Executive summary

PURPOSE OF THE MILO PROJECT

The COVID-19 pandemic has caused major disruptions to education. Across the world, schools have been partially or wholly closed, teachers and students have been forced to quarantine at home for short or extended periods of time, social learning opportunities have been cancelled and community interactions have been curtailed. Countries have been forced to find ways to adapt to these educational disruptions, by providing remote learning for students, adapting curriculum and assessments, and supporting the health and wellbeing of students, teachers and families.

The COVID-19 MILO (Monitoring Impacts on Learning Outcomes) study was designed to provide information on the impact of the pandemic on learning outcomes in six countries in Africa – Burkina Faso, Burundi, Côte d'Ivoire, Kenya, Senegal and Zambia. As these countries work towards the goal of meeting 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.

MAIN GOALS OF THE MILO PROJECT

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 generated by COVID-19

- expand the UIS bank of items for primary education

- generate a toolkit to scale assessment results to international benchmarks, reporting against SDG 4.1.1.b.

THE MILO STUDY DESIGN

The main aim of the MILO study was to determine the impact of COVID-19 on learning outcomes at the end of primary schooling. Data on learning outcomes prior to the pandemic were available through the national or regional assessments (historical assessments) that had been administered by the six countries in 2019, or 2016 in the case of Zambia.

The historical assessments were re-administered in the six MILO countries in 2021. These assessment data provided a comparison against assessment data from previous years. The performance for the target population in 2021 was compared against an equivalent cohort prior to the outbreak of the COVID-19 pandemic in 2019 (or 2016 in the case of Zambia).

Assessments for Minimum Proficiency Levels for SDG 4.1.1b (AMPL-b) tests were developed in the MILO project to provide a measure against SDG 4.1.1b. The AMPL tests were administered in 2021 alongside the national/regional assessments. Learning outcomes were reported through the proportion of students in the end of primary schooling population who met the Minimum Proficiency Levels (MPL). The link to this benchmark, established in the AMPL, was retrospectively applied to the historical assessment results. Knowledge about current and prior learning outcomes will also lay the foundation for the MILO countries to compare future learning outcomes, in order to measure ongoing progress towards SDG 4.1.1b.

PARTICIPATING COUNTRIES

Students from Burkina Faso, Burundi, Côte d'Ivoire, Kenya, Senegal and Zambia who were at or near the end of primary schooling were involved in the MILO project. Burkina Faso, Burundi, Côte d'Ivoire, and Senegal assessed Grade 6 students; Grade 7 students were assessed in Kenya and Grade 5 students in Zambia.

Contextual data were gathered from the target students, principals and system-level representatives from each country in order to understand how the COVID-19 disruption affected learning and to identify ways to support student learning.

AMPL READING AND MATHEMATICS ASSESSMENTS

- The AMPL for reading assesses key aspects of reading comprehension at upper primary level (Table 2.1).

- The AMPL for mathematics assesses key aspects of mathematics at upper primary level (Table 3.1).

- The AMPL for reading and AMPL for mathematics were developed using items from the UIS's Global Item Bank. The AMPL reading and mathematics are both strongly aligned to the Global Proficiency Framework enabling reporting against SDG 4.1.1b.

- Test booklets were provided to students in their language of instruction (French or English) and students had one hour to complete the booklet.

PERFORMANCE OF MILO COUNTRIES

- Across the six countries, the proportion of students who met the MPL in 2021 in reading ranged from 0.1% in Burundi to 46.7% in Kenya (Table 4.1).

- Comparisons of reading proficiency levels between 2021 and before the pandemic could be made for Burkina Faso, Burundi, Côte d'Ivoire, Senegal and Zambia.

- There was no difference in any of the five countries between the pre-pandemic and 2021 reading assessments. No differences were found in the proportions of students who met the MPL in reading at the end of primary schooling (Table 4.2).

- There was no difference in the reading performance between the performance of boys and girls on the AMPL within any of the participating countries (Table 4.2).

- Across the six countries, the proportion of students who met the MPL in 2021 in mathematics ranged from 2.1% in Zambia to 74.1% in Kenya (Table 4.3).

- Comparisons of mathematics proficiency between 2021 and before the pandemic could be made for all six MILO countries.

- There was no difference in Burundi, Côte d'Ivoire, Senegal, Kenya and Zambia between the pre-pandemic and 2021 mathematics assessments. No differences were found in the proportions of students who met the MPL in mathematics at the end of primary schooling (Table 4.4).

- Burkina Faso had a statistically significant difference in the proportion of students at the end of primary who met the MPL in mathematics. About 18% of the population met the MPL in 2019 and almost 24% met the MPL in 2021 (Table 4.4).

- For mathematics, there was some evidence of learning loss for boys in Kenya, with the proportion of boys who met the MPL dropping to about 74% in 2021, compared to almost 83% in 2019. (Table 4.4)

IMPACT OF COVID-19 ON TEACHING AND LEARNING

National contexts

Senior government officials in the six MILO countries completed the MILO System Questionnaire and indicated the ways in which the COVID-19 pandemic affected their education systems. Five of the six countries closed their schools as a consequence of the pandemic; Burundi was the only country where schools did not close (Figure 5.1). All five countries that experienced school closures had national plans or policies to provide directions for teaching and learning, as well as health and wellbeing, in response to the disruption.

