

COVID-19 in Sub-Saharan Africa: Monitoring Impacts on Learning Outcomes

ZAMBIA REPORT



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Contents

Acknowledgments	1
Contents.....	3
List of figures	3
List of tables	3
List of abbreviations	4
Introduction	5
Study design	5
Report outline.....	6
Sampling outcomes	6
Learning outcomes.....	7
Contexts of learning during the COVID-19 pandemic.....	8
National contexts	8
School and classroom contexts.....	9
Operational circumstances during COVID-19	9
Limitations to remote instruction and strategies to overcome barriers.....	10
Support for teachers	11
Student health and wellbeing and returning to school.....	11
Student contexts	12
Conclusion	13
References	16

List of figures

Figure 1: Reading and mathematics proficiency shown against the nine scales created from the Student Questionnaire	13
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List of tables

Table 1: Zambia student and home background characteristics of AMPL 2021.....	7
Table 2: Proportions of students who met or exceeded MPLs for reading and mathematics, AMPL and historical assessments, by gender, and percentage point difference for Zambia	7
Table 3: Proportion of students who reached or exceeded reading and mathematics MPL by region in Zambia.....	8

List of abbreviations

ACER	Australian Council for Educational Research
AMPL	Assessments for Minimum Proficiency Levels
CONFEMEN	The Conference of Ministers of Education of French-Speaking Countries
DFAT	Department of Foreign Affairs and Trade
GEM	Global Education Monitoring
GPE	Global Partnership for Education
GPF	Global Proficiency Framework
MILO	Monitoring Impacts on Learning Outcomes
MPL	Minimum Proficiency Level
NAS	National Assessment Survey
OECD	Organisation for Economic Co-operation and Development
PIRLS	Progress in International Reading Literacy Study
PISA	Programme for International Student Assessment
REDS	Responses to Educational Disruption Survey
SDG	Sustainable Development Goal
UIS	UNESCO Institute for Statistics
UNESCO	The United Nations Educational, Scientific and Cultural Organization

Introduction

Six African countries participated in the COVID-19: Monitoring Impacts on Learning Outcomes (MILO) project in 2021 – Burkina Faso, Burundi, Côte d’Ivoire, Kenya, Senegal and Zambia. This report presents the key findings from the MILO project for Zambia. The cross-national findings from all six participating countries are provided in the MILO Main Report (UIS & ACER, 2022).

The MILO study was designed to provide information on the impact of the pandemic on learning outcomes. As countries work towards achieving Sustainable Development Goal (SDG) 4.1.1b,¹ it is essential that progress towards this goal continues to be monitored. The MILO project was implemented to provide a way for countries to measure learning progress against SDG 4.1.1b prior to, during and after the pandemic.

The four overarching goals of the MILO project were to:

- evaluate the impact of COVID-19 on reading and mathematics learning outcomes by reporting against SDG indicator 4.1.1b
- identify the impact of different distance learning mechanisms put in place to remediate the learning disruption caused by COVID-19
- expand the UIS bank of items for primary education assessments
- generate a toolkit to scale assessment results to international benchmarks, reporting against SDG 4.1.1b.

The MILO study is a UNESCO Institute for Statistics (UIS) project and was funded by the Global Partnership for Education (GPE). The Australian Council for Educational Research (ACER) was the technical partner. A National Centre was responsible for implementing the project within each country. In the case of Zambia, the MILO project was implemented by the Examinations Council.

Study design

The MILO project used Assessments for Minimum Proficiency Levels (AMPL-b) to estimate learning outcomes in reading and mathematics at the end of primary schooling. These learning outcomes were reported as the proportion of students in the target grade who met the minimum proficiency levels (MPLs) referred to in SDG 4.1.1b:

The proportion of children and young learners ... at the end of primary ... achieving at least a minimum proficiency level in (i) reading and (ii) mathematics, by sex.
(United Nations, 2015)

¹ The proportion of children and young learners ... at the end of primary ... achieving at least a minimum proficiency level in (i) reading and (ii) mathematics, by sex. (United Nations, 2015)

In Zambia, the AMPLs were administered in English to a representative sample of Grade 5 students in schools from 24 June to 9 July 2021. The results of these assessments were compared with historical assessment data collected from an equivalent student cohort prior to the COVID-19 outbreak. The historical assessment was the National Assessment Survey (NAS), 2016. This comparison enabled the impact of the pandemic on learning outcomes to be quantified.

To assist in the interpretation of the assessment results, contextual data were collected through questionnaires:

- a Student Questionnaire – given to the same students who completed the AMPL tests)
- a School Questionnaire – completed by school principals or their delegates
- a System Questionnaire – completed by respondents at the national level.

