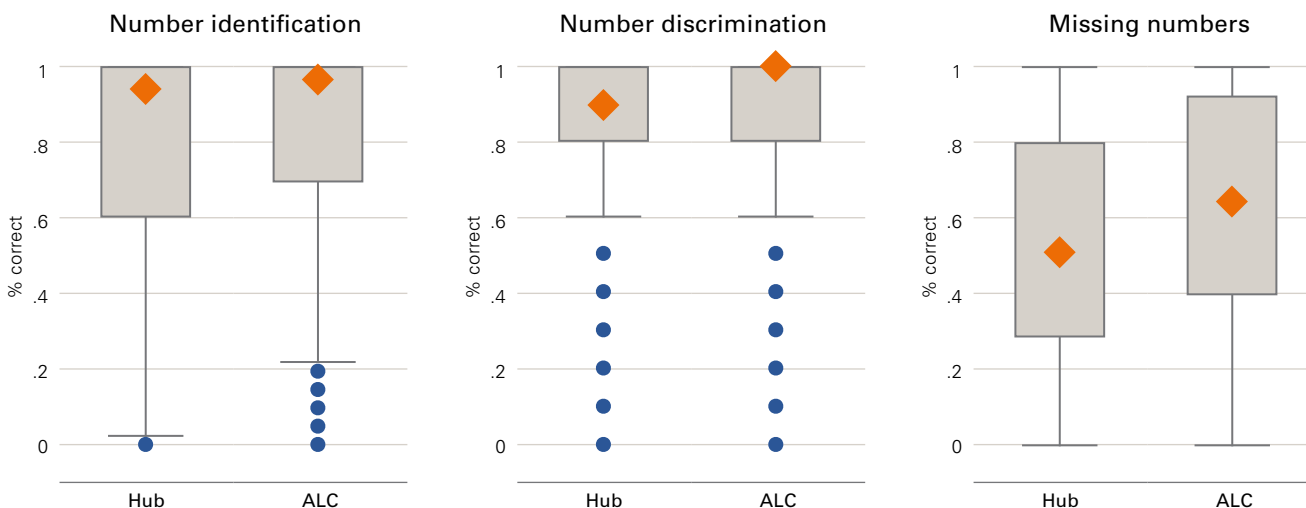
7.3 EGMA results

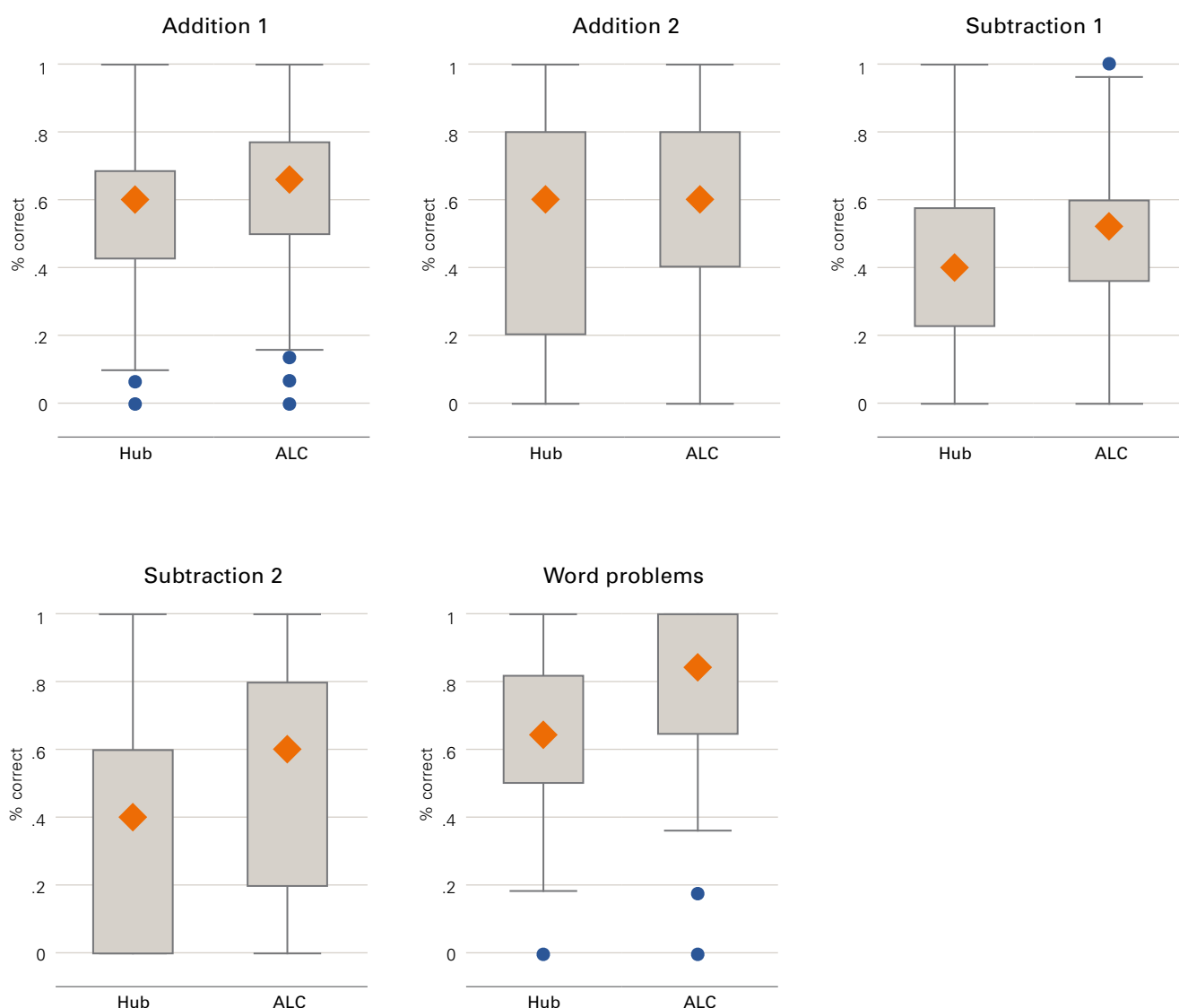
EGMA, and the eight subtasks that comprise the assessment, measure four foundational numeracy skills that early-grade children should acquire: number identification, number discrimination, number pattern identification, and addition and subtraction (including word problems). These basic skills are necessary for everyday activities like trading and personal finance and also determine children’s future success in learning more advanced mathematics (Brombacher, Bulat, King, Kochetkova, & Nordstrum, 2015; RTI International, 2014). Children’s early mathematical skills also predict their later reading skills as much as early reading skills do (Duncan et al., 2007; RTI International, 2014).

Figure 17. EGMA: mean scores and boxplots

	Mean of % correct		Mean score		Range	
	Hub	ALC	Hub	ALC	Min	Max
Number identification	79%	84%	15.8	16.9	0	20
Number discrimination	85%	90%	8.5	9.0	0	10
Missing numbers	53%	62%	5.3	6.2	0	10
Addition 1	59%	66%	11.7	13.1	0	20
Addition 2	52%	65%	2.6	3.2	0	5
Subtraction 1	44%	51%	8.9	10.2	0	20
Subtraction 2	39%	57%	2.0	2.8	0	5
Word problems	66%	77%	4.0	4.6	0	6

Note: The far-right columns, range, shows the minimum and maximum scores possible for each subtask. N=645 for hub school students, and N=268 for ALC students.





Note: To construct the boxplot, scores were sorted and ranked into four groups (quartiles). This means that the middle 50 per cent of observations are represented in the grey box, with the diamond symbol representing the median. The lines above and below the box are called whiskers and represent scores outside the middle 50 per cent, showing the minimum and maximum, excluding outliers. A short box means that the scores for that subtask are relatively similar, while a tall box represents greater variation in scores. Where boxes are higher or lower than their adjacent box, this indicates a difference between scores at the hub schools and ALCs. A box in which 25 per cent or more of the observations equal the minimum shows the lower quartile as equal to the minimum. If 50 per cent or more of the observations score the maximum, the top quartile will equal the median. Blue dots represent outliers.

Figure 17 shows that ALC and hub school students scored similarly across all math subtasks.³³ Starting with number identification, all students were able to read aloud close to 16 numbers out of a set of 20 numbers within one minute. Other basic subtasks included asking students to identify the larger number from 10 pairs of numbers, and a missing number task, which measures a student’s ability to recognize number patterns.

Students also scored similarly in terms of addition and subtraction. Level one addition and subtraction assesses student fluency to perform simple one-digit arithmetic in a span of 60 seconds. On level one addition, ALC students were able to correctly add 13.1 problems in one minute. Level two addition and subtraction measures student performance on two-digit operations. Level two tasks are not timed and are limited to

³³ The main purpose of these results is to provide an overall description of the scores, rather than to evaluate the differences between hub school and ALC students. However, a t-test shows that the differences between the two school types are not statistically significant for most subtasks, and the Cohen’s effect sizes are also small. This is an expected result especially for more rudimentary tasks.

five questions each. Students performed similarly in addition tasks, but the difference for subtraction was statistically significant, meaning that ALC students slightly outperformed hub school students.³⁴ The final task, word problems, measures basic mathematical operational skills with six practical, real-world situation questions. For this task, ALC students again slightly outperformed hub school students.³⁵

A breakdown of average math scores by age in Appendix 15 shows a positive linear trend for hub school students. For ALC students, there is no distinguishable association between age and scores. In terms of gender, female students score on average lower than male students at both hub schools and ALCs (Appendix 16).

Factors associated with EGMA performance³⁶

As for EGRA, the analysis now turns to factors that influence performance on mathematical tasks. Four patterns emerge from the analysis of EGMA scores. First, **attending an ALC is generally positively correlated with math scores**. Attending an ALC has a particularly strong association with addition skills. Second, for more advanced tasks, such as level two subtraction and word problems, there is no significant association between attending an ALC and scores, indicating that **ALC learners and hub school students have similar proficiency at higher levels of math**. Third, **age has a strong positive association with math scores**. However, while being older is associated with higher scores, the magnitude of the coefficient is smaller than attending an ALC. This means that while both attending an ALC and being one year older can raise scores, the effect of attending an ALC is larger than age.³⁷ Fourth, **being a girl is associated with lower math scores across all EGMA subtasks**, regardless of school type. This pattern is indicative of gender gaps in education, consistent with the findings from the EGRA assessment.

Besides these general patterns, the analysis also considered additional individual and school-level factors that affected the acquisition of numeracy skills. These are explored in turn below.

Teacher behaviour

In terms of teacher behaviour, the analysis includes two factors: whether the student received feedback on their academic performance, and what the teacher did when the student answered a question incorrectly. Receiving academic feedback from the teacher is associated with a positive increase in scores in four out of the eight subtasks. This is consistent with findings from the EGRA that individual feedback helps students learn. For the second factor, when students respond incorrectly, rephrasing a question is positively correlated with higher scores only in the number identification and quantitative comparison tasks, not with higher-level math tasks. Encouraging students to try again has no statistically significant association with math scores.

34 The difference between the mean scores of hub school and ALC students was statistically significant, and the Cohen's effect size (difference between the two means divided by the pooled standard deviation) was 0.35, indicating that the size of the difference is small to medium.

