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Covid-19 and EdTech in Africa: A Country-Level Review Based on eLearning Africa Data

Date May 2021

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Recommended citation

Damani, K. (2021). *Covid-19 and EdTech in Africa: A Country-Level Review Based on eLearning Africa Data* [Academic papers]. EdTech Hub. https://doi.org/10.5281/zenodo.4703718 Available at https://docs.edtechhub.org/lib/CDC2W7Q6. Available under Creative Commons Attribution 4.0 International, https://creativecommons.org/licenses/by/4.0/.

Notes

EdTech Hub is supported by UK aid and the World Bank; however, the views expressed in this document do not necessarily reflect the views of the UK Government or the World Bank.

Acknowledgements

Our thanks to the eLearning Africa team for their collaboration on this report. Particular thanks go to all the education and technology professionals who kindly contributed their time and expertise by submitting responses to the original survey.

Reviewers

Rebecca Stromeyer, Harold Elletson, David Hollow

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Abbreviations and acronyms

ADEA Association for the Development of Education in Africa

ANOVA Analysis Of Variance

DRC Democratic Republic of the Congo

GDP Gross Domestic Product

IGO Intergovernmental Organisation

NGO Non-governmental Organisation

OLS Ordinary Least Squares

SD Standard Deviation

Executive summary

The school closures as a result of Covid-19 have led to major disruption of education for millions of children in Africa and across the globe. Among the strategies for responding to this problem has been the use of educational technologies to support distance learning, from primary to tertiary level.

eLearning Africa and EdTech Hub wanted to understand the perspectives of those working in education and technology across Africa, to gain insights into how they view the pandemic and the place of technology in helping to overcome challenges in education. A survey was conducted with over 1600 responses from 52 African countries, and the findings were published in September 2020 in this report. The report provided valuable learning from across the continent and was widely cited in international media.

This follow-on report builds on the original, providing detailed country-specific and thematic analyses on noteworthy trends. The country-specific analyses focus on the 13 countries where most survey respondents worked. The ten key findings from the additional analysis presented in this report are that, at the point of data collection:

1. The perceived effectiveness of governments' distance learning strategies was much greater in countries where educational institutions worked to involve parents in planning new arrangements for their children's education during the Covid-19 pandemic.

2. Students from rural communities and students from low-income households are considered to be the most educationally disadvantaged by the pandemic. Primary-level education is considered to be the most disadvantaged by the pandemic.

3. More than three-quarters of education and technology professionals think that the move to online learning increases inequality and disadvantages poorer and more marginalised students.

4. In 12 of the 13 countries, at least three-quarters of respondents considered that the use of technology in education will become more widespread as a result of Covid-19. However, the DRC was the

exception, where only 40% of respondents thought it would become more widespread.

5. Rwanda is the country where those working in education and technology are most likely to report that they have received clear guidance from the government regarding how to use EdTech during the pandemic.

6. When asked what devices are most important for replacing face-to-face learning during the pandemic, most respondents working in the DRC said radio (31.4%) followed by laptop (20%). Those in Rwanda said laptops (32.6%) followed by smartphones (20.9%), and those in Cameroon said smartphones (38.2%), followed by television (20.6%).

7. The countries where the highest proportion of participants reported that the government was likely to take teachers' views into account were Ghana (65.6%), Rwanda (64.6%), and Ethiopia (60.4%). The countries with the lowest reported proportion of participants who reported that the government took into account teachers' views were the DRC (24.4%) and Nigeria (24.8%).

8. In the DRC, the education and technology community considers paper-based materials to be the most important way to sustain distance education at both primary and secondary levels.

9. Respondents from countries with higher proportions of rural populations were more likely to consider their governments' Covid-19 distance learning strategy to be ineffective.

10. Respondents from countries with smaller populations were more likely to be satisfied with their governments' action in minimising the impact of Covid-19 on education.

It is clear that countries across Africa have faced a wide range of challenges and adopted different strategies for using technology to help sustain education during Covid-19 school closures. There is no universally applicable strategy for all countries. It is hoped that this report provides a useful resource for those engaged in ongoing decision-making regarding effective education policies in the context of Covid-19, highlighting noteworthy trends and synthesising the perceptions of education and technology professionals working across the continent.