The questionnaires focused on the main COVID-19 disruption period, as identified by each country on the basis of when there was the most disruption to education. Zambia identified early March to 20 September 2020 as their main COVID-19 disruption period.

Report outline

In this report on the MILO results for Zambia, sampling outcomes are first provided, including a comparison of key characteristics of the Zambia populations participating in 2016 and 2021 assessments. Next, the learning outcomes in reading and mathematics are presented for Zambia, for boys, girls and for all participants. This report provides the achievement outcomes by explicit strata, showing achievement results by sub-region. Subsequently, the contexts of learning during the COVID-19 pandemic are first presented, including at the national education system level, school level and student level. Finally, the report concludes with a discussion of the outcomes and recommendations for strengthening the resilience of the education system.

The MILO Main Report (UIS & ACER, 2022) complements this Zambia report. It provides more detail on the MILO project background and instruments and provides the cognitive and contextual results for all six countries that participated in the MILO project.

Sampling outcomes

The Zambia school participation rate in the MILO study was extremely high. There were 252 schools that participated, with a 99 per cent response rate. Similarly, there was a very high student response rate. There were 4,954 students who undertook the assessment, with a 93 per cent response rate. Hence, the overall participation rate was 92 per cent.² Table 1 presents a breakdown of the AMPL population by the following categorical variables: gender, age, maternal literacy, paternal literacy and school type.

² Unweighted response rate including substitutes.

Contextual data from the historical population for Zambia was not available in a format suitable for direct comparisons of the populations in 2016 and 2021.

Table 1: Zambia student and home background characteristics of AMPL 2021

Background characteristic	AMPL 2021
Gender (% girls)	51%
Age (years)	12.3
Maternal literacy	59%
Paternal literacy	86%
School type (% public)	83%

Learning outcomes

To measure the impact of the COVID-19 disruption on learning outcomes, the reading and mathematics achievement results in 2021 were compared to those from 2016. Achievement results in reading and mathematics are reported in terms of the percentages of students who reached or exceeded the MPLs for upper primary for girls and boys, as well as overall.

A standard-setting exercise was conducted to establish the MPLs for students at the end of primary schooling. This determined the score in the AMPL associated with the minimum level of skill or knowledge required to meet the MPL for SDG 4.1.1b. Appendix A of the MILO Main Report (UIS & ACER, 2022) provides further details on how the MPL was established.

The percentages of students from Zambia who met or exceeded the reading and mathematics MPLs in 2021 is shown in Table 2. The table also shows the percentages of students who met or exceeded the MPLs in 2016. For all students there was no statistically significant difference in the proportion of students who met the MPL for reading and mathematics between 2016 and 2021. However, it is notable that in both 2021 and 2019, there is a greater proportion of students meeting the MPL for mathematics than reading.

Table 2: Proportions of students who met or exceeded MPLs for reading and mathematics, AMPL and historical assessments, by gender, and percentage point difference for Zambia

Learning domain	2021 AMPL Students who reached or exceeded MPLs (%)			2016 NAS Students who reached or exceeded MPLs (%)			Percentage point differences 2021 AMPL – 2016 NAS		
	All	Boys	Girls	All	Boys	Girls	All	Boys	Girls
Reading MPL	2.3	2.4	2.2	1.8	1.5	2.1	0.5 [^]	1.0 [^]	0.1 [^]
Mathematics MPL	2.1	2.0	2.1	3.5	3.7	3.4	-1.4 [^]	-1.7 [^]	-1.2 [^]

[^] No statistically significant difference between AMPL and historical assessment

The learning outcomes were not homogeneous across the different regions of Zambia. As can be seen in Table 3, the region/locality with the highest proportion of students who reached the MPL in reading was Copperbelt, Urban Area (9.5 per cent of students). Of the 20 regions/localities, there were 12 where less than one per cent of students reached or exceeded the MPL for reading. There were 11 regions/localities where less than one per cent of students reached or exceeded the MPL for mathematics.

