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CHAPTER 7

Student contexts of teaching and learning during COVID-19

HIGHLIGHTS

The same students who were assessed using the Assessment for Minimum Proficiency Levels (AMPL) completed the MILO Student Questionnaire. The COVID-19 disruption impacted students' access to education in addition to their health and wellbeing across the MILO countries.

- 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).
- In 2021, the relationship between anxiety and learning outcomes varied by country. Students in Kenya and Senegal who reported higher levels

of anxiety tended to have higher proficiency in reading and mathematics. Students in Zambia who reported higher levels of anxiety tended to show lower proficiency in both reading and mathematics. Students in Burkina Faso who reported higher levels of anxiety tended to show higher proficiency in reading only (Figure 7.1).

- 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.

- Compared to students in other MILO countries, students in Kenya and Senegal were most likely to report that they received support for school-related tasks from their family (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 those 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 family 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 those students with higher levels of family wealth (Figure 7.5).
- Students that had two parents that could read and write had higher proficiency in reading and mathematics, compared to those students for whom neither parent could read or write (Figure 7.6).
- Around half the students in Burkina Faso, Burundi and Côte d'Ivoire reported that their parents' highest level of education attained was below the level of primary school. In Kenya, Senegal and Zambia students were more likely to have parents whose highest level of education attained was at least the completion of primary or secondary school (Table 7.9).
- Students whose parents' highest level of education attained was post-secondary level or above had higher proficiency in mathematics and reading compared to those students whose highest parental education was below primary school level (Figure 7.7).
- Students in Côte d'Ivoire, Burkina Faso and Zambia who spoke the language of assessment at home, had higher proficiency in reading and mathematics compared to students in their country who spoke another language at home (Figure 7.8).

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INTRODUCTION

The second goal of the MILO project was to *identify the impact of different distance learning mechanisms put in place to remediate the learning disruption generated by COVID-19*. A key component of the MILO contextual framework is the need to collect information on student characteristics and the home environment as key themes in order to understand the impact of the COVID-19 disruption to student learning.

This chapter examines students' home environment and student characteristics, specifically those factors that enabled or inhibited learning during the pandemic and focuses primarily on findings from the MILO Student Questionnaire. This chapter also looks at the support available to students during the disruption and examines its various impacts on students. In addition, the chapter explores student performance in AMPL reading and AMPL mathematics by sub-groups of students based on home background characteristics and those students who may be considered vulnerable.

Effect size

This chapter uses effect sizes to measure differences in reading and mathematics proficiency between groups across countries. An effect size is a measure of the strength of the relationship between two variables using a standardised difference (OECD, 2009b). Using effect sizes makes comparisons between countries with considerably different learning outcomes easier to interpret. The Programme for International Student Assessment (PISA) effect size methodology has been adopted to calculate effect size in this study (OECD, 2009b). We have used effect-size benchmarks suggested by Hattie (2008), with 0.2 a small effect, 0.4 a medium effect and 0.6 a large effect on outcomes.

THE IMPACT OF THE COVID-19 DISRUPTION ON STUDENTS

Digital platforms provide learning opportunities during school closures (UNESCO, 2020a). When students cannot attend school, technologies allow a relative degree of continuation of regular classwork. However, it is important that any remote learning approach that uses technology is suited to the technological capabilities of families. Otherwise, students may not be able to access materials due to infrastructure or connectivity restraints, which may amplify inequalities among students (Munoz-Najar et al., 2021).

Students were asked about using technology during the COVID-19 disruption. Table 7.1 shows the proportions of students who had access to the internet and the proportions of students who used digital devices for their schoolwork. Students in Kenya and Senegal were most likely to have reliable internet access (26% and 18% respectively), while most students in the other MILO countries did not

have access to the internet. Consistently, around half of the student populations in Kenya and Senegal had some access to digital devices but students in the other MILO countries had very low access.

Family support was vital for students during the pandemic, despite many families experiencing difficult circumstances. Parents had to juggle child-minding (due to school and childcare closures) and their own working responsibilities, others had financial concerns due to losing their jobs, while others involved in healthcare may have had to live away from their families to reduce the risk of exposing them to COVID-19 (Fisher et al., 2020).

In the MILO project, students were asked whether their families had experienced any of a number of difficulties through the COVID-19 disruption. Table 7.2 shows the proportions of students who reported each difficulty. Students in Kenya and Senegal experienced more family difficulties than students in other countries and students in all countries were most likely to report that their families had to be more careful with money.

TABLE 7.1 Students' access to the internet and digital devices in MILO countries

		Burkina Faso (Student %)	Burundi (Student %)	Côte d'Ivoire (Student %)	Kenya (Student %)	Senegal (Student %)	Zambia (Student %)	MILO Median (Student %)
Internet access	Yes, worked well	1	4	3	26	18	7	6
	Yes, did not work well	2	4	3	17	11	4	4
	No access	91	97	94	58	70	89	90
Digital device	Laptop/desktop/tablet	2	4	6	10	17	4	5
	Smartphone	2	2	1	18	10	4	3
	Shared digital device	2	7	5	18	15	9	8
	School digital device	2	3	1	7	4	2	3
	No digital device	92	83	87	47	54	81	82

TABLE 7.2 Student reported family difficulties during COVID-19 disruption in MILO countries

	Burkina Faso (Student %)	Burundi (Student %)	Côte d'Ivoire (Student %)	Kenya (Student %)	Senegal (Student %)	Zambia (Student %)	MILO Median (Student %)
Parents/guardians lost their job(s)	30	9	10	59	42	22	26
Family had to be more careful with money	65	27	64	71	69	64	64
Parents/guardians had to work from home	54	13	29	59	53	34	44
Family had to move to a new location	16	6	8	19	18	13	14
Had to live away from parents/guardians	15	6	9	19	21	12	14
Missed meals usually got at school	42	8	21	27	27	16	24
Someone in household was very sick	17	7	9	23	19	16	16

Studies have shown that students in both South Africa and Ethiopia had high levels of anxiety, stress and depression during the pandemic (Woday Tadesse et al., 2021; Visser & Law-van Wyk, 2021). In response to the COVID-19 disruption, students may have felt anxious and worried about a range of issues. Students were asked whether they agreed or disagreed with a series of statements about how they felt during the COVID-19 disruption. Table 7.3 shows the proportions who agreed or strongly agreed with each statement.