35 The difference between mean scores of hub school and ALC students was statistically significant, and the Cohen's effect size (difference between the two means divided by the pooled standard deviation) was 0.36, indicating that the size of the difference is small to medium.

36 To estimate the association between attending an ALC and EGMA scores, a simple OLS regression is employed. EGMA scores are modelled as a function of attending an ALC, controlling for demographic, school, and teacher variables as in the EGRA setups (regression results are attached in Appendix 17). As in the Pashto EGRA analysis, causality cannot be identified between attending an ALC and scores, so the focus is on the strength and direction of the associations.

37 Including age as a variable in the regression analysis introduces a degree of multicollinearity, so it is important to consider age as a control variable, rather than a main variable of interest.

Household wealth

Four household wealth indicators were included in the analysis: having electricity, a radio, a refrigerator, and a telephone. Of these, only two, having electricity in the home and having a telephone, were positively correlated with math scores. Electricity has a positive association with the first two subtasks (number identification and quantitative comparison) and the fourth subtask (level one addition). It has no association with the other subtasks. Owning a phone was also positively associated with higher test scores but only for two subtasks, indicating that there are no clear trends between household wealth and foundational numeracy skills.

School characteristics

School factors included in the analysis are whether the school has an active management committee, whether the school has separate toilets for boys and girls, and whether the school has electricity.³⁸ For math, there is no significant association between scores and either having an active management committee or having separate toilets for boys and girls.

Learning during school closures due to COVID-19

Contrary to the findings from the reading assessments, the availability of learning materials at home had either mixed or no significant association with numeracy test scores. Learning with printed packs was only positively related to quantitative comparison scores and learning with textbooks had only a positive association with level two subtraction. Additionally, use of government-sponsored broadcasts (radio, television, and online) had a positive association with numeracy subtask scores, although the frequency of use of these channels was minimal.

³⁸ Having electricity at school has a negative association with some of the numeracy subtasks. However, very few schools have electricity (4 out of 33 ALCs and 2 out of 31 hub schools) and this variable may be capturing other factors correlated with having electricity.

8. ALCs in Afghanistan: Insights from local education officials

To inform the analysis of the early-grade assessment, interviews were conducted with provincial and district education directors.³⁹ The interviews were based on a structured set of questions (outlined in Appendix 3), and the interviewer had the flexibility to ask follow-up and clarifying questions. This format allowed for open-ended answers, and for interaction between the interviewer and interviewee.

The interviews in Badghis, Bamyan, Daikundi, and Ghor Provinces were conducted in Dari, and interviews in Maidan Wardak, Paktya, and Paktika were conducted in Pashto. Interviews were recorded, transcribed, and then translated into English. In each of the seven provinces being evaluated, interviews were conducted with two directors, apart from in Wardak Province, where only one interview was conducted.⁴⁰ In total, 13 interviews with directors were completed (1 female and 12 male). Questions were open-ended and an inductive manual coding method was used for thematic content analysis, allowing for an organic formulation of codes and themes.

The education officials showed general awareness of the purpose and design of ALCs although there was variation in the depth of their knowledge of ALCs. Nonetheless, most were able to either explain or mention several of their unique features: serving out-of-school children, having a focus on girls' education, covering two grade levels within one academic year, smaller class sizes, and informal settings, such as a teacher's home. The interviews also revealed a common perception that ALCs are relevant for marginalized students in remote areas, and that those students attending ALCs perform well, better than their counterparts in hub schools.

8.1 Why ALC learners perform better than hub school learners

"As far as I know, creating accelerated schools helps us a lot, especially in areas that are farther away. This is a good opportunity for children to go and study. My suggestion is that, as in the past, there should be better coordination in the creation of accelerated schools, the evaluation, and some of the good experiences we have with accelerated schools, so that we can transfer good experiences to public schools, or vice versa."
– Education official

The perception that ALC students perform at a higher level than hub school students was reflected both in direct statements and through comments on what determines school success. The success of ALCs was attributed to three factors: smaller class sizes, teacher training, and monitoring.

Smaller class sizes. There was a general view that ALCs had smaller class sizes, and that this contributed to their success relative to hub schools. Several respondents expressed that the nationwide shortage of teachers and financial resources had resulted in large class sizes for hub schools. One commented: "According to international guidelines, one teacher is enough for every 35 students; but unfortunately, in our country, due to the lack of resources and financial facilities, we do not have a large formation. We still have schools with three hundred students, but we have two teachers."

Others stated that smaller class sizes meant that teachers could pay more attention to their students. In hub schools, teachers may sometimes manage Grades 1 through 6, while an ALC teacher needs to teach only one grade at a time. Some directors attribute class size directly to school success, with one saying: "In accelerated schools, the number of students is less, and this has led to more learning. The problem in public schools is that we gather and train even up to 200 people in one class."

Based on these comments from education experts, an analysis of class size was conducted, modelling literacy and numeracy scores as a function of class size. Interestingly, larger class size was associated with an increase

³⁹ Provinces have an education directorate who designated a survey respondent, while districts have designated district education officers who participated in the survey.

⁴⁰ A district-level official of Maidan Wardak from the Ministry of Education was interviewed instead of one of the education directors, who declined to be interviewed.

in assessment scores, but only for ALC students. For hub school students, class size had no significant effect on learning outcomes.⁴¹

Teacher training. Several respondents commented that ALC teachers were better equipped to teach because of training they received from UNICEF.⁴² In some cases, the teachers receive “...two rounds of workshops, a 12-day workshop that is methodical and the next workshop is a follow-up workshop.” One respondent expressed that ALC donors are able to allocate more funds to training than standard government schools, and that this training can shape the effectiveness of the teacher in the classroom: “The Ministry of Education has a smaller budget to train teachers in public schools compared to ALCs that are funded by UNICEF. Teachers in ALCs receive the necessary trainings, and when the teachers receive trainings and education, they put it forward on the students, and the students do better... [Donors] pay more attention to the teachers they hire; therefore, students do better in ALC’s compared to public schools.”

This insight is consistent with a recent investigation on teacher capacity in Afghanistan (Molina et al., 2018) which found that teachers receive little training and support (40 per cent receive no help with lesson plan development) and many view their role as being present, rather than improving learning outcomes (which only 1 per cent of survey respondents saw as their role).

Monitoring. After teacher training is completed, ALCs are formally monitored by education officials. Several respondents stated that active monitoring was helpful in supporting teachers maintain quality education. Additionally, a key element to successful monitoring was conducting the monitoring in a timely manner. One participant commented: “In practice, the good thing is that these classes are monitored qualitatively because an independent section in the local school section [receives assistance from] partner institutions. Some institutions themselves have the same monitoring mechanism. But UNICEF, in cooperation with the Ministry of Education, has a monitoring mechanism, so their [teacher] quality is high...”

8.2 Supply-side constraints

The interviews also revealed several themes linked to supply-side constraints of educational access and quality. These constraints included a shortage of textbooks, a shortage of teachers, and political and physical insecurity.

Shortage of textbooks. A common theme from the interviews was the general lack of textbooks and qualified teachers across the education system. One respondent estimated that “37 million books have been published and have not yet reached the provinces.” Not only are textbooks important for learning during a normal school year, but they were urgently needed during the COVID-19 school lockdown. While the national government created learning content for various media platforms such as television, internet, and radio, many students in rural areas do not have access to any of these forms of information. In Daikundi province, UNICEF was able to help with textbook shortages by facilitating textbook procurement for ALCs.

Shortage of teachers. Officials in several provinces also explicitly noted a lack of qualified teachers. The shortage of teachers is a problem for both hub schools and ALCs but is more pronounced for the ALCs. This is

41 A sub-sample analysis of ALC school students and hub school students indicated a positive association between class size and ALC school literacy and numeracy scores. To analyse literacy scores, the association between zero-scores in four subtasks (also used in our main zero-score analysis) was conducted separately for ALC and hub school students. For numeracy, the association between EGMA subtasks and class size was also analysed separately for ALC and hub school students. In each analysis, the sample size was limited to classes within two standard deviations from the mean. This resulted in one class for ALCs (with 39 students) and three classes for hub schools (with class sizes larger than 121 students) being excluded from the analysis. Interestingly, the findings showed no significant effect of class size on assessment scores for the hub school group. One hypothesis that may explain this is that hub school classes are all large and have exceeded a threshold for which one-on-one learning and care can have a positive effect. In stark contrast, we found that class size had a positive and significant effect on literacy and numeracy scores for ALC students. One hypothesis that may explain this effect—larger class size leads to better outcomes—is that all ALC classes are relatively small, and the slightly larger classes may receive more teacher training and monitoring than smaller classes. However, the sub-sample analysis does not identify a causal association between class size and outcomes, meaning that the direction of the association cannot be ascertained. It may be possible, for example, that an ALC was created to meet the needs of a large group of students affected by a recent closure of a government school. If this were the case, the students would have already been learning, and would likely perform better than students who are attending school for the first time.

42 Teacher training by UNICEF Let Us Learn includes how to involve parents in student learning and instruction to encourage students to repeat lessons at home.

partly because ALCs prioritize hiring female teachers who live in the local community where the ALC is located. In many rural areas, compared with the capital cities, schools struggle to find teachers with a secondary school degree (minimum requirement). Where there is a shortage of female teachers, male teachers, sometimes religious scholars, are hired as teachers.

The use of unconventional school settings such as mosques or a teacher's home is thought to be a practical advantage of ALCs. In one interview, the director explained that in his community, there is resistance to women teaching in government schools but that they can teach in ALCs if they conduct classes from their home. A director from another province added that female teacher mobility can also be constrained by the teacher's family: "Female teachers are much better for girls because they are familiar with each other according to habits and attitude. Female schools should have female teachers. We are 100 per cent happy with that. But the problem is that many families do not allow women to go from their homes to other schools." Another director also explained that "The effort of our Department of Education and the people, in public, is to appoint female teachers in the classes where most of the girls study, because the people are of the same culture. People do not accept male teachers to teach for their daughters and sisters."

Security. Political and physical insecurity in Afghanistan presents a barrier to children's education, particularly for girls. It also reduces the availability of female teachers, who themselves face mobility constraints and may be unable to travel to a school. ALCs were partly designed to help these girls by narrowing the distance from their homes to the school. Currently, opportunities to safe access to learning has increased, providing prospects to expand CBE schools and ALCs.

9. Conclusions and recommendations

This study adds to the small but salient body of research in Afghanistan showing that CBE can help reach out-of-school children and help them to learn. Alternative learning pathways such as ALCs show promising results. Not only do ALCs boost primary school enrolment, but initial findings show that, relative to attending a hub school, ALC students demonstrate higher reading scores. This is a salient finding in a country where reading outcomes are very low, where even by Grade 3, only around 22 per cent of students have obtained minimum reading proficiency and score at least 25 per cent in mathematics (UNESCO Institute for Statistics (UIS), 2016).

A basic analysis of mean scores showed that ALC students outperformed their counterparts at hub schools on the more advanced reading tasks and scored similarly in numeracy (and higher in specific numeracy subtasks). When using statistical tools to measure the association between learning outcomes and student and school characteristics, results showed that attending an ALC (as opposed to a hub school) is associated with higher learning outcomes. Holding all else constant, ALC learners had higher scores than hub school students in several literacy subtasks: phonics, oral reading, and reading comprehension. ALC learners also had higher scores in addition tasks than hub school students, all else equal, while performing similarly to hub school students in other more advanced numeracy tasks.