1. Introduction

1.1. Purpose of the report

The purpose of this report is to provide insights regarding the similarities and differences in the perceptions of education and technology specialists working across Africa regarding the way in which Covid-19 is influencing education in their respective countries. It builds on the initial eLearning Africa report on Covid-19, which was published in September 2020 and was based on the survey responses of over 1600 individuals across 52 countries. This second report provides additional analyses of the survey responses, exploring key themes and undertaking detailed country-specific analyses of the 13 countries that had a higher number of survey responses. It is anticipated that this report will prove useful for policymakers and those involved in educational technology in the 13 focus countries.

1.2. Structure of the report

This report has six sections. Section 1 gives a brief introduction to the purpose and structure of the report. Section 2 outlines the methodological approach used to analyse the eLearning Africa survey data. Section 3 has 13 subsections, each relating to one of the focus countries. Each subsection provides a short overview of school closures and reopenings as a result of Covid-19, as well as details on survey results specific to each country.

Section 4 contains a comparative analysis of the findings from the 13 focus countries. It highlights the ways in which countries differ from each other along eight thematic lines that emerged from the survey. These themes are:

1. The perceived level of threat of Covid-19
2. Government responses to Covid-19
3. Knowledge of Covid-19
4. Obstacles to learning
5. Distance learning
6. Effectiveness of planning and response
7. Educational technology — challenges and solutions
8. The long-term impact of Covid-19

Section 5 provides an overview of the statistical relationships between different variables across the entire eLearning Africa survey dataset of 52 countries. The variables that were explored relate to:

- Wealth
- Rurality
- Level of threat of Covid-19
- Effectiveness of government strategy
- Access to education and technology

Section 6 provides a brief conclusion to the report.

2. Methodological approach

2.1. Approach to analysis of eLearning Africa survey data

This report is based on the analysis of survey data collected from 1,649 respondents from the eLearning Africa network between May 27 and June 15, 2020. The survey was made available in English, French, and Portuguese. Survey respondents work in education, the technology sector, Intergovernmental organisations (IGOs), Nongovernmental organisations (NGOs), and the public sector. Thirty-nine thousand and four hundred and forty-three requests were initially sent out to the eLearning Africa network, and 1,702 responses were received. However, 53 responses came from people working outside of Africa and were therefore not considered, leaving a final sample size of 1,649. Of these, 1,605 were most relevant to the analyses herein. A breakdown of the number of participants from each country can be found in Annex A.

The survey findings were analysed in different ways for each section of this report. The entire sample was used for the findings presented in findings by theme Section 5 as this presents an overview of the EdTech landscape in Africa in relation to Covid-19. A subset of the sample was used for a cross-country comparison in Section 4 and findings by country in Section 3. The subset for these sections is from the 13 countries that had at least 45 respondents to the survey. These countries are Cameroon, the Democratic Republic of the Congo (DRC), Ethiopia, Ghana, Côte d'Ivoire, Kenya, Nigeria, Rwanda, Senegal, South Africa, Tanzania, Uganda, and Zambia. It was decided to focus on these countries since the overall sample contained too few respondents from the remaining countries, to enable reasonably reliable statistical analysis on trends within them.

Additional data were then added to the dataset, namely, World Bank data on the countries' Gross Domestic Product (GDP) per capita (referred to throughout this report as 'wealth') (↑The World Bank, 2021), the countries' populations (↑The World Bank, 2021) and the percentage of a population living in rural areas (↑The World Bank, 2021). These data were added at the country level, according to which country a respondent worked in. For example, if a respondent worked in Kenya, the World Bank data associated with Kenya was added to their response. The addition of this additional

data facilitated extended analysis of how other survey items on EdTech and Covid-19 related to wealth and population. Wealth and population factors, and specifically the urban–rural divide, were added to the data as there is widely reproduced evidence of their relationship to EdTech infrastructure, education, and access to healthcare worldwide (↑Bakibinga-Gaswaga, et al., 2020).

2.2. Detail on analytical approaches used

The analyses used to explore the survey data can be roughly grouped into two sets. The first set of analyses explored associations between variables across the overall sample. This involved correlation and regression analysis to help provide a clear overview of trends across the relevant countries. Both correlations and regressions are methods of statistical analysis used to explore the strength (denoted by 'r' in correlations and 'r^2' in regressions) and direction (denoted by a positive or negative sign on the r or r^2 value) of associations between variables. Associations that are commonly considered statistically significant have p-values of less than 0.05.