Across the MILO countries, student worries and concerns were high. The most commonly reported concerns were that students were scared about what was happening due to COVID-19, were worried about catching COVID-19, were worried about how the disruption affected learning and were worried about changes in schooling. Students in Zambia and Côte d'Ivoire showed higher levels of worries or concerns due to the pandemic. They also experienced school closures of at least 13 weeks' duration (see Chapter 5), which were similar to the closures in Burkina Faso and Senegal. Students in Kenya experienced the longest school closures, while students in Burundi did not experience closures.

A student anxiety scale was derived from the items in Table 7.3. Figure 7.1 shows the effect size for the difference in reading and mathematics proficiency by student anxiety, comparing lower and higher levels of anxiety. A large effect was found in Kenya, with students with higher levels of anxiety displaying higher proficiency in both reading and mathematics. A small to medium effect was found in Senegal, again with higher reading and mathematics proficiency for those students with higher anxiety. A small effect was found for students in Burkina Faso, in relation to reading proficiency, with students with higher anxiety tending to have higher reading proficiency. Conversely, there was a small effect in reading and mathematics proficiency in Zambia, with students with lower levels of anxiety showing higher proficiency than those with higher levels of anxiety.

TABLE 7.3 Students' worries and concerns during COVID-19 disruption in MILO countries

	Burkina Faso (Student %)	**Burundi** (Student %)	**Côte d'Ivoire** (Student %)	**Kenya** (Student %)	**Senegal** (Student %)	**Zambia** (Student %)	**MILO Median** (Student %)
Worried about changes in schooling	79	71	85	73	79	87	79
Scared about what happening due to COVID-19	83	83	92	74	83	89	83
Worried how disruption affected learning	79	70	88	78	77	90	78
Worried about catching COVID-19	82	79	92	70	80	89	81
Difficult to concentrate on schoolwork	73	54	79	57	67	78	70
More lonely than usual	69	44	66	53	69	78	67
Upset about things would not normally bother	62	46	56	53	58	68	57
Felt angry more than usual	62	44	55	49	56	64	55

Students were asked about difficulties they experienced in returning to school after the COVID-19 disruption. Table 7.4 shows the proportions of students who agreed or strongly agreed that they experienced difficulties when they returned to regular lessons at school. The majority of students in Côte d'Ivoire reported difficulties in returning to regular lessons after the COVID-19 disruptions (between 61% and 89%). Students in Burundi were least likely to report difficulties returning to regular lessons as these students were unlikely to have experienced school closures (see Chapter 5). The majority of students in Burkina Faso, Côte d'Ivoire, Kenya, Senegal and Zambia reported experiencing difficulties in returning to regular lessons after the COVID-19 disruption.

Students in most of MILO countries, except for Burundi, were likely to report that they were more worried than before the disruption. Students in Côte d'Ivoire were most likely to report that they were not as interested in schoolwork and found it difficult to focus on schoolwork.

FIGURE 7.1 Reading and mathematics proficiency by student anxiety scale

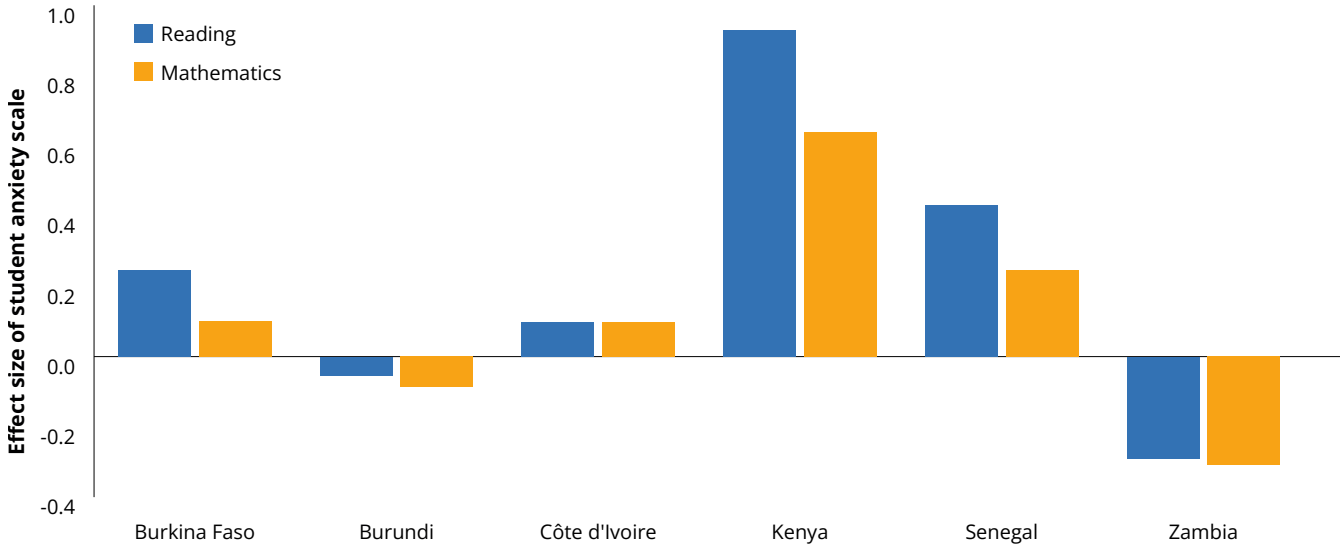


TABLE 7.4 Student reported difficulties in returning to regular lessons after COVID-19 disruption across MILO countries