This study also finds that girls underperform relative to boys in literacy and numeracy tasks, regardless of school type, highlighting the gender gap in education and the need for additional learning support for girls. Other factors that explain overall learning outcomes include learning at home: children who did homework and read at home every day outperformed those who did not. This calls for further encouragement of parental and caregiver support at home, as well as ensuring that learners have sufficient learning materials at home.

In terms of teaching and pedagogy, providing students with individual feedback is a key factor in learning, particularly for numeracy but also for reading skills.

Other individual- and school-level characteristics did not play as large a role. For instance, there is no detectable association between an active management committee or having a separate toilet for boys and girls with numeracy scores. Household wealth did not have a strong association with learning outcomes.⁴³

The COVID-19 pandemic placed significant pressure on the education system and interrupted learning for around 7.3 million students. Only 2 per cent of students in this study made use of government-sponsored broadcasts and most students spent three or fewer hours per week on any form of education. The most common method of learning during those limited hours was through textbooks, learning from family members (siblings and parents), and printed packs. Printed packs were shown to have a positive association with some literacy outcomes for both Dari- and Pashto-speakers. Teachers, even during school closures, remained committed to supporting their students learn. Nearly 80 per cent of teachers remained in touch with their students or helped community members learn.

The following recommendations stem from the key findings of this study:

- 1. Support and expand teacher training to include child-centred pedagogy that promote learning outcomes and best practices in both ALCs and government schools through in-service training and peer support.** ALC teachers receive training as part of the hiring process when a class is established. Qualitative evidence suggests that the supplemental ALC teacher training was a key factor in the relative success of student learning outcomes. Subsequently, government schools may also benefit from teacher training that includes child-centred pedagogy, and perhaps a refresher training for teachers at the start of the new school year. Results from this study show that in the classroom, activities that have the largest impact include encouraging students to read aloud at home, assigning homework, providing individual feedback, and rephrasing questions when the student does not understand. Current training which already promotes parental engagement and encourages students to repeat lessons at home could be further emphasized. Strengthening teacher training practices in both ALCs government schools should be prioritized with a focus on what successful practices are relevant and can be adapted from the ALC training for government schools.

⁴³ Household wealth was approximated using asset ownership (bicycle, computer, kitchen, radio, refrigerator, telephone, television) and access to electricity as proxies. That these factors were not associated with literacy and numeracy outcomes is possibly an indication that these were poor proxies of wealth. Using descriptive statistics, the mean ownership rates were insignificant for all proxies except for radio and refrigerator ownership. For these two assets, ALCs households had slightly less access, although the magnitude was negligible.

2. **Provide learning tools such as writing materials, coupled with teacher and parental support.** Low-cost resource interventions—such as basic materials (pens, pencils, notebooks) and printed packs—if combined with teacher- and parent-supported learning can boost learning outcomes. Learning materials were particularly important during the COVID-19 school closures while students were at home. During this period, printed packs were frequently used as a remote learning modality and linked to improving some reading outcomes. Resources are more effective if paired with parental engagement and conducive home environments (e.g. receiving help with homework, having books at home) (Emerson, Fear, Fox, & Sanders, 2012).
3. **Continue to support girls’ learning.** Girls underperform boys in every area of literacy and numeracy. However, ALCs are in a powerful position to help close this gender gap by targeting female students, employing female teachers, and setting up classes near the student’s home. ALCs can further support girls by actively engaging parents to support learning beyond the classroom, such as reading aloud at home.
4. **Address the shortage of qualified teachers at both ALC and government schools.** Qualitative evidence points to challenges with both the quality and supply of primary school teachers. Supporting and training new teachers may help to reduce the currently large class sizes at standard government schools, as well as provide students with child-centred and child-friendly approaches conducive to learning.

Additional research

This study presented the baseline results of the learning assessment of ALCs in Afghanistan. To build on this analysis, there are several research opportunities to further inform student- and school-level interventions.

First, in terms of remote learning modalities, it would be useful to learn why students with access to a television or radio at home did not use the government-sponsored broadcast programmes. Understanding the uptake barriers to these learning modalities could help strengthen remote learning in future instances of school closures.

Second, in terms of pedagogy, what additional teacher-specific behaviours improve learning outcomes? Given that reading aloud is associated with stronger academic performance, unpacking the teacher’s role in supporting this learning habit is a salient research area.

Third, to better understand the role of ALCs in school progression, it would be helpful to learn whether students who spent time out of school (and returned to school) have an equal likelihood of completing school or progressing to secondary school, and whether ALCs can help transition students to secondary schools as well as hub schools.

Fourth, in many countries, girls outperform boys in literacy skills, but this was not the case in Afghanistan.⁴⁴ Unpacking country-specific characteristics that lead to this gender gap would be useful to help inform and customize future education interventions.

Fifth, while ALCs can help primary school students achieve FLN skills, there is also a broad body of literature that demonstrates the large educational gains linked to early childhood education. In this respect, it would be helpful to study and identify appropriate pre-primary-level interventions to help equip children with the tools they need to be successful at primary school.

Lastly, future research could lean on the current EGMA and EGRA instruments to perform follow-up standardized testing. The test instruments used for this study were effective in measuring literacy and numeracy scores and multiple items could be re-used in the future (alongside test equating methods) to make robust comparisons between child numeracy and literacy across years.

⁴⁴ Progress in International Reading Literacy Study (PIRLS) measures the literacy levels of students in 50 countries, and in all countries, girls outperformed boys. The sample of countries includes a mix of high- and low-income countries, including countries in the region, such as Azerbaijan and Kazakhstan (TIMMS & PIRLS International Study Center, n.d.).

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Appendix

Appendix 1. Population and sample sizes by province

Province	Population			Sample		
	Districts	ALCs	Hub schools	Districts	ALCs	Hub school
Badghis	3	7	1	3	5	4
Bamyan	8	21	19	5	5	5
Daikundi	6	20	13	4	5	5
Ghor	4	10	9	2	5	5
Paktika	9	20	17	5	5	5
Paktya	8	20	16	4	6	4
Wardak	3	12	8	3	4	3
Total	41	110	83	26	35	31

Note: Due to security concerns, not all intended schools could be sampled. Instead, other nearby hub schools or ALCs were sometimes included in the study. This is particularly the case in Badghis province.

Appendix 2. Survey sample and final sample size of students by province

Province	Survey sample			Final sample		
	Hub schools	ALCs	Total	Hub schools	ALCs	Total
Badghis	100	51	151	97	51	148
Bamyan	83	37	120	80	37	117
Daikundi	109	79	188	107	78	185
Ghor	97	69	166	95	66	161
Paktika	100	78	178	92	77	169
Paktya	100	94	194	94	92	186
Wardak	80	67	147	80	67	147
Total	669	475	1,144	645	468	1,113

Appendix 3. Questionnaire used for local education official interviews

1. Can you please tell me your title and describe your role in the province/district?
2. Can you please describe the ALCs and the schools in your province/district? (How many schools and how many ALCs? What is the level of education provided in ALCs and schools?)
3. How would you rate the quality of education provided in the ALCs in your province/district?
4. What are the main differences between the ALCs and schools in your province/district? (Difference in student/teacher ratio, female teacher presence, teacher's qualification)
5. Do you think there is a difference between learning outcomes of students in ALCs and those attending regular schools? If so, what are, in your opinion, the causes of the difference?
6. During school closure due to COVID-19, have children in the ALCs and hub schools in your province/district accessed the alternative learning pathways provided (lessons broadcasted on the TV and radio)? Please explain the district/provincial strategy for remote learning; how teachers and communities were engaged if at all, what challenges were experienced, etc.

Appendix 4. Summary statistics by ALC and hub schools

	ALC	Hub school
Demographics		
Percentage of girls*	86%	46%
Age, average*	12.75	10.31
Language		
Pashto speakers*	50%	42%
Dari speakers*	50%	58%
Safety		
I feel safe on my way to school	84%	85%
I feel safe in school	86%	87%
Education at home		
I have a notebook and a pen*	86%	90%
Mother can read and write*	19%	26%
Father can read and write*	54%	62%
I have a place where I can read and do homework at home*	88%	83%
When I have homework, I receive help from someone at home	56%	56%
Reading		
Reads aloud at home - never	18%	19%
Reads aloud at home - sometimes	50%	54%
Reads aloud at home - everyday*	32%	27%
Family assets		
My family has a bicycle	38%	37%
My family has a kitchen	87%	89%
My family has electricity	81%	83%
My family has a radio*	56%	51%
My family has a TV	53%	50%
My family has a computer	23%	26%
My family has a refrigerator*	15%	9%
My family has a telephone*	88%	92%

*Indicates statistically significant differences between the two groups. A detailed table, including mean scores, difference, standard error, and significance level, is available in Appendix 5.

Appendix 5. Summary statistics by ALC and hub schools, with standard deviation, min and max

	ALC					Difference	Hub school				
	N	Mean	SD	Min	Max		N	Mean	SD	Min	Max
Demographics											
Female	468	.855	.353	0	1	-0.3973***	645	.457	.499	0	1
Age	468	12.808	2.497	8	18	-2.5193***	645	10.288	1.307	8	13
Language											
Pashto	468	.504	.501	0	1	-0.0919***	645	.412	.493	0	1
Dari	468	.496	.501	0	1	0.0919***	645	.588	.493	0	1
Safety											
I feel safe on my way to school?	465	.837	.37	0	1	0.0144	644	.851	.356	0	1
I feel safe in school	467	.859	.349	0	1	0.0218	644	.88	.325	0	1
Education at home											
I have a notebook and pen	468	.863	.344	0	1	0.0369*	641	.9	.3	0	1
Mother can read and write	468	.194	.396	0	1	0.0743***	640	.269	.444	0	1
Father can read and write	467	.54	.499	0	1	0.0807***	640	.62	.486	0	1
I have a place where I can read and do homework	464	.879	.326	0	1	-0.0497**	634	.83	.376	0	1
When I have homework, I receive help from someone	442	.554	.498	0	1	-0.0008	607	.554	.498	0	1
Reading											
Reads aloud at home - never	459	.181	.385	0	1	0.0032	625	.184	.388	0	1
Reads aloud at home - sometimes	459	.492	.5	0	1	0.05	625	.542	.499	0	1
Reads aloud at home - everyday	459	.327	.47	0	1	-0.0532*	625	.274	.446	0	1
Family assets											
Bicycle	467	.385	.487	0	1	-0.02	643	.365	.482	0	1
Kitchen	465	.869	.338	0	1	0.019	642	.888	.316	0	1
Electricity	468	.812	.391	0	1	0.0203	644	.832	.374	0	1
Radio	468	.56	.497	0	1	-0.0691**	644	.491	.5	0	1
Television	468	.528	.5	0	1	-0.0293	644	.498	.5	0	1
Computer	467	.236	.425	0	1	0.0238	640	.259	.439	0	1
Refrigerator	462	.147	.355	0	1	-0.0603***	633	.087	.282	0	1
Telephone	465	.884	.321	0	1	0.0337*	643	.918	.275	0	1