School contexts

Principals completed the MILO School Questionnaire and indicated the ways in which the pandemic affected schooling, teaching and learning. There were considerable commonalities in principals' responses across countries.

- Overwhelmingly, principals reported they expected that the pandemic would have a negative impact on academic outcomes for all students (Table 6.3).

- Most schools did not offer remote learning programs universally. In many countries, teachers remained onsite during the entire pandemic period (Table 6.4).

- Changes to school policies and procedures mostly focused on increased hygiene and cleaning. Policies relating to supplementing face-to-face teaching with remote instruction, or continuing remote instruction during the pandemic were less common (Table 6.5).

- The key barriers to remote learning were student access to digital devices or to the internet (Table 6.6).

- Academic progress and students' health and wellbeing were key concerns (Table 6.10).

With school closures impacting many countries, teaching and learning needed to adapt in order to support students during and after the closure.

- Although a limited proportion of students had access to live virtual lessons or digital materials, many schools suggested educational TV and radio to students during the pandemic (Table 6.11).

- To minimise the impact on teaching and learning, schools most commonly engaged the broader community and increased communication between staff and students (Table 6.12).

- Throughout the pandemic, schools undertook a number of activities to support student health and wellbeing, mainly checking in with students and contacting families (Table 6.14).

Teachers were expected to maintain assessment and monitoring of students and provide feedback to them during the pandemic.

- Most schools expected and required teachers to continue to assess students (Table 6.15).

- Consistently, teachers were expected and required to provide feedback to students about their schoolwork (Table 6.16).

Student contexts

Students completed the MILO Student Questionnaire and indicated the ways in which the COVID-19 disruption impacted their access to education and their health and wellbeing.

- Students in Kenya and Senegal were most likely to have reliable internet access and access to digital devices. Across the other four countries most students did not have access to the internet or digital devices (Table 7.1).

- Across all six MILO countries, students were most likely to report that their family had to be more careful with money. Students in Kenya and Senegal experienced more family difficulties during the COVID-19 disruption than students in other countries (Table 7.2).

- Students in all MILO countries reported higher anxiety levels during the COVID-19 disruption compared to before the pandemic (Table 7.3).

- At least half of the students in the five countries that experienced school closures (Burkina Faso, Côte d'Ivoire, Kenya, Senegal and Zambia) reported that they experienced difficulties when they returned to school (Table 7.4).

Support given to students from their families, schools and teachers was examined in relation to reading and mathematics proficiency in 2021.

- Students in Kenya and Senegal were most likely to report that they received support for school-related tasks from their families (Table 7.5).

- Students in Burundi, Côte d'Ivoire, Kenya,

Senegal and Zambia who received more support from their families tended to be more proficient in reading and mathematics compared to students who received less support (Figure 7.2).

- Students in Kenya and Senegal were most likely to report that they frequently received support from their school during the COVID-19 disruption (Table 7.6).

- Students in Côte d'Ivoire, Senegal and Zambia who received more support from their school tended to be more proficient in reading and mathematics (Figure 7.3).

- Students in Kenya were more likely to report that they received support from their teachers, whereas students in Côte d'Ivoire were least likely to report receiving support from their teachers (Table 7.7).

- Students in Kenya who received more support from their teachers tended to show greater proficiency in reading and mathematics (Figure 7.4).

The home background of students, including wealth, and parental literacy and education, was particularly relevant for students who experienced school closures during the COVID-19 disruption. Students with lower family wealth tended to have lower proficiency in both reading and mathematics than students with higher levels of family wealth (Figure 7.5).

UNDERSTANDING THE IMPACT OF COVID-19 ON LEARNING OUTCOMES

In the six MILO countries, students at the end of primary schooling have maintained learning outcomes in reading and mathematics since the onset of the pandemic, at least until mid-2021. There are several possible reasons for this:

- learning gains that may have otherwise been achieved since the previous assessment may have been suppressed by the pandemic

- students already on track to achieving the MPLs may have been less impacted by the COVID-19 disruption

- low proportions of students meeting the MPLs in historical assessments makes decline difficult to observe

- students may already have recovered from any learning loss by the time they undertook the assessment

- mitigation strategies may have lessened the impact on reading and mathematics outcomes compared to other academic and non-academic areas

- families, schools and educational systems were able to offset much of the impact of the disruption.

IMPLICATIONS FOR POLICY AND PRACTICE

Encouragingly, in the six MILO countries, schools, teachers, parents and students showed great resilience during the pandemic. However, the MILO results also show that there is still some way to go to support all students to reach the MPLs for SDG 4.1.1b. Importantly, there is also a need to continue to support the wellbeing of everyone in the school community. This report makes the following recommendations for policy and practice:

- prepare for the provision of effective remote teaching and learning in the case of future disruptions

- Continue to emphasise supporting the wellbeing of the school community during and after the pandemic

- ensure that there are effective systems in place to continue to monitor learning outcomes.