	Burkina Faso (Student %)	**Burundi** (Student %)	**Côte d'Ivoire** (Student %)	**Kenya** (Student %)	**Senegal** (Student %)	**Zambia** (Student %)	**MILO Median** (Student %)
Not as interested in schoolwork	52	18	89	41	51	37	46
Found it difficult to focus on schoolwork	65	20	88	50	51	46	51
Did not talk to classmates as much	53	20	61	48	52	49	51
Worked more slowly on schoolwork	58	17	81	41	48	47	47
More worried than before	65	27	82	57	60	57	59
Any concerns	**91**	**40**	**93**	**87**	**90**	**81**	**88**

SUPPORT PROVIDED TO STUDENTS

Family support

Parents' involvement in their child's learning has been shown to positively impact academic achievement (Borgonovi, & Montt, 2012; Pacific Community Educational Quality and Assessment Programme, 2019; UNICEF & SEAMEO, 2020). In particular, there is a positive relationship between a parent's literacy activities with their children and their children's achievement in literacy (Hemmerechts et al., 2017). During school closures, students were more reliant on support from their families.

In the MILO Student Questionnaire, students were asked about support they received from their families during the disruption. Table 7.5 shows the proportion of students who reported sometimes or often receiving specific support from their family. Students in Kenya and Senegal were most likely to report that they sometimes or often received each of the types of support from their families.

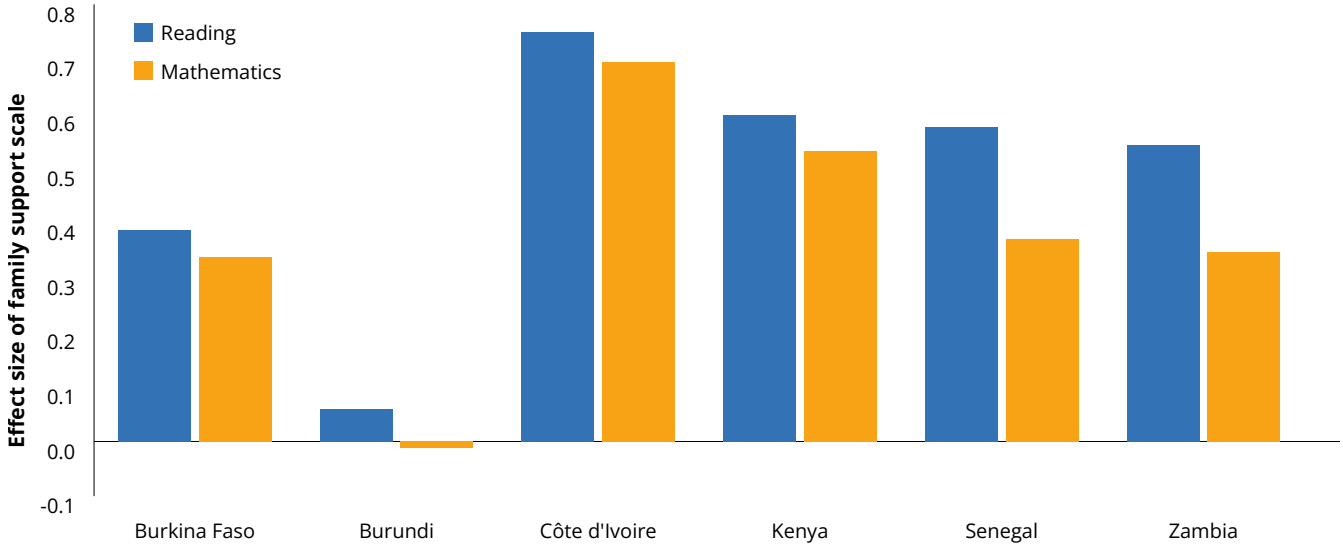
Students mostly reported that they received help with mathematics, reading and writing. The least reported type of support was receiving help to use digital devices to access or do schoolwork (likely this was due to a lack of access – see Table 7.1).

A family support scale was derived from the items in Table 7.5. Figure 7.2 presents the effect size for reading and mathematics proficiency by family support, comparing students who received less support to those who received higher levels of support. Students who received higher levels of support tended to display higher proficiency in reading and mathematics. A large effect was found in Côte d'Ivoire and a medium to large effect was found in Kenya for reading and mathematics proficiency, while in Senegal and Zambia there was a medium effect for reading and a small effect for mathematics proficiency. There was a small effect in Burkina Faso for both reading and mathematics proficiency. These results reinforce the notion that parental involvement positively impacts student achievement.

TABLE 7.5 Student reported frequency of familial support (sometimes or often) during COVID-19 disruption across MILO countries

	Burkina Faso (Student %)	**Burundi** (Student %)	**Côte d'Ivoire** (Student %)	**Kenya** (Student %)	**Senegal** (Student %)	**Zambia** (Student %)	**MILO Median** (Student %)
Help with reading and writing	50	26	44	85	76	65	57
Help with mathematics	55	29	46	86	78	64	59
Ask what student was learning	48	31	38	84	72	59	53
Help create a learning timetable	36	26	27	70	61	37	36
Help access learning materials	41	32	29	73	60	43	42
Check student is completing schoolwork	47	35	41	79	72	49	48
Explain new topics to you	35	27	28	69	60	39	37
Help use digital device for schoolwork	18	9	11	49	44	23	20

FIGURE 7.2 Reading and mathematics proficiency by family support scale



Support provided to students

Students were asked about support they received from someone at their school during the COVID-19 disruption. Table 7.6 shows the proportion of students who reported sometimes or often receiving specific support from someone at their school. Students in Kenya and Senegal were most likely to report that they frequently received support from their schools. Students in Burundi were least likely to receive support from their schools.