Table 3: Proportion of students who reached or exceeded reading and mathematics MPL by region in Zambia

Region/Locality	Reading AMPL 2021 Students who reached or exceeded MPL (%)	Mathematics AMPL 2021 Students who reached or exceeded MPL (%)
Central, Urban Area	4.7	2.1
Central, Rural Area	0.2	0.4
Copperbelt, Urban Area	9.5	8.2
Copperbelt, Rural Area	2.2	2.7
Eastern, Urban Area	0.3	0.3
Eastern, Rural Area	0.0	0.0
Luapula, Urban Area	0.0	0.0
Luapula, Rural Area	0.0	0.2
Lusaka, Urban Area	8.4	5.9
Lusaka, Rural Area	5.5	2.0
Muchinga, Urban Area*	0.0	17.9
Muchinga, Rural Area	0.0	1.1
North Western, Urban Area	4.9	3.0
North Western, Rural Area	0.2	0.3
Northern, Urban Area	0.7	0.0
Northern, Rural Area	0.0	0.8
Southern, Urban Area	3.6	0.8
Southern, Rural Area	0.1	0.3
Western, Urban Area	4.5	3.3
Western, Rural Area	0.0	0.2
Zambia	2.3	2.1

* 50 or fewer students participated in the AMPL assessments in this locality, statistics should be interpreted with caution

Contexts of learning during the COVID-19 pandemic

National contexts

The MILO System Questionnaire was completed by a senior government official nominated by the National Centre who provided information about the education policies and programs implemented in Zambia. This information was complemented by

other sources from publicly available literature on the impact of COVID-19 on schooling in Zambia. School closures, remote education and modified schooling are two policy areas of particular relevance to learning during the COVID-19 disruption.

All schools were closed in Zambia, beginning in late March 2020. Grades with examinations (7, 9 and 12), in both primary and secondary school, returned to school in June 2020. All other grades (including the MILO target grade) returned to school in late September; this period encompassed two academic breaks. The UNESCO School Closures Survey (UIS, 2020a) indicates that schools in Zambia were fully closed for 15 weeks and partially closed for 13 weeks. The UNESCO survey collected data via three iterations. The survey showed that schools in Zambia closed again during the second quarter of 2021, after the MILO System Questionnaire had been returned (UIS, 2020a). The school calendar was re-scheduled; with terms being delayed.

To facilitate remote learning during the school closures, online 'E-learning' and 'Smart Revision' platforms were introduced. The E-learning platform contained educational resources, such as e-books and links for specialised services and the Smart Revision platform contained past examination papers with model answers. In June 2020, an Educational Television channel was launched to provide lessons across all grades. The Ministry of General Education also developed self-study materials and distributed them to all schools across Zambia.

When schooling resumed, different grades were scheduled to attend on alternate days. Examinations for end of primary schooling (Grade 7), junior secondary (Grade 9) and O-levels (Grade 12), were delayed by one month to enable students adequate time to prepare.

School and classroom contexts

Principals in Zambia were asked to indicate how the pandemic affected schooling, teaching and learning. This section describes the proportion of students who attended schools where the principal reported issues related to operational circumstances during COVID-19, the limitations to providing remote instruction and strategies to overcome these limitations, student health and wellbeing, and returning to school. For example, when asked about the COVID-19 disruption, 69 per cent of students attended schools where the principal indicated the school continued to provide access for specific grade levels.

Operational circumstances during COVID-19

Despite school closures during the COVID-19 disruption period, specific groups of students in Zambia still had access to school buildings. These groups were:

- students from selected grade levels (69%)
- children of essential or critical workers (13%)
- students with special needs (12%)

- students who were considered at risk (8%).

Among schools that closed, 79 per cent of students attended schools whose principal reported that some or all teachers were onsite. Teachers being onsite would be able to teach the minority of students who had access to school buildings, as well as facilitate remote learning, such as using school resources, like computers, phones and photocopiers. Amongst students attending schools that closed, a minority of students (21%) attended schools where the principal reported offering remote learning programs to all students.

Almost 82 per cent of students attended schools where the principal reported that they were not prepared for providing remote instruction if their school buildings were closed to students for an extended period in the future. This indicates that Zambia has the opportunity to support schools to provide remote instruction in the case of future education disruptions.

Limitations to remote instruction and strategies to overcome barriers

Principals were asked to indicate the extent that their school's capacity to deliver remote instruction was limited by any one of ten options. The most common limitations indicated were:

- students' lack of internet access (80%)
- students' lack of digital devices (80%)
- difficulty in distributing hard-copies of learning materials (78%)
- lack of learning materials (75%)
- inability to communicate (74%).

The least reported limitation was a lack of available teaching (37%). This indicates that the support many schools most need relates to accessing technology, rather than human capital.

Strategies were implemented to minimise the impact of the pandemic on teaching and learning. The most common strategies, rated by principals as important or very important, were:

- engaging the broader community (77%)
- communication between staff and students (77%)
- providing digital resources for teachers or students (63%).

The least common strategies were:

- distributing learning materials (55%)

- communication between staff and families (46%)
- additional staff professional development (43%).

