Myanmar
EDUCATION IN MYANMAR: WHERE ARE WE NOW?

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1818 H Street NW, Washington DC 20433
Telephone: 202-473-1000; Internet: www.worldbank.org

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Acknowledgment

This report was authored by a team comprising Saurav Dev Bhatta (Senior Economist and Task Team Leader, HEAED), Saurav Katwal (Consultant Economist, HEAED), Sutirtha Sinha Roy (Economist, EEAPV), Roy Van der Weide (Senior Economist, DECPI), Uttam Sharma (Consultant Economist, HEAED), Aung Phyo Kyaw (Education Consultant, HEAED), and Mar Mar Thwin (Education Specialist, HEAED). It was prepared under the guidance of Mariam Sherman (Country Director for Myanmar, Cambodia and Lao PDR), Daniel Dulitzky (Regional Director, HEADR), Cristian Aedo (Practice Manager, HEAED), and Rinku Murgai (Practice Manager, EEAPV). The peer reviewers for this report were Tsuyoshi Fukao (Senior Education Specialist, HSAED) and Karthika Radhakrishnan (Senior Education Specialist, HSAED).

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Acronyms

ACLED	Armed Conflict Location & Event Data
CAPI	Computer Assisted Personal Interviews
CDM	Civil Disobedience Movement
CSO	Central Statistical Organization
DPE	Directorate of Primary Education
EGMA	Early Grade Mathematics Assessment
EGRA	Early Grade Reading Assessment
FCV	Fragility, Conflict and Violence
GDP	Gross Domestic Product
GER	Gross Enrollment Rate
ICT	Information and Communication Technologies
MLCS	Myanmar Living Conditions Survey
MoE	Ministry of Education
MoI	Ministry of Information
MSPS	Myanmar Subnational Phone Surveys 2023
NER	Net Enrollment Rate
NGO	Non-governmental Organization
NUG	National Unity Government
OOSC	Out-of-School Children
RAPID	Reach, Access, Prioritize, Increase, Develop
SAC	State Administration Council
SEA-PLM	Southeast Asia Primary Learning Metrics
TIMSS	Trends in International Mathematics and Science Study
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations Children's Fund
WDI	World Development Indicators

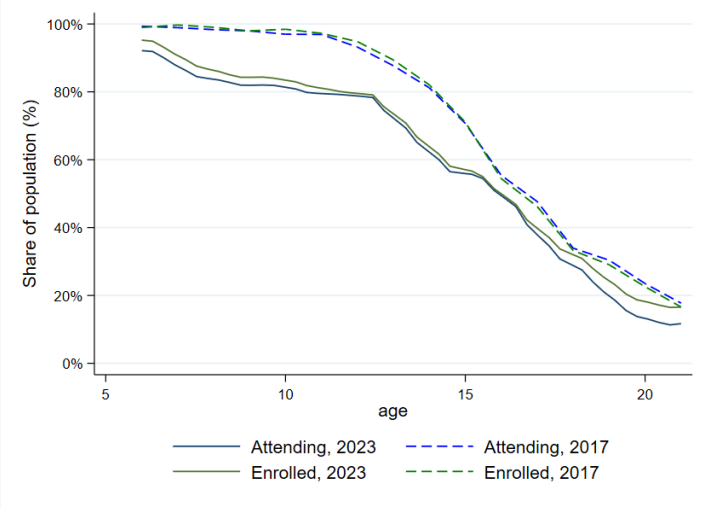
Executive Summary

This study analyzes the state of education access and disparities in learning outcomes among school-age children in Myanmar in the post-COVID-19, post-coup period.[1] Utilizing household survey data and learning assessment data from the Myanmar Subnational Phone Surveys 2023 (MSPS 2023),[2] along with secondary data from past household surveys and other sources, it attempts to answer three key empirical questions. First, it asks how access to school education has changed and what the current state of access is given the severe disruptions in schooling in the period following the onset of COVID-19. Second, it asks whether schooling choices of families have shifted towards non-state schools between 2017 and 2023. And third, it analyzes how learning outcomes of 7–14-year-old children in foundational literacy and numeracy differ across a range of child and household characteristics. The analyses of access, which focus on 6–17-year-old children, also give special attention to understanding disparities across genders, age groups, language groups, wealth quintiles, and locations.

State of access to schooling

The proportion of the population aged 6–22 years enrolled in educational institutions across the country has decreased from 69.2 percent in 2017 to 56.8 percent in 2023. Furthermore, there has been a decline in the share of enrolled children and youth for all age groups in this age range (Figure E.1). Net enrollment rates (NERs) have decreased across all levels of school education during this period, with the most significant decline occurring at the high school level. Considering that the country was experiencing an upward trend in enrollment rates at all levels prior to 2017, the decline in the share of enrolled children between 2017 and 2023 points to a crisis in education access in the country.

Figure E.1: Share of population enrolled or attending school by age, 2017 and 2023



Source: Authors' calculations based on Myanmar Living Conditions Survey (MLCS) (2017) and MSPS (2023).

[1] There was a military coup in Myanmar on February 1, 2021.

[2]The phone-based learning assessments were administered to children from a subset of households included in the MSPS 2023. Conducting school-based, face-to-face learning assessments would require authorization from the military authorities and some level of support from local education officials. As such interactions with the authorities are not feasible in the current political context, the assessment was administered to children in their homes using a phone-based approach.

There are large disparities in access across students from different income groups at all levels of school education and between females and males. At the high school level, the difference in NER between children from the richest and poorest wealth quintiles has actually widened between 2017 and 2023, as has the gender gap in access, which continues to be in favor of females. The access gap between Myanmar speakers and non-Myanmar speakers, on the other hand, has declined substantially at all levels during this period.

There is a wide variation in access to school education across locations, including between urban and rural areas, across states and regions, and between high and low conflict areas. Children in urban areas have better access to middle and high school education compared to children in rural areas, though these urban-rural gaps in access have decreased over time. The disparity in access across states/regions has, however, increased between 2017 and 2023. In particular, the NERs for the best and worst performing states/regions show a clear divergence in education access at all three levels of school education over time. There is also a stark difference in NER between high-conflict and low-conflict areas[3] at all levels in 2023. Primary level NER in low conflict areas is almost twice the rate in low conflict areas, while the gap is 59 percent at the middle school level and 19 percent at the high school level.

Approximately 28 percent of the 6–17-year-old children in the country are currently out of school, which is significantly higher than the share of out of school children (OOSC) in this age group (21 percent) in 2017. Clearly, unlike in many other countries in the region, where enrollments bounced back substantially after COVID-19 had subsided, large numbers of children in Myanmar have not come back to school in the post-pandemic, post-coup period. Regression analyses of the determinants of schooling status provide evidence that age, language background, household economic status, and conflict exposure are significantly associated with the probability of a child's being out of school. When families are asked why children have dropped out of school, the main reasons cited are school closures and financial hardships. As extended school closures after 2019 are directly linked to the COVID-19 pandemic and the military coup, these findings strongly suggest that the significant drop in student enrollments between 2017 and 2023 can be largely attributed to these two crises.

Coping with disruptions in schooling

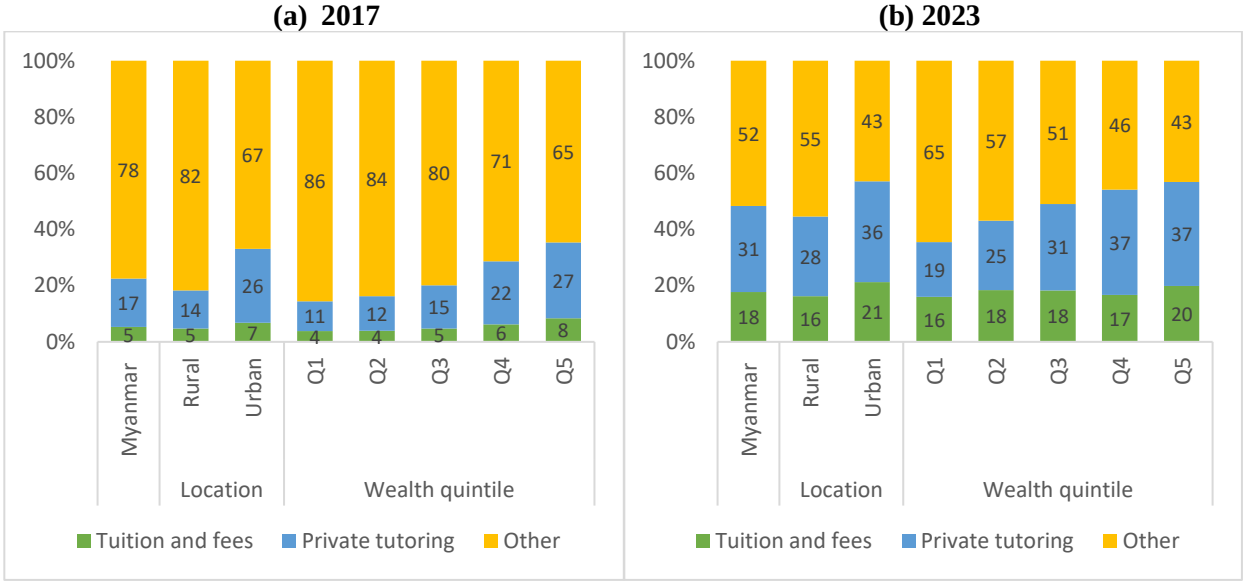
Although around 92 percent of the children who are currently enrolled in school go to state (public) schools, the share of non-state school children has increased from 5 percent in 2017 to 8 percent in 2023. This change indicates that there has been a notable shift in schooling choices of families toward non-state schools. The increase in the share of students in non-state schools is particularly large at the high school level, among children from the wealthiest household quintile, and in urban areas. This shift is not observed among children from the poorest two household quintiles. Supporting these findings, regression results show that the likelihood of attending non-state schools is higher among urban students and for students belonging to households in the richest wealth quintile.

Changes in the pattern of household educational expenditures between 2017 and 2023 also suggest that there has been a shift toward non-state schooling. More specifically, the share of educational expenditures devoted to tuition and fees by households increased from 5 percent in 2017 to 18 percent in 2023 (Figure E.2). Considering that state schools do not charge tuition and may charge only nominal fees of other kinds, this large change in the share of tuition and fees also implies that there has been a shift in schooling choices towards non-state schools. The increase in the share of tuition and fees is greater in urban areas than in rural areas and is the highest for the richest quintile. It is also interesting to note that the share

[3]High-conflict townships are those in the top 25 percent (or 4th quartile) when they are ranked based on the number of conflict incidents per person.

of household spending on private tutoring has also increased substantially during this period, suggesting that families may be relying more on tutoring support to supplement what their children are learning in school in the post-COVID-19, post-coup period.

Figure E.2: Shares of different types of household monthly educational expenditures, 2017–23



Source: Authors' calculations based on MLCS (2017) and MSPS (2023). Note: Only households with educational expenditures are included.

Some children use online education as a resource for learning, but it is used by less than 5 percent of the school-age children and more as a supplementary tool rather than as a replacement for traditional schooling. The share of online education users is two times higher among enrolled students than among children who are not enrolled in school, which suggests that online education is used more as a supplement to traditional schooling rather than as a substitute for it. Both descriptive evidence as well as regression findings indicate that children enrolled in non-state schools are significantly more likely to use online education compared to children who are enrolled in state schools, and that online education usage is much more prevalent among urban children, and children from the wealthiest and more educated families. It is therefore likely that both infrastructure limitations and financial constraints are key factors hindering the majority of children from accessing online educational resources.

Family engagement in their children's learning is also a supplementary input to the children's regular schooling. This is reflected in regression results which show that family support is significantly higher among children enrolled in school compared to non-enrolled children. The regression findings also indicate that children from wealthier households and households where the head is more educated receive more support from their families in their studies.

Disparities in learning outcomes

Children's proficiency rates[4] in literacy and numeracy subtasks are used to analyze the disparities in learning outcomes. It should, however, be noted that the proficiency rate estimates used in this study cannot be compared with similar indicators from earlier studies to estimate changes in learning outcomes over time. There are three reasons for this. First, the definition of what constitutes "proficiency" varies across instruments used in the different studies.[5] Second, the estimates from this study may be subject to sample selection bias as the assessment sample is a subset of only those households from the larger MSPS who were willing to enroll their children in the assessment, which means that the children represented by those studies would be different from those represented by the current study. And third, despite the measures taken to ensure that the assessed children were not helped by others in the household, there is a possibility that some children received assistance during the tests.

Children generally perform worse in the more complex subtasks in both literacy and numeracy.[6] Among 7–14-year-olds, only around 45 percent of the children have achieved proficiency in oral reading fluency and 52 percent have proficiency in understanding invented or unfamiliar words. In numeracy, 50 percent of children with education at the grades 1-3 level are proficient in subtraction, a complex subtask for this level. Large number subtraction and fractions seem to be particularly challenging for children with education at the grades 4-6 level. An encouraging observation is that a larger share of the children with education at the grades 4-6 level perform better than children with education at the grades 1-3 level in simple addition and subtraction (a subtask common to both groups), indicating that more years of schooling does contribute positively to learning.

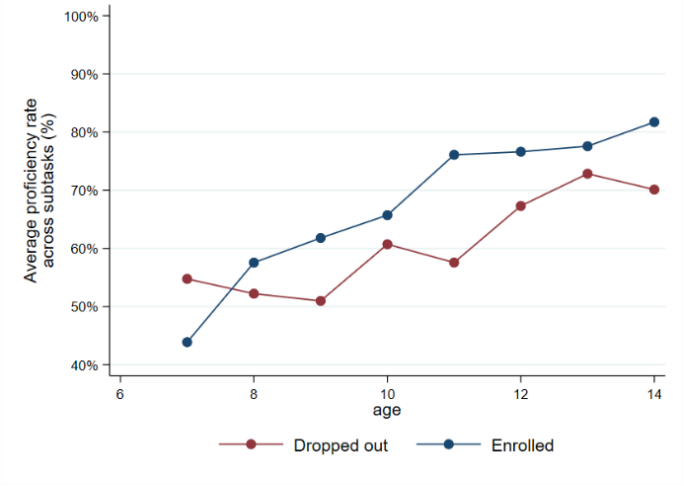
Children enrolled in school consistently exhibit higher overall average proficiency rates across subtasks in both numeracy and literacy compared to those who have dropped out. Moreover, the gap in average proficiency rates between these two groups is progressively larger for older children (Figure E.3). The positive association between enrollment in school and average proficiency rate is maintained even when other potential determinants of learning outcomes are controlled for using regression analysis, demonstrating the robustness of the relationship. More specifically, the regression results show that enrolled children have significantly higher average proficiency rates in numeracy and literacy compared to OOSC, and that the gap between the two groups widens as children progress in age. The re-confirmation of the importance of schooling provided by this finding is particularly relevant in the current context, as there has been a significant increase in the share of OOSC between 2017 and now.

[4] The proficiency rate in a subtask is defined as the percentage of children who are proficient in that subtask as per the criteria summarized in section 5. The mean literacy (numeracy) proficiency rate is the simple average of the proficiency rates in the different subtasks.

[5] For example, in the Southeast Asia Primary Learning Metrics (2019) for grade 5 students, minimum proficiency in reading requires a demonstration of relatively sophisticated reading and comprehension skills. However, collecting data on such skills through phone-based assessments can be challenging Similarly, in the Myanmar Early Grade Reading Assessment (EGRA) conducted in 2017-2018, reading proficiency is measured based on the time taken to complete the task. On the other hand, the phone-based reading tasks in this study are not timed. Hence, much simpler definitions of proficiency are used in the current study.

[6] The literacy subtasks for children aged 7-14 years include the following: (a) letter name knowledge, (b) familiar word reading, (c) invented word reading, (d) listening comprehension, (e) oral reading fluency and (f) reading comprehension.

Figure E.3: Average proficiency rates for enrolled and dropped out children (ages 7–14 years)



Source: Authors' calculations based on MSPS (2023).

The child's socio-economic background, particularly the education level of the household head and household wealth, emerge as influential factors determining average proficiency rates. Children from households with more educated household heads demonstrate superior performance in overall literacy and numeracy compared to their counterparts from less educated households. Moreover, children from wealthier households exhibit greater proficiency in both literacy and numeracy skills in comparison to their peers from economically disadvantaged backgrounds. Additionally, gender plays a modest role in learning outcomes, with girls outperforming boys in literacy, which aligns with findings observed in the general literature. Interestingly, children from female-headed households show lower literacy proficiency, possibly due to the time constraints faced by women in such households.

Notably, the home language of the child and the variables related to alternative educational services and resources do not have a significant association with learning outcomes. The lack of evidence of difference in learning outcomes across language groups stands in contrast to previous analyses based on the 2019 Southeast Asian Primary Learning Matrix (SEA-PLM) data, which indicated superior performance in mathematics and reading for Myanmar speakers (Bhatta and Katwal 2022b). One possible explanation for this unexpected result could be the reduced disparity in educational access between the language groups between 2017 and 2023. However, further investigation is necessary to understand the underlying causes behind this surprising discovery. Similarly, the analyses fail to establish a statistically significant relationship between learning outcomes and alternative education services and resources, namely, child's school type (state versus non-state), online schooling, and family support.

Implications

- The evidence presented above on the persistence of low enrollment rates at the school level despite the abatement of COVID-19 makes it clear that Myanmar is facing a crisis in school access. Therefore, it is crucial for education stakeholders to prioritize re-enrolling children in school and retaining them. The global literature suggests that efforts to bring children back to school and retain them in school will require both supply-side interventions, such as reopening and keeping schools open, and demand-side interventions, such as reaching out to families and children, supporting those at risk of dropping out, creating safe school environments, and helping families overcome financial constraints. To guide the design and implementation of such interventions in any country, systematic approaches such as the RAPID framework for learning recovery proposed by the United Nations Educational, Scientific, and

Cultural Organization (UNESCO), United Nations Children's Fund (UNICEF) and the World Bank could be adapted to the specific country context (World Bank et al. 2022).[7]

- The observed shift towards non-state schools suggests a potential to improve access by supporting the different types of non-state schools. Many non-state schools in Myanmar struggle to provide quality education due to resource constraints. To support such schools, assistance such as grants for infrastructure expansion, purchase of teaching materials, or payment of teacher salaries could be made available. Donors could also directly fund teacher salaries or provide teaching materials to schools as has been done in some other fragility, conflict and violence (FCV) affected counties like Afghanistan and Yemen. Such schools could also be supported by providing cash transfers to their students to cover tuition, fees, and other educational expenses.

- Only a small proportion of school-age children, mainly from urban areas and wealthier families, currently use online education. However, the fact that enrolled students use online education more than OOSC suggests that it is seen as a valuable supplementary learning resource. To increase its usage, interventions are needed to address challenges related to the limited supply of online resources suitable for Myanmar students, infrastructure limitations, and financial constraints faced by students, families, and teachers. Development partners could play an important role in supporting these types of interventions.

- Children from disadvantaged socio-economic backgrounds not only have lower learning outcomes but are also more likely to be out of school. Hence, interventions targeted towards this group of children can serve the twin purpose of enhancing equitable access and improving equity in learning outcomes. Considering the dismal condition of the Myanmar economy and its bleak prospects for future growth, it is likely that student stipends as well as other forms of support to poor households will continue to be of vital importance for some time.

- This study has made an initial attempt to understand the disparities in learning outcomes and the effects of the disruptions caused by COVID-19 and the coup on learning loss, and some insightful findings have emerged from this investigation. However, further research is needed to examine how the limitations of the proficiency rate estimates indicated above can be addressed. For example, it is important to gain a better understanding of how the different types of potential selection bias in the assessment sample may be affecting the estimates of proficiency rate estimates. Additionally, to further utilize and build on the work done in the current study and keep stakeholders informed of Myanmar's evolving education landscape, there is a need to conduct regular surveys that monitor both access and learning outcomes using sampling approaches similar to that of MSPS 2023.

- Conducting in-person school-based learning assessments in Myanmar in the current context is impractical because of the security challenges. This is the reason a phone-based learning assessment was used for this study. Phone-based learning assessments, however, have challenges, including limited control of the testing environment at home. The experience from this study indicates that while conducting such assessments is a challenging task, it can be done effectively by investing adequately in instrument design, training of enumerators, and putting in place a sound implementation quality

[7] The RAPID framework for establishing a learning recovery program focuses on five policy actions: 1.**R**eaching every child and retaining them in school; 2.**A**ssessing learning levels regularly; 3.**P**rioritizing teaching the fundamentals; 4.**I**ncreasing the efficiency of instruction; and 5.**D**eveloping psychosocial health and wellbeing.

assurance mechanism. Another notable learning from the study is that while it may not be possible to obtain learning outcome estimates from phone-based assessments that can be compared with estimates from studies that use in-person school-based learning assessments, such assessments can give rich information on the state of disparities in learning. Thus, they are valuable in filling important knowledge gaps in addition to being cost efficient.

1. Introduction

Myanmar had been making good progress in expanding access to education at all levels during the decade preceding the onset of the COVID-19 pandemic in February 2020. The increase in access to education during this period is well documented in the literature (CSO, UNDP and World Bank 2018; World Bank 2020). According to an analysis of household survey data by Bhatta and Katwal (2022a), the increase in access to school education was particularly large at the post-primary levels, where the net enrollment rate (NER) increased from 51 percent to 67 percent for middle school and from 26 percent to 43 percent for high school education between 2010 and 2017. Primary level NER also increased during this period and reached 90 percent, though the increase at this level was marginal. Similarly, access to tertiary education also increased during this period, though modestly, with the gross enrollment rate (GER) increasing from 11 percent to 16 percent. Cross-country comparisons of enrollment rates based on data from the World Development Indicators (WDI 2021) indicate that, in 2018, Myanmar compared favorably with the average of countries at similar levels of per capita gross domestic product (GDP) globally (Bhatta and Katwal 2022a).

The country experienced severe disruptions in the education sector due to the pandemic. Responding to the emergence of the pandemic, the government instructed all public schools in the country to close at the end of February 2020, a month before the start of the annual three-month school holiday period. Schools remained closed throughout the following academic year (June 2020 to February 2021). Following the miliary coup of February 1, 2021, they were instructed to reopen on June 1, 2021, for the new academic year; however, anecdotal evidence suggests that only a small fraction of the students rejoined school at that time. Furthermore, schools were instructed to close again in early July 2021, presumably in response to the third wave of the pandemic and remained closed until the end of October 2021. Overall, in the two years following the onset of COVID-19 (February 2020 to February 2022), schools remained fully closed for 532 days, making Myanmar the country with the highest number of school closure days in the East Asia and the Pacific region during this period (Bhatta and Katwal 2022a).

