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

KENYA REPORT

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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
NASMLA	National Assessment System for Monitoring Learner Achievement
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 Kenya. 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 4.1.1.b.

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 Kenya, the MILO project was implemented by the National 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 Kenya, the AMPLs were administered in English to a representative sample of Grade 7 students in schools from 8 June to 11 June 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 System for Monitoring Learner Achievement (NASMLA) Grade 7, 2019 (Karogo et al., 2020). The historical results for reading are not reported for Kenya since the 2019 assessment of English did not contain a sufficient number of reading comprehension items to align with the reading constructs within the Global Proficiency Framework (GPF). Therefore, comparisons between the 2019 and 2021 data could only be made for mathematics.

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. Kenya identified March 2020 to January 2021 as their main COVID-19 disruption period.

Report outline

In this report on the MILO results for Kenya, sampling outcomes are first provided, including a comparison of key characteristics of the Kenya populations participating in 2019 and 2021 assessments. Next, the learning outcomes in reading and mathematics are presented for Kenya, 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 Kenya 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 Kenya school participation rate in the MILO study was extremely high. There were 265 schools that participated, with a 100 per cent response rate. Similarly, there was a

very high student response rate. There were 6,417 students who undertook the assessment, with a 98 per cent response rate[2].

To ensure that achievement results between the AMPL 2021 and NASMLA 2019 were comparable, it was important that the two populations had similar characteristics. Comparative data based on the following categorical variables for both populations can be seen in Table 1. These variables were family wealth, gender, age, and school type. The characteristics of the population were similar across the two assessments, with some differences. The most prominent difference was the proportion of students attending public schools, with 5 percentage points more students attending public schools in NASMLA 2019 than AMPL 2021. Similarly, 4 percentage points more girls participated in the NASMLA 2019 than the AMPL 2021.

Table 1: Kenya student and home background characteristics of historical 2019 assessment and AMPL 2021

	AMPL 2021	NASMLA 2019	Difference (AMPL 2021-NASMLA 2019)
AMPL–National assessment wealth index (logits)	0.58	0.19	0.39
Gender (% girls)	51%	55%	-4%
Age (years)	12.6	12.5	0.1
School type (% public)	77%	82%	-5%

Learning outcomes

To measure the impact of the COVID-19 disruption on learning outcomes, the mathematics achievement results in 2021 were compared to those from 2019. Achievement results in mathematics, and the AMPL reading results, 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 Kenya 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 mathematics in 2019. There was some evidence of learning loss for boys, with an approximately 9 percentage point decrease in the proportions of boys who met the MPLs, dropping from 83% in 2019 to 74% in 2021. For girls, as well as for all students (i.e. boys and girls), there was no statistically

[2] The response rates are unweighted including substitutes.

significant difference in the proportion of students who met the MPL for mathematics between 2019 and 2021. However, it is noteworthy that there is a greater proportion of students in 2021 meeting the MPL for mathematics (74.1%) compared to reading (46.7%).

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 Kenya

Learning domain	2021 AMPL Students who reached or exceeded MPLs (%)			2019 NASMLA Students who reached or exceeded MPLs (%)			Percentage point differences 2021 AMPL - 2019 NASMLA		
	All	Boys	Girls	All	Boys	Girls	All	Boys	Girls
Reading MPL	46.7	44.9	48.4	NA	NA	NA	NA	NA	NA
Mathematics MPL	74.1	73.5	74.6	79.7	82.8	78.4	-5.7^	-9.3*	-3.7^

^ No statistically significant difference between AMPL and historical assessment
* Statistically significantly higher than in historical assessment

The learning outcomes were not homogeneous across the different counties of Kenya. As can be seen in Table 3, the county with the highest proportion of students who reached the MPL in mathematics was as much as 94.7 per cent in Baringo, and as low as 37.0 in West Pokot.

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

County	Reading AMPL 2021 Students who reached or exceeded MPLs (%)	Mathematics AMPL 2021 Students who reached or exceeded MPLs (%)
Baringo	82.4	94.7
Bomet	33.8	82.5
Bungoma	38.6	69.8
Busia	50.5	80.2
Elgeyo Marakwet	25.4	75.8
Embu	62.9	81.6
Garissa*	0.6	38.3
Homa Bay	58.6	85.4
Isiolo*	21.8	37.4
Kajiado	59.6	86.7
Kakamega	33.7	61.5
Kericho	31.0	76.9
Kiambu	70.4	79.8
Kilifi	41.4	85.2
Kirinyaga	73.3	85.2
Kisii	34.4	67.6
Kisumu	73.3	86.8
Kitui	32.2	68.5
Kwale	26.2	61.3
Laikipia*	64.6	83.5