Support for teachers

Support was provided or promoted to teachers to assist them in supporting students and themselves. The most common forms of support were:

- formal support networks such as a counselling service (66%)
- peer support system (62%)
- online wellbeing management programs and resources (61%).

The least common forms of support were:

- professional association links and information such as mental health services (33%)
- accommodation for teachers who were primary carers and have children at home (30%)
- informal/social events such as book club (18%).

In response to the pandemic, teachers in Zambia were also provided with a range of professional learning activities. The most common activities were:

- methods for preventing the spread of infectious diseases (e.g. washing hands) (42%)
- teacher wellbeing (32%)
- student wellbeing (32%)
- methods to engage with families to support their child's wellbeing (31%).

The least common professional learning activities were:

- teaching specific content remotely (e.g. literacy, numeracy) (19%)
- support for providing remote student instruction without using digital technologies (e.g. providing print material) (18%)
- students with special needs (12%)
- support for providing remote student instruction using digital technologies (6%).

Student health and wellbeing and returning to school

Throughout the pandemic, many students attended a school that undertook activities to support student health and wellbeing. The most common activities were:

- contacting families (84%)

- checking in with students (74%)
- providing specific support to students (69%)
- providing support from counsellors (68%).

Visits to students' homes were relatively uncommon; only 45% of students attended schools where the principal reported this strategy was used.

In preparing for regular teaching after the COVID-19 disruption, schools in Zambia made various provisions. Most frequently these involved:

- additional monitoring of students' health and safety (81%)
- directing targeted teaching at learning areas where student achievement had not sufficiently progressed (72%)
- spending time going over material that was already covered (70%).

The least common provisions were:

- require or encourage more students to repeat a grade level (48%)
- provide extra academic support only to students who have fallen behind (48%)
- offer additional support to families regarding student wellbeing (46%)
- provision of supplementary staff or tutoring to assist in students judged to require additional support (45%).

Principals were asked about their concerns after the COVID-19 disruption. They reported concern about all four options, which were:

- students' academic progress (96%)
- the ability of staff to cope (95%)
- the principal's own ability to cope (95%)
- students' health and wellbeing (94%).

Student contexts

A student's context, including their home environment and the level of support that they are provided, can shape their achievement levels (Çiftçi & Cin, 2017; Cullinane & Montacute, 2020). The resources that students have access to at home can greatly mediate the effects of disruptions to learning resulting from COVID-19 (Cullinane & Montacute, 2020; Reimers & Schleicher, 2020). Hence, the effect size of various factors related to student characteristics, home environment and support are analysed and compared.

An effect size is a measure of the strength of the relationship between two variables using a standardised difference. The stronger the effect size, the stronger the

relationship between the variables of interest (e.g. family wealth) and the outcome variable (e.g. mathematics proficiency). Nine indices were created based on a collection of related items from the Student Questionnaire. These indices are student anxiety, student disability, family wealth, parental education, parental literacy, family support, teacher support, school support and assessment language (whether assessment language was the main language spoken at home). The MILO Main Report (UIS & ACER, 2022) provides further details about the effect sizes and specific scales constructed.

As can be seen in Figure 1, family wealth had the strongest relationship with student proficiency in reading. Family wealth also had a positive relationship with mathematics. This means that students from wealthy families on average exhibited higher levels of proficiency than students from less wealthy families. Likewise, the scales related to parental education and family support both exhibited a strong relationship with student proficiency in reading and mathematics. Parental literacy had a strong relationship with reading proficiency, but not mathematics. Student disability and teacher support exhibited weaker positive relationships with reading and mathematics proficiency.