The disruptions in the education sector caused by the pandemic were compounded by the military coup as many officials in the Ministry of Education (MoE) and a large number of public school teachers throughout the country joined the civil disobedience movement (CDM) to protest against the miliary takeover. It is estimated that around 30 percent of the teachers were dismissed from their positions by the military government for participating in the CDM, severely weakening the service delivery capacity of the public education system.[8] Furthermore, as conflict between the military and anti-coup groups escalated, some public schools in the country experienced violent attacks, particularly in the Yangon, Mandalay and Sagaing regions, raising concerns for the safety of children and teachers physically attending school (Insecurity Insight 2021). Anecdotal evidence suggests that safety concerns as well a general mistrust of government institutions in the post-coup period may also have had a negative effect on student attendance (Frontier 2022).

Unlike in many countries in the region, where enrollments bounced back substantially after Covid 19 had subsided, official statistics suggest that student enrollments in Myanmar continued to remain low. For example, according to World Bank (2023), evidence from household survey and/or administrative data from Cambodia, Indonesia, and Thailand indicate little difference in enrollments between the pre and post pandemic periods. Similarly, administrative data from Bangladesh show that enrollment figures for pre-primary to grade 5 remained virtually unchanged during this period (DPE 2021). On the other hand, according to the Myanmar military authorities, the total school enrollment in Myanmar in November 2021

[8] The State Administration Council (SAC) reported during a press conference in July 2021 that there were a total number of 271,072 teachers in public schools (SAC 2021a). This represents a 30 decline from the 389,241 teachers in the system in 2018-19.

was around 4.8 million (SAC 2021b), which is less than 50 percent of the enrollment of 9.7 million in 2019–20. This estimate was revised upward by the military authorities to 6.7 million in May 2022, suggesting that more students were coming back to school, but it clearly shows that a large share of the school-age children (over 30 percent) have continued to remain out of school in the post-coup context. The latest figures from the military authorities also indicate that currently around 82 percent of the 47,760 public schools in the country have reopened (MoI 2022). However, data on the number of non-public schools that are currently open, or the number of students enrolled in these schools are not available. While there are over 10 types of non-public schools in the country (see Section 4), government statistics suggest that, in the 2018/19 academic year, less than 6 percent of students were enrolled in these schools (CSO 2020).[9] Hence, it is unlikely that the reopening of non-public schools had a notable impact on overall student enrollment.

Apart from the above official aggregate enrollment figures provided by the military authorities, there is a near absence of information on the state of education in the post-coup context, both in terms of access as well as learning outcomes. As schools were closed for most of the time during the COVID pandemic, it can be assumed that student enrollment was minimal during this period, though official data on enrollments were not published. After the military authorities instructed schools to reopen, they shared some aggregate enrollment figures for the nation as whole, as noted above. However, given the political incentive for the military authorities to show that normalcy was returning to the education sector, there is room to question the reliability of these figures. Furthermore, the authorities have never publicly shared any disaggregated data on student enrollment. On the other hand, while anecdotal evidence on schooling access has been published in the media, reliable and comprehensive data on access to education from independent sources have been missing. In the case of learning outcomes, the evidence gap is even larger—neither the government nor other agencies have collected and published data on student learning since the onset of the pandemic. Furthermore, there is no analysis available on disparities in educational outcomes across different population groups. Hence, a significant knowledge gap exists on the state of education outcomes now and how it has changed from pre-COVID times. This study helps fill this knowledge gap.

The objective of this study is to analyze the state of education access and disparities in learning outcomes among school-age children in Myanmar in the post-COVID, post-coup period. The key empirical questions explored include the following: (a) given the disruptions in schooling in the period following the onset of COVID-19, how has access to school education changed and what is the current state of access; (b) have families shifted toward non-state schools in the post-COVID, post-coup context; and (c) how do learning outcomes of 7-14-year-old children differ across genders, age groups, language groups, wealth quintiles and locations? As part of this exploration, the study also analyzes the disparities in access across the above dimensions. To answer the question on shifts in schooling preferences towards non-state schools, it analyses the patterns in school enrollment as well as the patterns of household expenditures on education. The analysis of access focuses on children in the 6–17-year age range and also includes a discussion on the profiles of OOSC and the reasons why these children are not in school.

The main learning outcomes of interest are the basic literacy and numeracy skills of children in primary and lower secondary age groups (7–10 years and 11–14 years). It should be noted that the literacy and numeracy performance estimates in this study are not comparable to those of previous studies, as will be explained in section 2. However, the data collected in this learning assessment encompass a wide

[9] Statistics provided by the miliary authorities indicate that 2.5 percent of the students were attending private schools, and they do not provide information on other types of non-public schools. However, as shown in Figure 4.1 in this report, the majority of students attending non-public or non-state schools go to private schools. Hence, it is likely that the share of students enrolled in non-public schools in 2018/19 was less than 6 percent. This is supported by household survey data from LCS 2017 which suggest that student enrollment in non-state schools was around 6 percent in 2017.

range of individual and household characteristics of the assessed children, making them well suited for analyzing disparities in learning outcomes.

This study relies mainly on primary data from a phone-based household survey and a phone-based learning assessment, as collecting education outcomes data through school-based face-to-face surveys is not feasible in the current political context.[10] As noted by Angrist et. al (2020a), phone-based assessments are a relatively new approach to measuring student learning. While they had been used to assess learning outcomes of primary school students in some developing countries in the past, their popularity increased markedly after the onset of COVD-19 as face-to-face school-based learning assessments became risky and impractical, and the need to know what was happening to children's learning became more pressing. Some examples of assessments of this type conducted during the pandemic include an assessment of learning loss in Botswana (Angrist et al. 2020b), evaluation of the effects of one-on-one phone tutorials in Sierra Leone (Crawfurd et al. 2021), assessment of foundational literacy and numeracy of a local level pilot project on teaching at the right level (Radhakrishnan et. al 2021; Radhakrishnan, Sharma, and Shinde 2022) and an assessment of foundational literacy of a distance education program in Nepal (Radhakrishnan, Sharma, and Shinde 2022) in Nepal.

Phone-based learning assessments have a number of limitations, including their unsuitability to assess complex skills and the higher chances of external support to students (cheating) during actual assessments. But there is some evidence that they can measure the basic numeracy skills of children relatively accurately (Angrist et al. 2020a). In the case of literacy assessments, recent studies conducted with primary school students in India and Côte d'Ivoire show promise as it was observed that the performances of the students are similar regardless of whether they were assessed over the phone or in person (Ahluwalia et al. 2023; Sobers et al. 2021). Note that this is the first time that phone-based learning assessments have been conducted in Myanmar.

The rest of the report is organized as follows. Section 2 describes the data and analytical approach used in this study. Section 3 examines the state of access to education in the country, with a focus on disparities in school education and changes observed between the pre-COVID and current periods. Section 4 explores whether there has been a shift in schooling preferences from state to non-state education during this time. Section 5 analyzes the disparities in learning outcomes of children and also investigates how the reduction in access to schooling during the pre-COVID post-coup period relates to learning outcomes. Finally, Section 6 summarizes the findings of this study and presents some concluding remarks.

[10] Conducting any face-to-face survey in the current conflict situation in Myanmar is challenging because of travel restrictions as well as concerns for the safety of enumerators and respondents. These concerns are particularly important in education-related surveys since education is a politically sensitive sector, as evidenced by the mass participation of public school teachers in the CDM in opposition to the miliary coup. Furthermore, doing a school-based survey as opposed to a household-based survey, would require formal authorization from the military authorities and close cooperation of local education officials during survey implementation. Such interactions with the military authorities and local officials are not feasible at this point. Hence, even though the vast majority of schools had reopened at the time of the survey, the study team decided to do a phone-based survey instead of a face-to-face school-based survey.

2. Data and methodology

Data sources

The analyses of access and household educational expenditures in this study are primarily based on household survey data from two sources: (a) primary data from the Myanmar Subnational Phone Surveys 2023 (MSPS 2023) and (b) secondary data from the Myanmar Living Conditions Survey 2017 (MLCS 2017). While multiple rounds of high-frequency phone surveys had been conducted in Myanmar by the World Bank following the onset of the pandemic, the MSPS 2023 is the first large scale nationally representative household survey conducted after February 2020 that allows relevant indicators to be estimated at the subnational (state/regional) level as well. Furthermore, unlike the short high frequency phone surveys, which had few questions related to the education sector, the MSPS 2023 includes a relatively comprehensive set of questions on access to schooling as well as a few household-level questions on education expenditures. The MSPS was conducted between November 2022 and March 2023. The nationally representative MLCS 2017 survey, which was conducted face to face, also includes a separate module for education and relevant questions on household educational expenditures. Other data used in the analyses of access include conflict data from the Armed Conflict Location & Event Data (ACLED) project[11] and some qualitative information collected through key informant interviews to better understand the process of accessing education in these troubled times.

The analyses of the current state of learning outcomes utilize primary data from a phone-based learning assessment of children from a subset of households included in the MSPS 2023. Conducted between December and April 2023, this assessment is designed to test the basic literacy and numeracy skills of children. As the children assessed are a subset of children included in the main MSPS, most of the information on household and individual child characteristics required for the analyses are obtained from the MSPS dataset.

Sampling

The MSPS 2023 sample consists of 8,497 households selected from 306 of the 330 townships in the country. The sampling frame for the survey consisted of approximately 150,000 households from 321 townships across the country included in a database maintained by the firm hired to conduct the survey.[12] The sample households were selected using a stratified random sampling approach, where the sampling frame was first stratified into 321 townships (given that the sampling frame included only 321 townships). Then, within each township, the households in the sampling frame were divided into two groups: (a) households with heads who are illiterate, have no education, or have up to primary education and (b) other households. Finally, a maximum of 32 households were randomly sampled from each township while ensuring that two–thirds of the households came from the first group and one third came from the second group. However, because of difficulties in reaching households in 15 of the townships in the sampling frame, the final sample included households from only 306 townships. These 306 townships represent all 14 states/regions plus the Union Territory of Nay Pyi Taw and 97 percent of the nation's population.[13] The sample is representative at the national level as well as at the level of the states and regions. It should, however, be noted that the final sample sizes for individual states/regions deviate somewhat from their shares of the national population since some states have been oversampled (for example, Shan and Rakhine) considering their higher poverty rates, remoteness, and greater conflict intensity. Further details on the

[11] Data downloaded from www.acleddata.com on March 15, 2023.
[12] The MSPS was implemented by a local survey firm. The database maintained by the survey firm also included information on a number of household characteristics that could be utilized to stratify the sample appropriately.
[13] The 24 townships in the country missing from the sample are from the following states/regions: Chin, Kachin, Kayah, Sagaing, Shan, and Tanintharyi.

sampling methodology, including sample replacement strategies for non-response and formulae for sampling weights, can be found in Sinha Roy (2023).

The literacy and numeracy assessments were administered to a sample of 1,340 children—636 males and 704 females. To select the sample of assessment participants, all MSPS main sample households that had children aged 7-16 years were asked if they would be interested in enrolling their children to participate in the assessment. The households that confirmed their commitment to participate as well as households which indicated that they would provide confirmation of participation after checking with their children were identified as potential participants for the assessments. These households were contacted in the following weeks to set up an appointment for their children's assessment. Among the children with confirmed appointments, those who actually participated in the assessments comprised the final study sample of 1340 children (53 percent females, 47 percent males) from 1014 households (or around 32 percent of the MSPS sample households with children aged 7–16 years).

The analysis of disparities in learning outcomes in this report focuses on the sub-sample of children in the 7–14 age group, which consists of 1118 children (538 males, 580 females). Summary statistics for key individual and household characteristics of children aged 7–14 years in the MSPS main sample and the learning assessment sample are presented in Table 2.1. While the two samples look similar in terms of some characteristics, a number of differences stand out. A larger share of the children in the assessment sample is female, enrolled in school, and speak the Myanmar language at home. Furthermore, the children in this sample come from households that are, on average, wealthier and more likely to live in urban areas. As these characteristics are potential positive correlates of learning outcomes, they could introduce an upward bias in the learning assessment results.

Table 2.1: Summary statistics for individual and household characteristics in MSPS 2023 and learning assessment sample 2023

Characteristic	MSPS main survey 2023	Learning assessment sample 2023
Female (%)	49.96	51.88
Age (years)	10.56	10.61
Non-Myanmar speaker (%))	16.22	13.48
Enrolled in school (%)	83.01	86.99
Enrolled in non-state school (%)	9.76	9.66
Wealth index (number)	-0.12	0.00
Female headed household (%)	13.77	12.45
Household head's years of education (years)	8.10	8.55
Number of children in household (number)	2.34	2.23
Urban (%)	56.11	58.33
Conflict intensity (number)[a]	-8.57	-8.59
Number of children in sample	3625	1118

Source: Authors' calculations based on MSPS (2022-23).
Note: a. Conflict intensity is measured as the log of per capita conflict incidents at the township level

Learning assessment instruments

The instruments used for the literacy and numeracy assessments in this study are primarily based on instruments used in the early grade mathematics and reading assessments (EGMA and EGRA) conducted in Myanmar in 2016/17 and 2017/18, respectively. These EGRA and EGMA instruments are designed to assess the literacy and numeracy skills of early grade children in nine and eight subtasks, respectively. As EGRA/EGMA instruments are meant to be administered to students face-to-face orally on a one-on-one basis, not all types of EGRA/EGMA questions are suitable for inclusion in phone-based

assessments. Furthermore, while EGRA/EGRA instruments are targeted towards specific grades (grades 2 and 3) and are administered to students in schools through a school-based survey, the phone-based assessments in the current study were administered to children in their own homes through a household survey, and the sample of children assessed included children from a range of ages and grades.[14] Hence, appropriate skip patterns have been included in the phone-based literacy and numeracy instruments to allow certain simple questions to be skipped by older children and children in higher grades. [15]

The literacy instrument for the current phone-based assessment tests the literacy skills of 7–14-year-old children in six of the nine EGRA subtasks:[16] (a) letter name knowledge, (b) familiar word reading, (c) invented word reading, (d) listening comprehension, (e) oral reading fluency, and (f) reading comprehension. The questions in this instrument are either the same as the corresponding questions in the 2017/18 EGRA instrument or are very similar to them.

The numeracy instrument incudes four of the six EGMA subtasks[17] **as well as some additional subtasks targeted towards children in grades 4-6.** The numeracy skills in the following four EGMA subtasks of children whose current grade or most recent grade (if they are no longer in school) is between 1 and 3 were assessed: (a) number identification, (b) simple addition, (c) simple subtraction, and (d) word problems dealing with simple addition and subtraction. The specific subtasks covered by the numeracy assessment for children in the two grade groups are summarized in Table 2.2. The questions have been organized by grade groups for numeracy as children's abilities to answer numeracy questions are closely related to what they learn in specific grades whereas basic literacy skills are more general and less specific to grades. As shown in this table, the instrument for children in grades 4–6, or who were in grades 4–6 before they stopped attending school, included additional subtasks involving more complex numeracy skills (subtasks (e) and above). However, they were also asked to answer questions under subtask d to compare their performance with that of early graders in one of the simple subtasks.

Table 2.2: Subtasks covered by the numeracy assessment for different grade groups

Subtask	Grades 1- 3	Grades 4- 6
a. Number discrimination	√	
b. Simple addition	√	
c. Simple subtraction	√	
d. Word problem: simple addition and subtraction	√	√
e. Complex subtraction: larger numbers, and with borrowing		√
f. Decimal sum		√
g. Place value		√
h. Word problem: multiplication and division		√
i. Simple fractions		√

[14] It is currently not feasible to conduct a school-based face-to-face learning assessment since doing so would require authorization from the military authorities and some level of support from local education authorities.
[15] Since older students were also a part of this study, a more difficult reading comprehension component and five publicly released grade 4 math items from Trends in International Mathematics and Science Study (TIMSS) were also included.
[16] The EGRA instruments also include the following additional subtasks: letter sound knowledge; initial sound identification, and dictation (World Bank and MOE 2021).
[17] The EGMA subtasks not included in the current phone-based assessment include number identification and missing number recognition.

As the assessment instruments were based on EGRA/EGMA, which is targeted towards early grades, it may have been easier for children from higher age groups in the sample to answer the questions in the test. In section 5, this is reflected in higher performance of older children in both literacy and numeracy. However, the assessment data indicate that even among older children, the percentage of those achieving proficiency in the simplest subtasks is less than 100 percent. It is relevant to note that questions in the instruments used in this study to test 7–14-year-old children on literacy skills are no easier than the ones employed by Radhakrishnan et al. (2022) to assess the literacy of children in grades 4 and 5 in Nepal. Similarly, the numeracy questions administered to children in the grades 4-6 groups are comparable in terms of difficulty to those used by Radhakrishnan et al. (2022) and more complex than the ones from the phone-based assessments done by Crawfurd et al. (2022).

Implementation of learning assessments

The implementation of the phone-based learning assessments involved three stages: (1) the development of draft instruments/questionnaires; (2) training of enumerators, pilot testing, and finalization of instruments; and (3) fielding of the assessments along with monitoring and quality assurance measures. The first two stages were completed between November and December 2022. The assessment was fielded immediately following this and was completed on April 23, 2023.

During the first stage, instruments used in phone-based assessments in other countries as well as the EGRA/EGMA instruments used earlier in Myanmar were carefully reviewed, based on which suitable questions/items were developed for the current study. As noted above, the instruments for this study were based primarily on the EGRA/EGMA instruments. Relevant EGRA/EGMA subtasks and items suitable for phone-based assessments were selected without altering their original content where possible. After tentative selection of the assessment items, three rounds of trial test runs were conducted by the World Bank team, and the results of these trial tests were thoroughly discussed. Based on the trial test findings and consultations with teams that had conducted similar assessments in Botswana and Nepal, the instruments were finalized, and training modules and enumerator guidelines were drafted. The instruments were designed to be administered using a combination of phone calls and text messages.

The second stage included an initial three-day face-to-face training of enumerators, followed by pilot testing and finalization of the instruments. The training, which was conducted by the World Bank team with the participation of the survey firm's survey supervisors, included sessions focused on understanding the questions, role-playing exercises, and extensive discussions on ways to overcome potential challenges**.** Following the training, a pilot test was conducted on a sample of 53 children using a Computer Assisted Personal Interviews (CAPI) version of the instruments. Each assessment was audio-recorded, and consultants working as part of the Bank team reviewed each audio file. Based on this review, the enumerators were provided detailed feedback, including one-on-one feedback, in a discussion and feedback session held between the enumerators and the trainers. Both the literacy and numeracy assessments were revised based on the pilot test, and three sets of instruments were prepared for further testing.[18] During the pilot, special care was also taken to ensure that the Myanmar font could be read correctly even in a regular phone, so that a lack of access to a smart phone would not have a negative impact on test scores. A full-day training and practice session was then held for enumerators on these revised literacy and numeracy instruments, after which the second pilot test using CAPI was conducted. As before, quality checks were performed on each pilot test interview utilizing the audio recordings of the assessments. A final feedback session was held before the full-scale phone-based assessment commenced, by which time the enumerators were confident of their abilities to conduct the phone-based assessment.

[18] To account for the possibility of multiple eligible children within a single household, three assessment sets were produced.

The assessments were conducted at times convenient for the households, and steps were taken to maximize the time children spent on answering the assessment questions. To ensure that the enumerators and the assessed children could focus on the assessment questions during the assessment interview, the survey firm assigned a dedicated person to call the households beforehand to set up appointments for conducting the assessments. Background information on the assessment, including clarification that this was not a class test, was also provided to the households when setting up the appointments. Once the assessment date and time were confirmed with a household, this information was relayed to the enumerators, who then called the household on the agreed date and time to conduct the assessment. Each child was given both the literacy and numeracy tests in a single assessment session. The average length of the assessment interview was 38 minutes. Steps taken to maximize the implementation fidelity of the assessment and ensure the quality of the data are summarized in Box 2.1.

Box 2.1: Quality assurance during assessment implementation

Quality assurance measures put in place in this study were designed to mitigate two broad categories of potential risks to data quality: (a) risks related to the assessment environment of the child, and (b) risks related to the performance of assessment enumerators.

The key risks identified under the first category are as follows:

- children could experience survey fatigue, leading to worse performance in the test that was administered last,
- in households with more than one assessment participant, the second (or third) participant could overhear the answers given by the first, and subsequently perform better, and
- other household members could help the child in the assessment, leading to better performance in the test.

To mitigate the first risk, literacy and numeracy tests were randomized into two groups so that some children were tested on literacy first and others were tested on literacy second. The second risk was addressed by giving multiple candidates in a single household different versions of the same test selected from a set of three tests.[a] Analysis of the data from the assessments revealed that there were no statistically significant differences in scores based on the ordering of the literacy and numeracy tests or based on the version of numeracy instrument used, indicating that this risk was adequately addressed (see Annex B). Finally, to minimize the possibility of household members helping the child, the enumerator re-emphasized to the household members that this was not a class test and requested them to refrain from helping the child during the assessment. Furthermore, the enumerator remained alert for any sign of help from others throughout the assessment and reminded them to stop helping the child when such behavior was detected. Additionally, in the case of the more complex numeracy questions, the children were asked to explain how they arrived at the answer, and the answer was marked correct only if the explanation was satisfactory.

Risks related to the performance of assessment enumerators were addressed mainly by reviewing the audio-recordings of the assessments and double checking the data recorded by the enumerators. As in the case of the pilot, each assessment was audio recorded. Initially, individual feedback and suggestions, based on findings from the review of audio files and the dataset, were provided by the World Bank consultants to each enumerator. The consultant team prepared a data correction matrix to document all errors made by the enumerators in the assessments, and group meetings with the survey firm were also held to review the quality of the interviews and the identified data errors. In total, the consultants listened to more than 30 percent of the total interviews conducted. During the audio reviewing phase, limited errors were detected, which provided a high degree of confidence in the assessments. All errors were corrected before conducting the data analysis. Of the errors that were detected, 83 percent were related to the literacy questions. In addition, group meetings with the survey firm were also held to review the quality of interviews and the identified data errors.

[a] This was done only for the numeracy assessment.

Analysis methodology

Simple descriptive statistics are used to analyze the state of education access, changes in access, possible shifts in schooling choices toward non-state schools, and disparities in learning outcomes. The key indicator of access used in this report are enrollment rates computed using information on the schooling status individual children. Disparities in access across genders, language groups, socio economic groups, and locations are illustrated by comparing these key indicator values for the different population groups. Changes in access and disparities in access between the pre-COVID and post-coup period are estimated using the household survey data from 2017 and 2023. Shifts in schooling choices are measured primarily by changes in shares of students enrolled in non-state schools and changes in expenditure patterns of households. To analyze disparities in learning outcomes in 2023, the key indicator used is the share of the subtasks in which the child is proficient, with the proficiency threshold defined separately for each subtask.