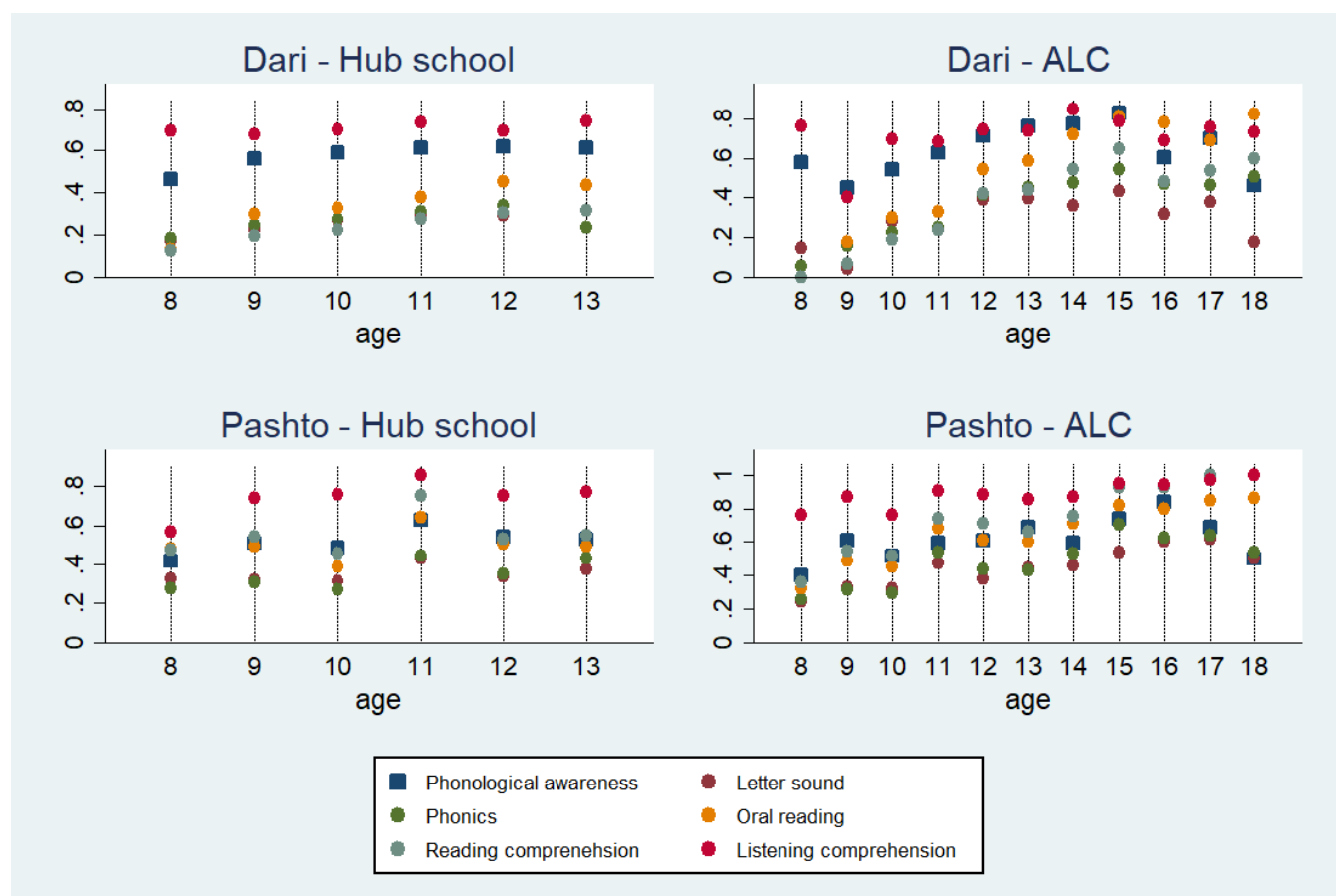
Note: p < .10, ** p < 0.05, *** p < 0.01.

Appendix 6. Comparison of school-level mean scores by school type

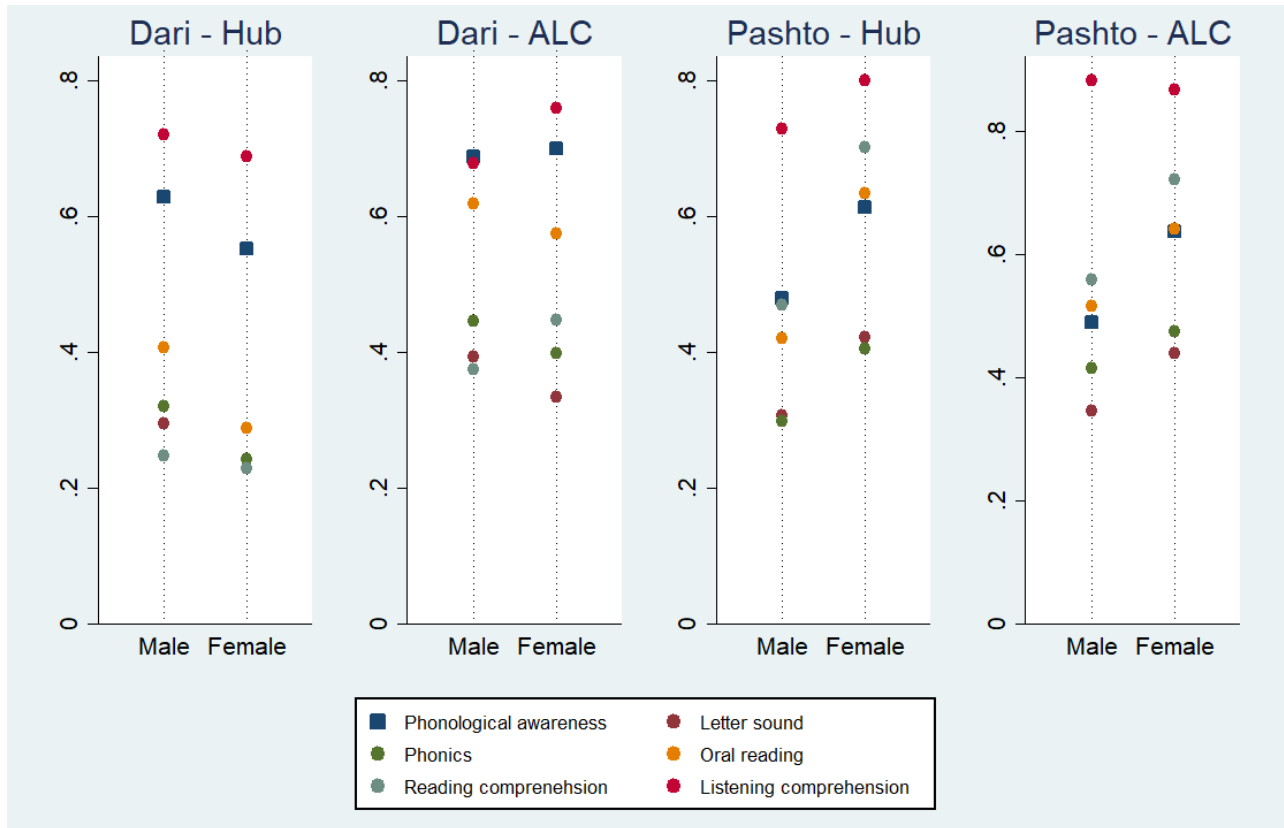
	Mean (ALC)	Mean (Hub school)	Difference	Standard error
Does the school have an active management committee?	0.6175	0.8512	0.2336***	0.0253
Does this school have separate toilets for boys and girls?	0.3974	0.5473	0.1499***	0.0300
Do actively used classrooms and indoor spaces in the school have completely intact roofs and walls?	0.5256	0.7271	0.2015***	0.0285
Does the school have space for all enrolled students to learn indoors throughout the whole school year?	0.4850	0.6109	0.1258***	0.0299
Does the school have a functional heating apparatus in each classroom?	0.2585	0.0000	-0.2585***	0.0173
Does your school provide free meals for its students?	0.0962	0.0295	-0.0667***	0.0222
Does the school have electricity?	0.1432	0.0930	-0.0501***	0.0193
Does the school have internet connectivity?	0.0385	0.0000	-0.0385***	0.0108
Does the school have a library?	0.1261	0.4016	0.2755***	0.0304

Note: p < .10, ** p < 0.05, *** p < 0.01.

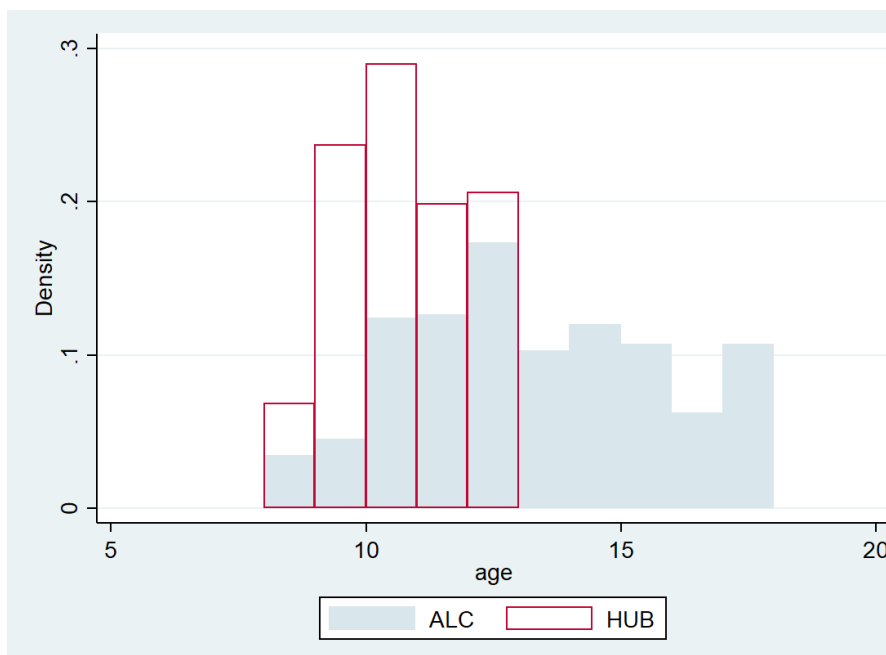
Appendix 7. Average reading subtask score by age



Appendix 8. Average reading subtask score by gender



Appendix 9. Age distribution of ALC and hub school students



Note: The y-axis represents the percentage of people at each age. Therefore, summing the density values at the top of each square will total one.