The most commonly reported method of support was that schools gave helpful tips to students about studying on their own, followed-up on checking students completed schoolwork and asked to see completed schoolwork. Students were least likely to report that their schools taught lessons on the internet or prepared schoolwork with online access – again mostly because access to the internet was low (see Table 7.1).

A school support scale was derived from the items in Table 7.6. Figure 7.3 shows the effect size for reading and mathematics proficiency comparing students with low levels of support from schools to those with higher levels of support. There was a small effect in Senegal and Zambia, with students who received more support from their schools tending to have higher proficiency in reading and mathematics than students who received less support.

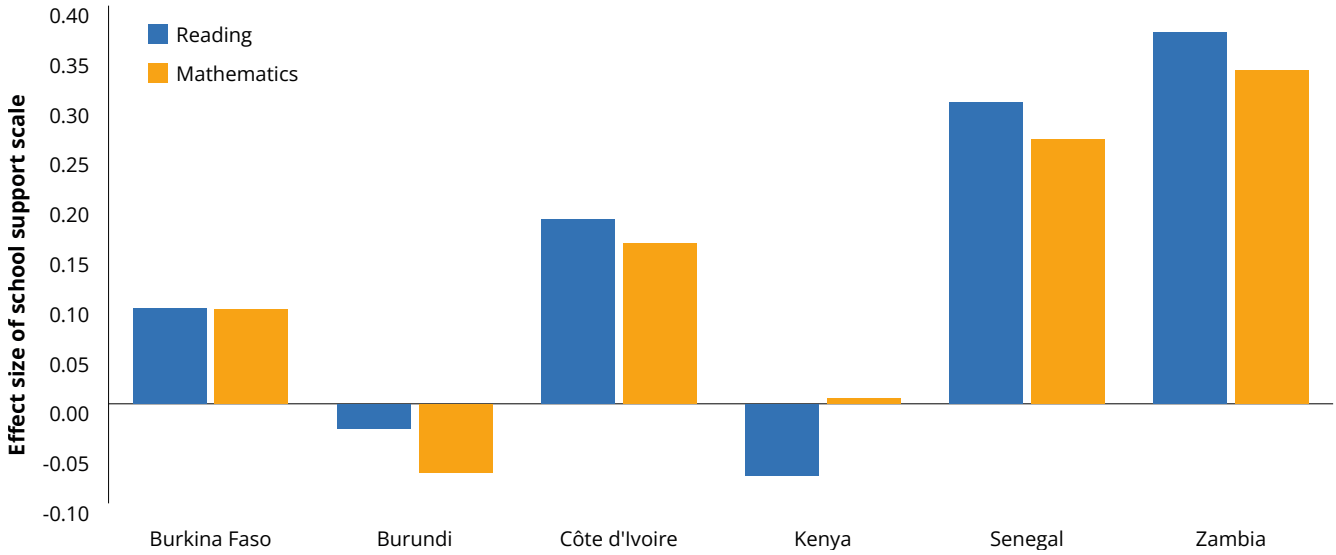
Students were also asked about support they received specifically from their teacher during the COVID-19 disruption. Table 7.7 shows the proportion of students who agreed or strongly agreed that they received support from their teacher. Students in Kenya were more likely to report that they received support from their teachers, whereas students in Côte d'Ivoire were least likely to report receiving support from their teachers.

Across all six MILO countries, students were most likely to report that their teachers encouraged them to learn and showed interest in their learning. Students were least likely to report that their teachers made special efforts to keep in contact.

TABLE 7.6 Student reported frequency of school support (sometimes or often) during COVID-19 disruption across MILO countries

	Burkina Faso (Student %)	Burundi (Student %)	Côte d'Ivoire (Student %)	Kenya (Student %)	Senegal (Student %)	Zambia (Student %)	MILO Median (Student %)
Send paper-based materials to home	17	5	7	50	27	14	15
Prepared paper-based materials for pick-up	17	8	5	42	23	14	15
Prepared schoolwork be accessed online	12	4	4	43	20	9	10
Taught lessons on the internet	11	4	4	43	20	9	10
Contacted student by SMS or social media	13	5	7	37	23	10	11
Asked student to watch shows on TV	39	9	52	55	56	21	46
Asked student to listen to shows on radio	52	24	41	58	50	25	45
Gave helpful tips about studying on own	59	31	44	75	62	38	51
Asked how student was feeling	43	29	34	64	50	28	38
Checked student completing schoolwork	37	40	22	68	48	22	38
Asked to see completed schoolwork	32	37	19	69	45	23	35