Although both correlation and regression analyses allow an exploration of associations between variables, there are a few key differences between them. Put simply, correlation analysis only allows exploration of the relationship between two variables. However, regression analysis explores how one or several (e.g., multiple regression) variables might affect or predict change in one outcome variable. Thus, correlation analysis is useful in giving a basic overview of relationships between pairs of variables in the dataset, while regressions are useful for exploring what group of variables might together predict an outcome variable. There are several types of regression and correlation analysis that might be specifically applicable to different types and combinations of types of data, such as, for continuous data (e.g., age), data that can be ranked (e.g. 1st place, 2nd place, etc.) and data that can be categorised(e.g., gender). The type of correlation or regression used also depends on whether the data meet various assumptions, such as having a normal distribution for example. All of the considerations mentioned in this paragraph, and others, were made when deciding which analysis to use for exploring associations between variables in the dataset.

The second set of analyses focused on descriptive statistics. As the name suggests, the main aim of descriptive statistics is to describe the data, for

example, in terms of frequencies, percentages, and measures of central tendency (mode, median, and mean). These statistics help present a quick overview of groups represented in the dataset (e.g., the number of men, the number of people who responded in a particular way, or the average age of a sample). Such statistics were used to create a picture of the overall sample but were chiefly used to elucidate the differences between the strategies used and challenges faced by the countries studied. Chi-square (x^2) tests, which test whether two categories of responses or groups are related (e.g., a preference for using a certain type of technology and the country a respondent came from) were used as a measure of the significance of the differences between countries. The chi-square test statistic (x^2) thus revealed whether the different descriptive statistics in each country were the result of more than just chance.

The results of this analysis are presented across three sections. The first, in Section 3, gives an overview of each country's Covid-19 education response and key findings from the survey. The second, in Section 4, focuses on significant differences in descriptive statistics by country. The third, in Section 5, considers trends across the overall sample.

2.3. Parameters and limitations

It is important to note that the analyses conducted for this report are based on responses to a large-scale survey that primarily collected data related to the perceptions and experiences of respondents. This means that the data set and all the associated statistical analyses are about the perspectives of the education and technology professionals who responded. As such, they provide valuable insights regarding the beliefs of the cohort of respondents, but analyses do not necessarily claim to fully reflect all the operational realities within each specific country. Because of this, in order to remind the reader of the purpose and emphasis of the report, the findings throughout the report are prefaced with phrases such as 'the perception of respondents is that'.

The survey was conducted between May 27 and June 15, 2020. As a result, and because of the fast-moving nature of the education response to Covid-19, the most recent contextual information about countries is very likely to differ from what respondents chose to include in their survey responses.

There are many areas where the report identifies significant trends or findings but deliberately does not expand on the implications or likely reasons behind them. It is anticipated that exploration of the underlying causal factors behind the data is best taken up by experts in the focus countries, using this initial analysis as a springboard for further work. Finally, it is also notable that while the survey data were collected from people working in Africa, this follow-up report was analysed and written by a non-African.

3. Findings by country

This section explores the results of the eLearning Africa survey for the 13 countries which had over 45 responses. The countries are listed in alphabetical order. Each country section includes a brief overview of policy responses, specifically with respect to the education sector during the Covid-19 pandemic. This is then followed by a summary of the survey findings specific to each country. The country outline then ends with a summary of survey statistics relevant to it.

3.1. Cameroon

The Cameroonian government took the decision to close schools on March 17, 2020, because of the threat of Covid-19 (↑Kindzeka, 2020). Schools were reopened in October 2020.

3.1.1. Summary of survey findings for Cameroon

In most countries, survey participants expressed uncertainty about whether their government had issued guidance on how to use EdTech during the pandemic. However, in Cameroon, 61.5% of respondents were clear that the government had issued guidelines. By way of comparison, only Rwanda had higher levels of reported guidance from the government (66.7%) and every other country reported less than 50%.

Respondents working in Cameroon did not significantly differ from other country responses in most other areas. One noteworthy exception relates to what was considered to be the biggest challenge with regard to using EdTech. In Cameroon, the biggest reported challenge was the availability of electricity, whereas in other countries the biggest barrier was seen as the affordability and availability of connectivity.