It is important to note that the literacy and numeracy proficiency estimates from this study cannot be compared with similar indicators from earlier studies to estimate changes in learning outcomes over time. There are three main reasons for this. First, the definition of what constitutes "proficiency" varies across instruments. For example, in the SEA-PLM 2019 assessment of grade 5 students, minimum proficiency in reading requires a demonstration of relatively sophisticated reading and comprehension skills. More specifically, a student proficient in reading understands texts with familiar structures and manages competing information (UNICEF and SEAMEO 2020).[19] However, data on such skills could not be collected in the phone-based assessment for this study. Similarly, in the EGRA conducted in 2017-2018, the reading proficiency measures also uses the time taken to complete the task; on the other hand, the phone-based reading tasks in this study are not timed. This study uses relatively simple definitions of proficiency, particularly because phone-based assessments are designed to measure very basic skills.

Second, the estimates from this study may be subject to sample selection bias as the assessment sample is a subset of households from the larger MSPS who were willing to enroll their children in the assessment. It is, therefore, possible that parents who volunteered their children for the assessment were more confident of their children's academic abilities than those who chose not to participate, leading to a sample of high performers among the assessment participants. On the other hand, earlier assessments in Myanmar were conducted through school-based surveys, which means that the children represented by those studies would be different from those represented by the current study. In particular, school-based assessments are able to ensure the participation of a representative sample of children (high as well as medium and low performers) from the targeted grades, which is difficult to achieve through a household survey. And third, despite the measures taken to ensure that the assessed children were not helped by others in the household, there is a possibility that some children received assistance during the tests.[20] These last two factors could lead to learning outcomes estimates that are higher than the true values, making them unsuitable for comparison with earlier estimates.

These data are well suited to analyze equity in learning outcomes.[21] The assessment data used in this study have two key strengths. First, they can be readily linked to the household data from the main MSPS

[19] These students are able to do the following: "find multiple pieces of related information in texts with familiar structures and make connections between details and ideas to draw inferences; use clues and explicit information to support inferences even when there is competing information; and identify the most likely reasons for events and the reactions of characters in narratives, where that information is only implied in the text." (UNICEF and SEAMEO 2020; p. 42)

[20] Parental help during phone-based assessments is an issue noted by Sam-Kpakra (2021) and Crawfurd et al. (2022) also in their respective studies.

[21] The Cronbach's alpha in our literacy assessment is 0.81

survey, which provides rich information on various household and locational characteristics associated with the assessed children. Second, this assessment includes school dropouts in the sample of children assessed. As a result, the data used in this study are particularly well-suited for analyzing disparities in learning outcomes across a range of individual and household characteristics, including important socio-economic variables. Moreover, they allow for the examination of the effects of schooling status on learning outcomes. These types of analyses cannot be rigorously conducted with data from school-based assessments alone, as such assessments only focus on the learning outcomes of children enrolled in school.

Supplementing the descriptive analysis, regression models are used to analyze the determinants of schooling access and children's learning outcomes in 2023. In addition, regressions are also employed to analyze the correlates of schooling choice, online education uptake and parental engagement in their children's education. Details of these regression models are presented in Box 2.2.

Box 2.2: Regression model for the determinants of educational outcomes

The key outcomes at the child level are enrollment status (enrolled versus not enrolled), type of school attended (state versus non-state), use of online education (using online education versus not using), parental engagement in their studies (time adults in household invest in education of child), and learning outcomes (literacy and numeracy proficiency rates) in 2023. The outcome $Y_{i,h,a}$, for child *i* from household *h* residing in location *a* is modeled as:

$$Y_{i,h,a} = \beta_0 + \boldsymbol{X}_{i,h,a}^{T}\,\boldsymbol{\gamma} + \varepsilon_{i,h,a},$$

where $\boldsymbol{X}_{i,h,a}$ is a vector of explanatory variables representing different student and household characteristics, and $\varepsilon_{i,j,t}$ is a random error term. The coefficient vector $\boldsymbol{\gamma}$ represents the average effects of the various explanatory variables on the outcome, while controlling for the effects of the other variables included in the model.

Among others, the key explanatory variables of interest in all the regressions include child's gender (male versus female), child's home language (Myanmar versus other), household location (urban versus rural), household socioeconomic status (wealth quintile), and household's exposure to conflict (township level conflict intensity as measured by the log of number of conflict incidents per capita). The regressions specific to learning outcomes also include enrollment status, parental engagement level, access to online education and school type as explanatory variables. These variables represent the child's key human capital inputs: public investment in education (access to schooling) and private investment in education (parents' time investment, and investment in private education). Note that by including enrollment status and an interaction term for enrollment status and age as explanatory variables in the model, it is possible to infer, to some extent, the possible effects of reduced participation in regular schooling due to COVID-19 and the coup on children's learning.

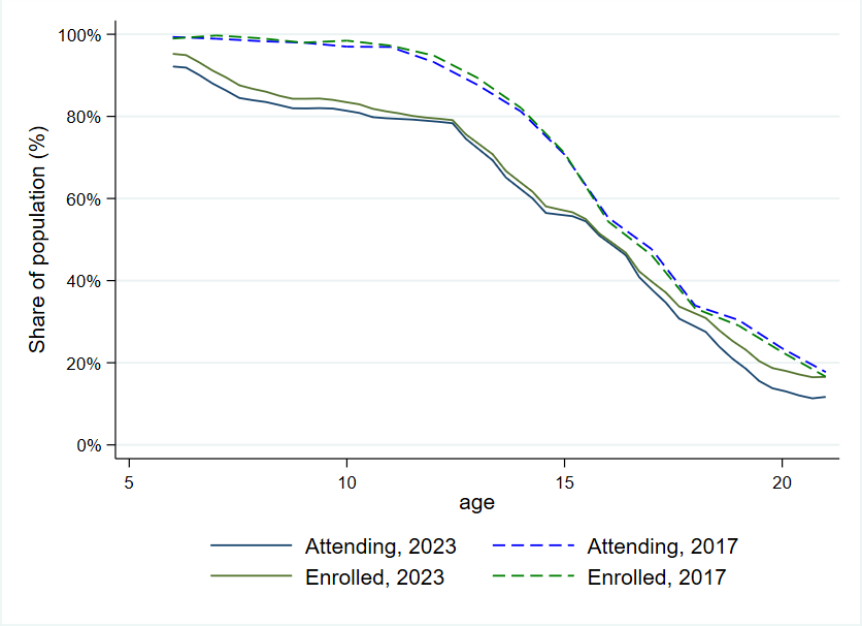
3. State of education access: levels, disparities, and changes

3.1 Changes in access at the aggregate national level

According to household survey data from MSPS 2023 and LCS 2017, the share of the population enrolled in educational institutions has declined substantially between 2017 and 2023. The proportion of the population aged 6–22 years enrolled in educational institutions is lower in 2023 than in 2017 across this age range (Figure 3.1). As a result, the share of the total enrolled population in this age group has declined from 69.2 percent in 2017 to 56.8 percent in 2023. Considering that the country was experiencing an upward trend in enrollment rates prior to 2017, the decline between 2017 and 2023 points to a crisis in access in the country. Figure 3.1 also shows that, as might be expected, the share of the population enrolled in educational institutions decreases progressively with age for both years.

There is little difference between the share of students enrolled and those attending educational institutions in both years, implying that there were very few students who enrolled in school but did not attend.[22] As is clear from Figure 3.1, the divergence between enrollment and attendance is more noticeable in 2023 at the lower and upper ends of the age distribution but is overall relatively small. More specifically, among the school-age population, only around 2 percent of the currently enrolled children are not attending school. Hence, the analyses in the rest of the paper will only use student enrollment as a measure of access.

Figure 3.1: Share of population enrolled or attending school by age, 2017 and 2023



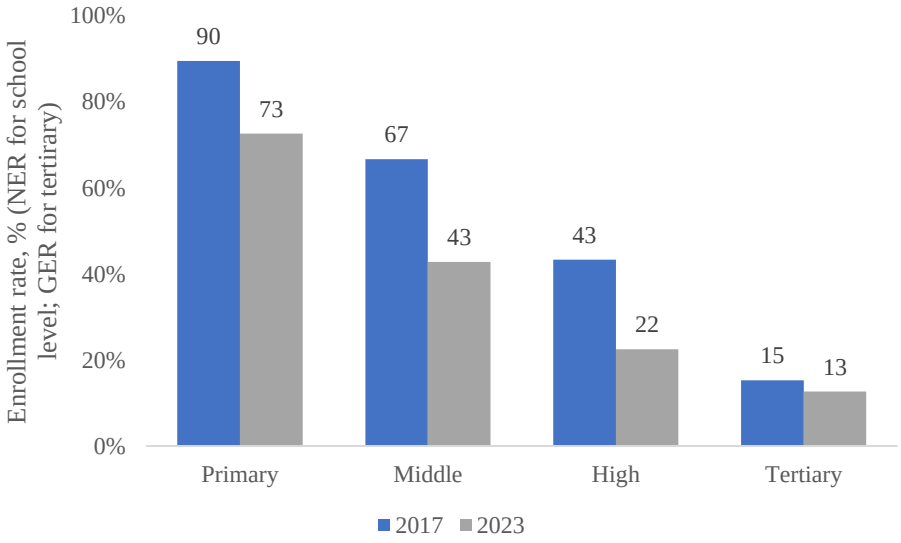
Source: Authors' calculations based on MLCS (2017) and MSPS (2023).

Disaggregating the findings by educational levels, it becomes apparent that NERs decreased across all levels of school education during this period, with the most significant decline occurring at the high school level. As shown in Figure 3.2, the NER—the share of children of the target age group enrolled

[22] The MLCS 2017 asks if the child is currently attending school and the MSPS 2023 asks if the child attended school in the past 4 months. It is possible that the true attendance rates in 2023 are lower than what have been observed due to the sensitive nature of the question (given the current political context in the post-coup period); however, the current attendance patterns are comparable to what was observed in 2017.

in a particular level of education—decreased by 17, 24 and 21 percentage points at the primary, middle and high school levels, respectively.[23] When expressed in percentage terms, it becomes evident that the decline in NER is progressively greater for higher levels of education, and ranges from a low of 19 percent for primary education to a high of 48 percent for high school education. The GER for tertiary education also dropped significantly during this period (by 2 percentage points or 17 percent) from an already low baseline value of 15 percent. The larger declines in enrollment rates for higher age groups and educational levels could be due to greater safety and security concerns among older children in the current post-coup context. Older children may feel more vulnerable in the current situation[24] and prefer to stay away from public schools for safety reasons. Additionally, some older children may also be making independent decisions to show their solidarity with anti-coup resistance groups by not attending public schools.

Figure 3.2: Enrollment rate by level of education, 2017-23



Source: Authors' calculations based on MLCS (2017) and MSPS (2023).

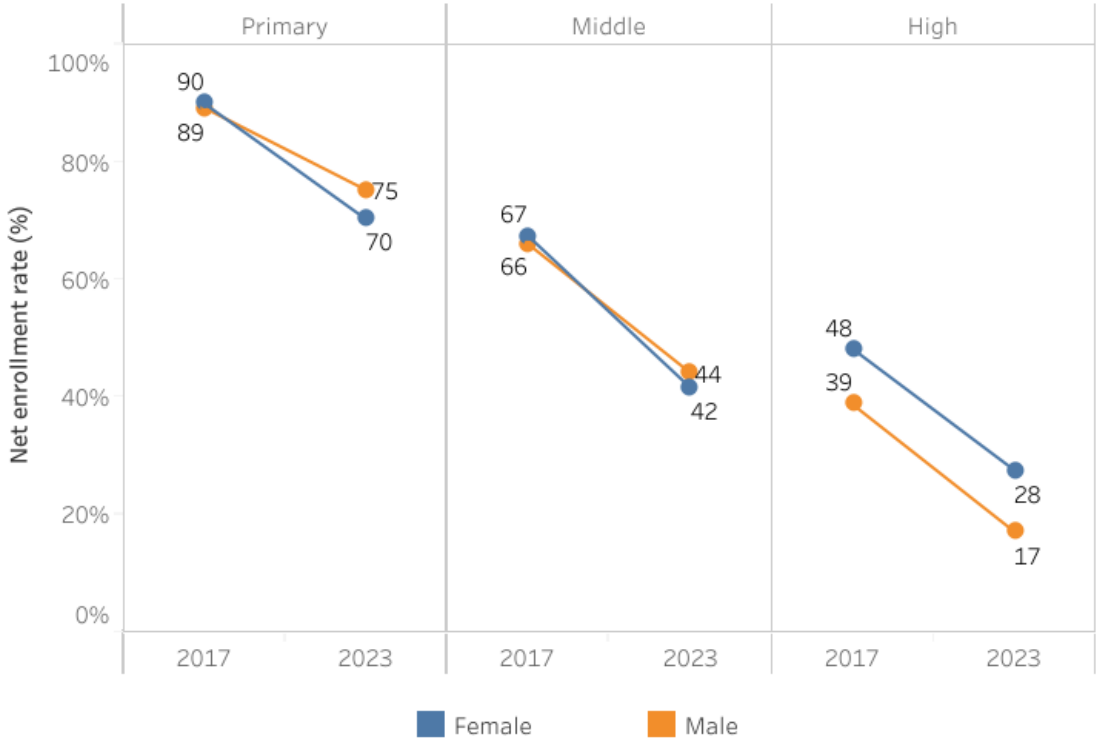
3.2 Disparities in access to school education

Disparities across key student and household characteristics

The gender gap in access is small at the primary and middle school levels but is significantly larger and in favor of females for high school education. As shown in Figure 3.3, the difference in NER between males and females in 2023 is relatively small at the primary and middle school levels—around 7 percent (5 percentage points) and 5 percent, respectively—and is in favor of males. This represents a small increase from 2017, where the NER gender gap was negligible (though females had marginally higher NERs). On the other hand, for high school education, the NER for females in 2023 is 65 percent (11 percentage points) higher than that for males, suggesting that the latter are more likely to drop out of the education system as they move up the grades beyond middle school. Furthermore, at the high school level, though there has been almost no change in the NER gender gap in terms of percentage point difference between 2017 and 2023, the gap has increased substantially in percentage terms from 23 percent to 65 percent.

[23] The target age groups for each level are as follows: primary (grades 1–5 for ages 6–10); middle (grades 6–9 for ages 11–14); and high (grades 10–12 for ages 15–17).
[24]When disturbances take place in schools, security forces are more likely to view older students as suspects, making them relatively more vulnerable than younger children to interrogation by authorities.

Figure 3.3: Primary, middle and high school NER by gender, 2017–23



Source: Authors' calculations based on MLCS (2017) and MSPS (2023).

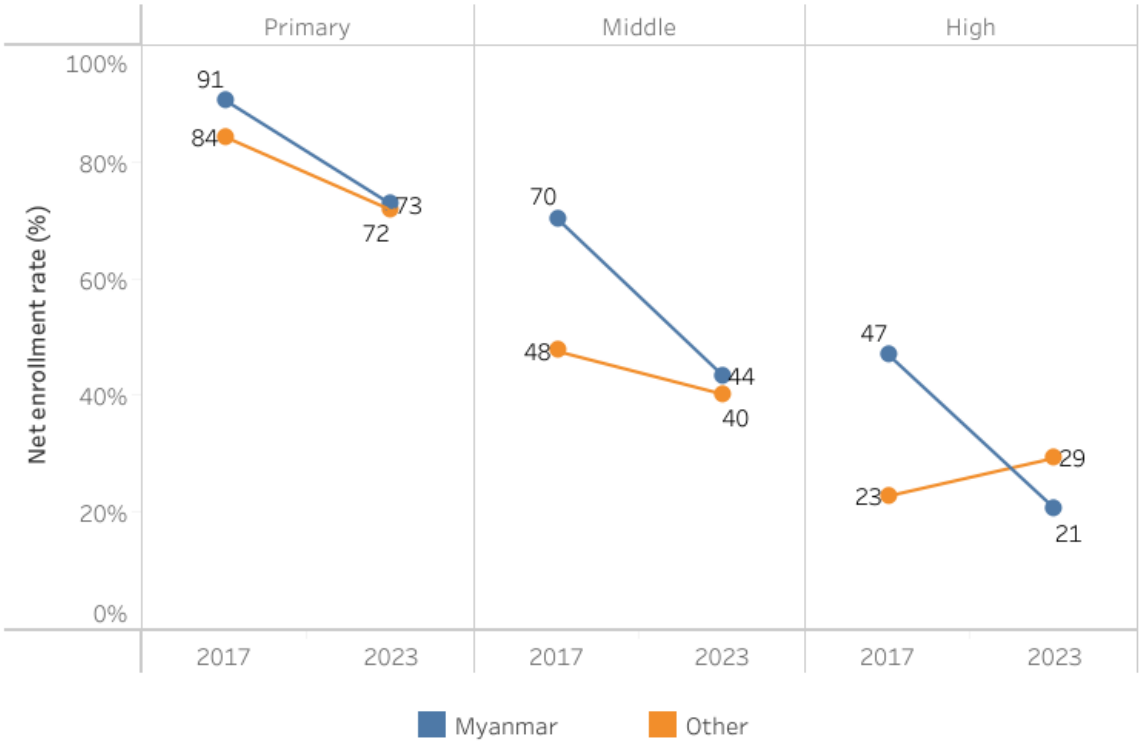
In the past, the Myanmar-speaking majority has had better access to school education than the non-Myanmar speaking population. There are no official statistics on the distribution of the national population by ethnicity or mother tongue in Myanmar.[25] However, data from the current phone-based household survey (MSPS 2023) indicate that approximately 80 percent of the national population is Myanmar speaking.[26] As Myanmar is the sole language of instruction in public schools throughout the country, it is likely that non-Myanmar speakers are at a disadvantage in terms of accessing schooling, learning what is taught, and remaining in school. The MLCS 2017 household survey data confirm that the NER for non-Myanmar speakers was significantly lower than that for Myanmar speakers for each level of school education in 2017 (Figure 3.4).[27] Furthermore the gap in NER between the two population groups was progressively larger for higher levels of education, ranging from 8 percent (7 percentage points) for primary education to 104 percent (24 percentage points) for high school education.

The disparity in NER between Myanmar speakers and non-Myanmar speakers declined substantially between 2017 and 2023, with non-Myanmar speakers actually outperforming Myanmar-speakers in terms of NER at the high school level. During this period, the NER for both

[25] As non-Myanmar speakers are typically from minority ethnic groups, differences between Myanmar and non-Myanmar speakers is correlated with the differences between the majority Bamar ethnic group and others.
[26] Myanmnar is divided into seven regions (Ayeyarwady, Bago, Magway, Mandalay, Sagaing, Tanintharyi, and Yangon) , seven states (Chin, Kachin, Kayah, Kayin, Mon, Rakhine, and Shan) and the Union Territory of Nay Pyi Daw. Myanmar speakers constitute over 90 percent of the population in each of the seven regions and Nay Pyi Daw (see table A3.1 in the annex). The minority ethnic communities/national races, who are mainly non-Myanmar speakers, are concentrated in the seven states.
[27] The MLCS 2017 survey does not include any direct question on mother tongue of the respondent. Hence, when analyzing the MLCS 2017 data, it is assumed that the language of the interview is the primary language spoken in the household.

groups decreased at the primary and middle school levels in line with the experience for the population as a whole. However, the decrease was greater for Myanmar speakers, resulting in an NER gap of only 1 percent for primary school education and 10 percent for middle school education. On the other hand, at the high school level, the NER for non-Myanmar speakers actually increased while the NER for Myanmar speakers decreased. As a result, the NER for non-Myanmar speakers in 2023 is 38 percent higher than that for Myanmar speakers. These results showing comparatively worse outcomes for Myanmar speakers suggests that, in the post-coup context, schooling disruptions in non-Myanmar speaking areas (where state presence was less even in 2017) may have been less than in the Myanmar-speaking areas where the Myanmar speaking majority resides.

Figure 3.4: Primary, middle, and high school NER by language spoken at home, 2017-23



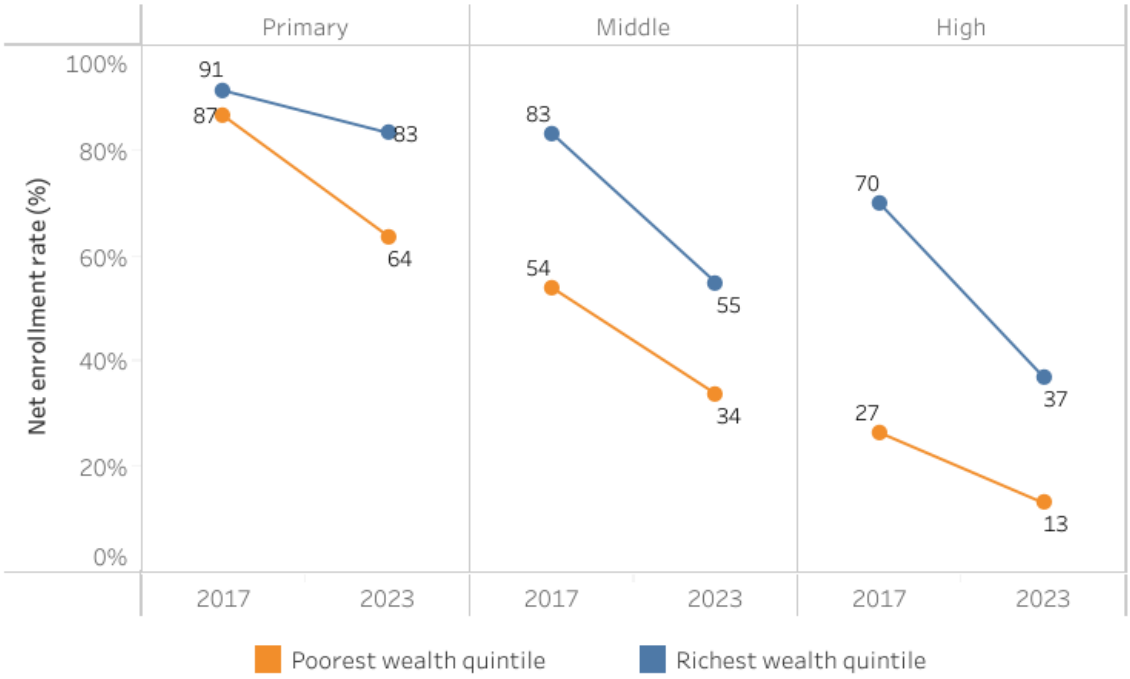
Source: Authors' calculations based on MLCS (2017) and MSPS (2023).