Appendix 10. Probit regression analysis of zero scores

	Letter sound	Phonics	Oral reading	Reading comprehension
ALC		-0.259**	-0.297**	-0.271**
Age	-0.106***	-0.143***	-0.166***	-0.182***
Female	0.409***	0.341***	0.370***	0.212**
Homework		-0.587**	-0.626*	-0.593**
Were you attending school before they closed because of COVID?		-0.469***	-0.439***	-0.297*
Reading aloud at home (reference=never)				
Sometimes			-0.310**	
Everyday	-0.387**	-0.392**	-0.514***	-0.356**
When teacher rephrases	0.280**			
Household assets				
Electricity	-0.270*	-0.289*		
Refrigerator			-0.502***	-0.281*
Telephone				-0.287*
Remote learning modalities				
Government-sponsored broadcast: radio, TV, online				-1.188**
Printed packs	-0.339*			
Textbooks	-0.358***			
Parents	0.464***		0.243*	0.221*
Separate toilet for boys and girls	-0.226*			

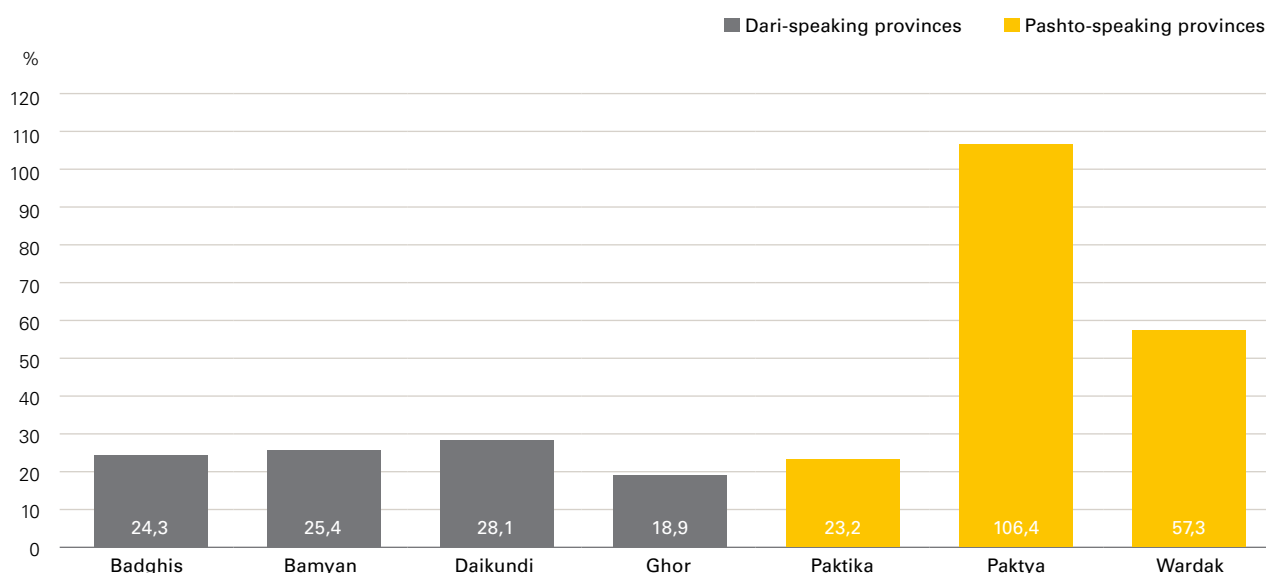
Note: Blank spaces denote no effect, the asterisks (*) indicate the significance level of the effect, * $p < .10$, ** $p < 0.05$, *** $p < 0.01$.

Appendix 11. Methodology

The analysis focuses on whether attending an ALC leads to better outcomes, measured by EGRA scores. The decision to enrol in an ALC versus a hub school, however, introduces self-selection bias. Moreover, ALCs are established in areas where there is a demand for schooling by out-of-school and older-age children, who are expected to perform worse than students who have been attending school regularly. To minimize this bias, an instrumental variables (IV) approach is used, employing distance to school as an instrument for school status.

For Dari-speaking provinces, a two-stage-least-squares IV approach is used, with distance to school as an instrument for school status. The Dari-speaking provinces are less dense than the Pashto-speaking provinces, and it is assumed that schools are generally far from children’s homes (see Figure 18). In Badghis, for example, only 12 per cent of the population have access to in-village primary schools. 62 per cent travel more than 10 km to school, and only 20 per cent of students live within a 5 km radius of school.⁴⁵ For the Pashto-speaking provinces, there is higher density, and there may be patterns of more children living near a hub school. Distance is therefore not used as an instrument for the Pashto-speaking provinces.

Figure 18. Population density (people per square km of land), by province



Source: World Bank (2019)

The purpose of using an instrument is to ensure that the relationship between school choice and educational achievement can be modelled with minimal bias. The instrument employed, distance, is exogenous to educational achievement but strongly predicts whether a student enrolls in an ALC versus a hub school. Distance is an ordinal variable relating to how long it takes a student to walk to and from the school they are enrolled in each day. A value of one is given if the distance is more than one hour, two if the distance is between 30 minutes to one hour, and three if the distance is less than 30 minutes. The interpretation of the variable should be that the distance ‘improves’ for the student as the number increases. Because distance is an ordinal variable, an ordered probit is applied in the first stage.

The first-stage ordered probit results show that distance is a strong predictor of school type, significant at the 1 per cent level, with a Cragg-Donald Wald F statistic of 53.91, surpassing the rule of thumb of 10 (Stock-Yogo). This is because ALCs typically close the distance gap for students although there is still considerable variation in distance among students who attend hub schools, and for some ALC students.

45 <https://afghanag.ucdavis.edu/country-info/province/files/All-Badghis.pdf>

In the second-stage ordinary least squares (OLS) analysis, school status, the main variable of interest, is instrumented and modelled as:

$$Y_i = \alpha + \beta_1 ALC_i + \beta_2 Demographics_i + \beta_3 LearningActivities_i + \beta_4 LearningMaterials_i + \beta_5 SchoolCharacteristics_s + \beta_6 COVID_i + \beta_7 Province + e_t$$

Y_i represents the dependent variable, for child i in school s , which are the percentage of questions answered correctly on EGRA subtasks. ALC is a binary variable taking the value of one if the student attends an ALC and zero if attending a hub school. Next, a set of control variables are included, those which traditionally influence educational outcomes, such as student, family, and school characteristics (Lee & Barro, 2001). *Demographics* is a vector of student characteristics including gender, age, and whether the father can read. *LearningActivities* is a vector of learning indicators, including having a notebook and a pen/pencil in the classroom; receiving homework during the school year; reading aloud at home; receiving performance feedback from the teacher; and, whether the teacher rephrases and explains a question or encourages the student to try again when something is unclear. *SchoolCharacteristics* represents three variables: having an active school management committee (which measure parental involvement), having a separate toilet for boys and girls, and having electricity. *COVID* is a vector of variables addressing learning during the COVID-19 pandemic, namely understanding the channels students used to learn during school closure, such as printed packs, textbooks, government-sponsored broadcasts (television, radio, and internet), and through family members. *Province* controls for geographic fixed effects, with Badghis as the reference category. A description of the full list of the variables included the regression is as follows:

Table 5. Descriptive statistics

Variable	Observations	Mean	Standard deviation	Min	Max
ALC	1,113	0.420485	0.493859	0	1
Female	1,113	0.624439	0.484485	0	1
Age	1,113	11.34771	2.270478	8	18
Father – read and write	1,107	0.586269	0.492724	0	1
Notebook and pen/pencil in the classroom	1,109	0.884581	0.319671	0	1
Homework	1,102	0.954628	0.208213	0	1
Attending school before closures due to COVID	1,090	0.782569	0.412688	0	1
Reading aloud at home (reference =never)					
Sometimes	1,084	0.521218	0.49978	0	1
Everyday	1,084	0.296126	0.456758	0	1
Teacher behavior					
Feedback on academic performance	1,113	0.916442	0.471517	0	3
Rephrases/explains question	1,113	0.415094	0.49296	0	1
Encourages student to try again	1,113	0.392633	0.488556	0	1
Household assets					
Electricity	1,112	0.823741	0.381212	0	1
Radio	1,112	0.519784	0.499833	0	1
Refrigerator	1,095	0.112329	0.315915	0	1
Telephone	1,108	0.90343	0.295505	0	1
Remote learning modalities					
Printed packs	1,113	0.154537	0.361626	0	1
Textbooks	1,113	0.627134	0.483784	0	1
Government-sponsored broadcast (radio, TV, online)	1,113	0.017071	0.129594	0	1
Through siblings	1,113	0.222821	0.416326	0	1
Through parents	1,113	0.156334	0.363335	0	1

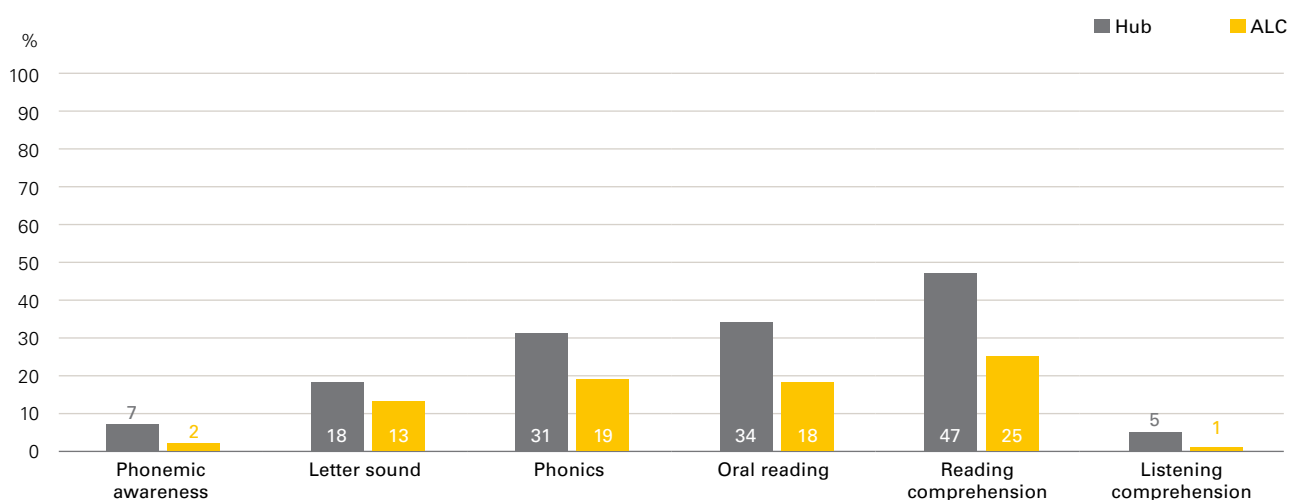
Variable	Observations	Mean	Standard deviation	Min	Max
School characteristics					
Active management committee	1,113	0.75292	0.431508	0	1
Separate toilets for boys and girls	1,113	0.484277	0.499977	0	1
Electricity	1,113	0.114106	0.318083	0	1

Appendix 12. Zero-score analysis⁴⁶

Descriptive statistics of mean scores of ALC and hub school students shows that students at ALCs have higher mean scores. To identify whether the higher scores are a result of attending an ALC, a regression analysis was conducted, outlined in Appendix 11. As an additional analysis to determine whether there is a relationship between school type and test scores, the relationship between illiteracy (zero scores) and school type was conducted. Findings show a significant negative relationship between attending an ALC and the likelihood of being illiterate. This exercise supports the main analysis outlined in Appendix 11.