FIGURE 7.3 Reading and mathematics proficiency by school support scale

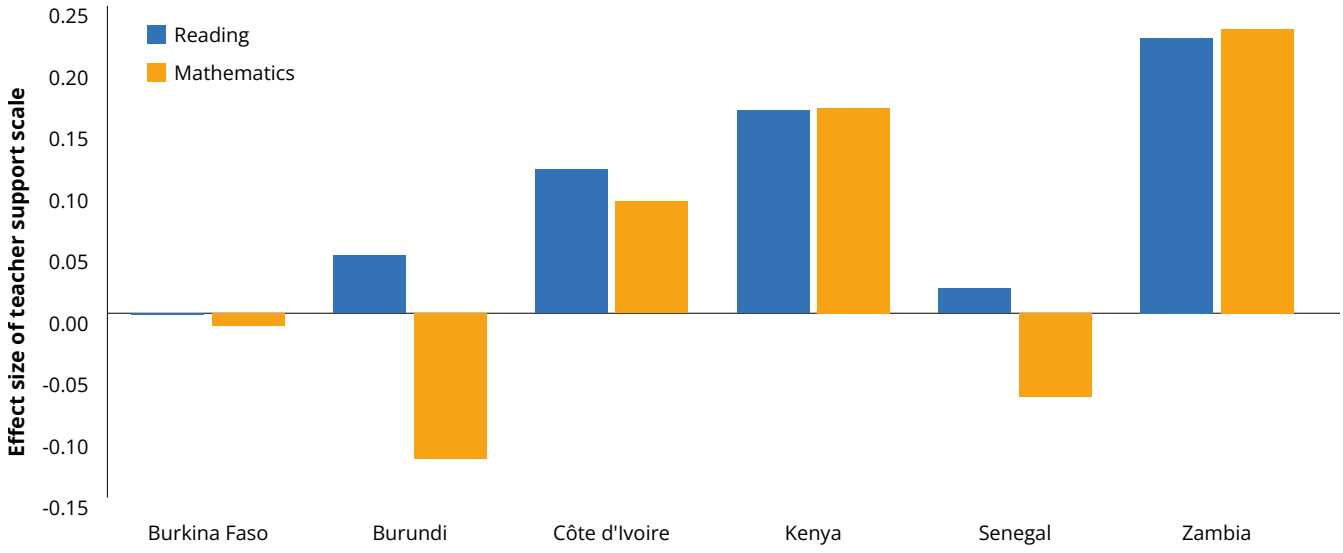


A teacher support scale was derived from the items in Table 7.7. Figure 7.4 shows the effect size for reading and mathematics proficiency comparing students with low and high levels of teacher support. There was a small effect in Zambia; students with higher levels of teacher support displayed higher proficiency in reading and mathematics.

TABLE 7.7 Student reported strongly agree or agree they received teacher support across MILO countries

	Burkina Faso (Student %)	Burundi (Student %)	Côte d'Ivoire (Student %)	Kenya (Student %)	Senegal (Student %)	Zambia (Student %)	MILO Median (Student %)
Teacher(s) available when needed help	39	51	26	61	49	40	44
Teacher(s) clear how best to contact	35	31	27	53	47	38	36
Teacher(s) gave feedback could understand	37	46	25	58	46	38	42
Teacher(s) special effort to keep in contact	30	39	23	50	41	35	37
Teacher(s) interest in student's learning	45	50	30	68	53	47	48
Teacher(s) encouraged student to learn	48	53	35	78	62	51	52
Teacher(s) adapted schoolwork meet needs	36	37	27	44	47	38	38

FIGURE 7.4 Reading and mathematics proficiency by teacher support scale



STUDENTS FACING DISADVANTAGE

Disadvantaged students have been shown to be more vulnerable to learning loss during emergencies in education, such as the COVID-19 disruption (Tarricone et al., 2021). The MILO contextual framework emphasises the importance of collecting information to identify vulnerable students (where it is appropriate to do so). In the Student Questionnaire, items were included to capture components of socio-economic status (SES), to record students who speak a minority language mainly at home and those who have a disability requiring additional support. SES is considered to be a construct comprised of three components: economic, social and cultural. These components are typically indicated by household wealth, parents' education and parents' occupation.

Socio-economic status[13] is broadly understood as 'the relative position of individuals or groups in a hierarchical social structure, based on the possession of some valued social, economic and cultural resources, values and attributes.' (Osses et al., forthcoming). There is a large body of evidence showing the association between children's SES and educational outcomes (see for example Broer et al., 2019; Sirin, 2005). This is particularly the case during emergencies in education, as children with low-SES characteristics have fewer family, economic and cultural resources to buffer them against the effects of emergencies, such as when schools need to close (Cullinane & Montacute, 2020; Di Pietro et al., 2020). In addition, emergencies such as COVID-19 can further reduce already low household incomes, which can force children to enter paid work with the threat of not returning to school, even after the emergency has subsided (Bekalo et al., 2003; Desai, 2020; Smitha, 2014; Wagner & Warren, 2020).

In MILO it was not feasible to capture meaningful data on parental occupation because of the age of the target population. Therefore, information about two out of the three SES components was collected. Family wealth – an economic indicator of SES – was measured by enquiring about home possessions, the construction material of household walls and the main source of household lighting. Parental education – an often-used cultural indicator of SES – is included in MILO with indicators of parental literacy and the highest level of education attained, using International Standard Classification of Education Indicators (UNESCO, 2012).

Disadvantaged students have been shown to be more vulnerable to learning loss during emergencies in education, such as the COVID-19 disruption.

Indicators associated with family wealth were aggregated into an index that reflects the economic context of students' homes for each country. Figure 7.5 shows the effect size for reading and mathematics proficiency by the country-specific index of family wealth, by comparing the wealthiest quarter of students to the least wealthy quarter.

There was a medium to large effect in reading and mathematics proficiency across most countries, students from higher wealth backgrounds showed higher levels of proficiency in reading and mathematics compared to those from low wealth backgrounds. There was a small effect on mathematics proficiency in Burundi and Kenya.

For younger-age students, home learning requires parents to either relay instructions from the school or take on the teaching responsibilities with guidance from the school (Obiakor & Adeniran, 2020). However, if the child comes from a home where neither parent is literate, or where parents have low literacy skills, then their parents' ability to assist with schoolwork is limited.