Lamu*	66.9	92.3
Machakos	49.3	82.7
Makueni	48.5	82.6
Mandera*	29.5	70.8
Marsabit*	19.2	79.6
Meru	53.0	74.4
Migori	34.1	62.6
Mombasa	68.0	83.3
Muranga	43.1	72.7
Nairobi	79.5	83.6
Nakuru	51.5	77.7
Nandi	30.6	71.1
Narok	34.3	59.8
Nyamira	35.2	78.4
Nyandarua	56.6	74.1
Nyeri	50.4	61.3
Samburu*	9.5	61.4
Siaya	45.1	72.8
Taita Taveta*	44.5	72.2
Tana River*	55.2	79.7
Tharakanithi*	81.5	84.9
Transnzoia	38.7	63.1
Turkana	32.4	49.8
Uasin Gishu	44.1	66.2
Vihiga	52.8	82.1
Wajir*	11.7	56.4
West Pokot	8.8	37.0
Kenya	46.7	74.1

* 50 or fewer students participated in the AMPL assessments in this county, 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 Kenya. This information was complemented by other sources from publicly available literature on the impact of COVID-19 on schooling in Kenya. 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 Kenya for six months, beginning in late March 2020. Schools were partially opened in September 2020, allowing learners in grades 4, 8 and 12 to return to school. Schooling for all grades resumed in January 2021. The school calendar was re-scheduled, with terms being delayed. Grade 4, Class 8 and Form 4 completed Terms 2 and 3 of the 2020 academic calendar in October to December 2020 and January to March 2021, respectively. The remaining school grades completed Terms 2 and 3 of 2020 during January to March 2021, and March to July 2021. The delay of the terms, combined with shorter holiday periods in 2020 and 2021, were designed to allow the normal academic calendar to resume in 2023.

During school closures, remote teaching was undertaken to **support** continuity of learning. The Kenyan government provided support related to equipment, internet connectivity and training of teachers, especially for teachers of students from low socioeconomic households. Educational content and instruction was also delivered through television and radio (UIS, 2020).

Upon the resumption of schooling, new health and safety protocols were implemented. These measures included: wearing masks, social distancing (additional desks were provided), hand washing using soap and running water, hand sanitising, checking body temperatures, and regular fumigation. Teachers aged 58 years and above were encouraged to work from home.

School and classroom contexts

Principals in Kenya 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, 24 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 Kenya still had access to school buildings. This predominantly related to students from selected grade levels (24%). However, to a lesser extent, the following groups also had access to school buildings:

- children of essential workers (8%)
- students with special needs (3%).
- students who were considered at risk (3%).

Among schools that closed, 24 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 (16%) attended schools where the principal reported offering remote learning programs to all students.

Just over 80 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 Kenya 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 (83%)
- students' lack of digital devices (83%)
- difficulty in distributing hard-copies of learning materials (80%)
- inability to communicate (76%).
- lack of learning materials (74%)
- concerns about providing equitable teaching (70%).

The least reported limitation was a lack of available teachers (57%). 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 (75%)
- communication between staff and students (74%)
- providing digital resources for teachers or students (68%).

The least common strategies were:

- distributing learning materials (55%)
- encourage educational TV/radio (50%)
- distributing learning materials (55%).

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:

- peer support systems (50%)
- formal support networks, such as counselling services (40%)
- online wellbeing management programs and resources (29%).

The least common forms of support were:

- access to nutritional information and support (21%)
- access to physical activity resources (21%)
- accommodation for teachers who are primary carers and have children at home (14%)
- professional association links and information such as mental health services (12%)
- informal/social events such as book club (12%).

In response to the pandemic, teachers in Kenya 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) (59%)
- methods to engage with families to support their child's wellbeing (37%)
- methods to engage with families to support their child's learning (34%)
- student wellbeing (34%).

The least common professional learning activities were:

- support for providing remote student instruction using digital technologies (20%)
- teaching specific content remotely (e.g. literacy, numeracy) (19%)
- students with special needs (9%).

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 (57%)
- checking in with students (49%)
- provide support from counsellors (42%)

- providing specific support to students (41%).

Visits to students' homes were relatively uncommon; only 23% of students attended schools where the principal reported this strategy was used.

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

- additional monitoring of students' health and safety (56%)
- targeted teaching directed to learning areas where student achievement had not progressed to the desired extent (54%)
- spending time going over material that was already covered (50%).

The least common provision was requiring or encouraging more students to repeat a grade (9%).

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

- the principal's own ability to cope (98%)
- the ability of staff to cope (95%)
- students' academic progress (94%)
- students' health and wellbeing (93%).

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). Eight indices were created based on a collection of related items from the Student Questionnaire. These indices are student anxiety, 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, student anxiety had the strongest relationship with student proficiency in both reading and mathematics. This was closely following by parental literacy, students whose parents had higher literacy levels exhibited higher levels of proficiency than students whose parents had lower literacy levels. Other factors related to the home environment exhibited a similar relationship, including, parental education, parental support and family wealth.