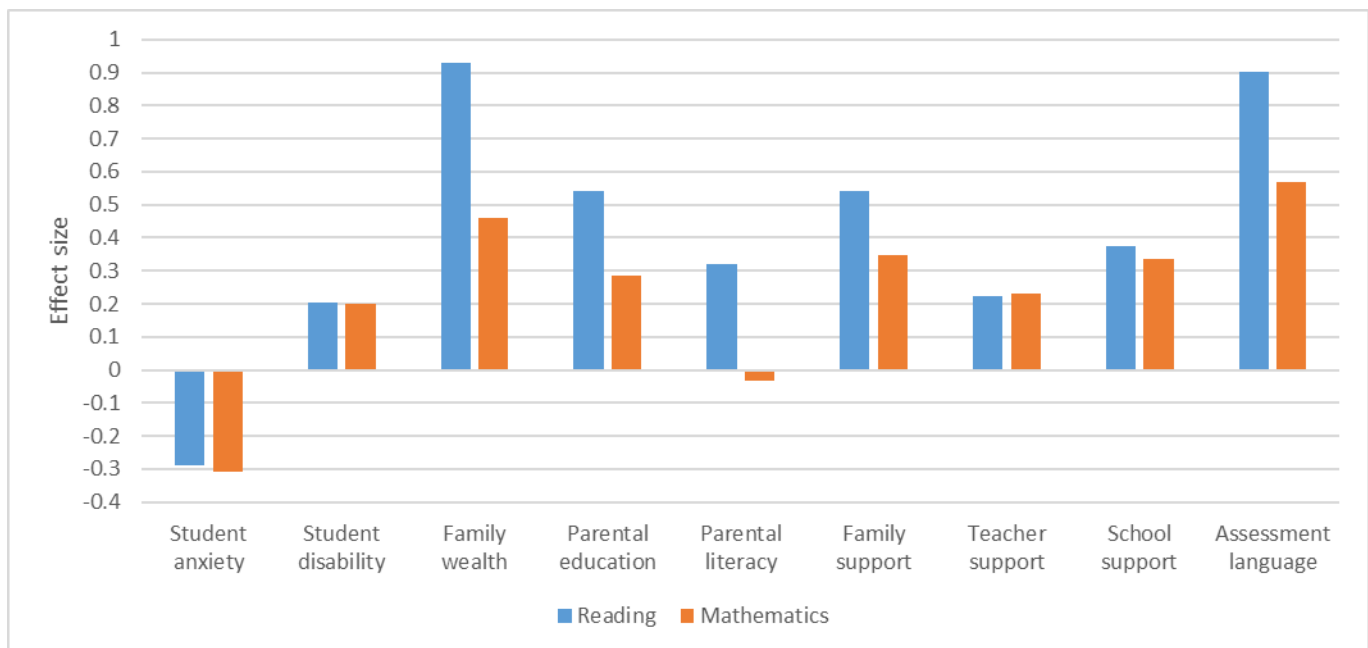


Figure 1: Reading and mathematics proficiency shown against the nine indices created from the Student Questionnaire

Conclusion

It is encouraging that Zambia students and schools demonstrated resilience in the face of the COVID-19 education disruption. Learning outcomes for reading and mathematics between 2016 and 2021 remained steady.

One possible explanation for these results is that the 17 weeks that students from examination classes were absent from school due to the COVID-19 disruption, were offset by the approximately 25 weeks that students had been at school prior to the

administration of the AMPL. Upon returning to school, principals reported that teachers commonly went over learning material that had already been covered and targeted teaching at specific learning areas. The material covered by teachers may have focused more on reading and mathematics compared to other academic and non-academic areas. Hence, while declines in these core areas are less likely, declines in other areas not assessed in the MILO study (such as science or social and emotional skills) might have occurred.

The proportion of students meeting the reading and mathematics MPLs in some regions/localities in Zambia is considerably higher than in others. It is likely that the differences in context between the regions/localities will be shaping the different outcomes observed. They differ by wealth, infrastructure and language usage, for example. But attention can be given to investigating what is working in some regions/localities, and considering how effective practices and policies may be applied nationally.

The MILO contextual findings provide insights into how learning progress in Zambia can continue to improve. The three recommendations presented below are elaborated on in the MILO Main Report (UIS & ACER, 2022):

- **Prepare for the provision of effective remote teaching and learning for future disruptions.** It was widely reported by principals in Zambia that they were not prepared for future disruptions to education. Remote teaching needs to reflect the low technology environment of many families in Zambia, building on the strengths indicated by principals related to communication with families and teachers. However, planning needs to incorporate how barriers to remote education can be overcome through broadening access to and use of technology.
- **Continue to emphasise supporting the wellbeing of the school community.** Principals in Zambia were concerned about their own, teachers' and students' wellbeing. Although activities were taken to support wellbeing, such as checking-in with students, these could be supplemented with more targeted support. For example, a limited proportion of students attended schools that provided access to students who were considered at risk during the COVID-19 disruption. All students can benefit from the targeting and tailoring of support to their needs.
- **Ensure that there are effective systems in place to continue to monitor learning outcomes.** The targeting of support aimed at both wellbeing and student learning can be greatly assisted through effective monitoring of student outcomes. For example, in addition to collecting data related to mathematics and reading, other domains could be monitored, such as social and emotional learning. At the classroom-level and school-level, assessments can provide helpful feedback to students, parents and teachers, informing them of progress, what to work on and how to reform practices. System-level information can be collected through participation in national, regional or international assessments. The MILO project

has provided tools, methods and capacity development to support Zambia's monitoring system. This includes using the AMPL to monitor Zambia's progress towards achieving SDG 4.1.1b.

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