Table 1. *Summary of survey statistics on Cameroon.*

Topic	Top Response(s)
Students who are most educationally disadvantaged by the pandemic	Students from rural communities (45.2%) Students from low-income households (21.4%)

Stage of education most disadvantaged by the pandemic	Primary
Stage of education least disadvantaged by the pandemic	Higher Education / University
Best distance learning solutions	Primary: TV Secondary: Online learning
Best device for rapidly deployable, short-term replacement for face-to-face learning	Smartphone (38.2%) and TV (20.6%)
% respondents who believe the views of teachers were taken into account	39.5%
% respondents who are aware of falsehoods circulating about Covid-19	30.2%
% respondents who received professional development on distance-based learning	21.1%
Biggest obstacle to effectively using EdTech during the pandemic	Availability of electricity
Most significant obstacle facing students during Covid-19	Lack of access to technology (9), lack of a good learning environment at home (8), lack of access to learning materials (8), lack of interaction with teachers (8) and health risks to students in school (7)

3.2. Côte d'Ivoire

Many of the restrictions that were put in place in Côte d'Ivoire to curb the spread of the virus were lifted by July 2020. This included the reopening of schools in May 2020 (↑Reuters Staff, 2020).

3.2.1. Summary of survey findings for Côte d'Ivoire

Quite differently to the responses from those working in other countries, respondents working in Côte d'Ivoire considered the threat from Covid to be much lower than in other countries. Notably, the respondents in Côte d'Ivoire were the most likely to indicate that the availability and accessibility of relevant content were challenges with regard to the effective use of educational technology during the Covid-19 crisis. Of the respondents, 12.2% and 14.6% respectively considered these factors to be challenges. This contrasts with the overall figures of 4.4% and 3.2% respectively relating to these challenges. However, the biggest challenge to using educational technology in Côte d'Ivoire was similar to that of other countries — the availability and affordability of connectivity. Apart from the two differences mentioned above, Côte d'Ivoire is quite similar to other countries in terms of the responses received.

Table 2. *Summary of survey statistics on Côte d'Ivoire.*

Topic	Top Response(s)
Students who are most educationally disadvantaged by the pandemic	Students from rural communities (49.1%)
Stage of education most disadvantaged by the pandemic	Primary (50.9%)
Stage of education least disadvantaged by the pandemic	Vocational (3.5%)
Best distance learning solutions	Primary: TV Secondary: Online learning
Best device for rapidly deployable, short-term replacement for face-to-face learning	Smartphone (34.1%)
% respondents who believe the views of teachers were taken into account	31.6%
% respondents who are aware of falsehoods circulating about Covid-19	36.8%

% respondents who received professional development on distance-based learning	33.3%
Biggest obstacle to effectively using EdTech during the pandemic	Availability of connectivity (19.5%)
Most significant obstacle facing students during Covid-19	Lack of access to technology

3.3. Democratic Republic of the Congo (DRC)

Schools and universities in the DRC were closed on March 24, 2020, to stem the spread of Covid-19 but partially reopened in August 2020 (↑Ging, 2020) and fully in October 2020 (↑UNICEF, 2020). Despite schools reopening, learning has remained disrupted and therefore the need for distance-based learning methods continues.

3.3.1. Summary of survey findings for the DRC

Survey respondents based in the DRC had similar responses to those in other focus countries across Africa. However, there still were some key differences. These differences included the finding that paper-based learning materials are the most important medium for distance education delivery to primary students in the DRC, and not television, which is the top choice across the focus countries. Like Cameroon, the availability of electricity was seen as a big challenge with regard to using EdTech, alongside the availability of connectivity. Survey respondents in the DRC were also the most likely to think that falsehoods about the origin of Covid-19 were circulating — 70.7% of respondents in the country believed this to be the case. By comparison, the majority of respondents in most other countries tended to believe there was no misinformation about the origin of the virus.

Further, the DRC's perception of the best device for a rapidly deployable, short-term replacement for face-to-face learning was 'radios and laptops'. This was unlike the more typical response across other countries, which was 'smartphones'. Participants in the DRC were also the least optimistic about the use of technology being more widespread after the pandemic.

Only 40% of respondents thought it would be more widespread, which contrasts with the overall figure across Africa of 86.6%.