Consistent with findings from the global literature and past studies from Myanmar, the NERs in 2023 for children from richer income groups are higher than those for children from poorer groups. Figure 3.5 shows the NERs for children from the richest and poorest 20 percent (quintiles) of the households in the country. In 2023, the primary education NER for children from the richest quintile is 29 percent (19 percentage points) higher than the NER for the poorest quintile, and the gap between the two groups increases progressively for higher levels of education, reaching 185 percent at the high school level. This finding implies that financial constraints are a barrier to accessing education, especially at the higher levels, and that disproportionately larger shares of poorer children tend to drop out of the system in higher grades.

The disparity in access across income groups has increased between 2017 and 2023 at all levels of school education. The primary NER gap between children from the richest and poorest quintiles has increased sixfold from less than 5 percent (4 percentage points) in 2017 to almost 30 percent (19 percentage points) in 2023. While the NERs of the two groups have converged to some extent at the post-primary level during this period, the NER gaps have actually widened in percentage terms at both the middle school and high school levels—from 54 percent to 62 percent and from 159 percent to 185 percent, respectively.

Clearly, while financial constraints continue to be a barrier to accessing education, their effects have become more pronounced in the post COVID context even at the primary level where the enrollment gaps across income groups were relatively small in the pre-COVID years.

Figure 3.5: Primary, middle, and high school NER by wealth group, 2017–23

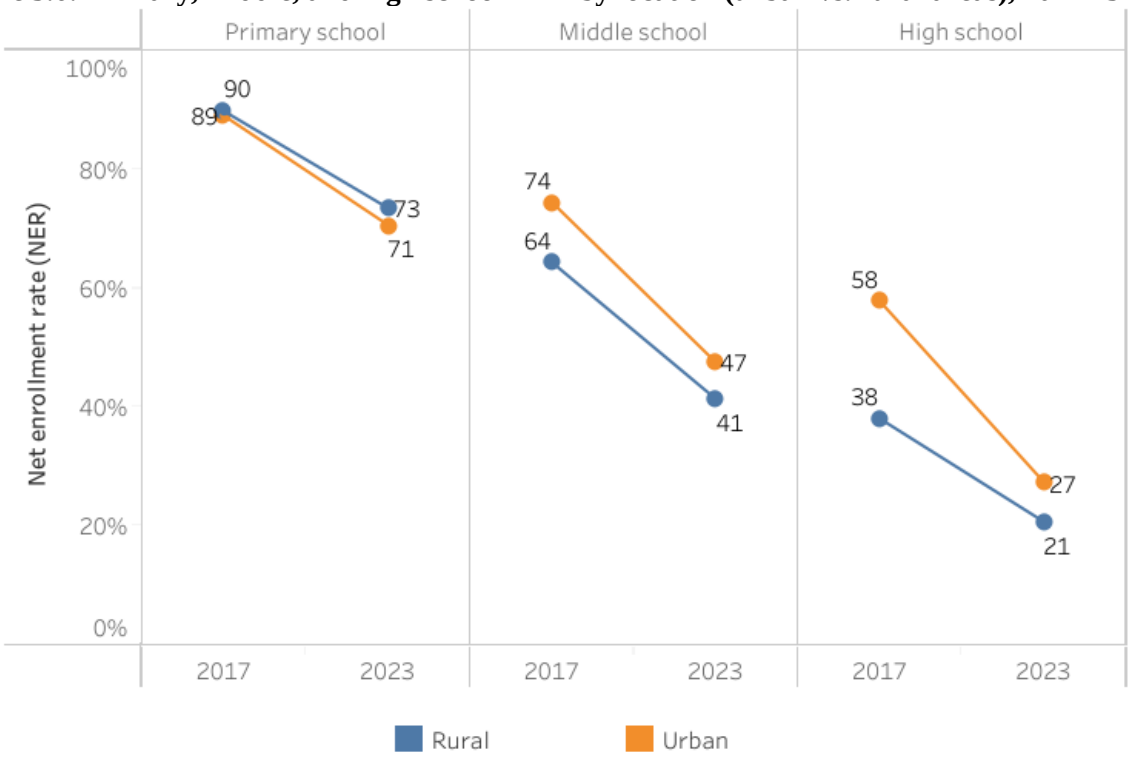


Source: Authors' calculations based on MLCS (2017) and MSPS (2023).

Disparities across locations

Children in urban areas have better access to middle and high school education compared to children in rural areas, but these rural urban gaps in access have decreased over time. As shown in Figure 3.6, while there is negligible difference in NER between urban and rural areas at the primary level, the urban-rural gap is quite substantial for middle and high school education. More specifically, the NER for urban areas exceeds the NER for rural areas in 2023 by 15 percent at the middle school level and by 29 percent at the high school level. Better access to education in urban areas compared to rural areas in 2023 is consistent with the pattern of access in 2017 and earlier years as well (Bhatta and Katwal 2022a). However, the urban-rural gaps in middle school and high school NERs have decreased since 2017, when they were 16 percent and 53 percent, respectively. This convergence in NERs is a result of a relatively larger decline in access in urban areas compared to rural areas, rather than a result of improved NERs for rural areas.

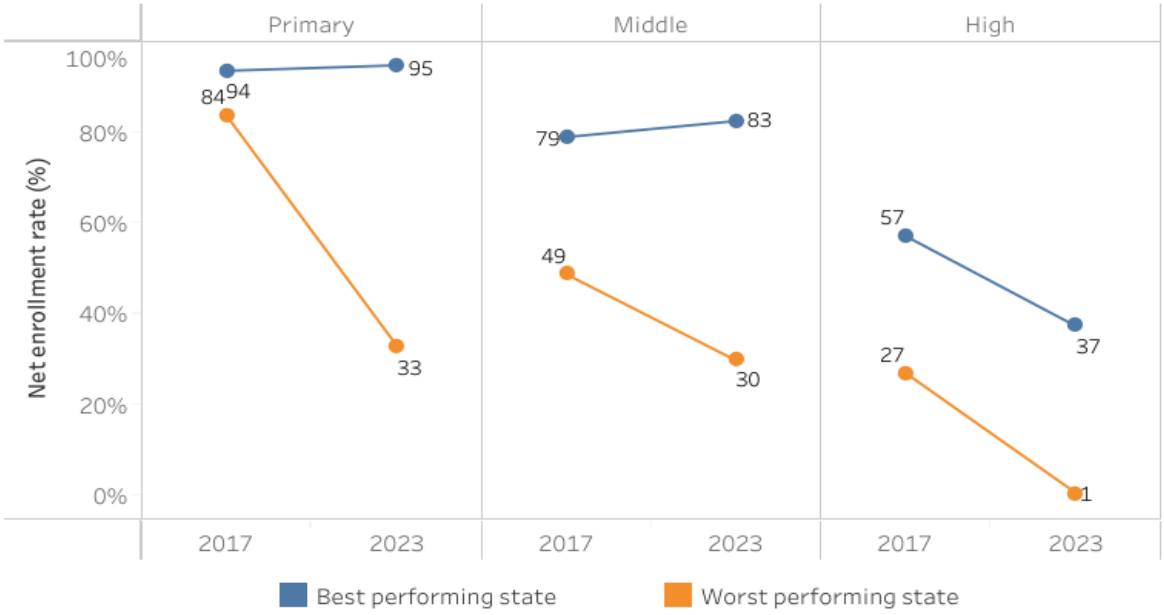
Figure 3.6: Primary, middle, and high school NER by location (urban vs. rural areas), 2017-23



Source: Authors' calculations based on MLCS (2017) and MSPS (2023).

There is a wide variation in access to school education across states and regions, and the disparity in access across these spatial units has increased at all levels between 2017 and 2023. As shown in Figure 3.7, a comparison of the NERs for the best (highest NER) and worst (lowest NER) performing states/regions in the respective years shows a clear divergence in education access at all three levels of school education during this period. The increase in disparity is particularly severe at the high school level where the NER gap has increased from 110 percent (30 percentage points) to over 3600 percent (37 percentage points). Furthermore, students in the worst performing state/region have almost no access to high school education in 2023. It is also relevant to note that, unlike at the high school level where the NER for both the best and worst performers has decreased substantially, the divergence in NERs at the primary and middle school levels is driven by improved access in the best performing state accompanied by reduced access in the worst performing state.

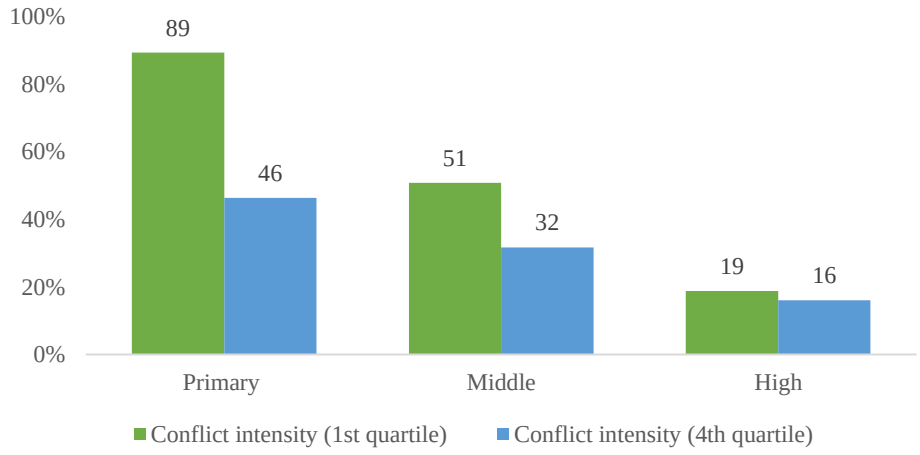
Figure 3.7: Primary, middle, and high school NER by best/worst performing states, 2017-23



Source: Authors' calculations based on MLCS (2017) and MSPS (2023).

NERs are significantly lower in high-conflict areas compared to low-conflict areas, especially at lower levels of education. In low-conflict areas,[28] the NER at the primary level is almost double that in high-conflict areas. Although the gap in NERs between high-conflict and low-conflict areas is smaller at the middle school level, it is still substantial, with a 659 percent difference favoring low conflict areas (Figure 3.8). The gap in the high school NER is also significant, with low-conflict areas having a 19 percent higher rate than high-conflict areas. These disparities underscore the urgent need for policies and interventions that ensure that education is accessible and available to all children, regardless of the security situation in their areas.

Figure 3.8: Primary, middle, and high school NER by conflict intensity (across townships), 2023



Source: Authors' calculations based on MSPS (2023) and ACLED (2023).

[28]High-conflict townships are those in the top 25 percent (or 4th quartile) when they are ranked based on the number of conflict incidents per person.

3.3 Children out of school: who are they and why are they not in school?

Approximately 28 percent of the 6–17-year-old children in the country are currently not enrolled school. In contrast, the overall share of OOSC in this age group in 2017 was only 21 percent, indicating that there was about 33 percent increase in the share of OOSC between these two years. This implies that the disruptions caused by COVID-19 and the coup in the Myanmar society have had a significant negative impact on schooling access.

OOSC are more prevalent in urban areas, and among poorer households and older age groups. In 2023, there is little difference between males and females in the prevalence of OOSC. However, compared to rural areas, urban areas have a significantly larger share of OOSC (75 percent versus 68 percent), and the prevalence of OOSC is greater among children from poorer households compared to those from richer households. For instance, while 42 percent of the children in the poorest quintile are out of school, the corresponding share for the richest quintile is only 24 percent. It is also relevant to note that the share of OOSC is progressively higher among older children and ranges from 18 percent for primary school aged children to 51 percent for high-school-age children.[29] This is not surprising since in most countries, more children tend to drop out of the education system as they progress to higher grades in school.

Compared to children who are enrolled in school in 2023, disproportionate shares of OOSC are of high school age, come from poorer families, and reside in rural areas and high-conflict townships. As shown in Table 3.1, among the OOSC, 46 percent are high school age children, 56 percent are from the poorest two quintiles, and 79 percent live in rural areas. In contrast, the corresponding figures for in-school children are 18 percent, 41 percent, and 72 percent, respectively, indicating that OOSC are more likely than their in-school counterparts to be older, less wealthy, and rural. Consistent with the high NER observed for the primary school level, the OOSC population includes a much smaller share of primary school-age children than the in-school population. Furthermore, children from high-conflict townships are significantly more likely to be out of school--38 percent of the OOSC are from townships with highest levels of conflict (top 25 percent in terms of per capita conflict incidents) while only 17 percent of children are from townships with the lowest per capita conflict incidents (bottom 25 percent).

Table 3.1: Profiles of OOSC and children (6–17-year-old) who are in school, 2023 (%)

	Children who are out of school	Children who are in school	All children
Gender			
Male	49	49	49
Female	51	51	51
Total	100	100	100
Age group			
Primary school age (6–10)	21	46	39
Middle school age (11–14)	33	36	35
High school age (15–17)	46	18	26
Total	100	100	100
Wealth quintile			
Poorest quintile	35	21	25
2nd quintile	21	20	21
3rd quintile	13	21	19

[29] See Table A3.2 in the annex for details.

	Children who are out of school	Children who are in school	All children
4th quintile	21	24	23
Richest quintile	10	14	13
Total	100	100	100
Location			
Rural	79	72	74
Urban	21	28	26
Total	100	100	100
Conflict intensity			
Bottom quartile	17	25	22
2nd quartile	21	32	29
3rd quartile	24	26	26
Top quartile	38	17	23
Total	100	100	100

Source: Authors' calculations based on MSPS (2023).
Note: Conflict intensity is measured as the log of per capita conflict incidents at the township level.

Regression analyses of the determinants of schooling status provide further evidence that age, language background, household economic status, and conflict exposure are significantly associated with the probability of a child's being out of school. The positive and statistically significant marginal effects for age in the regression results presented in Table 3.2 indicate that, on average, older children of both sexes are more likely to be out of school than younger children. The relationship between language, which can also be viewed as a proxy for ethnicity, and schooling status is particularly strong—the probability of being out of school for a child whose primary language spoken at home is non-Myanmar is around 11 percent lower than the probability that a Myanmar speaker is out of school. And the relationship is statistically significant for both males and females.

In the 6–17-year-old population as a whole, children from the richer wealth quintiles are less likely to be out of school than a child from the poorest wealth quintile, and the likelihood generally decreases progressively for each higher quintile. This relationship is, however, weaker for females than for males. On the other hand, for both males and females, there is a positive and significant relationship between conflict intensity in the child's township and the likelihood of the child's being out of school. Similarly, for females, the likelihood of being out of school is higher when there are more children in the household. Another household characteristic with a negative association with out-of-school status is the education of the household head: children from families where the household head has more years of education are less likely to be out of school. On the other hand, children from households headed by females have a higher probability of being out of school, though this relationship is significant only for females. Finally, these regression results suggest that, when the above explanatory variables are taken into account, location and gender are no longer significant determinants of schooling status.

Table 3.2: Determinants of schooling status (being out of school) among 6–17-year-old children

	Model 1 All	**Model 2 Male**	**Model 3 Female**
Child characteristics			
Child is female	-0.0102		0.0000
	(0.0233)		(.)
Age of child	0.0395***	0.0453***	0.0351***
	(0.0031)	(0.0036)	(0.0045)
Primary language at home is non-Myanmar	-0.1078***	-0.1202*	-0.1045**

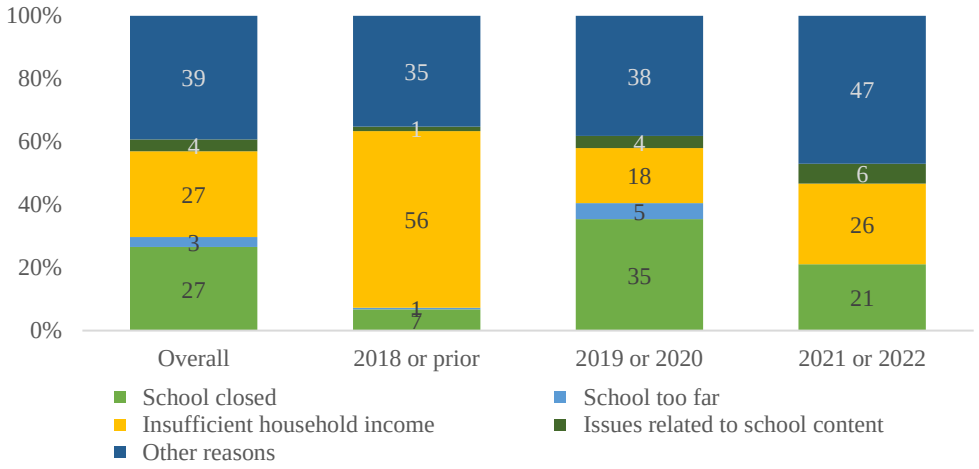
	(0.0381)	(0.0660)	(0.0504)
Household socioeconomic and demographic characteristics			
Wealth quintile (reference: Bottom quintile)			
2nd wealth quintile	-0.0811*	-0.0128	-0.0727
	(0.0449)	(0.0519)	(0.0469)
3rd Wealth quintile	-0.1768***	-0.1071**	-0.2087***
	(0.0353)	(0.0471)	(0.0405)
4th wealth quintile	-0.1253***	-0.0804*	-0.1257***
	(0.0368)	(0.0453)	(0.0407)
Top wealth quintile	-0.1728***	-0.1184**	-0.1965***
	(0.0395)	(0.0494)	(0.0487)
Is a female-headed household	0.0563*	0.1748***	-0.0405
	(0.0335)	(0.0411)	(0.0402)
Household head's years of education	-0.0119***	-0.0126***	-0.0118***
	(0.0026)	(0.0037)	(0.0034)
Number of children in household	0.0060	-0.0133	0.0218*
	(0.0097)	(0.0129)	(0.0121)
Location			
Urban	-0.0192	0.0010	-0.0405
	(0.0225)	(0.0314)	(0.0289)
Conflict intensity[a]	0.0431***	0.0315**	0.0474***
	(0.0112)	(0.0133)	(0.0139)
Number of obs.	5221	2600	2621
Pseudo R-squared	0.22	0.24	0.25

Source: Authors' calculations based on MSPS (2022-23)
Note: Robust standard errors presented in parentheses.
Regression model used is Probit (reported results are marginal effects); sample restricted to 6–17-year-old children; dependent variable is schooling status (1 if out-of-school and 0 otherwise); coefficients represent marginal effects; standard errors in parentheses.
a. Conflict intensity is measured as the log of per capita conflict incidents at the township level
*** p<0.01, ** p<0.05, * p<0.1.

School closures and financial hardships are the main reasons given by households for why children have dropped out of school. Based on the reasons cited by respondent households**,** it is estimated that 27 percent of the children who had dropped out of school[30] did so because of school closures and another 27 percent dropped out due to insufficient household income (Figure 3.9). However, when the children are grouped by the year they dropped out of school, it is seen that school closure is cited as the reason for only 7 percent of children who dropped out before 2018.[31] On the other hand, it is estimated that around 35 percent of the children who dropped out in 2019 or 2020 and 21 percent of those who dropped out the following years left the school system because of school closure. As extended school closures after 2019 are directly linked to the COVID pandemic and the military coup, these findings strongly suggest that the significant drop in student enrollments between 2017 and 2023 can be largely attributed to these two crises.

[30] Note: In this discussion, dropped out students include children who were enrolled in school in the past but did not enroll in school in the 12 months preceding the phone survey.
[31] For children who are not currently enrolled in school, the questionnaire asks the following: "What was the last year in which the child was enrolled in school?"

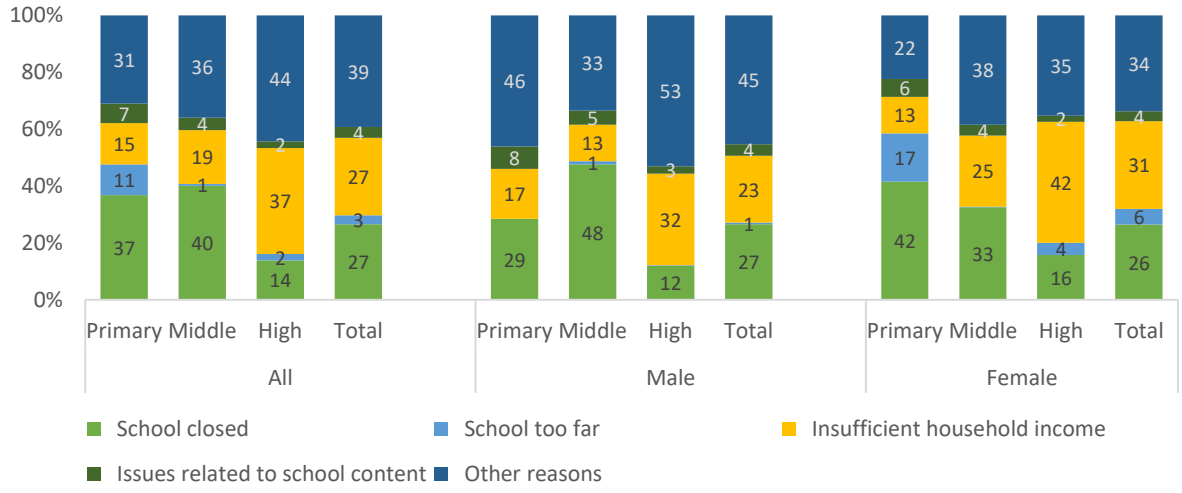
Figure 3.9: Reasons for dropping out of school across the years (6–17-year-old children)



Source: Authors' calculations based on MSPS (2023).
Note: Sample restricted to 6–17-year-old children. Students who dropped out of school are those children who were enrolled in school in the past but did not enroll in school in the past 12 months.

The reasons given for leaving school vary across age groups and by gender. While school closure is the most common reason given for dropping out of school among the primary and middle school age children, economic hardship is the main reason given for dropping out among the high school age children (Figure 3.10). Some important insights emerge when the results are disaggregated by gender. First, among primary school-age children, school closure and distance to school are cited as the reason for leaving school far more frequently for females than for males. Second, economic hardship is the stated reason for dropping out for large percentages of both male and female dropouts, and this factor becomes progressively more important at higher levels of education for females in particular. And third, there is a significantly larger percentage of males (compared to females) who appear to have dropped out of school because of reasons other than school closure, economic hardship, and distance to school, and these "other reasons" seem to be particularly important for high school-age males.