FIGURE 7.5 Reading and mathematics proficiency by family wealth

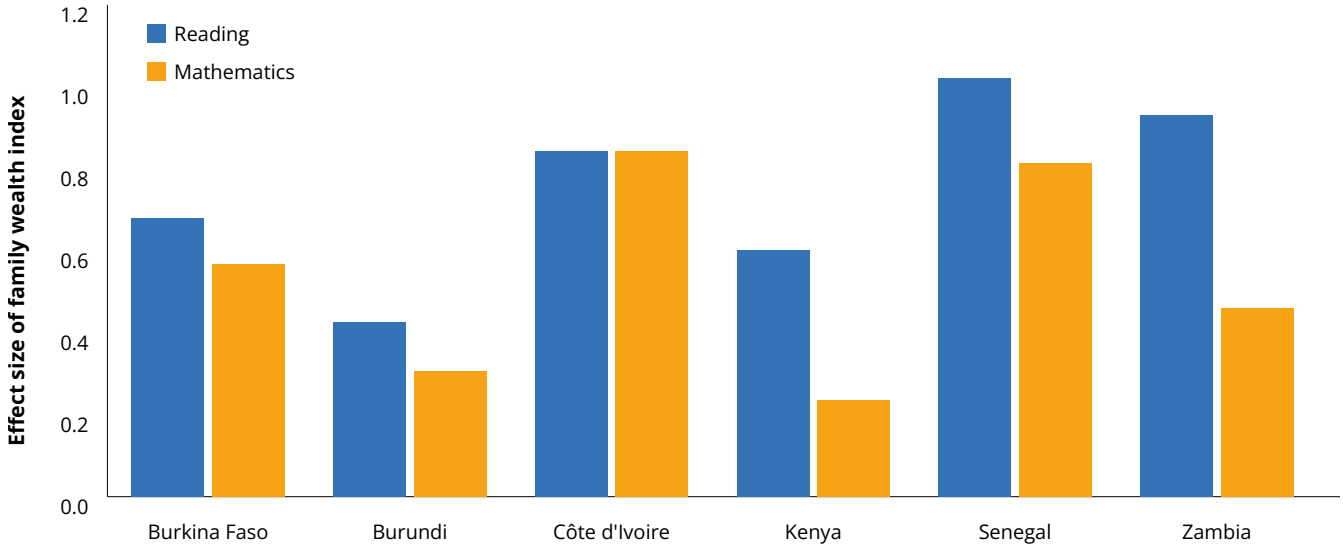


TABLE 7.8 Student reported parental literacy across MILO countries

		Burkina Faso (Student %)	Burundi (Student %)	Côte d'Ivoire (Student %)	Kenya (Student %)	Senegal (Student %)	Zambia (Student %)	MILO Median (Student %)
Mother	Can't read or write	53	20	49	7	31	10	25
	Either read or write	8	8	4	8	13	5	8
	Can read and write	38	72	47	85	56	85	64
Father	Can't read or write	40	16	28	6	17	10	16
	Either read or write	7	6	3	7	8	5	6
	Can read and write	54	79	68	87	75	85	77
Neither parent can read or write		33	9	24	3	12	3	10
Some parental literacy		36	26	33	15	39	15	30
Both can read and write		31	65	43	81	50	82	57

In the MILO project, students were asked about their parents' literacy in terms of whether their mother and father could read and write. This was asked regardless of whether or not the student lived with both parents. Almost three quarters of students lived with both parents (72%). Sixteen per cent lived with one parent and 12% lived with neither parent. Around five per cent of students didn't report their mother's or father's literacy, with some answering for one parent but not the other.

Table 7.8 shows the proportions of students in MILO countries who reported that their mother and father could read and write. Students were more likely to report that their fathers could read and write compared to their mothers. Around half of students in Burkina Faso and Côte d'Ivoire (53% and 49% respectively) reported that their mothers could neither read nor write. Most students reported that their fathers could both read and write, which ranged from more than half in Burkina Faso (54%)

through to a substantial majority of students in Kenya and Zambia (87% and 85% respectively).

Eighty-one per cent of students in Zambia and 82% in Kenya reported that both their parents could read and write compared to 50% in Senegal, 43% in Côte d'Ivoire (43%) and 38% in Burkina Faso.

Figure 7.6 examines the effect size for reading and mathematics proficiency by parental literacy. There was a large effect in Burkina Faso, Côte d'Ivoire, Kenya and Senegal in reading proficiency by parental literacy; students who reported that both their parents could read and write displayed higher reading proficiency than those who reported that neither parent could read nor write. There was a large effect in mathematics proficiency in Côte d'Ivoire and a medium effect in Burkina Faso, Kenya and Senegal; students whose parents could both read and write showed higher mathematics proficiency than those who reported their parents could not.

Students of parents with poorer literacy are likely to have lower levels of achievement (Wagner & Spratt, 1988). This suggests that these students are further at risk, given the large periods of time they were forced to be absent from school without parents with the appropriate literacy skills to support their learning needs.

Students were also asked about their mother's and father's highest formal education. Table 7.9 shows the proportions of students in MILO countries who reported the highest level of education attained by each parent as well as the highest level of education attained by either parent. Students were more likely to report that their mothers did not complete primary education compared to their fathers in all MILO countries.

Around half the students in Burkina Faso, Burundi and Côte d'Ivoire reported that their highest parental education was below primary school level (53%, 48% and 45% respectively). In Kenya, Senegal and Zambia, the highest level of educational attainment was more likely to be completion of primary or secondary schooling (44%, 50% and 60% respectively). Less than ten per cent of students in Senegal, Côte d'Ivoire, Burundi and Burkina Faso reported that their highest parental education was university level or higher.