Table 3. *Summary of survey statistics on the DRC.*

Topic	Top Response(s)
Students who are most educationally disadvantaged by the pandemic	None in particular (37.5%) Students from rural communities (35%)
Stage of education most disadvantaged by the pandemic	Primary (35%)
Stage of education least disadvantaged by the pandemic	Higher Education / University (2.5%)
Best distance learning solutions	Primary: paper-based Secondary: paper-based and online learning
Best device for rapidly deployable, short-term replacement for face-to-face learning	Radio (31.4%) Laptop (20%)
% respondents who believe the views of teachers were taken into account	24.4%
% respondents who are aware of falsehoods circulating about Covid-19	70.7%
% respondents who received professional development on distance-based learning	2.8%
Biggest obstacle to effectively using EdTech during the pandemic	Availability of connectivity (20%) Availability of electricity (20%)
Most significant obstacle facing students during Covid-19	Lack of a good learning environment at home Lack of access to technology

3.4. Ethiopia

Schools in Ethiopia were closed in March 2020 to stop the spread of the virus. This has not only harmed students' education, but resulted in many children losing access to the free school meals they would have otherwise received. Schools began partially reopening on October 19 (↑Wuilbercq, 2020) but some remained closed for nearly nine months.

3.4.1. Summary of survey findings for Ethiopia

Respondents working in Ethiopia diverged from the norm established across other countries as to whether they felt that the Government had taken sufficient account of the views and experience of teachers in developing a Covid-19 response. The most common view held by participants across all countries was that the government had not sufficiently considered teachers' views. However, in Ethiopia, participants noted that the government *had* considered them. Only participants in Ghana and Rwanda responded similarly to those in Ethiopia.

Participants working in Ethiopia also differed in their views on the most useful medium for primary students. They stated that radio, and not TV, was the most important medium. In contrast to other countries, the respondents from Ethiopia did not consider secondary school students as being among the most disadvantaged group of students during the pandemic. In most other countries, participants viewed those in vocational and university education as the least disadvantaged by the pandemic, but in Ethiopia, the least disadvantaged were seen as vocational and secondary school students. The respondents from Ethiopia mirrored other countries in most other areas of the survey.

Table 4. *Summary of survey statistics on Ethiopia.*

Topic	Top Response(s)
Students who are most educationally disadvantaged by the pandemic	Students from rural areas (44.4%) Students from low-income households (31.1%)
Stage of education most disadvantaged by the pandemic	Primary (35.6%)
Stage of education least disadvantaged by the pandemic	Vocational (4.4%)

Best distance learning solutions	Primary: Radio Secondary: Online learning and TV
Best device for rapidly deployable, short-term replacement for face-to-face learning	Laptop, smartphone and tablet (all 20.5%) Radio (17.9%)
% respondents who believe the views of teachers were taken into account	60.4%
% respondents who are aware of falsehoods circulating about Covid-19	33.3%
% respondents who received professional development on distance-based learning	25.6%
Biggest obstacle to effectively using EdTech during the pandemic	Availability of connectivity (30.8%)
Most significant obstacle facing students during Covid-19	Lack of access to technology

3.5. Ghana

The Ghanaian government reopened schools in January 2021 after ten months of closure (↑AfricaNews, 2021).

3.5.1. Summary of survey findings for Ghana

Respondents in Ghana thought that the government took teachers' views into account in developing its response to the pandemic. This was similar to respondents in Ethiopia and Rwanda but unlike the response in most other countries. Respondents in Ghana were also slightly more likely to think that falsehoods about Covid-19 were circulating in the country. In all other countries (with the exception of the DRC, Nigeria, Senegal, and Zambia), more respondents thought that there were no falsehoods than those who thought there were.

Another point of difference with respect to Ghana, that is worth mentioning is that the number of university students respondents

believed were able to access the technology required to allow them to effectively study online was greater than the number reported for the other countries. In most countries, as in Ghana, respondents saw university students as among the least adversely affected by pandemic related school closures. However, the majority of respondents from Ghana thought that between 21% and 80% of university students had online access. This contrasts with the range of 21%–60% in most other countries.

Table 5. *Summary of survey statistics on Ghana.*

Topic	Top Response(s)
Students who are most educationally disadvantaged by the pandemic	Students from rural communities (36.2%) Students from low-income households (31%)
Stage of education most disadvantaged by the pandemic	Primary (36.2%)
Stage of education least disadvantaged by the pandemic	Vocational (5.2%) Higher (5.2%)
Best distance learning solutions	Primary: TV Secondary: Online learning and TV
Best device for rapidly deployable, short-term replacement for face-to-face learning	Smartphone (38.8%)
% respondents who believe the views of teachers were taken into account	65.6%
% respondents who are aware of falsehoods circulating about Covid-19	52.5%
% respondents who received professional development on distance-based learning	28.6%
Biggest obstacle to effectively using EdTech during the pandemic	Affordability of connectivity (26.5%)

Most significant obstacle facing students during Covid-19	Lack of access to technology

3.6. Kenya

Schools were closed on March 15, 2020 (↑Jepkemei, 2020). Restrictions have, however, gradually been loosened since then. From the beginning of October 2020, schools began reopening in phases (↑Otieno, 2020).