Figure 3.10: Reasons for dropping out of school by age group and gender, 2023



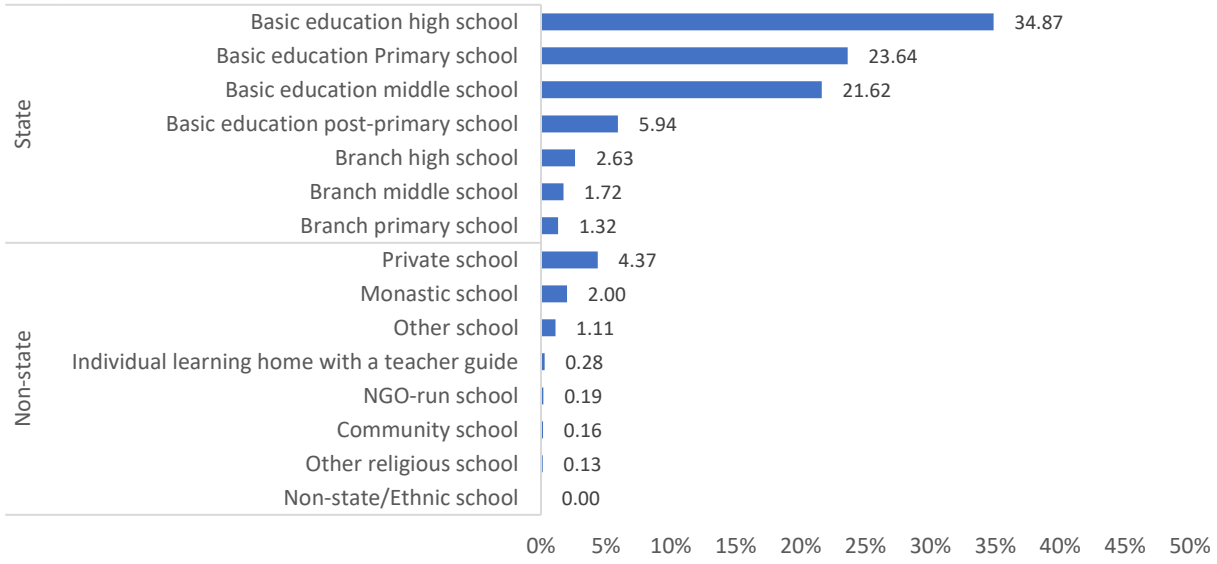
Source: Authors' calculations based on MSPS (2023).
Note: Sample restricted to 6–17-year-old children. Students who dropped out of school are those children who were enrolled in school in the past but did not enroll in school in the past 12 months.

4. Coping with disruptions in schooling

4.1 Patterns of student enrollment across school types

Myanmar has over 16 types of schools, but the overwhelming majority of students are enrolled in public or state basic education schools. As shown in Figure 4.1, state basic education schools—namely, basic education primary schools, basic education middle schools, and basic education high schools[32]—are the educational institutions where the vast majority of school students (80 percent) are enrolled in 2023. An additional 12 percent of enrolled students are enrolled in other types of state schools which include basic education branch schools and basic education post-primary schools. Hence, in total, approximately 92 percent of enrolled students are enrolled in state schools, and 8 percent are enrolled in non-state schools.[33] Clearly, despite the changed political context following the military coup, state schools continue to cater to the needs of most students who have remained in the school system.

Figure 4.1: Distribution of enrolled students (ages 6-17) by school type, 2023



Source: Authors' calculations based on MSPS (2023).

However, the distribution of enrolled children across state and non-state schools varies by education level, household wealth, and location, with the share of non-state school students being as high as 16 percent in the case of children from wealthiest households. Enrollment shares across state and non-state schools are slightly higher for males than for females. Similarly, the shares differ sharply by education level. In particular, the share of high school students enrolled in non-state schools in 2023 is 13 percent, which is significantly larger than the shares for primary (8 percent) and middle school (6 percent) (Table 4.1). This may be reflecting the limited business space available at the primary and middle school levels for non-state schools to operate, given the existence of an extensive nationwide network of state schools at these levels. Similarly, the share of enrolled students in non-state schools generally increases with household wealth, starting with 4 percent for the poorest quintile and increasing fourfold to 14 percent for

[32] Note: basic education high schools can also include middle and primary grades; similarly basic education middle schools can include primary grades as well.

[33] The category "other school" may include clandestinely runs schools such as the ones affiliated with the National Unity Government or schools run informally by former public school teachers. Only 0.6 percent of the students are enrolled in this category of schools.

the wealthiest quintile. This is, however, not surprising considering that more financial resources are required to send children to non-state schools compared to state schools. In terms of location, urban areas have a disproportionately larger share of students in non-state schools compared to rural areas.

Notwithstanding the limited presence and reach of non-state school across the country as a whole, there is evidence to suggest that there has been a small shift in schooling preferences toward non-state schools from state schools between 2017 and 2023. This shift is evident in the overall share of non-state schools in the nation, which increased by an impressive 60 percent between 2017 and 2023, albeit from a very low baseline of 5 percent. The increase in the share of students in non-state schools is particularly large at the high school level, among the wealthiest population quintile, and in urban areas. This shift is not observed among children from the poorest two household quintiles. While it is possible that the shift can be partly attributed to the changed preferences of families in the post-coup context, definitive statements on the reasons for the shift cannot be made based on the available data.

Table 4.1: Distribution of enrolled children (6–17) across state and non-state schools, 2017 and 2023 (%)

	2017			2023		
	State	**Non-state**	**Total**	**State**	**Non-state**	**Total**
All	95	5	100	92	8	100
Gender						
Male	95	5	100	91	9	100
Female	95	5	100	93	7	100
Age group						
Primary school age (6–10)	96	4	100	92	8	100
Middle school age (11–14)	96	4	100	94	6	100
High school age (15–17)	92	8	100	87	13	100
Wealth Quintile						
Poorest quintile	96	4	100	96	4	100
2nd quintile	96	4	100	96	4	100
3rd quintile	97	3	100	94	6	100
4th quintile	92	8	100	87	13	100
Richest quintile	90	10	100	84	16	100
Location						
Rural	96	4	100	94	6	100
Urban	91	9	100	85	15	100
Conflict intensity						
Bottom quartile	-	-	-	94	6	100
2nd quartile	-	-	-	87	13	100
3rd quartile	-	-	-	89	11	100
Top quartile	-	-	-	94	6	100

Source: Authors' calculations based on MLCS (2017) and MSPS (2023).
Note: a. Conflict intensity is measured as the log of per capita conflict incidents at the township level

A comparative analysis of the profiles of children enrolled in non-state schools versus state schools in 2023 further confirms that children in non-state schools are disproportionately from the higher wealth quintiles and are more concentrated at the high school level and in urban areas. As shown in Table 4.2, **c**ompared to children enrolled in state schools, non-state school children are somewhat more likely to be males than females. Among non-state school students, the share of enrolled students at the high school level (29 percent) is close to two times larger than the corresponding share for students enrolled in state schools. This could be a result of lower availability of state schools in higher grades as well as stronger

preference among parents to send their older children to non-state schools, where feasible, potentially due to both quality and safety concerns. While there is no consistent pattern in the shares of enrolled students across wealth groups for state schools, much larger shares of non-state school students come from households belonging to the wealthiest two quintiles, a finding consistent with the discussion in the preceding paragraph. Finally, with regard to the location of students, a significantly larger share (52 percent) of non-state school students tend to come from urban areas compared to children from state schools, perhaps reflecting the relatively limited presence and reach of non-state schools in rural areas. Similarly, a larger share of non-state school students is from higher conflict areas compared to students enrolled in state schools.

Table 4.2: Profile of students enrolled in state versus non-state schools, 2023 (%)

	State	Non-state	All children
Gender			
Male	48	54	49
Female	52	46	51
Total	100	100	100
Age group			
Primary school age (6–10)	44	44	45
Middle school age (11–14)	39	26	37
High school age (15–17	17	29	18
Total	100	100	100
Wealth quintile			
Poorest quintile	21	10	20
2nd quintile	22	9	21
3rd quintile	21	14	21
4th quintile	23	39	24
Richest quintile	13	27	14
Total	100	100	100
Location			
Rural	74	48	72
Urban	26	52	28
Total	100	100	100
Conflict intensity[a]			
Bottom quartile	26	17	25
2nd quartile	33	22	32
3rd quartile	24	40	26
Top quartile	16	21	16
Total	100	100	100

Source: Authors' calculations based on MSPS (2023).
Note: a. Conflict intensity is measured as the log of per capita conflict incidents at the township level.

Some students, especially in non-states schools, use online education as a resource for learning, but it appears to be utilized as a supplementary tool rather than as a replacement for traditional schooling. As shown in Table 4.3, a relatively small share of the children aged 6–17 years (4.1 percent) used online

learning during the 12 months preceding the survey.[34] Considering that the share of online education users is almost three times larger in urban areas than in rural areas and increases progressively for the richer quintiles, it is likely that both infrastructure limitations and financial constraints are key constraints hindering the majority of children from accessing online educational resources. There is also evidence that the uptake of online education is greater among students in non-state schools compared to students in state schools, a finding consistent with the higher share of online education users among wealthier students. A particularly interesting finding is that the share of online education users is two times greater among enrolled students than among children who are not enrolled in school, which suggests that online education is used more as a supplement to traditional schooling rather than as a substitute for it. Other notable findings are that the use of online education is slightly greater in high conflict areas, and among males and high-school aged children compared to low conflict areas, females and younger children, respectively.

Table 4.3: Distribution of children (ages 6 - 17) who used online education in the past 12 months, 2023 (%)

	Used online education (past 12 months)	Did not use online education (past 12 months)	Total
All	4.1	95.9	100.0
Enrollment status			
Not enrolled	2.3	97.7	100.0
Enrolled	4.7	95.3	100.0
School type			
State	3.3	96.7	100.0
Non-state	13.7	86.3	100.0
Gender			
Male	4.7	95.3	100.0
Female	3.5	96.5	100.0
Age group			
Primary school age (6–10)	3.9	96.1	100.0
Middle school age (11–14)	2.9	97.1	100.0
High school age (15–17)	5.8	94.2	100.0
Wealth quintile			
Poorest quintile	1.5	98.5	100.0
2nd quintile	1.6	98.4	100.0
3rd quintile	2.9	97.1	100.0
4th quintile	6.3	93.7	100.0
Richest quintile	10.4	89.6	100.0
Location			
Rural	2.7	97.3	100.0
Urban	8.0	92.0	100.0

[34] This share likely also includes children attending online schools established by the National Unity Government (NUG) with the support of former public school teachers and other interested citizens with experience in education in an attempt to provide an alternative to state schools, which are viewed by many as part of the public service delivery structure of the military regime. The NUG was formed as a government in exile by the Committee Representing Pyidaungsu Hluttaw (CRPH), a group of elected members of parliament ousted in the 2021 coup.

	Used online education (past 12 months)	Did not use online education (past 12 months)	Total
Conflict intensity[a]			
Bottom quartile	2.8	97.2	100.0
2nd quartile	3.7	96.3	100.0
3rd quartile	5.5	94.5	100.0
Top quartile	4.3	95.7	100.0

Source: Authors' calculations based on MSPS (2023).
Note: a. Conflict intensity is measured as the log of per capita conflict incidents at the township level.

Results from regression analyses support the above findings on state versus non-state schooling. Consistent with the findings above, model 1 in Table 4.4 shows that, compared to students belonging to the bottom wealth quintile and students from rural areas, respectively, the richest wealth quintile students and urban students are significantly more likely to enroll in non-state schools than in state schools, when other factors such as various student demographic characteristics, household characteristics, and household location are taken into account. Moreover, the probability of children being enrolled in non-state schools is progressively higher for higher income groups. Similarly, the household head's education level is also a significant positive determinant of enrollment in non-state schools.

As shown in Figure 4.1, however, many different types of schools fall under the non-state category, and each category is itself not homogenous. For example, while the cost of attending a private school (which is one type of non-state school) would be higher than the cost of attending a state school, some private schools are relatively inexpensive and are within the reach of poorer households as well (see Box 4.2). Similarly, while urban areas have proportionally much larger shares of non-state schools, rural area also have many non-state schools, some of which are relatively affordable (see Box 4.3 for an example of an affordable non-state school run by charitable organizations). The downside of the heterogeneity of non-state schools in terms of cost of attendance and management structure is that there is also likely to be a wider variation in quality across these schools compared to state schools.

Box 4.1: Online school established by a citizen's group

This online school was established in February 2022 by a citizen's group consisting of township level education board members, former public school teachers, and other concerned individuals with experience and interest in education. The school started its first program in April 2022 with 1,000 registered students in grades KG–11, and completed it in December 2022. Around 80 percent of students completed the course. In the school's second program, conducted between June 2022 and March 2023, 1,500 students registered but only 1000 completed the course as many of them returned to public schools. The school will start its third program in June 2023.

Student enrollment process, operating hours, and curricula: The school uses social media platforms as well as its network of teachers, former students, and other interested individuals to disseminate information about its programs. Enrollment is a straightforward process, requiring students to complete and submit an online Google Sheet form. The programs offered by the school are full-time, consisting of five hours of classes—three in the morning and two in the afternoon—held each day, five days a week. Additionally, special classes and extra-curricular activities are organized on weekends based on the needs of the students. The programs are based on the national curriculum and cover seven core compulsory subjects, as well as some electives. The school does not accept part-time students.

Teachers: The school had 100 teachers in the first program and 150 teachers in the second program. The majority of the teachers are former public school teachers, but former public servants and university students are also eligible to apply for teaching positions. When the school was established, the management team made arrangements for some online teacher training and capacity building, including basic information and communication technology (ICT) training. Moreover, the teachers have also had an opportunity to participate in some online trainings organized by the school, and it is expected that they will participate in similar training programs in the future as well.

Financing: While students are not required to pay tuition or other fees, donations are welcomed if students wish to contribute. As the school does not have the financial resources to provide subsidies or scholarships to students for internet access, it is difficult for poor students to take advantage of the programs offered by the school. The school's two main sources of funding are contributions from external organizations and student donations. Teachers at the school are mostly volunteers, and there is no fixed salary for them. However, the school covers their internet bills according to the number of periods they teach. Teachers who teach 1 to 6 periods per week receive MMK 30,000 per month, while those who teach more than 7 periods receive MMK 40,000 per month. The total expenses for the school amounts to approximately MMK 60,000,000 per program, which mainly covers the internet bills of teachers. Securing adequate and regular financing is one of the key challenges facing the school's management team.

Source: Different secondary sources including online news media

The most important finding from model 2 is that children enrolled in non-state schools are significantly more likely to use online education compared to children who are enrolled in state schools. This is fully consistent with the findings from the descriptive analysis discussed above. Similarly, urban children and children from the wealthiest and more educated families are more likely to use online education than children from rural areas and less wealthy or less educated households. In contrast, female children and children from families with larger number of children are less likely to use online education.

The regression findings also provide interesting insights regarding the factors associated with parental engagement in the children's learning. In the current context where schooling has been disrupted for an extended period and a large share of the school age children remain out of school, parental

engagement in their children's schooling can be assumed to be particularly important for the latter's learning. Findings from model 3 in Table 4.4 shed light on the child and household characteristics associated with greater family support in children's education. Female 6–17-year-old children are more likely to receive family support for their education than their male counterparts. On the other hand, the likelihood of family support decreases with the child's age, which may be a reflection of the greater independence exhibited by older children as well as knowledge limitations faced by parents when providing academic support to children in higher grades. The household head's years of education is also an important determinant of parental engagement in children's learning, with more educated parents engaging more in their children's studies.

However, the most important determinants of parental engagement in their children's learning are the children's enrollment status and household wealth. More specifically, children enrolled in schools and children from the wealthiest households are significantly more likely to receive family support and guidance on their education than children who are not enrolled and children from less wealthy households. The strong positive relationship between a child's enrollment status and family support suggests that parental engagement is a supplementary input to their children's regular schooling rather than a substitute for it.

Table 4.4: Determinants of enrollment in state versus non-state schools, access to online education, and family support (Probit models)

	Model 1 School type	**Model 2 Online education**	**Model 3 Family support**
Child characteristics			
Child is female	-0.0132	-0.0166**	0.0538**
	(0.0102)	(0.0074)	(0.0241)
Age of child	0.0017	0.0019	-0.0314***
	(0.0017)	(0.0012)	(0.0035)
Primary language at home is not Myanmar	0.0138	-0.0001	-0.0503
	(0.0197)	(0.0132)	(0.0514)
Child is enrolled in school	—	—	0.1279***
			(0.0323)
Child is enrolled in non-state school	—	0.0397***	—
		(0.0091)	
Household socioeconomic and demographic characteristics			
Wealth quintiles (reference: Bottom quintile)			
2nd wealth quintile	0.0376**	-0.0113	-0.0014
	(0.0165)	(0.0110)	(0.0438)
3rd wealth quintile	0.0365***	0.0017	0.0323
	(0.0116)	(0.0111)	(0.0408)
4th wealth quintile	0.0597***	0.0261	0.0503
	(0.0140)	(0.0160)	(0.0407)
Top wealth quintile	0.0763***	0.0406***	0.1477***
	(0.0203)	(0.0147)	(0.0510)
Is a female headed household	-0.0015	-0.0115	-0.0492
	(0.0123)	(0.0111)	(0.0342)
Household head's years of education	0.0034***	0.0045***	0.0120***
	(0.0013)	(0.0008)	(0.0027)
Number of children in household	-0.0042	-0.0125***	-0.0078
	(0.0047)	(0.0037)	(0.0109)
Household location			

	Model 1 School type	Model 2 Online education	Model 3 Family support
Urban	0.0675***	0.0194***	0.0355
	(0.0167)	(0.0068)	(0.0288)
Conflict intensity[a]	0.0053	0.0053	-0.0094
	(0.0059)	(0.0035)	(0.0114)
Number of observations	4899	4899	5015
Pseudo R-squared	0.12	0.18	0.13

Source: Authors' calculations based on MSPS (2023).
Notes: Dependent variables in the models are as follows. Model 1: school type = 1 if non-state school and 0 otherwise; Model 2: online education = 1 if child used online education in the past 12 months and 0 otherwise; Model 3: family support = 1 if average daily minutes of parental guidance is greater than the median and 0 otherwise.
a. Conflict intensity is the log of per capita conflict incidents at the township level. Robust standard errors in parentheses. All three models account for state/region fixed effects. *** p<0.01, ** p<0.05, * p<0.1.

Box 4.2: Private schools – costs and teaching learning experience

Urban private school in Yangon: Hsu Eaint San is a grade 2 student, currently attending a private school that is considered relatively expensive even for Yangon. Her parents enrolled her in this school for the 2022-23 academic year upon the strong recommendation of one of their friends. The registration process for Hsu Eaint was very simple. Her parents had to fill out a registration form and pay the necessary fees, which included a registration fee of MMK 500,000 plus a one-time enrollment fee of MMK 500,000. The monthly fee in this school is MMK 450,000, excluding additional fees for materials such as textbooks, and uniforms (transportation services are not provided by the school). The parents shared that the school uses the same national curriculum as public schools but supplements it with lessons from Oxford Phonics and some books from Cambridge University. Each class has only 18 students, and classes are taught face to face from 9:00 AM to 4:00 PM, Monday to Friday by a teacher supported by an assistant. The parents are, overall, quite satisfied with the quality of learning environment in the school and are particularly pleased that their daughter can communicate in English very well even though she is only in grade 2.

Rural private school in Shan (South): Khin Thida Aung is a six year old preschool student attending school for the first time in her life. Her parents had considered sending her to a public school. But they decided that it was not the best option in the current political context and enrolled her in her current school upon the recommendation of her father's former employer. As part of the registration process, they had to fill a form and also submit Khin Thida's birth certificate and photograph. While the school fee is MMK 1,020,000 per year (around MMK 85,000/month), fortunately, they only had to pay half of this fee since the other half was paid by a donor. In addition, the school charges MMK 8,500 for school uniforms. However, the school provides textbooks, notebooks, and two meals a day (usually consisting of bread in the morning and fruit in the evening) free of cost, making the school relatively affordable. The school hours are from 8:30 am to 3:00 pm, Monday through Friday, with an extra hour from 3 pm to 4 pm for teaching art and craft. There are 20 children in Khin Thida's class, and classes are held regularly. Children's progress and needs are discussed with parents every two months. Khin Thida's parents shared that, during these meetings, parents also openly discuss their children's activities and behavior as well as the food situation at home. In addition, a communication letter is sent by the school to parents every Friday (through a Facebook page created by the school), and they have to send a reply to the letter every Monday. This has encouraged the parents to stay more engaged with their children's education.

Source: Phone-based interviews conducted for the current study.

Box 4.3: Other non-state schools— costs and teaching learning experience

Rural ethnic school funded by a philanthropic organization in Shan (north): Lway Ei Nang Kham, currently a grade 10 student, was attending a public school until the pandemic caused a two-year interruption in her studies. She wanted to resume her schooling, but because of the political turmoil in the country, opted to join a boarding school managed by an ethnic education committee and funded by a philanthropic organization, upon the recommendation of family members. Some of her friends continue to attend public schools while others have joined non-state schools. Her current school required advance registration for new students (continuing students are automatically re-enrolled each year), which she completed on time. Students who cannot afford to pay can enroll without paying any registration fees. While students are welcome to pay monthly fees to support the school, this is not a requirement. They do, however, need to purchase their own school uniforms. The primary language used in the school is Myanmar, and classes are held from 9:00 am to 4:00 pm (Monday to Friday), so the school has one more teaching period than public schools. The last period during each school day is for learning the native ethnic language. Additionally, there is a 'Reading and Discussion' class every Saturday. As the school uses the new national curriculum, when exams are conducted, half of the questions focus on critical thinking and the other half include questions that focus more on memorizing what is in the textbooks. Overall, Lway Ei is quite happy with the teaching learning environment of the school. Her impression is that, in comparison to public schools, the number of students in this school has been increasing and could double in the next academic year.

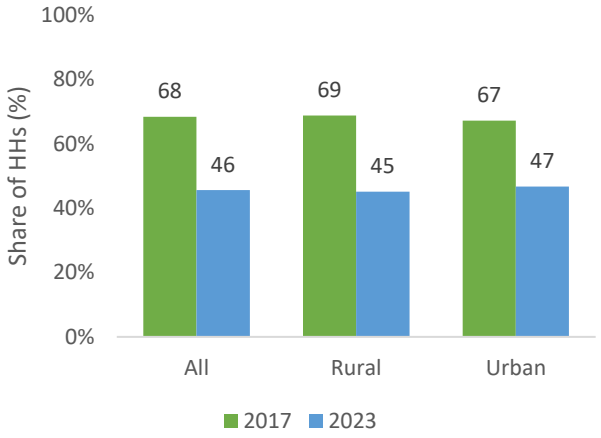
Community run school in Bago: Mr. Kyaw Ba is a teacher and operations team member of a community run school established by an education-focused network called Pyin-Nya-Eainmat formed in 2021 to cater to rural children who have little or no access to education. This group has opened schools in different parts of the country, and most of the teachers are former public school teachers. Kyaw Ba, has been teaching at the network's school in Bago since its inception. As shared by Kyaw Ba, students can enroll in the school through a straightforward registration process that requires the parents to fill a simple registration form at the school. The school does not charge fees of any kind. The main source of funding for this school, as well as for other schools run by this network, is donations from individuals and groups. For example, in 2022, the organization received substantial funding from a humanitarian organization in Republic of Korea. The school conducts classes face to face in two shifts five days a week—one during the day (6:30 am to 8:30am) and one in the evening (3:30 pm to 5:30pm). It uses the national curriculum used by most public schools, but with some modifications to the content. The teachers assess the students' progress regularly and share the findings with the operations team during monthly meetings. Additionally, there is an annual meeting where the operations team and teachers assess and discuss the progress of each student individually. The school operations team provides training to teachers on teaching techniques and presentation styles. There are also monthly meetings where teachers share their difficulties and challenges with the operations team and each other and receive advice and suggestions.