Conversely, the level of teacher support and school support appeared to have a minimal relationship with proficiency. This comparison of effect sizes highlights that, in Kenya, factors related to the home environment tend to have a stronger relationship with proficiency in mathematics and reading than factors related to the school environment. This is consistent with meta-analytical research indicating that the home environment has the largest impact on student achievement (Hattie, 2008).

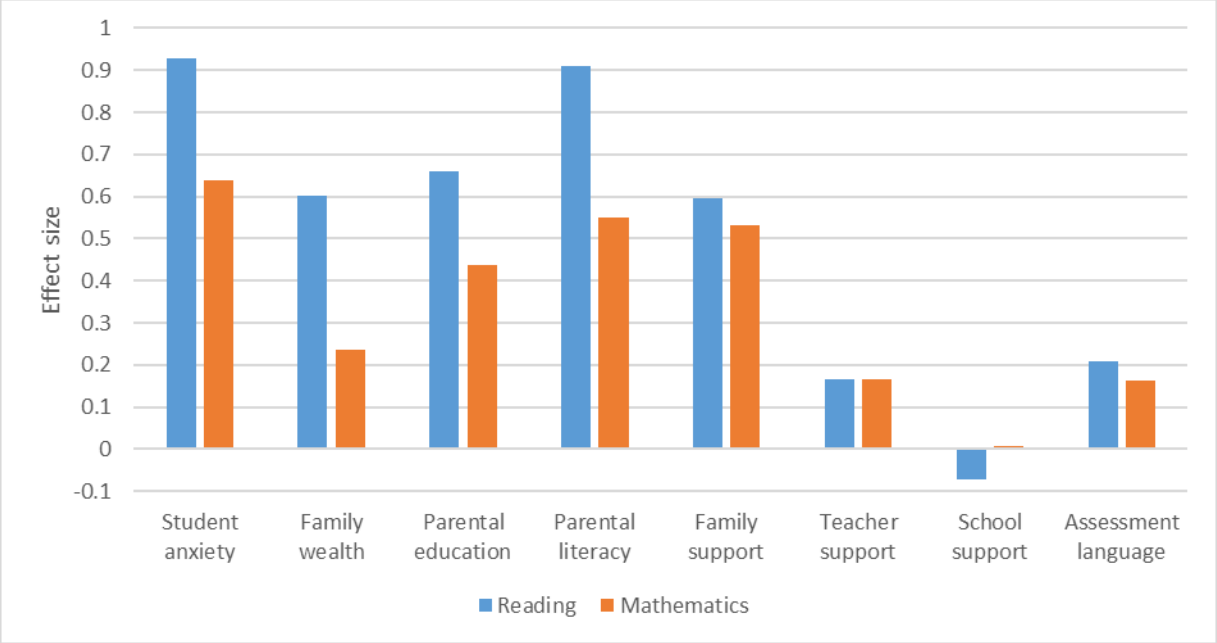

Figure 1: Reading and mathematics proficiency shown against the eight indices created from the Student Questionnaire

Conclusion

It is encouraging that overall in Kenya, students and schools demonstrated resilience in the face of the COVID-19 education disruption. Overall, there were no differences in the proportions of students who met the MPLs in mathematics at the end of primary schooling between 2021 and before the pandemic. However, there was evidence of learning loss for boys between 2019 and 2021. A smaller proportion of boys met or exceeded the MPL in 2021 (73.5%) compared to the historical assessment (82.8%), a decrease of 9.3 percentage points. There was no corresponding statistically significant decline in girls' mathematics learning outcomes in Kenya.

One possible explanation for the overall steady results is that the approximate 22 weeks that students had returned to school prior to the AMPL being administered somewhat

offset the interruption to learning during school closures caused by COVID-19. Further, 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 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.

Whilst the proportion of students meeting the reading and mathematics MPLs in some counties in Kenya is relatively high, it is far lower in other counties. It is highly likely that the differences in context between the counties will be shaping the different outcomes observed. Counties will differ by wealth, infrastructure and language usage, for example. But attention can be given to investigating what is working in some counties, and considering how effective practices and policies may be applied nationally.

The MILO contextual findings provide insights into how learning progress in Kenya 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 Kenya that they were not prepared for future disruptions to education. Remote teaching needs to reflect the low technology environment of many families in Kenya, 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 Kenya 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 leaning can be greatly assisted though 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 Kenya's monitoring system. This includes using the AMPL to monitor Kenya's progress towards achieving SDG 4.1.1b. Continuing to monitor learning outcomes for boys, girls and for students overall post-pandemic will be important to identify any groups of students that require additional support.

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