FIGURE 7.6 Reading and mathematics proficiency by parental literacy

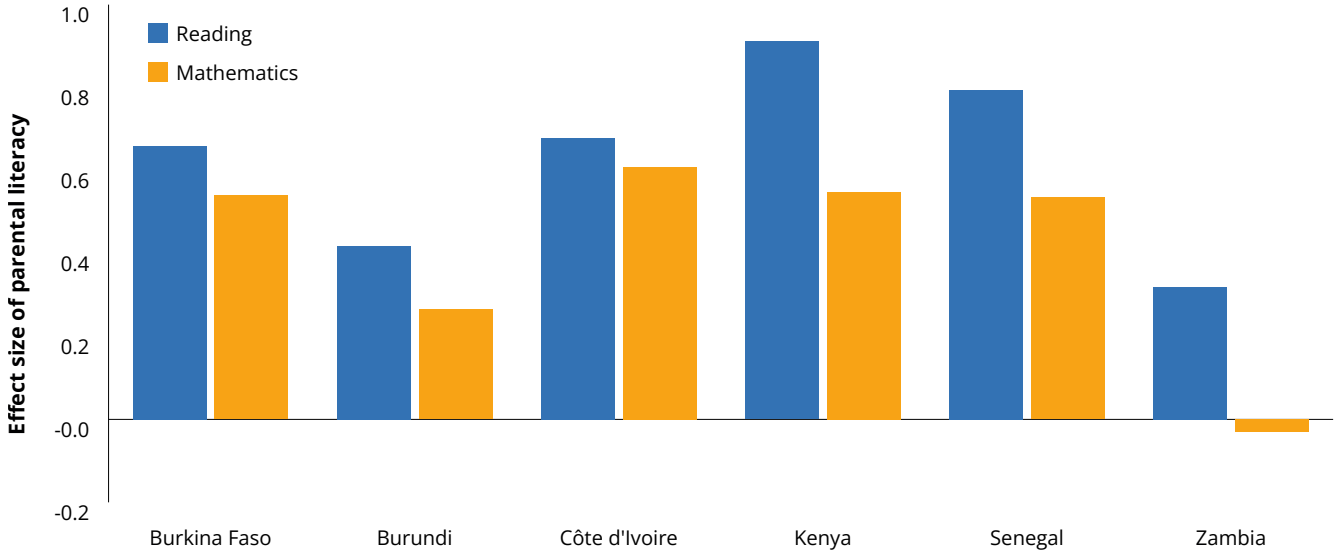


TABLE 7.9 Student reported parental education across MILO countries

		Burkina Faso (Student %)	Burundi (Student %)	Côte d'Ivoire (Student %)	Kenya (Student %)	Senegal (Student %)	Zambia (Student %)	MILO Median (Student %)
Mother	Did not complete primary	67	63	68	12	45	18	54
	Completed primary or secondary	26	29	25	51	43	62	36
	Post-secondary, non-university	3	3	4	20	5	12	4
	University or higher	4	5	3	16	7	8	6
Father	Did not complete primary	60	57	50	9	34	13	42
	Completed primary or secondary	32	35	38	47	45	59	42
	Post-secondary, non-university	3	3	5	23	9	17	7
	University or higher	5	6	7	21	12	12	9
Highest parental education (either mother or father)	Did not complete primary	53	48	45	5	26	8	36
	Completed primary or secondary	36	39	40	44	50	60	42
	Post-secondary, non-university	14	6	17	31	22	33	20
	University or higher	4	4	6	24	9	18	8

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Figure 7.7 presents the effect size for reading and mathematics proficiency by parents' highest level of education attained. There was a medium to large effect across all MILO countries; students whose parents' highest level of education attained was post-secondary level or higher showed higher proficiency in reading compared to those students whose highest parental education was below primary school. There was a large effect in mathematics achievement in Côte d'Ivoire, and a medium effect in Kenya and Senegal.

Students were asked what language they spoke at home. Table 7.10 shows the proportion of students who spoke the language of the assessment (French or English) or another language. Across all MILO countries, the majority of students spoke a language other than the language of the assessment at home. Around one-quarter of students in Côte d'Ivoire spoke the language of assessment (23%), compared to between one and six per cent across the other MILO countries (Burkina Faso, Burundi, Kenya, Senegal and Zambia).

Figure 7.8 shows the effect size for reading and mathematics proficiency where the language spoken at home matched the language of the assessment compared to those who spoke a different language. The was a large effect on reading and mathematics proficiency in Côte d'Ivoire and a medium to large effect in Zambia; students who spoke the language of the assessment showed higher proficiency in reading and mathematics than those who spoke another language at home. Further, there was a medium effect in reading proficiency in Burkina Faso and Senegal; students who spoke the language of assessment showed higher proficiency than those who spoke a different language. Results showing a positive relationship between speaking the language of assessment and academic achievement are consistent with other studies of developing countries (Pacific Community Educational Quality and Assessment Programme, 2019; UNICEF & SEAMEO, 2020).