Source: Phone-based interviews conducted for the current study.

4.2 Patterns of household education expenditure

Currently, around 46 percent of the households have educational expenditures, which is a significant reduction from 2017. Between 2010 and 2017, there was little change in the share of households which spent some of their income on education. However, the share dropped dramatically by 68 percent (22 percentage points) between 2017 and 2023, implying that the children in many households may no longer be going to school (Figure 4.2). This finding is broadly consistent with the finding on the reduction in student enrollments between 2017 and 2023 discussed earlier. Disaggregating by location, it is seen that while the reduction in the share of households with educational expenditures is larger for rural areas compared to urban areas, the difference is relatively small.

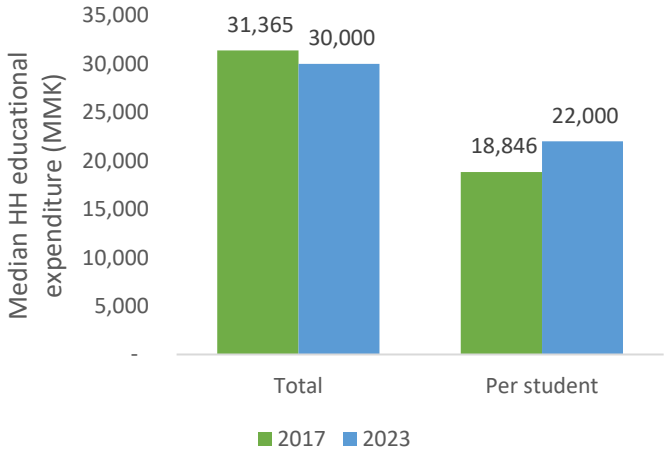
Figure 4.2: Share of households with education expenditure



Source: MLCS (2017) and MSPS (2023).
Note: Only households with educational expenditures are included.

The per student educational expenditures for households with educational expenditures increased substantially between 2017 and 2023. The median[35] educational expenditures and per student expenditures for households that have expenditure in 2023 were MMK (Myanmar Kyat) 30,000[36] and MMK 22,000, respectively (Figure 4.3). There was a small decrease (4 percent) in total educational expenditures for this restricted set of households between 2017 and 2023, likely reflecting the reduced income levels of households following the onset of COVID-19. On the other hand, the median educational expenditures per student for these households increased by 17 percent between 2017 and 2023 (or by 2.8 percent per year), indicating that education has become more expensive for each child going to school. However, this increase is relatively small when compared with the trend observed between 2010 and 2017, during which period the median household educational expenditure per student increased dramatically by 272 percent or by 45 percent per year (Bhatta and Katwal 2022a).

Figure 4.3: Median monthly household educational expenditure, 2017-23



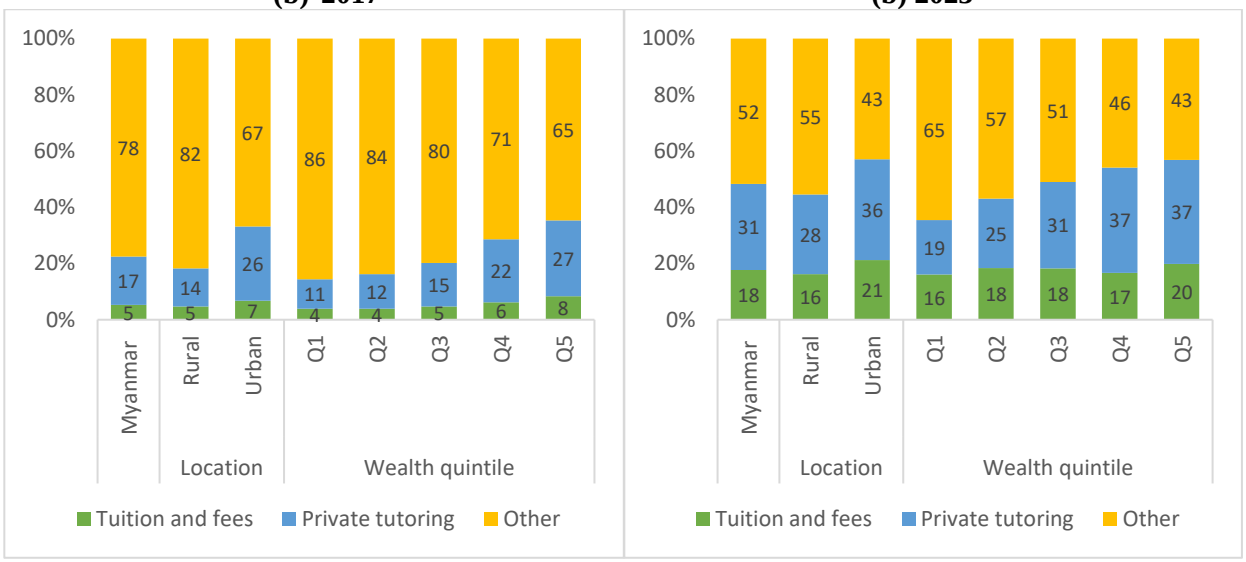
Source: Authors' calculations based on MLCS (2017) and MSPS (2023).
Note: Only household with educational expenditures are included.

[35] Median was used instead of mean to account for extreme values.
[36] As of the writing of this report the exchange rate of USD and MMR was, US$ 1 = MMK 2110.13.

The pattern of household educational expenditures has changed between 2017 and 2023, with a larger share of educational expenses allocated to tuition and fees. The share of educational expenditures devoted to tuition and fees increased from 5 percent in 2017 to 18 percent in 2023 in the country as whole (Figure 4.4). Considering that state schools do not charge tuition and may charge only nominal fees of other kinds, this large change implies that there has been a small shift in schooling preference towards non-state schools. The increase in the share of tuition and fees is greater in urban areas than in rural areas and is the highest for the richest quintile.

These findings are in line with the findings of Table 4.2 discussed earlier where a shift towards non-state schools was observed in terms of student enrollment, especially for urban areas and the richer population groups. In addition, the share of household education expenditure devoted to private tuition has also increased substantially from 5 percent in 2017 to 18 percent in 2023. This could be a result of a combination of higher cost of private tuition per child as well as an increased reliance on non-state schools by households to support their children's learning. Figure 4.4 shows that the share of private tutoring in household education expenditure has also increased significantly during this period in both urban and rural areas and for all wealth quintiles. While the MSPS 2023 data only provide information on the share of students who rely exclusively on private tutoring for their schooling,[37] the MLCS 2017 data show that over 50 percent of students enrolled in regular schools utilize private tutoring. Hence, as in 2017, it is likely that private tutoring is an important supplement to regular schooling in 2023 as well. Furthermore, the increase in the share of private tutoring in household expenditure suggests that families may be relying more on tutoring support to supplement what their children are learning in school in the post-COVID-19, post-coup period.

Figure 4.4: Shares of different types of households monthly educational expenditures, 2017–2023



Source: Authors' calculations based on MLCS (2017) and MSPS (2023).
Note: Only households with educational expenditures are included.

Observed changes in household educational expenditure levels in state versus non-state schools also indicate that household preferences may be shifting towards non-state education. Figure 4.5 categorizes households with educational expenditures into three types: (a) households with children enrolled in state schools only, (b) households with children attending non-state schools only, and (c)

[37] As shown in Figure 4.1, according to the MSPS 2023 data, around 0.28 percent of the 6–17-year-old school students currently use private tutoring to support their learning instead of attending regular schools.

households with some children going to state schools and other children going to non-state schools. It shows that, between 2017 and 2023, the share of households with only state school children [type (a)] decreased by 5 percentage points while the shares of types (b) and (c) increased, providing further evidence of a shift in household preference toward non-state education. Figure 4.6 shows that, while households with only state school children also experienced an increase in educational expenditures, the other two types of households experienced much larger increases. In particular, the median educational expenditure of households whose children went to only non-state schools, and both types of schools, jumped by 172 percent and 148 percent, respectively. Though these increases can be partly attributed to increasing per student cost of non-state education, it is likely that part of the increase is also due to a shift in enrollment from state to non-state schools.

Figure 4.5: Share of households by type of school where the children are enrolled

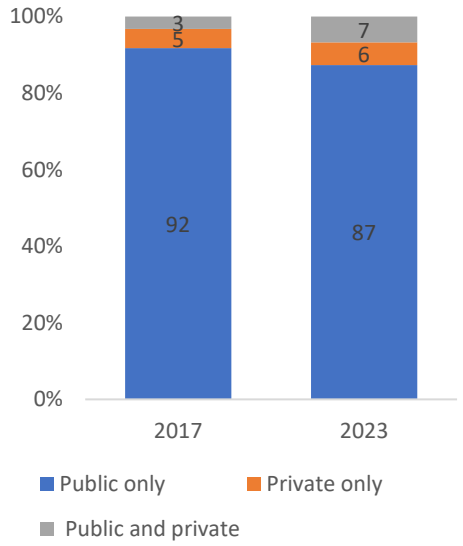
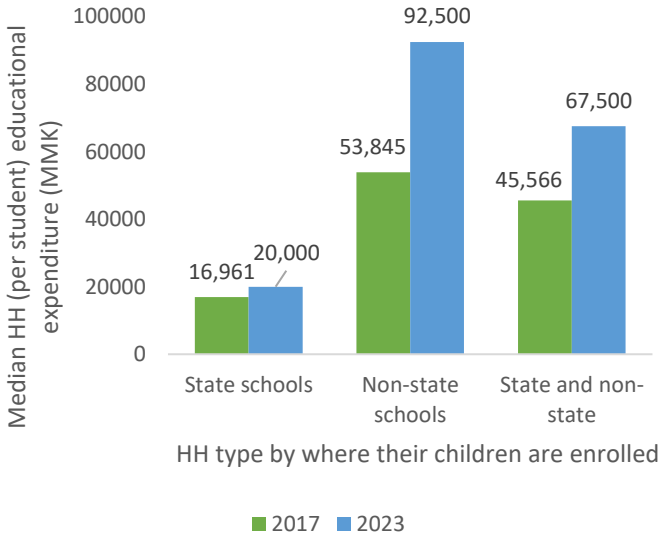


Figure 4.6: Median household educational expenditure (per student) by household type



Source: Authors' calculations based on MLCS (2017) and MSPS (2023).
Note: Only household with educational expenditures are included.

5. Disparities in learning outcomes

This section examines the disparities in the literacy and numeracy skills among school-age children in Myanmar. It investigates differences in literacy and numeracy proficiency outcomes between enrolled children and children who have dropped out of school, and across a number of key child and household characteristics. The disparity between enrolled and dropped-out children is of particular interest given that, as discussed in section 3, there has been a significant decrease in school enrollment rate between 2017 and 2023. It should be noted that in the assessed sample, all children who are currently out of school are children who were enrolled in school at some point. Hence, the terms "out of school children" and "dropped out children" are used interchangeably in this section.

This section first presents descriptive evidence on how average literacy and numeracy proficiency rates vary between enrolled and dropped out children, between males and females, and across two key socioeconomic household characteristics, namely household wealth and education of household head, that are often found to be significantly correlated with learning outcomes in the literature. It then presents regression results on the determinants of average proficiency rates in literacy and numeracy. Note that, given the limitations of the phone-based assessments described in section 2, literacy and numeracy proficiency rate estimates presented in this study are not readily comparable with learning outcome estimates from past assessments. However, these measures have good internal consistency (i.e., they can be compared across children within the dataset) and can be reliably used to analyze the relationship between child learning outcomes and their potential determinants.

5.1 Descriptive analysis

Literacy

To analyze disparities in literacy outcomes, children were first categorized as proficient or not proficient in each literacy subtask. The performance benchmarks used in this study for the different literacy subtasks are presented in Table 5.1. As shown, the criteria used to classify a child as proficient are relatively stringent, and particularly strict for the simplest subtask, namely, letter name knowledge.[38]

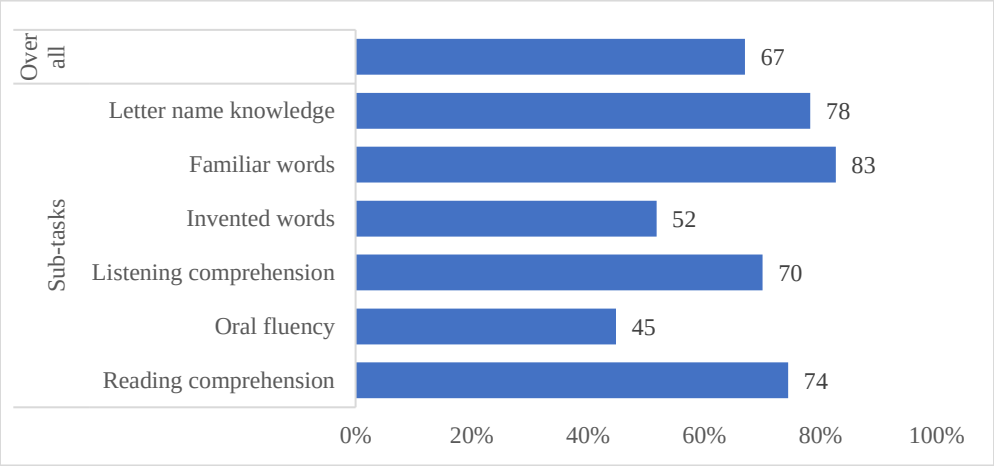
Table 5.1: Proficiency benchmarks for the different literacy subtasks

Subtask	Definition of proficient
a) Letter name knowledge	Correctly reads all 9 letters given in the test
b) Familiar word reading	Correctly reads at least 9 of the 10 words given
c) Invented word reading,	Correctly reads at least 9 of the 10 words given
d) Listening comprehension	Correctly answers at least 5 of the 6 questions given
e) Oral reading fluency	Correctly reads aloud at least 31 of the 34 words in the given sentences
f) Reading comprehension	Correctly answers at least 5 of the 6 questions given

Significant shares of the children assessed are observed to be proficient in the different literacy subtasks. Figure 5.1 summarizes the proficiency rates (shares of children who are proficient) of 7–14-year-old children in the various subtasks. Given that the proficiency benchmarks are specific to each subtask, the proficiency rates across subtasks cannot be directly compared except for subtasks (b) and (c) which use the same criteria. Nevertheless, two interesting insights can be gained from the estimates presented in this figure. First, it shows that the proficiency rates in most subtasks are relatively high, possibly due to the data limitations discussed in section 2. And second, most children have not achieved oral reading fluency, and almost half of the children struggle with unfamiliar or invented words.

[38] Radhakrishnan et al. (2022) also uses similar performance criteria for categorizing assessment participants.

Figure 5.1: Proficiency rates in the different subtasks for children aged 7-14 years



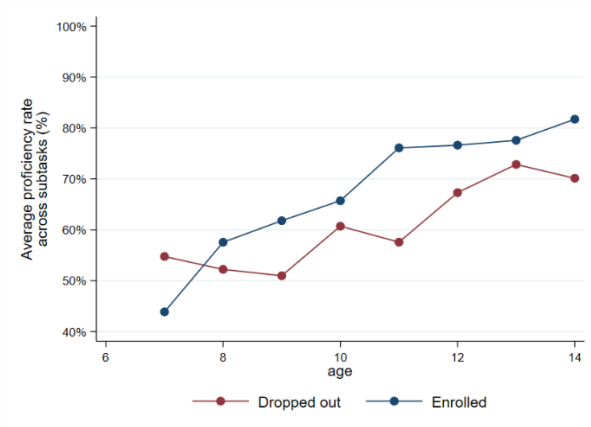
Source: Authors' calculations based on MSPS (2023).

In the analysis of disparities that follows, the key indicator used is the mean or average proficiency rate across subtasks, defined as the unweighted average of proficiency rates for all the subtasks included in this assessment. Note that this approach gives equal weights to all subtasks regardless of their level of difficulty. As shown in figure 5.1, the average proficiency rate across all the literacy subtasks is 67 percent.

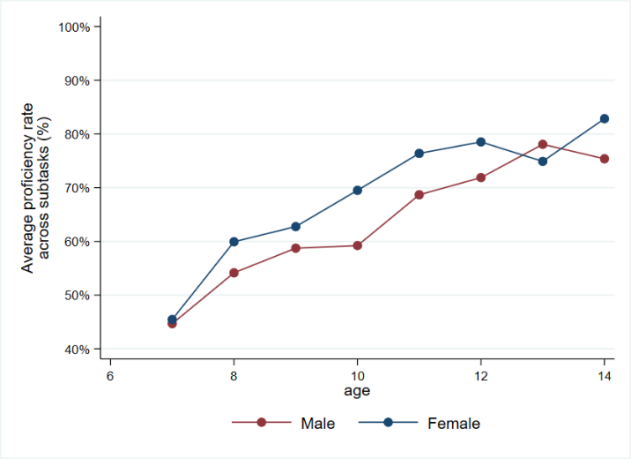
Enrolled children have a higher average proficiency rate across literacy subtasks than children who have dropped out. Figure 5.2a shows the average proficiency rates across literacy subtasks by enrollment status. Three observations stand out in this figure. First, children enrolled in school have higher average proficiency rates compared to children who have dropped out of school. Second, average proficiency rates increase with age for both enrolled children and dropped-out children. And third, average proficiency rates for the enrolled and dropped-out groups start diverging at early ages, suggesting that regular schooling is especially important for enhancing foundational literacy skills at early ages to prevent large gaps at later stages. Another important individual child characteristic across which average proficiency rates across literacy subtasks differ is gender. As shown in Figure 5.2b, females consistently outperform males for all ages except at age 13, and the gap appears to increase with age. The better performance of females is consistent with the findings of Bhatta and Katwal (2022b) for grade 5 students in Myanmar based on data from the Southeast Asian Primary Learning Metrics (SEA-PLM).

Figure 5.2: Average proficiency rates across literacy subtasks of 7–14-year-old children by enrollment status and gender

(a) Enrollment status



(b) Gender



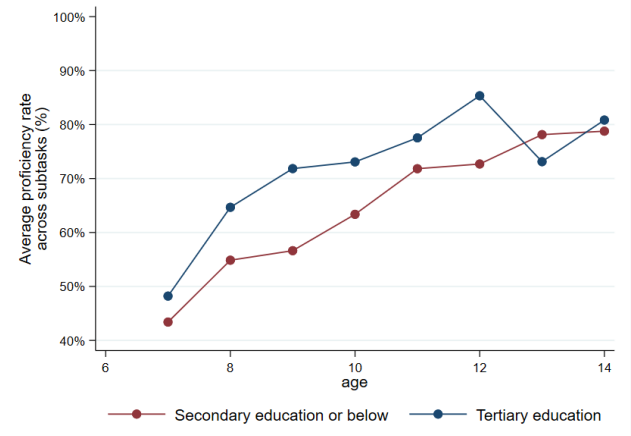
Source: Authors' calculations based on MSPS (2023).

Average proficiency rates across literacy subtasks are higher for children from wealthier and more educated households. As shown in Figure 5.3, the average proficiency rate for children from households in the richest wealth quintile is consistently higher than that for children from the poorest 20 percent of the households. Another notable observation is that, for children aged 11 and above, the disparity in literacy outcomes between these two groups generally increases with age, implying that the disadvantages faced by poorer children increase as they progress through middle school. Like children from wealthier households, children from households with heads who have post-secondary education have higher average performance rates than their peers from households with less educated heads (except for 13-year-olds). Furthermore, the average proficiency rate gap between these two groups of children is relatively large for all ages. However, the difference in average proficiency rates seems to diminish at the upper end of the age range, suggesting that the advantages of having a more educated household head decrease in higher grades.

Figure 5.3: Average proficiency rates across literacy subtasks of 7–14-year-old children by socio-economic status

(a) Household wealth

(b) Education of household head



Source: Authors' calculations based on MSPS (2023).

<u>Numeracy</u>

For each numeracy subtask, children who answered all the questions correctly are classified in this study as proficient. As summarized in Table 2.1 in section 2, the numeracy assessment included 9 subtasks. The numeracy tests given to the assessment participants covered different sets of subtasks based on their current or most recent grades in school. More specifically, children in the grades 1-3 group were given questions that covered subtasks 1–4, while children in the grades 4–6 group were given questions that covered subtasks 4–9. As for literacy, the average proficiency rate across subtasks for each child was computed as the unweighted average of the proficiency rates of the subtasks on which they were tested.

For each of the two grade groups, the numeracy proficiency rates are highest for the simplest subtasks and are generally lower for the more complex subtasks (Table 5.2). For example, children in the grades 1–3 group have the highest proficiency rate for number discrimination, the simplest task in the assessment, and progressively lower rates for addition and subtraction. Similarly simple addition and subtraction word problems and place value problems are the subtasks where children in the grades 4–6 group have the best performance. Complex subtraction and fractions seem to be particularly challenging for the grades 4–6 group. Another notable observation is that, in the subtask common to both grade groups, namely simple addition and subtraction word problem, the proficiency rate is greater for the grades 4–6 group, suggesting that more years of schooling do contribute positively to learning.