IMPLICATIONS FOR MEASURING SDG 4.1.1

The AMPL-b is a robust and efficient tool that measures the proportion of students who meet SDG 4.1.1b. Beyond 2021, the AMPL-b are resources provided by the UIS that can be used by countries and assessment programs to monitor progress against SDG 4.1.1b.

The AMPL-b can be implemented by countries, regions or systems to suit their reporting needs. The AMPL-b can be used as a standalone assessment to efficiently report against SDG 4.1.1b. They can also be integrated into existing national or regional assessments to measure and describe the broad range of abilities that children at the end of primary schooling may exhibit in reading and mathematics, in addition to reporting against SDG 4.1.1b.

The development of the AMPL-b is a significant step forward and has the potential to align national and cross-national assessment programs to a single set of global standards in mathematics and reading as articulated in SDG 4.1.1, and elaborated by the definitions of the MPLs (Australian Council for Educational Research Global Education Monitoring Centre [ACER-GEM], 2019, 2020) and the Global Proficiency Frameworks (United States Agency for International Development [USAID] et al., 2020a, 2020b). The AMPL-b is currently available in English and French but can readily be adapted and translated, and could include additional items set above or below the MPLs.

Currently, the AMPL-b covers the end of primary schooling outcomes, SDG 4.1.1b. However, the same methods could be applied if further assessments are developed to measure learning outcomes at the end of lower secondary to address SDG 4.1.1c (AMPL-c) or the end of lower primary, SDG 4.1.1a (AMPL-a).

Endnotes

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).

2   In 2016 for Zambia

3   Contextual data from the historical population for Zambia was not available in a format suitable for direct comparisons of populations. Some contextual data was not available from the Kenyan historical assessment.

4   The GPF advisory group on alignment was a working group comprised of psychometricians and subject matter experts who contributed to the development of the Global Proficiency Framework in 2020. The group was convened to formulate a set of alignment criteria to allow assessments to be compared to the GPF in order to determine their suitability for evaluating and reporting against SDG 4.1.1. The alignment criteria are outlined in detail in: USAID, UIS, UK Aid et al. (2020) *Policy Linking Toolkit for Measuring Global Learning Outcomes – Linking assessments to the Global Proficiency Framework.*

5   From SDG 4.1.1 Review Panel: March 2021.

6   These items were reproduced with permission from CONFEMEN.

7   For the purposes of AMPL, this item was classified as "Retrieve information" rather than "Decoding" as consistent with the GPF for reading (USAID et al, 2020a) which lists matching a given word to an illustration as an example of retrieving information.

8   The four French-speaking countries were Burkina Faso, Burundi, Côte D'Ivoire and Senegal.

9   These items are used with permission from CONFEMEN.

10 Zambia's historical assessment was conducted in 2016. All other countries' historical assessments were conducted in 2019.

11 Historical results are not reported for Kenya since the 2019 assessment of English in Kenya did not contain a sufficient number of reading comprehension item to align with the reading constructs within the GPF.

12 In the MILO project, students were the primary sampled unit. All results from the School Questionnaire are reported using student weights that are representative of the population. Therefore all results from school principals need to be interpreted in numbers of students.

13 There is no consensus among researchers and practitioners on which are the best indicators to operationalise SES. Typical children SES indicators are parents' occupation and education level, household income and home possessions. For a review of SES indicators used in educational research and other disciplines such as health, economics and sociology see Osses et al. (forthcoming).

14 Results for Kenya have been excluded based on data validation issues

15 The population chosen by countries to report against varied from Grade 5 to Grade 7.

16 A wealth index for Kenyan students was computed based on common items from the historical assessment and the AMPL. Comparisons for boys over time revealed higher scores on the wealth index in the 2021 population in comparison to the historical population.

17 For further information on different learning approaches and the benefits, considerations and enabling conditions, see for example Dabrowski et al. (2020).

18 For further recommendations relating to education in emergencies, see the Policy Monitoring tool developed for building resilient education systems (Tarricone et al., 2021).

19 Magnitude of item by gender interaction estimates from a facet model. See PISA 2006 Technical Report (OECD, 2009a).

20 'Not reached' items were defined as all consecutive missing values at the end of the test, except the first missing value of the missing series which was coded as 'embedded missing' i.e. coded the same as other items that were presented to the student but which did not receive a response. Omitting the 'not reached' items from the item calibration ensures the item difficulties not to be over-estimated.

21 The psychometric properties of the reading items administered in Burundi was unexpectedly inconsistent with those of the other countries. In particular, the response patterns in nearly all of the reading items was consistent with high rates of guessing and resulted in very low discrimination. It was therefore decided to exclude Burundi from the international reading item calibration. Burundi student reading proficiency estimations were subsequently based on the international calibration.

22 Expected a-posteriori/plausible value (EAP/PV) reliability (Adams, 2005).

23 A two-dimensional model with Quadrature estimation with 40 nodes was used.

24 So-called weighted likelihood estimates (WLEs) were used as ability estimates in this case (Warm, 1989).

25 Conceptual background and application of macros with examples are described in the PISA Data Analysis Manual SPSS®, 2nd edn (OECD, 2009b).