As mentioned previously, the EGRA is a language-specific instrument, requiring the Dari and Pashto assessments to be evaluated separately. The exception to this rule is the comparison of zero scores, i.e., the number of students unable to answer any question on the test. Scoring zero, not being able to answer any question, is a meaningful indicator of underperformance. The reading assessment instruments were designed to measure learning outcomes of Grade 2-5 students, and the students who were assessed have all received approximately three to five years of education. Figure 19 shows that hub school students more frequently could not answer any questions than ALC students, and that the percentage of students with zero scores increased with difficulty level. It also shows that listening comprehension was the least challenging task.

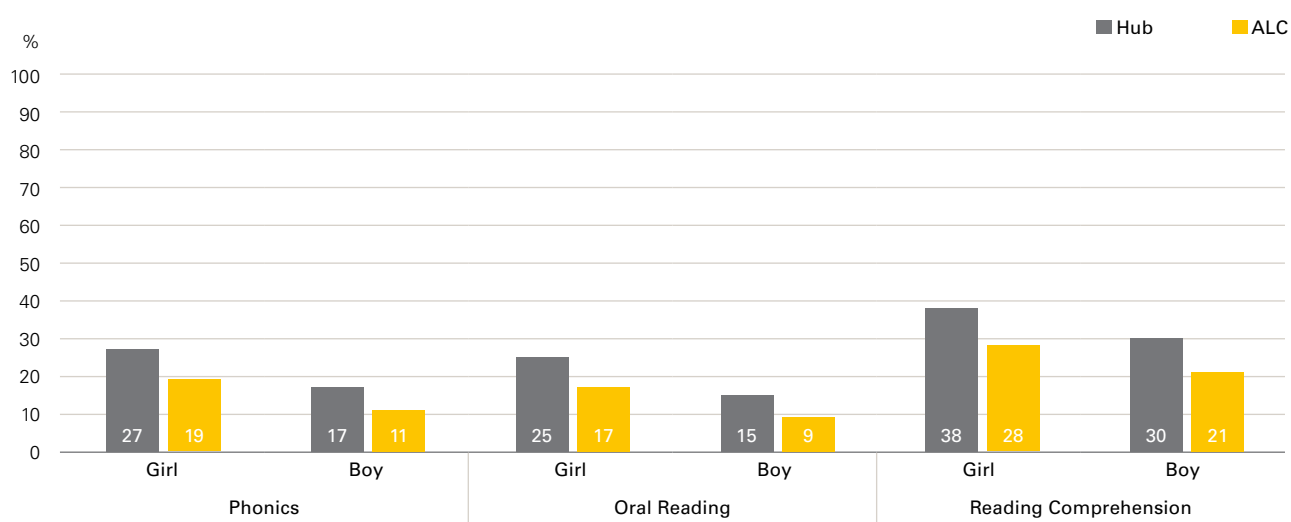
Figure 19. Percentage of students with zero scores, by reading subtask (N=1,113)



⁴⁶ To estimate the association between school type (main variable of interest) and getting a zero score (outcome variable), a probit regression is applied, and then marginal effects are calculated to produce the predicted probability of getting a zero score. The focus is the school type, and the predicted likelihood of scoring a zero, by gender, is calculated while holding all other control variables, such as age or parent’s education, at the mean.

To measure the strength of the relationship between zero scores and school type (ALC or hub), a regression analysis was applied, controlling for variables that influence school status (outlined in Appendix 4). Of the six EGRA subtasks, four are analysed below.⁴⁷ The analysis reveals first that school type has no significant effect on the most basic literacy assessment – letter identification. However, an effect is detected on more advanced subtasks, which are presented in turn below: phonics, oral reading, and reading comprehension. For all three subtasks, ALC students were consistently less likely to score zero compared with hub school students. Girls also were more likely to score zero than boys across the subtasks. Figure 20 shows that, for example, for the phonics subtask, a female hub school student has a 27 per cent chance of getting a zero score, while a female ALC student has a 19 per cent chance.⁴⁸ There is also a pattern of boys being less likely to score zero than girls across all three subtasks, indicative of gender gaps in education at the primary school level.

Figure 20. Predicted probability of getting a zero score



Note: The sample size for the phonics subtask is 1,027, and 1,045 for oral reading and reading comprehension.

There are three main factors that reduce the likelihood of getting a zero score: age, whether the child is learning at home or not, and wealth. The factor with the largest effect is learning at home, such as having homework and reading at home every day (as opposed to not at all). Having homework during the school year, alone, has a strong downward effect on zero scores on the three subtasks. Reading at home also has a sizeable downward effect on zero scores.

Some patterns also emerge by subtask. The letter-sound subtask measures the fundamental building blocks of reading, and the likelihood of getting a zero score decreases for this task when students have learning materials at home. In the more advanced stages of learning, such as reading comprehension, government-sponsored broadcasts (radio, television, and online) were strongly associated with reducing zero scores. The estimations also show an unusual effect of learning through parents during the COVID-19 school closures, which seems to indicate that it led to an increase in zero scores. Further research is needed to unpack this finding, but one possibility is that only children who are already severely behind in their literacy need help from their parents, and this variable then largely captures the worst performing students. Appendix 10 includes the key significant variables from our analysis of zero scores for the four subtasks.⁴⁹

47 Of the six subtasks, only four have enough variation in the zero scores (across ALCs and hub schools) for the analysis.

48 The predicted likelihood is calculated holding all other variables at the mean, and by gender.

49 Full estimation tables are available upon request. Regression specifications include a reduced model and with and without age. Results are stable across various specifications of the subtasks.

Appendix 13. OLS regression analysis, dependent variable: Dari EGRA subtasks

	(1) Phonemic awareness	(2) Letter sound	(3) Phonics	(4) Oral reading	(5) Reading comprehension	(6) Listening comprehension
ALC	0.374** (0.165)	0.364** (0.157)	0.412* (0.192)	0.607** (0.248)	0.487** (0.176)	0.0897 (0.113)
Female	-0.0216 (0.0437)	-0.113*** (0.0342)	-0.120*** (0.0396)	-0.136** (0.0509)	-0.0159 (0.0443)	0.0186 (0.0275)
Age	-0.0263 (0.0229)	-0.0201 (0.0207)	-0.0174 (0.0246)	-0.0118 (0.0314)	-0.0113 (0.0230)	-0.00472 (0.0150)
Father – read and write	0.0207 (0.0340)	0.0141 (0.0307)	0.0180 (0.0352)	0.0313 (0.0411)	0.00209 (0.0342)	0.0404 (0.0335)
Mother - read and write	0.0380 (0.0319)	0.0135 (0.0363)	0.0613 (0.0548)	0.0658 (0.0465)	0.0540 (0.0326)	-0.0616** (0.0268)
Notebook and pen/pencil in the classroom	0.0427 (0.0390)	0.0733* (0.0353)	0.0976* (0.0551)	0.135* (0.0748)	0.124* (0.0618)	0.0331 (0.0355)
Homework	-0.0332 (0.0753)	-0.0898 (0.0572)	0.0206 (0.0529)	0.0402 (0.0591)	-0.0678 (0.0740)	-0.0834 (0.0861)
Attending school before COVID closure	0.0554 (0.0603)	0.0689 (0.0474)	0.188*** (0.0515)	0.205*** (0.0660)	0.0811 (0.0617)	-0.0446 (0.0563)
Reading aloud at home (reference=never)						
Sometimes	0.109 (0.0633)	0.0653 (0.0508)	0.0280 (0.0611)	0.0226 (0.0853)	0.0107 (0.0807)	0.166** (0.0664)
Everyday	0.184*** (0.0617)	0.0834 (0.0557)	0.0368 (0.0675)	0.0407 (0.0936)	0.0280 (0.0860)	0.180** (0.0725)
Teacher behaviour						
Feedback on academic perf.	0.0180 (0.0276)	0.0503 (0.0295)	0.0289 (0.0292)	0.0394 (0.0360)	0.0545* (0.0294)	0.0609 (0.0380)
Rephrases/ explains question	-0.00406 (0.0321)	0.0471 (0.0291)	0.0317 (0.0394)	0.0783 (0.0525)	0.0505 (0.0389)	0.00180 (0.0274)
Encourages to try again	-0.0186 (0.0328)	0.0166 (0.0424)	0.0263 (0.0574)	0.0270 (0.0645)	-0.00115 (0.0499)	0.000440 (0.0223)
Household assets						
Electricity	0.0377 (0.0485)	0.122*** (0.0385)	0.137** (0.0543)	0.171** (0.0697)	0.121* (0.0601)	0.00403 (0.0385)
Radio	-0.0426 (0.0496)	-0.0228 (0.0224)	-0.0355 (0.0299)	-0.0335 (0.0500)	-0.0158 (0.0377)	-0.0479** (0.0199)
Refrigerator	0.0189 (0.0563)	0.0738 (0.0790)	0.0905 (0.101)	0.141 (0.0927)	0.134 (0.0903)	0.0162 (0.0377)
Telephone	0.259** (0.101)	0.0889 (0.0538)	0.0681 (0.0541)	0.118 (0.0755)	0.164* (0.0799)	0.0952 (0.0832)

	(1) Phonemic awareness	(2) Letter sound	(3) Phonics	(4) Oral reading	(5) Reading comprehension	(6) Listening comprehension
Remote learning modalities						
Printed packs	-0.0422 (0.106)	0.0327 (0.0925)	0.0241 (0.112)	0.101 (0.0923)	0.166** (0.0575)	-0.102*** (0.0339)
Textbooks	-0.0324 (0.0449)	0.0156 (0.0252)	-0.0272 (0.0284)	0.00657 (0.0487)	0.0378 (0.0356)	0.0360 (0.0316)
Distance education (radio, TV or online)	0.0571 (0.0731)	0.194* (0.107)	0.126 (0.0726)	0.157** (0.0580)	0.158*** (0.0466)	-0.0889 (0.110)
Through siblings	-0.0352 (0.0447)	-0.0129 (0.0300)	-0.0270 (0.0400)	-0.0520 (0.0503)	0.00608 (0.0528)	0.0310 (0.0231)
Through parents	-0.139** (0.0550)	-0.0788** (0.0337)	-0.155*** (0.0508)	-0.148* (0.0701)	-0.0515 (0.0543)	-0.0317 (0.0395)
School characteristics						
Active mgmt. committee	-0.0259 (0.0375)	0.0537* (0.0297)	0.0418 (0.0369)	0.0503 (0.0447)	0.0427 (0.0369)	0.0617* (0.0299)
Separate toilets for boys and girls	0.0712 (0.0442)	0.0377 (0.0421)	0.0619 (0.0481)	0.152** (0.0658)	0.116* (0.0571)	0.0224 (0.0339)
Electricity	-0.00177 (0.0699)	0.0635 (0.0424)	-0.0169 (0.0525)	-0.148* (0.0720)	-0.104 (0.0675)	-0.0427 (0.0467)
Provinces (reference=Badghis)						
Bamyan	-0.195** (0.0846)	-0.0820* (0.0439)	-0.0755 (0.0659)	0.0158 (0.0863)	-0.0800 (0.0795)	-0.230*** (0.0464)
Daikundi	-0.0813** (0.0362)	-0.0183 (0.0324)	-0.0904* (0.0452)	0.0859 (0.0662)	0.0126 (0.0634)	-0.187*** (0.0333)
Ghor	-0.0950 (0.0541)	0.0730 (0.0487)	0.135** (0.0626)	0.235*** (0.0775)	0.0893 (0.0687)	-0.256*** (0.0559)
Constant	0.535** (0.227)	0.114 (0.191)	-0.00555 (0.233)	-0.319 (0.320)	-0.209 (0.223)	0.638*** (0.158)
Observations R^2	547	547	547	547	547	547
Adjusted R^2	0.136	0.104	0.103	0.185	0.139	0.186