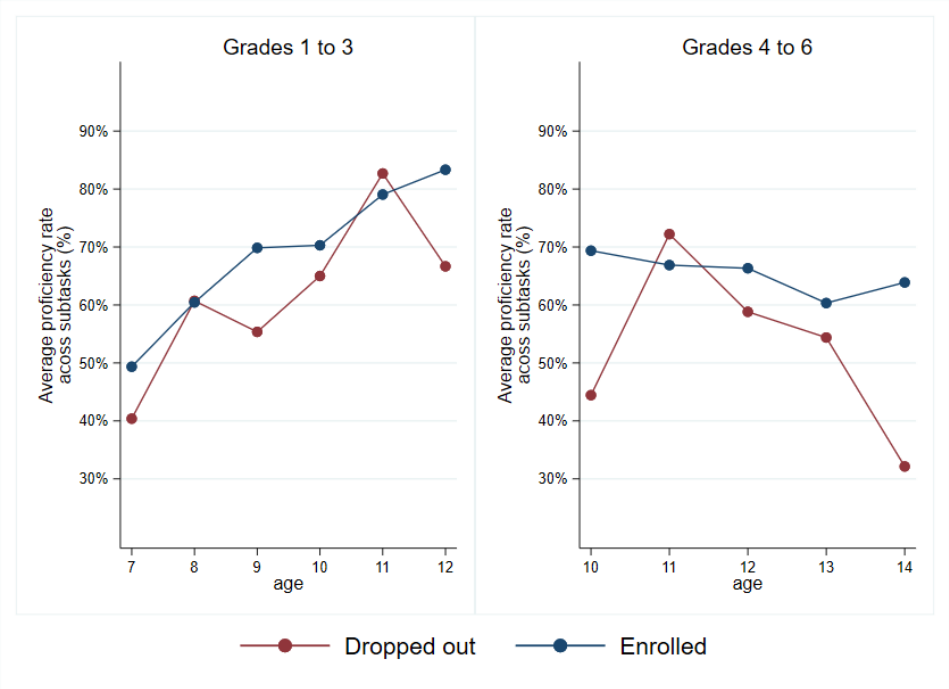
Table 5.2 Proficiency rate by numeracy subtask for each grade group

	Proficiency rate (%)	
Numeracy subtask	**Grades 1–3**	**Grades 4–6**
a. Number discrimination	86	
b. Simple addition	54	
c. Simple subtraction	50	
d. Word problem: simple addition and subtraction	62	78
e. Complex subtraction: larger numbers, and with borrowing		44
f. Decimal sum		68
g. Place value		79
h. Word problem: multiplication and division		61
i. Simple fractions		50

Source: Authors' calculations based on MSPS (2023).

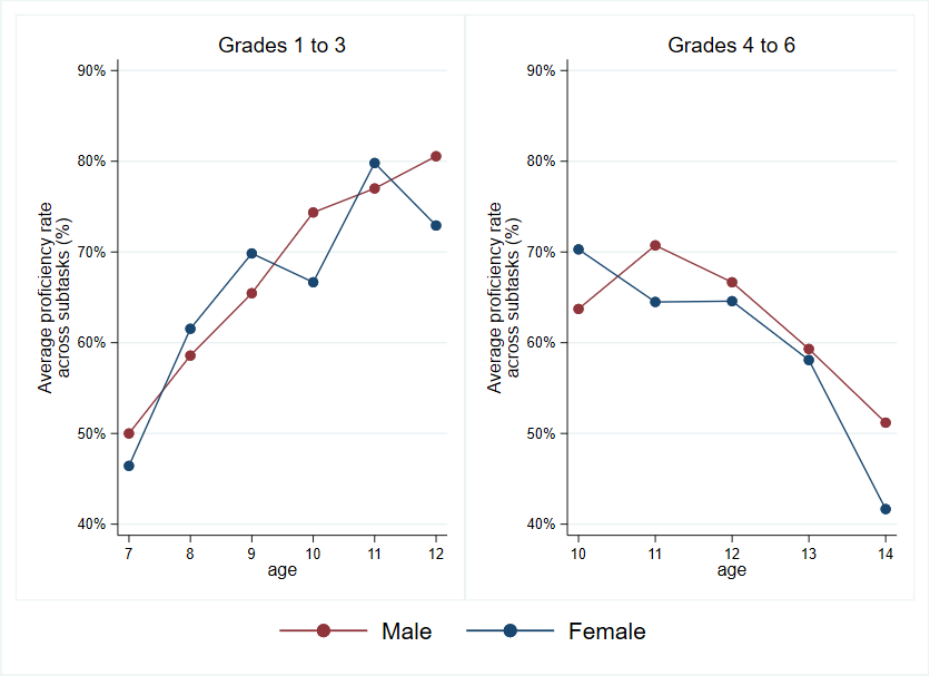
Similar to the findings for literacy, the average proficiency rate across subtasks in numeracy is higher for enrolled children compared to children who have dropped out of school. Figure 5.4 shows the average proficiency rates across subtasks for enrolled and dropped-out children for the two grade groups separately. It is notable that, within each grade group, there are many children outside the typical age rage for that grade group. For example, the grade 1-3 group includes children as young as 7 and as old as 12. The figure shows that enrolled children have higher average proficiency rates compared to those who have dropped out in both grade groups. Furthermore, while the gap in proficiency rates for the two groups of children is relatively small for the grades 1–3 group, it widens progressively with age for children in the grades 4–6 group. Together, these findings further highlight the importance of schooling for enhancing learning. The relationship between gender and numeracy outcomes, however, appears to be mixed (Figure 5.5). While there is little difference in average proficiency rates between males and females in the grades 1–3 group, the gap is largely in favor of males in the grades 4–6 group.

Figure 5.4: Average proficiency rates across numeracy subtasks of 7–14-year-old children by enrollment status



Source: Authors' calculations based on MSPS (2023).

Figure 5.5: Average proficiency rates across numeracy subtasks of 7–14-year-old children by gender



Source: Authors' calculations based on MSPS (2023).

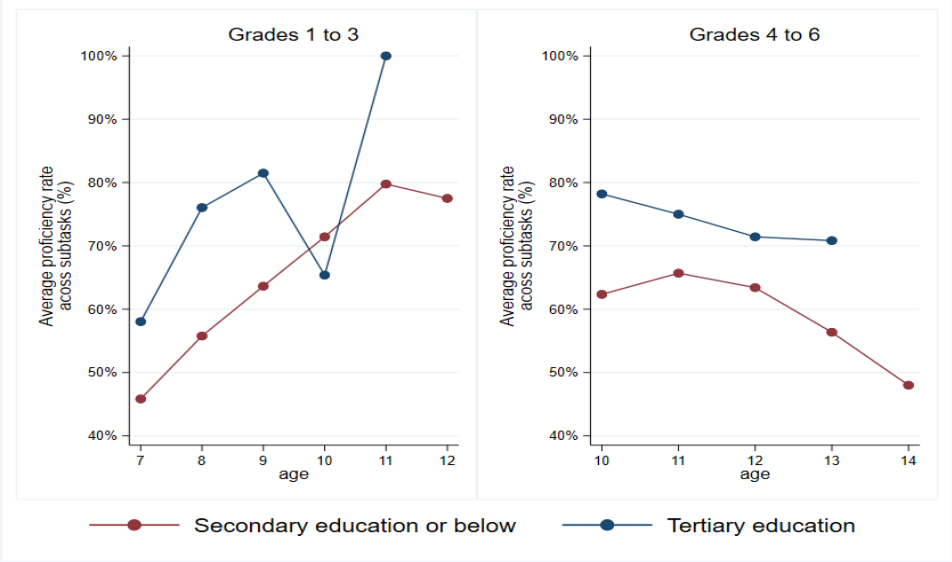
Consistent with the findings for literacy, children from wealthier households and households with more educated heads have higher average proficiency rates across numeracy subtasks. As shown in Figure 5.6, the average proficiency rate of children belonging to the richest household wealth quintile is

consistently higher than that of children from the poorest quintile for both grade groups. The gap in average proficiency rate between children from more educated and less educated household heads is also large and consistent across the grade groups (Figure 5.7). And the gap increases significantly at higher ages for both grades 1–3 and grades 4–6 group. These findings suggest that both household wealth and the education level of the household head are important potential determinants of numeracy learning outcomes.

Figure 5.6: Average proficiency rates across numeracy subtasks of 7–14-year-old children by household wealth

Source: Authors' calculations based on MSPS (2023).

Figure 5.7: Average proficiency rates across numeracy subtasks of 7–14-year-old children by household head's education



Source: Authors' calculations based on MSPS (2023).

5.2 Regression results: determinants of learning outcomes

The relationships between enrollment status and average proficiency rates across subtasks observed above do not account for different child, family and locational characteristics that may co-determine child learning outcomes. To control for these factors, proficiency rates in literacy and numeracy are regressed on an indicator for enrollment status, holding constant a number of child and household characteristics, including the ones discussed in section 5.1. The other characteristics included in the regression models include language spoken at home and an indicator for the interaction between age and enrollment status; a number of household socio-economic attributes (household wealth, gender of the household head, education level of household head, and number of children in household);alternative forms of educational services or support accessed by the child (non-state schooling, online schooling, and family support at home); and household location (urban vs. rural, and state/region). The results of this regression analysis are presented in Table 5.2.

The regression results demonstrate the robustness of the negative relationship between dropping out of school and average proficiency rate, even when considering other potential determinants of learning outcomes. Specifically, the analysis reveals a negative association between children's enrollment status and average proficiency rate across subtasks. Furthermore, it confirms that this negative association strengthens as children progress in age. In other words, enrolled children outperform their peers who have dropped out, especially among older age groups, with the impact being particularly notable in numeracy. Similarly, in line with the descriptive evidence discussed above, it shows that girls have better performance in literacy compared to boys. However, gender does not exhibit a significant association with average proficiency rate across subtasks in numeracy.

Interestingly, the alternative forms of educational services or support discussed in section 4 do not have a significant association with either literacy or numeracy proficiency. This finding suggests that the effect of these factors on educational performance may be limited or influenced by other intervening variables not captured in the analysis. Another interesting finding is that there is no evidence of a significant difference in proficiency rates between Myanmar speakers and non-Myanmar speakers. This is surprising considering that analyses of pre-COVID-19 learning outcomes based on data from the Southeast Asian Primary Learning Matrix (SEA-PLM) show significantly higher learning outcomes for Myanmar speakers in mathematics and reading (see Bhatta and Katwal, 2022b).

Several household attributes, including household economic status and gender and educational background of the household head, are strongly linked to children's proficiency in both literacy and numeracy subtasks. Notably, household wealth shows a positive correlation with average proficiency rate, which remains statistically significant for both numeracy and literacy even when considering alternative models. Similarly, the number of years of schooling completed by the household head emerges as a positive determinant of children's proficiency in both literacy and numeracy. Conversely, children from female-headed households consistently exhibit lower overall proficiency rates compared to their counterparts from male-headed households in all four models. The number of children in the household is negatively associated with average proficiency rates in both literacy and numeracy; however, the relationship is only statistically significant for numeracy.

Table 5.3: Determinants of average proficiency rates across subtasks for literacy and numeracy for 7–14-year-old children

	Literacy		Numeracy	
	Model 1	Model 2	Model 3	Model 4
Child characteristics				
Dropped out of school	-0.0691**	0.1202	-0.0770***	0.2815**
	(0.0268)	(0.1391)	(0.0229)	(0.1184)
Age * Dropped out of school		-0.0167		-0.0316***
		(0.0120)		(0.0102)
Age	0.0403***	0.0423***	0.0329***	0.0367***
	(0.0063)	(0.0065)	(0.0054)	(0.0055)
Is female	0.0504***	0.0502***	-0.0059	-0.0062
	(0.0158)	(0.0158)	(0.0135)	(0.0134)
Speaks non-Myanmar at home	0.0024	0.0023	0.0051	0.0047
	(0.0311)	(0.0311)	(0.0266)	(0.0265)
Alternative forms of educational services/support				
Attends non-state school	-0.0269	-0.0302	-0.0375	-0.0437*
	(0.0274)	(0.0275)	(0.0235)	(0.0234)
Used online education	-0.0143	-0.0132	0.0131	0.0151
	(0.0286)	(0.0286)	(0.0244)	(0.0243)
Received family education support	-0.0036	-0.0038	0.0072	0.0067
	(0.0081)	(0.0081)	(0.0069)	(0.0069)
Household characteristics				
Wealth Index	0.0124**	0.0127**	0.0144***	0.0151***
	(0.0055)	(0.0055)	(0.0047)	(0.0047)
Is female headed household	-0.0585**	-0.0573**	-0.0450**	-0.0428**
	(0.0239)	(0.0239)	(0.0204)	(0.0204)
Household head's years of education	0.0078***	0.0078***	0.0056***	0.0055***
	(0.0018)	(0.0018)	(0.0016)	(0.0016)
Number of children in household	-0.0039	-0.0044	-0.0152**	-0.0162**
	(0.0082)	(0.0082)	(0.0070)	(0.0070)
Location: Urban	-0.0048	-0.0063	0.0129	0.0099
	(0.0182)	(0.0182)	(0.0155)	(0.0155)
Number of observations	1024	1024	1024	1024
Adjusted R-squared	0.21	0.21	0.16	0.17

Source: Authors' calculations based on MSPS (2023).

Note: Standard errors in parentheses. All three models are Ordinary Least Squares models, and control for state/region fixed effects and grade group (i.e. grades 1-3, grades 4-6, and higher grades). Dependent variable is average proficiency rate.

*** p<0.01, ** p<0.05, * p<0.1.

6. Conclusions

This report has analyzed the state of education access and disparities in learning outcomes as well as the shifts in schooling choices taking place in Myanmar in the post-COVID-19, post-coup context. Utilizing phone-based household survey data collected between November 2022 and March 2023, and face-to-face household survey data from 2017, it has attempted to present a comprehensive picture of current enrollment levels and disparities in enrollment rates, and how they have changed between the pre-COVID period and today. In the context of these changes, the report has also explored whether there has been a shift in schooling choices towards non-state education by analyzing changes in enrollment and expenditure patterns in recent years.

To understand the disparities in learning, the study has utilized literacy and numeracy learning outcomes data collected through a phone-based learning assessment administered to children in their households in March/April 2023 specifically for this study. As part of this exploration, it has also attempted to investigate the relationship between disruptions caused by COVID-19 and the coup and learning outcomes by looking at whether children who dropped out of school have lower proficiency rates in literacy and numeracy compared to their peers in enrolled in school. As explained in section 2, because of potential selection bias and other data limitations as well as differences in the definition of proficiency used, the literacy and numeracy proficiency rates from this study cannot be compared with estimates of learning outcomes from other studies. On the other hand, the richness of information on individual and household characteristics available in the dataset has made it possible to investigate how learning outcomes are related to the socioeconomic characteristics of the households to which the tested children belong.

6.1 Summary of key findings

Current state of access

The analyses of the MSPS 2013 and MLCS 2017 data presented in this report clearly show that the share of the school age population enrolled in school has declined significantly after the onset of COVID-19. Furthermore, the reduction in enrollment has occurred for all ages and education levels. This is in contrast to the experience of many other countries Southeast and South Asian countries where enrollments largely recovered after COVID-19 subsided and schools reopened.

There are significant disparities in access across students from different income groups at all levels of education and a significant gender gap exists in favor of females at the high school level. Not only are the NERs for children from richer income groups at the high school level higher than those for children from poorer groups, but the gap in access between children from the richest and poorest wealth quintiles has also widened between 2017 and 2023. Moreover, the gender gap in access at the high school level has also increased between these two years.

However, the disparity in NER between Myanmar speakers and non-Myanmar speakers has declined at all levels of education. While the NERs of Myanmar speakers were significantly higher than those of non-Myanmar speakers at all levels of school education in 2017, the NER gaps have all but disappeared in 2023. In the case of high school education, the NER for non-Myanmar speakers has actually increased and surpassed the NER of Myanmar speakers**.**

A disproportionately high share of OOSC reside in townships with high levels of conflict intensity, and there are also other notable disparities in access to education across different geographical areas. While gaps in access across urban and rural areas have declined between 2017 and 2022, children in urban

areas continue to have better access to middle and high school education compared to children in rural areas. Furthermore, enrollment rates vary significantly across states and regions, and the gap between the best and worst performing states/regions has grown substantially at all levels of education.

The reduction in enrollment is reflected in a substantial increase in the percentage of OOSC in the country since 2017. Currently, approximately 28 percent of the 6–17-year-old children in the country are out of school. Regression analyses of the determinants of schooling status indicate that older children, poorer children, Myanmar speakers, and children from female headed households and households with less educated household heads are more likely to be out of school compared to other children. Households whose children have dropped out of school cite school closures and financial hardships as the main reasons for their children no longer attending school, both of which are factors associated with disruptions caused by COVID-19 and the coup.

Coping with disruptions in schooling

Around 92 percent of the school students in the country are currently enrolled in state schools. These include 80 percent enrolled in basic education schools and 12 percent enrolled in other types of state schools. Hence the overall share of students enrolled in non-state schools is only 8 percent.

However, this share of 8 percent in 2023 represents a 60 percent increase in the percentage of students enrolled in non-state schools compared to 2017, indicating that there has been a small but notable shift in schooling choices toward non-state schools. The shift is particularly prominent at the high school level, where the share of non-state school students has increased from 8 to 13 percent. Similarly, there have been large increases in the percentages of non-state school students among the wealthiest population quintile, and in urban areas. Supporting these findings, regression results show that the likelihood of attending non-state schools is higher among urban students and among students belonging to the richest wealth quintile.

The shift toward non-state schooling is also reflected in the changed pattern of household educational expenditures between 2017 and 2023. More specifically, the share of educational expenses allocated to tuition and fees by households increased from 5 percent to 18 percent during this period. This increase also implies a shift towards non-state schooling since state schools do not charge tuition and usually charge only nominal fees of other kinds. This change in the pattern of household educational expenditures is more prominent in urban areas than in rural areas, and for the richest wealth quintile**.**

Less than 5 percent of the school-age children use online education as a resource for learning, and online resources appear to be utilized to supplement rather than replace traditional schooling. The share of online education users is disproportionately higher among children enrolled in school compared to non-enrolled children. Regression results also show that the likelihood of using online education is greater for enrolled students. These findings suggest that online education is used more as a supplementary tool to support the learning of school students rather than as a replacement for traditional schooling. Online education use is more prevalent among children from urban areas, wealthier households, and non-state schools.

Parental engagement in their children's learning is also a supplementary input to the children's regular schooling. This is reflected in regression results which show that family support is significantly higher among children enrolled in school compared to non-enrolled children. The regression findings also indicate that children in households where the head is more educated receive more support from their families in their studies.

Disparities in learning outcomes

The analysis consistently demonstrates that older children outperform their younger counterparts in both literacy and numeracy. Descriptive evidence shows a positive association between learning outcomes and children's age. This positive relationship between age and literacy outcomes is confirmed by regression analyses that control for different individual, household and locational factors that could potentially determine average proficiency rates. The regression models also show that age is positively associated with numeracy outcomes when the other potential determinants are taken into account. These findings underscore the notion that as children progress through their educational journey, they tend to exhibit improved proficiency in both literacy and numeracy.

Average proficiency rates across subtasks in both numeracy and literacy are higher for children enrolled in school compared to those who are not, and the gap in proficiency rates between these two groups increases with child age. The positive relationship between being in school and proficiency rates is relatively robust, as evidenced by regression results which show significantly higher average proficiency rates in literacy and numeracy for enrolled children while controlling for the different explanatory factors noted above. In addition to confirming the existence of a gap in learning outcomes between enrolled children and OOSC in favor of the former, the regression results also indicate that this gap increases for older children, particularly when it comes to numeracy skills.

The strongest determinant of average proficiency rate, other than child age, is the child's socio-economic background, as represented by the education of the household head and household wealth as well as the gender of household head. Children from households where the head has obtained higher levels of education consistently outperform their counterparts from less educated households in both literacy and numeracy. Similarly, children from wealthier households exhibit higher proficiency in both literacy and numeracy skills compared to their peers from economically disadvantaged backgrounds. Two other factors associated with learning outcomes include the gender of the child and of the household head. Girls significantly outperform boys in literacy, in alignment with findings documented in the general literature; but there is no such effect on numeracy outcomes. And children from female headed households have lower proficiency rates in literacy and numeracy. A candidate reason for this negative association is that women in female headed households are possibly more time constrained.

Interestingly, the analysis does not show any difference in learning outcomes between Myanmar and non-Myanmar speakers, and none of the variables related to alternative forms of educational services and resources is significant. The lack of any observed difference in proficiency rates between Myanmar and non-Myanmar speakers contrasts with previous analyses based on the SEA-PLM data from 2019, which demonstrated significantly better performance for Myanmar speakers in mathematics and reading (Bhatta and Katwal, 2022b). One possible explanation for the lack of difference in learning outcomes between the language groups could be related to the reduced disparity in access to education between these two groups, as seen in Section 3. However, further investigation is required to understand the underlying reasons behind this unexpected finding and to explore potential implications for language-based educational policies and interventions. Similarly, the regression analyses fail to show statistically significant relationships between proficiency rates and the child's school type (state versus non-state), use of online schooling, and access to family support.

6.2 Implications

As low enrollment rates persist across all education levels and age groups in Myanmar despite the abatement of COVID-19, getting children back to school and ensuring their continued attendance should be a top priority for the country. On the one hand, statistics from the miliary authorities indicate that around 18 percent of the state schools in the country remain closed. On the other hand, financial hardships and school closures are the main reasons cited by households to explain why their children have dropped out of school. The global literature suggests that efforts to bring children back to school and retain them in school after prolonged school closures may need to consider a combination of supply side interventions aimed at reopening closed schools and keeping them open, as well as demand side interventions such as conducting enrollment campaigns, identifying children at risk of dropping out of school and implementing strategies for drop-out prevention, and providing financial support to poor families to help them overcome their financial constraints. To guide the design and implementation of such interventions in any country, systematic approaches such as the RAPID framework for learning recovery proposed by UNESCO, United Nations Children's Fund (UNICEF), and the World Bank could be adapted to the specific country context (World Bank et al. 2022).[39] It is also important to note that since state schools continue to be the institutions where the overwhelming majority of children study, large-scale improvements in access in Myanmar will not be possible without the involvement of these schools.

At the same time, the observed shift in schooling choices toward non state schools suggests that there is scope for improving access to some degree by supporting schools and students in the non-state sector. Many non-state schools in Myanmar often struggle to provide quality education and remain financially viable because of resource constraints. To support such schools, various forms of assistance could be made available, such as grants for infrastructure expansion, purchase of teaching learning materials, or payment of teacher and staff salaries. In the context of FCV countries like Myanmar, donors could also directly fund teacher salaries or provide teaching learning materials to schools. For instance, there are many NGO-run community-based education centers in Afghanistan where donors provide teaching learning materials and whose teachers receive their salaries directly from donors. Similarly, UNICEF has been providing "incentive payments" to a large number of teachers in Yemen since 2018-19 through a multi-donor trust fund (Aedo et al. 2023). Non-state schools and their students could also be supported by providing cash transfers to students to cover tuition, fees, and other educational expenses.

Making online education resources more accessible can potentially enhance the learning of more school children. Currently a small percentage of school-age children —mainly from urban areas, private schools, and wealthier families--uses online education. The fact that the use of online education is more prevalent among enrolled students than among OOSC indicates that students value it as a supplementary learning resource. Hence, making online education more accessible to students is likely to increase its uptake and potentially enhance the children's learning. This will require, among others, interventions to address challenges related to the limited supply of online resources suitable for Myanmar students, infrastructure limitations, and financial constraints faced by students. Accordingly, some of the key areas of focus of such interventions could be educational digital content development and distribution, support to students and teachers to acquire devices for accessing digital content, and support to students and teachers for accessing the internet. Development partners could play an important role in supporting these types of interventions.