FIGURE 7.7 Reading and mathematics proficiency by highest parental education

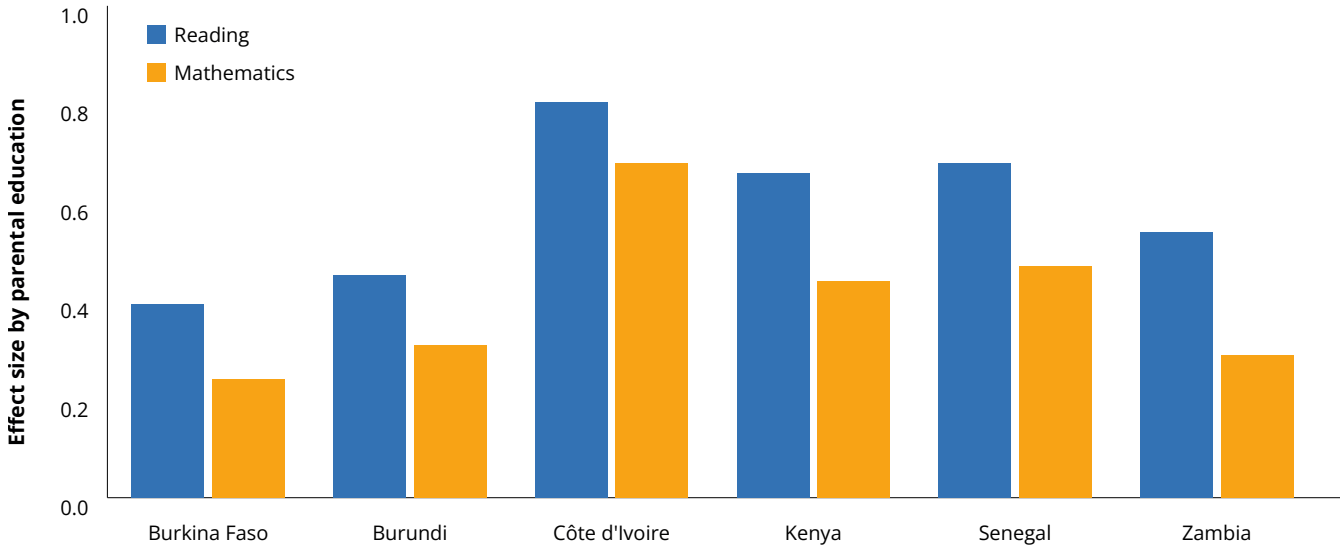
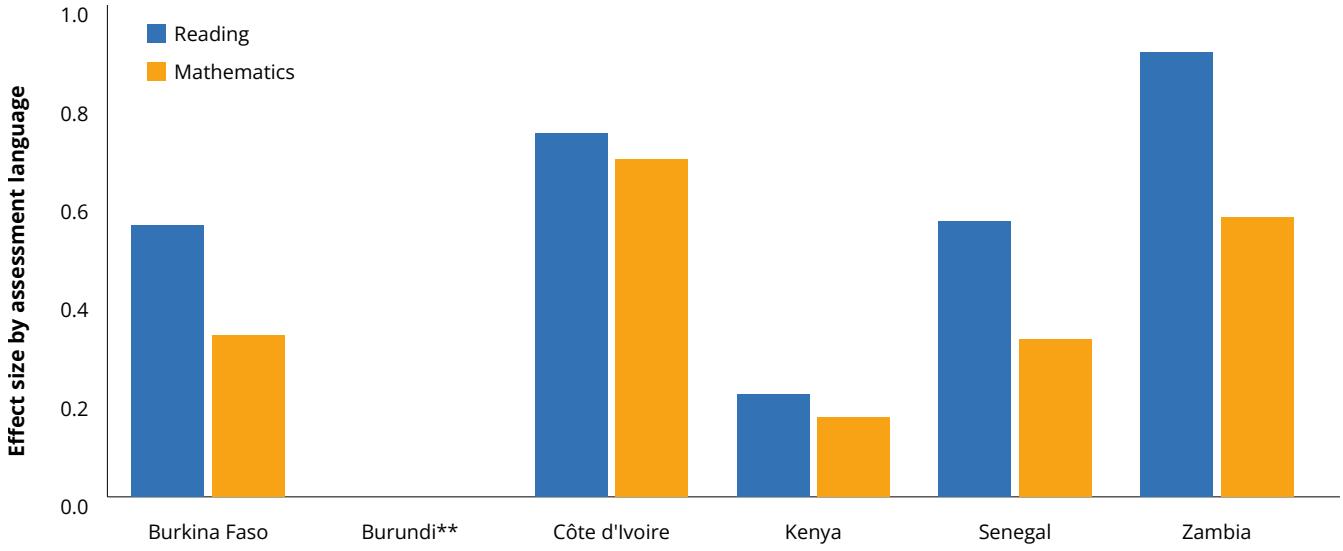


TABLE 7.10 Language spoken at home across MILO countries

	Burkina Faso (Student %)	Burundi (Student %)	Côte d'Ivoire (Student %)	Kenya (Student %)	Senegal (Student %)	Zambia (Student %)	MILO Median (Student %)
Language of assessment	6	1	23	3	3	5	4
Other language	94	99	77	97	97	95	96

FIGURE 7.8 Reading and mathematics proficiency by language spoken at home



** Burundi's results are not included due to small sample size

The International Network of Education in Emergencies has highlighted that children with disability (or special needs) are particularly vulnerable during emergencies (INEE, 2020). Children with disability often experience barriers accessing information, as well as increased isolation and exclusion from decision-making. Further, the additional support that might usually be provided to children with disability is often interrupted during an emergency (Dickinson et al., 2020; Good, 2015). Although, children with disability are vulnerable during emergencies across all education systems, risks are heightened in low-income countries, which have fewer resources to cater to them (Wagner & Warren, 2020). For example, parents of children with disability in Uganda reported struggles with home education and learning due to lack of access to accessible learning materials and learning support (Mbazzi et al., 2021).

Children with disability often experience barriers accessing information, as well as increased isolation and exclusion from decision-making.

In the MILO project, students were asked whether they received support from their schools or teachers during the COVID-19 disruption in relation to their disability. Table 7.11 shows that the majority of students across the MILO countries[14] reported that they did not have a disability. Support received varied across the countries, with up to six per cent reporting that they received extra support and up to seven percent reporting they received less support (than other students).

Figure 7.9 shows the effect size for reading and mathematics proficiency, comparing students with a disability to those with no disability. There was a medium effect in Senegal; students with a disability showed lower proficiency in reading and mathematics compared to those with no disability. Conversely, there was a small effect in Zambia, with students with a disability showing higher proficiency in reading and mathematics compared to those without a disability. It should be noted that disabilities range from those that have minimal impact on a child's academic outcomes without support to those requiring major levels of support and intervention.

TABLE 7.11 Students receiving support for a disability

	Burkina Faso (Student %)	**Burundi** (Student %)	**Côte d'Ivoire** (Student %)	**Kenya** (Student %)	**Senegal** (Student %)	**Zambia** (Student %)	**MILO Median** (Student %)
No disability	85	91	89	N/A	81	89	89
Received extra support	4	3	2	N/A	6	3	3
Received the same level of support	6	3	3	N/A	6	3	3
Received less support	5	3	6	N/A	7	5	5

FIGURE 7.9 Reading and mathematics proficiency by student disability

** Kenya's results are not included due to data validation issues

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).