Note: Standard errors in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

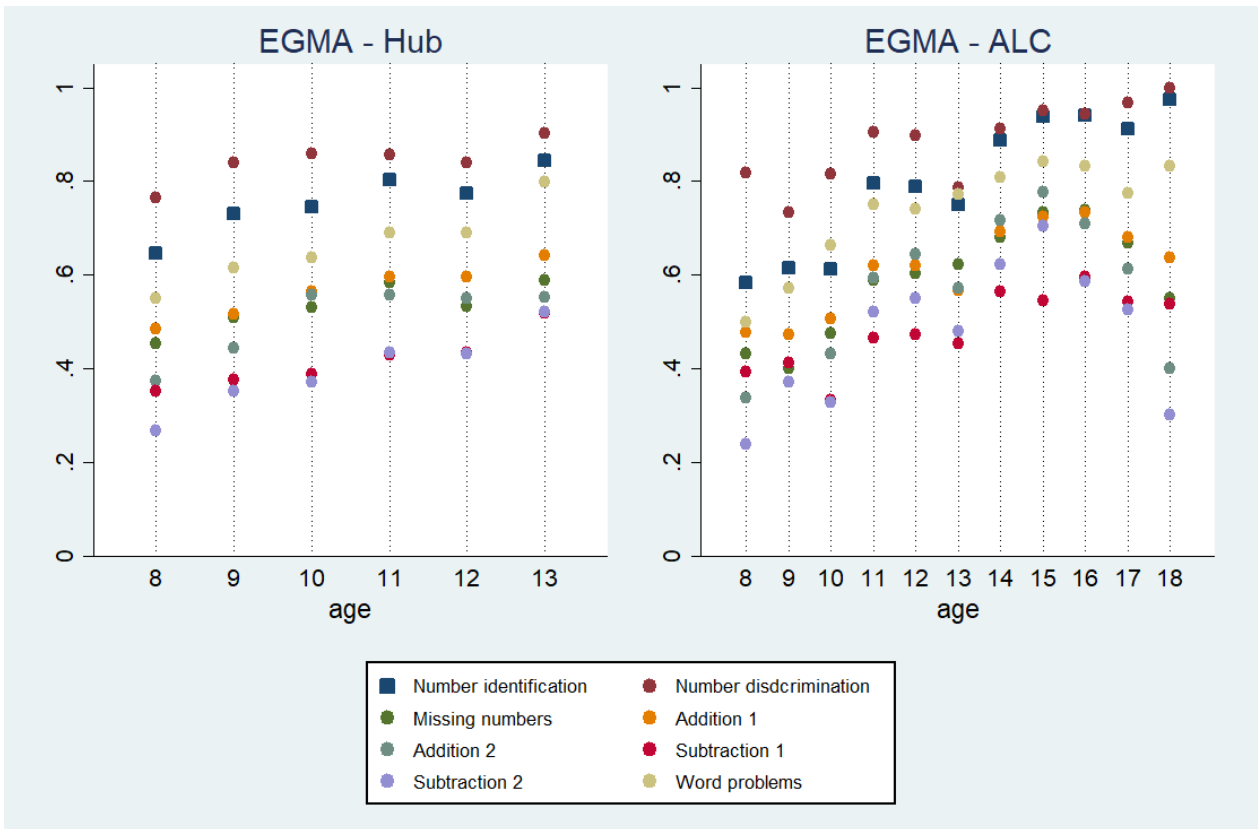
Appendix 14. OLS regression analysis, dependent variable: Pashto EGRA subtasks

	(1) Phonemic awareness	(2) Letter sound	(3) Phonics	(4) Oral reading	(5) Reading comprehension	(6) Listening comprehension
ALC	0.0496 (0.0330)	0.121** (0.0388)	0.147** (0.0494)	0.141** (0.0569)	0.165*** (0.0499)	-0.00350 (0.0516)
Female	0.0566 (0.0383)	-0.125** (0.0535)	-0.147*** (0.0412)	-0.102** (0.0450)	-0.162*** (0.0479)	0.0629 (0.0538)
Age	0.0326*** (0.00921)	0.0257** (0.0112)	0.0437*** (0.00983)	0.0195* (0.00944)	0.0279** (0.00982)	0.0319*** (0.00635)
Father – read and write	0.0167 (0.0234)	0.00472 (0.0285)	0.0776*** (0.0235)	-0.000886 (0.0216)	0.0301 (0.0268)	0.0453* (0.0217)
Mother – read and write	-0.0321 (0.0312)	0.0127 (0.0433)	-0.0350 (0.0270)	-0.0605 (0.0508)	-0.0621 (0.0629)	-0.0372 (0.0360)
Notebook and pen/ pencil in the classroom	-0.149*** (0.0435)	-0.0664* (0.0338)	-0.0666 (0.0411)	-0.0853* (0.0442)	-0.0561 (0.0660)	-0.147*** (0.0385)
Homework	0.0189 (0.0603)	0.135*** (0.0301)	0.0427 (0.0667)	0.0579 (0.0580)	0.100 (0.0671)	-0.000697 (0.0663)
Attending school before closures due to COVID	0.0327 (0.0399)	0.138** (0.0432)	0.0749 (0.0571)	0.0136 (0.0569)	-0.00594 (0.0546)	0.0801 (0.0495)
Reading aloud at home (reference=never)						
Sometimes	0.0265 (0.0347)	-0.00333 (0.0313)	0.103** (0.0413)	0.0195 (0.0423)	0.0446 (0.0535)	0.0659 (0.0385)
Everyday	-0.0646* (0.0351)	0.0487 (0.0542)	0.140** (0.0522)	0.0783 (0.0473)	0.0361 (0.0577)	0.0958 (0.0555)
Teacher behaviour						
Feedback on academic perf	0.0549 (0.0549)	0.0289 (0.0428)	0.0524 (0.0381)	0.0654 (0.0465)	0.0564 (0.0478)	0.0294 (0.0476)
Rephrases/explains question	-0.0831* (0.0439)	-0.0403 (0.0451)	-0.0704* (0.0383)	-0.0765* (0.0386)	-0.0366 (0.0392)	-0.0375 (0.0335)
Encourages student to try again	0.0624 (0.0386)	0.0327 (0.0289)	-0.0227 (0.0239)	0.00867 (0.0340)	0.0357 (0.0404)	0.0552 (0.0335)
Household assets						
Electricity	0.0498 (0.0689)	0.0452 (0.0668)	0.0681 (0.0721)	0.114 (0.0678)	0.0212 (0.0484)	0.0654 (0.0405)
Radio	0.0945** (0.0372)	0.0517 (0.0388)	0.0429 (0.0276)	0.0393 (0.0363)	0.0861* (0.0413)	0.0222 (0.0542)
Refrigerator	0.0214 (0.0616)	0.0101 (0.0593)	0.0398 (0.0481)	0.0974** (0.0412)	0.0678 (0.0445)	0.00169 (0.0337)
Telephone	-0.0291 (0.0534)	0.0343 (0.0272)	0.0234 (0.0388)	0.114** (0.0434)	0.0795* (0.0382)	-0.0359 (0.0411)

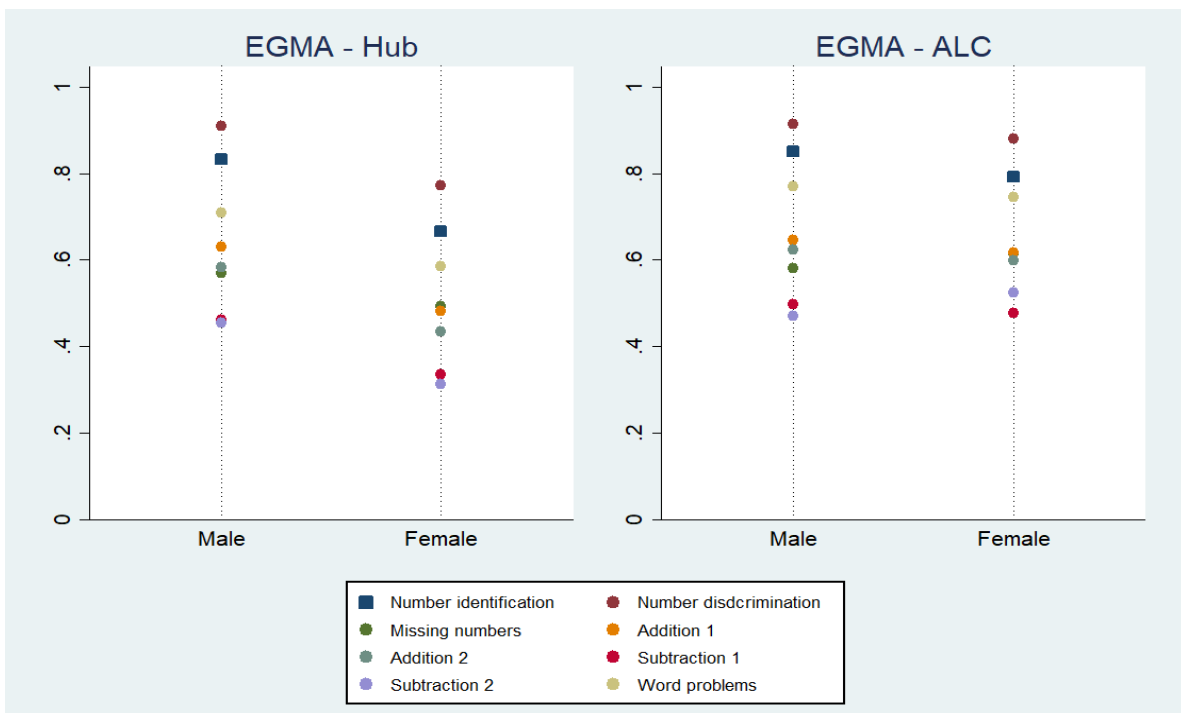
	(1) Phonemic awareness	(2) Letter sound	(3) Phonics	(4) Oral reading	(5) Reading comprehension	(6) Listening comprehension
Remote learning modalities						
Printed packs	0.0692* (0.0338)	-0.00523 (0.0329)	0.0410 (0.0330)	0.0337 (0.0363)	0.0691 (0.0415)	0.121*** (0.0270)
Textbooks	0.0685 (0.0565)	-0.0275 (0.0387)	-0.0481 (0.0485)	-0.00609 (0.0542)	0.0646 (0.0534)	0.135* (0.0696)
Distance education (radio, TV or online)	-0.0155 (0.0429)	-0.107* (0.0484)	-0.0531 (0.0809)	0.0380 (0.0630)	0.120* (0.0587)	0.178*** (0.0356)
Through siblings	-0.0950** (0.0299)	-0.0524* (0.0262)	0.0204 (0.0440)	-0.0527 (0.0334)	0.00336 (0.0419)	-0.00224 (0.0581)
Through parents	-0.0959* (0.0435)	-0.0542 (0.0507)	-0.000831 (0.0905)	0.00851 (0.113)	0.0117 (0.117)	-0.0781 (0.0486)
School characteristics						
Active management committee	-0.0251 (0.0492)	-0.0729* (0.0385)	-0.0275 (0.0659)	-0.0873 (0.0953)	-0.0854 (0.108)	-0.0684* (0.0361)
Separate toilets for boys and girls	0.0144 (0.0376)	0.0408 (0.0437)	0.0271 (0.0373)	0.0294 (0.0494)	0.0362 (0.0481)	-0.101* (0.0524)
Electricity	-0.170*** (0.0433)	-0.100** (0.0388)	-0.0789 (0.0475)	-0.0613 (0.0673)	-0.0413 (0.0786)	-0.0371 (0.0830)
Provinces (reference=Paktika)						
Paktya	0.224*** (0.0522)	0.384*** (0.0496)	0.393*** (0.0646)	0.448*** (0.0593)	0.555*** (0.0729)	0.00680 (0.109)
Wardak	0.285*** (0.0694)	0.260*** (0.0617)	0.213*** (0.0646)	0.241** (0.0902)	0.252** (0.0973)	0.147 (0.113)
Constant	-0.0251 (0.183)	-0.332 (0.209)	-0.519** (0.202)	-0.104 (0.220)	-0.227 (0.211)	0.307* (0.143)
Observations R^2	437	437	437	437	437	437
Adjusted R^2	0.422	0.421	0.442	0.456	0.482	0.394

Note: Standard errors in parentheses, * $p < .10$, ** $p < 0.05$, *** $p < 0.01$.