[39] The first step of the RAPID framework—**R**eaching every child and retaining them in school—focuses on the types of interventions mentioned above.

The strong and consistent evidence on lower learning outcomes among children from disadvantaged socio-economic backgrounds highlights the importance of providing targeted support to poor children. Furthermore, as the enrollment rates are lower for students from poor households at all levels of schooling and these students are also more likely to drop out of school, interventions targeted towards this group of children can serve the twin purpose of enhancing equitable access and improving equity in learning outcomes. Considering that the projected growth of the Myanmar economy for 2022 was only 3 percent following a contraction of 18 percent the previous year and since around 40 percent of the population is estimated to be living in poverty (World Bank 2022), it is likely that student stipends as well as other forms of financial and in-kind support to poor households will continue to be of vital importance for some time. In addition, the observed positive relationship between the education level of the household head and learning outcomes suggests that more remedial and other types of academic support in school may be needed for children from poorer households as it is unlikely that their parents would be well educated.

There is a need for further research to better understand the impacts of the schooling disruptions caused by COVID-19 and the coup on learning outcomes. This study has made an initial attempt to gauge the disparities in learning outcomes across children with different individual and household characteristics and the effects of the schooling disruptions on learning. While some insightful findings have emerged from this investigation, further work is needed to examine how different types of potential selection bias[40] in the assessment sample may be affecting the estimates of learning outcomes. It will also be useful to delve deeper into the disparities across children in specific literacy and numeracy subtasks to shed light on what children know and can and cannot do based on their performance on each subtask.

Additionally, to further build on the work done in the current study and keep stakeholders informed of Myanmar's evolving education landscape, there is also a need to conduct periodic survey-based monitoring of both access and learning. Future rounds of the survey could be designed to track the same children included in the present study and draw upon the lessons learned from the present study to ensure improvements in data quality (see Box 5.1 and Box 2.1). They could also be designed to be more focused in terms of the target age group and include children who had dropped out of school after the coup but have subsequently reenrolled, which will not only make it possible to estimate determinants of changes in learning outcomes more precisely but may also allow the estimation of the rate at which learning losses can be recovered once children return to school. Additionally, it will be useful to supplement these quantitative surveys with systematic key informant interviews and focus group discussions to gain a more in-depth understanding of the schooling processes and challenges faced by schools, teachers, and students in both state and non-state schools.

[40] For example, potential selection bias arising from the possibility that (a) families who are reluctant to enroll their children in school may also be reluctant to enroll them in the learning assessment; and (b) families that lack confidence in their children's academic abilities may opt out of the learning assessments.

Box 6.1 Reflections on and lessons learned from the phone-based learning assessment

Conducting phone-based assessments in an FCV country such as Myanmar is a challenging task. Unlike other country contexts where phone-based assessments have been combined with in-person evaluations to test internal and external validity of the data, the current security challenges meant that a similar evaluation design could not be considered in Myanmar. However, it is exactly in such FCV contexts that phone-based learning can be valuable in filling important knowledge gaps (in addition to being cost efficient). This study offers some key insights for conducting assessments in such settings:

Piloting: Greater upfront investments in rigorously piloting the assessment and training of survey enumerators to act as effective assessors can contribute to better data quality. The experience from this study indicates that it is important to pilot all aspects of the assessment, including the mode of assessment delivery (phone calls and SMS text messages), conducting spot checks of recorded phone-based assessments and providing feedback to enumerators, testing the distribution of responses for each competency against historical datasets (even though they may not be fully compatible due to considerable differences in sampling design), and randomizing the order of literacy and numeracy assessments as well as randomization of tests across assessment participants in the same household.

Survey design: In this study, the learning assessment was administered to a subsample of eligible children from a larger sub-nationally representative household survey. This sampling design allowed for the collection of data on a range of child and household level characteristics in the first round, which could be easily merged with child learning outcomes data collected subsequently. The availably of data on different household characteristics is unique to and a key strength of phone-based assessments as most in-person assessments are conducted in the school setting. In school-based assessments, household respondents are not available to answer questions related to employment, consumption, food security or coping strategies of the household. Thus, the data collected for this study were particularly well suited for analyzing disparities in learning outcomes across a range of individual and household characteristics. Another key strength of this survey was that it also allowed for the interviews of households from more remotely located regions, which may not have been feasible in an in-person assessment. Finally, while in-person school-based assessments only look at the learning outcomes of children enrolled in school, this survey also included school dropouts in the sample of children assessed, making it possible to analyze the effects of schooling status on learning outcomes. Hence, phone-based assessments hold promises as a viable approach to analyzing equity in the learning outcomes of children in Myanmar in the future as well.

On the other hand, the sampling strategy used here to select assessment participants is prone to producing learning outcome estimates that may be incompatible with estimates from other studies from the past which use different sampling and assessment administration methods. Thus, measuring changes in learning outcomes using historical in-person assessments and new in-phone survey data may not be possible. Incompatibilities in estimates are further aggravated by differences in instrument design – as in-person assessment instruments have to be adapted to be delivered easily over the phone. One key lesson from this study is that it relevant to communicate these sources of incompatibility and manage expectations of potential consumers of the research output accordingly from the study inception stage itself.

Analysis: Phone-based assessments data are likely to be contaminated by two confounding factors: parental assistance during the assessment and selection biases wherein children with better abilities are more likely to agree to participate in the assessment. The extent of these two confounding factors may vary across settings but given that project teams are unable to control the testing environment some contamination is expected to remain. Selection biases are more easily detectable when assessment samples are drawn from a sub-nationally representative household survey. Tracking a panel of child respondents and analyzing changes in learning outcomes within the panel could mitigate the risk of selection. Planning multiple rounds of phone surveys in advance could help in this regard. Identifying and correcting for parental assistance could be much harder and to the best of our knowledge, is an ongoing research topic. Rigorous training of enumerators, spot checks of phone recordings to identify parental interventions, and regular feedback to enumerators can to some extent mitigate this risk. But as these measures cannot not eliminate this risk entirely, it is important to manage the expectation of readers accordingly as mentioned above.

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Annex A: Supplementary tables and graphs

A3.1: Population and language distribution by state/region, 2023

State/region	Population	Share speaking Myanmar language (%)	Share speaking non-Myanmar language (%)
Ayeyarwady	6,260,344	92	8
Bago	4,965,768	91	9
Chin	535,977	1	99
Kachin	2,004,666	79	21
Kayah	344,089	62	38
Kayin	1,635,149	73	27
Magway	3,922,063	99	1
Mandalay	6,684,800	99	1
Mon	1,959,436	71	29
Nay Pyi Taw	1,341,479	96	4
Rakhine	3,382,097	12	88
Sagaing	5,683,996	97	3
Shan	6,672,771	32	68
Tanintharyi	1,524,356	97	3
Yangon	8,853,241	98	2

Source: Authors' calculations based on MSPS (2023) and ACLED (2023).

A3.2: Distribution of children by schooling status (ages 6-17 years) (%)

	Out of school	In school	Total
All	28	72	100
Gender			
Male	28	72	100
Female	29	71	100
Age group			
Primary school age group (6–10)	15	85	100
Middle school age group (11–14)	26	74	100
High school age group (15–17)	51	49	100
Wealth quintile			
Poorest quintile	40	60	100
2nd quintile	29	71	100
3rd quintile	19	81	100
4th quintile	26	74	100
Richest quintile	22	78	100
Location			
Rural	30	70	100
Urban	23	77	100
Conflict intensity			
Bottom quartile	21	79	100
2nd quartile	21	79	100
3rd quartile	27	73	100

	Out of school	In school	Total
Top quartile	48	52	100

Source: Authors' calculations based on MSPS (2023).
Note: a. Conflict intensity is measured as the log of per capita conflict incidents at the township level.

Table A4. 1: Distribution of enrolled children (6-17 years) by the type of educational institution (%)

Type of educational institution	Male	Female	Total
Basic education Primary school	22.36	24.85	23.64
Branch primary school	1.42	1.23	1.32
Basic education post-primary school	3.93	7.85	5.94
Basic education middle school	24.07	19.29	21.62
Branch middle school	1.56	1.88	1.72
Basic education high school	35.12	34.64	34.87
Branch high school	2.39	2.86	2.63
Monastic school	3.07	0.98	2.00
Other religious school	0.05	0.21	0.13
Private school	4.21	4.53	4.37
Non-state/Ethnic school	0.00	-	0.00
NGO-run school	0.39	0.00	0.19
Community school	0.13	0.19	0.16
Individual learning home with a teacher guide	0.44	0.13	0.28
Other school	0.86	1.35	1.11
Total	100.00	100.00	100.00

Source: Authors' calculations based on MSPS (2023).

Table A4. 2: Profiles of students who accessed online education in the past 12 months (ages 6-17) (%)

	Used online education (past 12 months)	Did not use online education (past 12 months)	All children
Enrollment status			
Not enrolled	15	28	27
Enrolled	85	72	73
Total	100	100	100
School type			
State	76	94	93
Non-state	24	6	7
Total	100	100	100
Gender			
Male	56	48	49
Female	44	52	51
Total	100	100	100
Age group			
Primary school (6 - 10)	36	37	39
Middle school (11 - 14)	26	37	35
High school (15 - 17)	38	26	26

	Used online education (past 12 months)	Did not use online education (past 12 months)	All children
Total	100	100	100
Wealth quintile			
Poorest quintile	9	25	25
2nd quintile	8	22	21
3rd quintile	13	19	19
4th quintile	36	23	23
Richest quintile	34	12	13
Total	100	100	100
Location			
Rural	49	75	74
Urban	51	25	26
Total	100	100	100
Conflict intensity[a]			
Bottom quartile	16	23	22
2nd quartile	27	29	29
3rd quartile	34	25	26
Top quartile	23	22	23
Total	100	100	100

Source: Authors' calculations based on MSPS (2023).
Note: a. Conflict intensity is measured as the log of per capita conflict incidents at the township level.

Annex B: Data quality, and instrument reliability and validity

Reliability pertains to the consistency of measurements obtained from an instrument. It indicates the extent to which the instrument produces consistent and dependable results over multiple administrations or under different conditions. Validity addresses the accuracy of the instrument in measuring what it is intended to measure. It examines whether the instrument accurately captures the construct or phenomenon it claims to assess.

Reliability

In the discussion below, the Cronbach's alpha—the most widely used method to evaluate test score reliability (see RTI International 2016)—is used to measure the reliability of the literacy and numeracy instruments. This measure assesses the internal consistency of an instrument, providing a measure of how well the items within the instrument correlate with each other. A higher value of Cronbach's alpha indicates greater reliability. In general, a Cronbach's alpha value below .6 indicates insufficient consistency across subtask results (World Bank and MoE 2021), while values of 0.7 or greater are considered acceptable (RTI International 2016).[41]

The Cronbach's alpha estimate for literacy scores for this study is relatively high (0.81), suggesting that the literacy instrument has high reliability or internal consistency. The estimates for the numeracy instruments, however, are lower. More specifically, the Cronbach's alpha estimate for the grade 1-3 instrument is 0.73. But the corresponding estimate for the instrument for grades 4-6 is 0.62, reflecting lower reliability though it crosses the minimum threshold of 0.6. [42]

Validity

The concept of predictive validity is used below to assess the validity of the instruments. This approach examines the relationships between lower-order and higher-order skills measured by the instrument. The underlying logic is that if children's performance on lower-order skills can effectively predict their performance on higher-order skills, then the instruments are deemed to accurately measure what they aim to measure. For example, in the case of literacy, reading comprehension requires a certain level of proficiency in lower order subtasks such as understanding words and reading text fluently. In the case of numeracy, children need to know how to discriminate numbers to be able to add properly. Simple regression analyses are used to investigate these relationships. Following the approach used in World Bank and MoE (2021), the outcome on the higher order subtask of interest (dependent variable) is regressed against each lower order subtask individually while controlling for the student's household wealth level.

As shown in Tables B.1 and B.2, positive and statistically significant correlations are observed between the subtasks that measure lower-level skills and those that measure higher-level skills. The coefficients range from 0.46 to 0.91 for the literacy subtasks and from 0.21 to 0.66 for the numeracy subtasks. These results provide evidence of the instruments' validity in capturing the intended constructs and their relationships.

[41] Another approach to measuring reliability of instruments is the test-retest method (World Bank and MoE 2021), which involves retesting the same students using the same instruments after a certain period of time and looking at the correlations in outcomes in these two rounds. This approach has not been used since it was not feasible to retest the same students because of both time and resource constraints.

[42] Note: The World Bank and Ministry of Education (MoE) (2021) EGRA/EGMA report a Cronbach's alpha of 0.90 for their literacy instrument and 0.87 for their numeracy instrument for grade 3.

Table B.1: Predicting higher-order literacy subtasks with lower-order literacy subtasks

Subtask	Predictors	Coefficient
Oral reading fluency	Familiar words	0.55***
	Invented words	0.46***
Reading comprehension	Familiar words	0.57***
	Invented words	0.48***
	Oral reading fluency	0.91***

Source: Authors' calculations based on MSPS (2023). *** p<0.01, ** p<0.05, * p<0.1.

Table B.2: Predicting higher-order numeracy subtasks with lower-order numeracy subtasks

Grades 1-3			Grades 4-6		
Subtask	**Predictors**	**Coefficient**	**Subtask**	**Predictors**	**Coefficient**
Addition	Number discrimination	0.54***	Complex subtraction	Addition/subtraction word problems	0.27***
Subtraction	Number discrimination	0.58***	Multiplication/ Division word problems	Addition/subtraction word problems	0.32***
	Addition	0.66***		Complex subtraction	0.21***

Source: Authors' calculations based on MSPS (2023). *** p<0.01, ** p<0.05, * p<0.1.

Effectiveness of some of the steps taken to ensure data quality

As discussed in section 2, a number of risks to data quality during assessment implementation were identified and measures were implemented to addresses these risks to the extent possible (see Box 2.1). Among others, the risks identified, and mitigation measures implemented included the following:

Risk	Mitigation measures
1. Children could experience survey fatigue, leading to worse performance in the test that was administered last	1. Literacy and numeracy tests were randomized into two groups so that some children were tested on literacy first and others were tested on literacy second.
2. In households with more than one assessment participant, the second (or third) participant could overhear the answers given by the first, and subsequently perform better.	2. For numeracy, when there were multiple assessment candidates in a single household, they were given slightly different versions of the same test selected from a set of three tests.[43]
3. Other household members could help the child in the assessment, leading to better performance in the test.	3. The enumerator re-emphasized to the household members that this was not a class test and requested them to refrain from helping the child during the assessment. Additionally, in the case of the more complex numeracy questions, the children were asked to explain how they arrived at the answer, and the answer was marked correct only if the explanation was satisfactory.

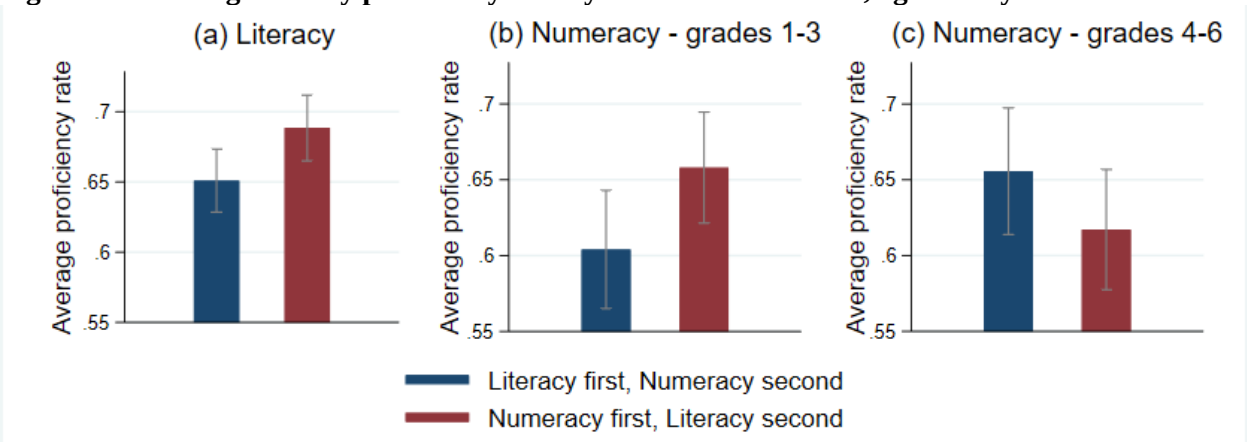
[43] If there was only one child in the household, versions 1 of the instrument was administered to the child. In households with mutliple assessment participants, random selection was used to determine the order in which the children would be assessed, after which the first child received version 1 of the instrument, the second child received version 2, and the third child received version 3.

Risk	Mitigation measures
4. Enumerators could have shortcoming in how they conducted the assessments.	4. Each assessment was audio-recorded, and the recordings were reviewed alongside the entered data to identify errors and potential shortcomings on the part of the enumerators and implement remedial measures.

It is difficult to estimate the effectiveness of the measures taken to minimize potential help from others in the household (measure 3). However, the review of audio recordings and corresponding data checks (measure 4) revealed relatively few errors, providing a high degree of confidence in the assessment. Similarly, the effectiveness of measures 1 and 2 can be determined using simple statistical analyses of the average proficiency rates in literacy and numeracy.

Effectiveness of measure 1: Figures B.1a, B.1b, and B.1c present estimates of the average proficiency rates for different version numeracy tests for different orderings of the literacy and numeracy tests. As shown by the overlap between the confidence interval vertical lines associated with the two bars in each figure, the proficiency rates in both literacy and numeracy, on average, do not differ significantly (at the 5% level) by the order in which the tests were administered. This indicates that the randomization of the order of the literacy and numeracy tests was effective in minimizing the possibility of potential biases in test results due to survey fatigue in the second test.

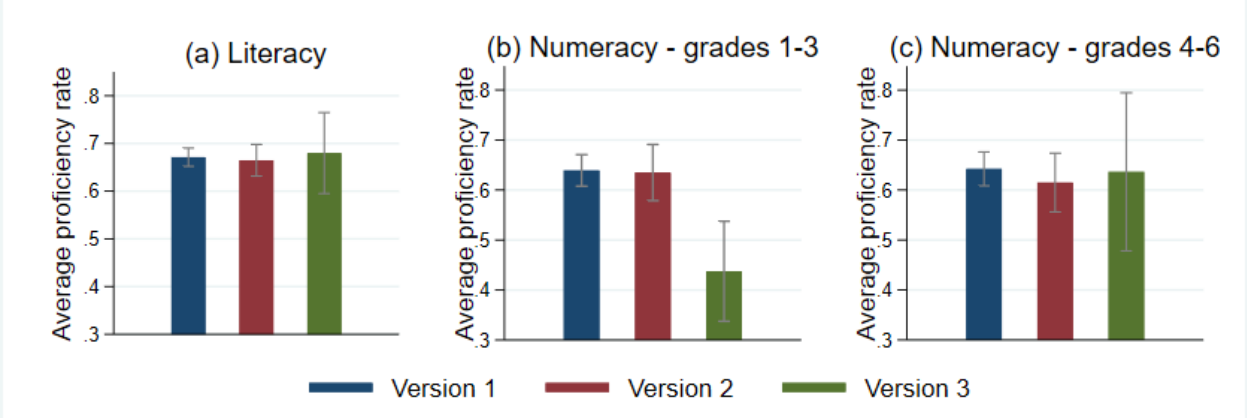
Figure B.1: Average literacy proficiency rate by the order of the tests, ages 7-14 years



Source: Authors' calculations based on MSPS (2023)
Note: The vertical lines are 95 percent confidence interval bars.

Effectiveness of measure 2: Figures B.2a, B.2b, and B.2c present estimates of the average proficiency rates for the numeracy tests for the three different versions of the numeracy instrument for the two grade groups**.** There are no statistically significant differences (at the 5 percent level) in the average proficiency rates across the three versions of the numeracy test for grades 4-6. Similarly, the average proficiency rates do not differ signficanly across versions 1 and 2 of the numeracy test for grades 1-3. The average proficiency rate for version 3 of the grade 1-3 numearcy test (which was administered to the third child in households with 3 assessment participants) is significatnly lower than that for the other two versions administered; however, it should be noted that there were only 21 children who received this version of the instrument making the estimate of the average for this group less reliable. The overall evidence presented above suggests that the use of differnet versions of the numeracy instrument was largely effective in minizing potential upward bias in outcomes of the chidren tested after the first child had been tested in households with more than one assessment participant.

Figure B.2: Average numeracy proficiency rate by the version of the numeracy test, ages 7-14 years



Source: Authors' calculations based on MSPS (2023); vertical lines are 95 percent confidence interval bars.
Note: The vertical lines are 95 percent confidence interval bars.

Limitation of the assessment

The design of this phone-based assessment draws upon the experience and approaches of phone-based assessments conducted in other countries including the studies done by Angrist et al. (2020b) in Botswana, Crawfurd et al. (2022) in Sierra Leone, and Radhakrishnan et al. (2022). Like other phone-based assessments, the current assessment has a number of limitations, such as its unsuitability to assess complex skills and its susceptibility to contamination of results due to the non-secured and non-standardized environments in which the children are assessed.

However, unlike most other phone based and face to face assessments, which are administered to students in specific grades, the current assessment was administered to children in a specific age range (7-14 years) who were selected through a household survey as opposed to school-based survey, which is not feasible in Myanmnar in the current political context. This approach has a number of strengths: first, as explained in section 2, the collected data include information on a range of child and household characteristics, making them particularly well suited for analyzing equity issues; second, both in-school and dropped-out children are included in the assessment, making it possible to understand the effects of dropping out on learning; and third, it also allows us to see the extent to which older children lack foundational literacy and numeracy skills, which is an important question in its own right. Furthermore, as discussed above, the numeracy instrument used in this assessment for grades 1-3 has acceptable reliability, and the literacy instrument has high reliability.

But at the same time, this assessment has a number of limitations that may not apply to other phone-based assessments. These arise from a combination of the following issues: (i) as the instruments used are primarily based on EGRA/EGMA which target early graders, expanding their use to older age groups limits content validity and information value due to restricted variance; (ii) in the case of the numeracy assessment, as the additional items (beyond those covered by EGMA) have been included for grades 4-6 without statistical equating, the results from grades 4-6 for those items are not compared with the results form the grades 1-3 instrument in this study; (iii) as the assessments were administered to a self-selected group of children, the results are likely to be biased (and reliability and concurrent/predictive validity could also be affected); and (iv) as the numeracy instruments are grade-based, it is not possible to compare the numeracy outcomes with literacy across the same age range (7-14) using simple descriptive statistics. However, as shown in section 5, these limitations can be addressed to some extent in the analysis of disparities in child performance—the main focus of this study—by using regression models that include appropriate controls for grades and age.