Appendix 15. Average numeracy subtask score by age and school type



Appendix 16. Average numeracy subtask score by gender and school type



Appendix 17. OLS regression analysis, dependent variable: EGMA subtasks

	(1) Number identification	(2) Quantitative comparison	(3) Missing number	(4) Level 1 addition	(5) Level 2 addition	(6) Level 1 subtraction	(7) Level 2 subtraction	(8) Word problem
ALC	0.0696 (0.0421)	0.0484* (0.0261)	0.0377 (0.0396)	0.0762*** (0.0238)	0.0961*** (0.0337)	0.0980*** (0.0316)	0.0663 (0.0423)	0.0253 (0.0318)
Female	-0.185*** (0.0310)	-0.108*** (0.0217)	-0.0927*** (0.0299)	-0.138*** (0.0165)	-0.167*** (0.0321)	-0.162*** (0.0263)	-0.0913** (0.0328)	-0.0577 (0.0343)
Age	0.0197*** (0.00541)	0.00865** (0.00374)	0.0273*** (0.00694)	0.0241*** (0.00404)	0.0280*** (0.00559)	0.0200*** (0.00447)	0.0450*** (0.00852)	0.0307*** (0.00570)
Father – read and write	0.00634 (0.0176)	0.00570 (0.0159)	0.0211 (0.0339)	0.0251* (0.0146)	-0.0522* (0.0291)	0.0114 (0.0224)	-0.0113 (0.0267)	-0.0556** (0.0224)
Mother – read and write	-0.00467 (0.0364)	-0.0119 (0.0233)	-0.0118 (0.0306)	-0.00622 (0.0150)	-0.00561 (0.0278)	-0.00512 (0.0198)	0.00331 (0.0281)	0.0250 (0.0286)
Notebook pen/ pencil in the classroom	0.00478 (0.0434)	-0.0112 (0.0302)	-0.0193 (0.0448)	-0.0299 (0.0280)	0.0891* (0.0447)	-0.00235 (0.0279)	0.0298 (0.0504)	-0.0157 (0.0373)
Homework	0.0869* (0.0437)	0.0848** (0.0377)	0.0811 (0.0811)	0.0227 (0.0261)	0.0788 (0.0654)	0.0436 (0.0384)	-0.0392 (0.0738)	0.0919 (0.0583)
Attending school before COVID	0.0229 (0.0269)	0.0257 (0.0232)	0.00509 (0.0413)	0.00933 (0.0173)	0.0826* (0.0406)	-0.000533 (0.0280)	0.00975 (0.0436)	0.0315 (0.0395)
Reading aloud (reference=never)								
Sometimes	-0.0220 (0.0332)	0.0271 (0.0258)	-0.00960 (0.0309)	0.00172 (0.0171)	0.0422 (0.0420)	0.0103 (0.0270)	-0.00575 (0.0335)	0.00376 (0.0390)
Everyday	0.00363 (0.0341)	0.0519* (0.0270)	-0.0159 (0.0375)	0.0159 (0.0232)	0.0426 (0.0446)	0.0282 (0.0296)	0.0554 (0.0380)	0.0490 (0.0442)
Teacher behaviour								
Feedback on academic perf	0.0537* (0.0304)	0.0799*** (0.0180)	0.00354 (0.0236)	0.0374** (0.0160)	0.0141 (0.0264)	0.0292* (0.0157)	-0.0187 (0.0328)	0.00669 (0.0267)
Rephrases/explains the question	0.0332* (0.0163)	0.0309** (0.0146)	0.0211 (0.0340)	0.0195 (0.0156)	0.0313 (0.0402)	0.0260 (0.0152)	0.0107 (0.0329)	0.0289 (0.0298)
Encourages the student to try again	-0.00223 (0.0212)	-0.000499 (0.0150)	-0.0297 (0.0290)	-0.0164 (0.0127)	0.0246 (0.0263)	-0.0379** (0.0152)	-0.00917 (0.0305)	-0.00572 (0.0197)
Household assets								
Electricity	0.0871** (0.0418)	0.0918** (0.0336)	0.0876 (0.0533)	0.0566* (0.0313)	0.0587 (0.0757)	0.0247 (0.0320)	-0.0739 (0.0620)	0.0691 (0.0524)
Radio	0.00838 (0.0211)	0.0222 (0.0228)	0.0584 (0.0373)	0.0365 (0.0231)	0.00507 (0.0319)	-0.00803 (0.0176)	0.00885 (0.0288)	-0.0463 (0.0275)
Refrigerator	0.0149 (0.0481)	-0.00126 (0.0436)	0.0668 (0.0458)	0.00204 (0.0265)	0.0515 (0.0368)	-0.00189 (0.0268)	0.0808 (0.0601)	0.0784 (0.0499)
Telephone	0.00699 (0.0321)	0.00953 (0.0447)	0.0136 (0.0569)	0.0837* (0.0428)	-0.0677 (0.128)	0.0703** (0.0274)	0.0190 (0.116)	0.0912 (0.0602)
Remote learning modalities								
Printed packs	0.0227 (0.0227)	0.0348* (0.0183)	0.000423 (0.0603)	-0.0593* (0.0291)	-0.0216 (0.0405)	-0.0536 (0.0318)	-0.00924 (0.0358)	-0.0122 (0.0279)
Textbooks	0.0221 (0.0226)	-0.00950 (0.0244)	-0.0123 (0.0312)	-0.00577 (0.0143)	-0.00922 (0.0293)	0.0162 (0.0238)	0.0581* (0.0299)	0.00453 (0.0330)
Distance education (radio, TV)	0.117*** (0.0398)	0.110** (0.0390)	0.169*** (0.0442)	0.0503* (0.0260)	-0.0556 (0.114)	0.0535** (0.0237)	0.0964 (0.0784)	0.178*** (0.0580)
Through siblings	0.0398* (0.0209)	0.0279 (0.0199)	-0.0427 (0.0274)	-0.0166 (0.0153)	-0.00559 (0.0336)	-0.00830 (0.0209)	-0.0143 (0.0347)	-0.00826 (0.0297)
Through parents	-0.0753* (0.0365)	-0.0251 (0.0211)	-0.147*** (0.0306)	-0.0797*** (0.0280)	-0.141*** (0.0427)	-0.0739*** (0.0259)	-0.118** (0.0559)	-0.0717 (0.0444)

Foundational Literacy and Numeracy in Rural Afghanistan

Findings from a baseline learning assessment of accelerated learning centres

	(1) Number identification	(2) Quantitative comparison	(3) Missing number	(4) Level 1 addition	(5) Level 2 addition	(6) Level 1 subtraction	(7) Level 2 subtraction	(8) Word problem
School characteristics								
Active management committee	0.0116 (0.0433)	-0.00215 (0.0243)	-0.0329 (0.0265)	0.0165 (0.0298)	0.0292 (0.0461)	0.0244 (0.0305)	0.0387 (0.0476)	-0.0204 (0.0263)
Separate toilets	-0.0154 (0.0345)	-0.00577 (0.0236)	-0.00811 (0.0233)	0.00906 (0.0185)	-0.0152 (0.0374)	-0.0288 (0.0224)	-0.0384 (0.0439)	0.00600 (0.0216)
Electricity	0.0145 (0.0353)	0.0185 (0.0227)	-0.0438 (0.0416)	-0.0449* (0.0256)	-0.0425 (0.0392)	-0.0480 (0.0306)	-0.141*** (0.0491)	-0.0935* (0.0454)
Provinces (reference=Badghis)								
Bamyan	0.0456 (0.0434)	-0.0353 (0.0224)	-0.197*** (0.0663)	-0.0301 (0.0360)	-0.179*** (0.0635)	-0.0725* (0.0370)	-0.194*** (0.0672)	-0.0777* (0.0418)
Daikundi	0.0775* (0.0398)	0.000277 (0.0269)	-0.184*** (0.0350)	0.0225 (0.0343)	-0.0949* (0.0462)	-0.0129 (0.0328)	-0.0556 (0.0514)	-0.00766 (0.0391)
Ghor	0.00205 (0.0525)	-0.0281 (0.0276)	-0.148*** (0.0503)	-0.000388 (0.0355)	-0.160** (0.0584)	-0.0377 (0.0417)	-0.263*** (0.0653)	-0.0510 (0.0490)
Paktika	-0.208*** (0.0686)	-0.185*** (0.0498)	-0.441*** (0.0572)	-0.159*** (0.0341)	-0.418*** (0.0552)	-0.132*** (0.0432)	-0.289*** (0.0564)	-0.0732 (0.0490)
Paktya	0.0289 (0.0423)	-0.0727** (0.0300)	-0.140** (0.0528)	0.00662 (0.0358)	0.0173 (0.0563)	0.0620* (0.0333)	-0.0185 (0.0859)	0.00103 (0.0522)
Wardak	-0.0124 (0.0496)	-0.0374 (0.0323)	-0.0844 (0.0502)	0.0876** (0.0354)	0.00694 (0.0558)	0.0886* (0.0453)	0.145** (0.0686)	0.158*** (0.0547)
Constant	0.404*** (0.108)	0.577*** (0.0982)	0.365*** (0.123)	0.206** (0.0892)	0.200 (0.130)	0.144 (0.101)	0.0973 (0.143)	0.196* (0.114)
Observations R^2	993	993	993	993	993	993	993	991
Adjusted R^2	0.299	0.231	0.249	0.316	0.304	0.315	0.319	0.200

Note: Standard errors in parentheses, * $p < .10$, ** $p < 0.05$, *** $p < 0.01$.

for every child, answers

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