3.6.1. Summary of survey findings for Kenya

Like Ethiopia and Rwanda, radio was noted as the most important medium for primary students in Kenya. It is worth recalling that in most other countries the most important medium for primary students during the Covid-19 crisis was considered to be TV. The respondents who worked in Kenya did not note anything else that diverged significantly from respondents in other countries.

Table 6. *Summary of survey statistics on Kenya.*

Topic	Top Response(s)
Students who are most educationally disadvantaged by the pandemic	Students from rural communities (38.5%) Students from low-income households (30.8%)
Stage of education most disadvantaged by the pandemic	Primary (35.4%)
Stage of education least disadvantaged by the pandemic	Higher (5.4%) Vocational (3.1%)
Best distance learning solutions	Primary: Radio Secondary: Online learning
Best device for rapidly deployable, short-term replacement for face-to-face learning	Smartphone (33.3%)
% respondents who believe the views of teachers were taken into account	43.3%

% respondents who are aware of falsehoods circulating about Covid-19	39.6%
% respondents who received professional development on distance-based learning	25.9%
Biggest obstacle to effectively using EdTech during the pandemic	Affordability of connectivity (30.8%)
Most significant obstacle facing students during Covid-19	Lack of access to technology

3.7. Nigeria

Similarly to other countries, the government closed schools and implemented a full lockdown at the end of March 2020. There has since been a phased reopening of the economy, which included the reopening of schools in mid-October 2020 (↑Ettang, 2020). However, a second wave of the pandemic led to the reimposition of some restrictions, including school closures, in December 2020. Schools were once more allowed to reopen on January 18, 2021 (↑BBC News Pidgin, 2020).

3.7.1. Summary of survey findings for Nigeria

In Nigeria, many respondents (54.4%) believed falsehoods around the nature of Covid-19 to be in circulation around the country. There was a high degree of belief that incorrect information about Covid-19 was in circulation, with only DRC and Zambia having higher levels of the same response. Less than a quarter of respondents in Nigeria believe that teachers' views are being taken into consideration in the government's response to the pandemic.

Table 7. *Summary of survey statistics on Nigeria.*

Topic	Top Response(s)
Students who are most educationally disadvantaged by the pandemic	Students from rural communities (49.1%)

Stage of education most disadvantaged by the pandemic	Primary (33%)
Stage of education least disadvantaged by the pandemic	Vocational (4.1%)
Best distance learning solutions	Primary: TV Secondary: Online learning
Best device for rapidly deployable, short-term replacement for face-to-face learning	Smartphone (34.4%)
% respondents who believe the views of teachers were taken into account	24.8%
% respondents who are aware of falsehoods circulating about Covid-19	54.4%
% respondents who received professional development on distance-based learning	30.1%
Biggest obstacle to effectively using EdTech during the pandemic	Affordability of connectivity (25.8%)
Most significant obstacle facing students during Covid-19	Lack of access to technology

3.8. Rwanda

As in other countries, containment measures were also introduced to stop the spread of Covid-19 in Rwanda, including the closure of schools on March 14, 2020. Though schools were partially reopened in November 2020, after being closed for seven months, some were closed again due to a spike in cases in January 2021 (↑Laterite & Research for Equitable Access and Learning (REAL) Centre, 2021; ↑AfricaNews, 2021).

3.8.1. Summary of survey findings for Rwanda

Respondents from Rwanda were among those who deviated the most from what was reported in other countries. While respondents in most countries were satisfied with the steps their respective governments took to minimise the effect of Covid-19 on education, this was especially true for respondents in Rwanda. Similarly to respondents from Tanzania, those working in Rwanda were also especially likely to think that no falsehoods about the nature or origins of Covid-19 were in circulation in the country. Unlike survey participants in most other countries, however, respondents working in Rwanda tended to believe that the government had taken teachers' views and experiences into account in developing its education response to the Covid-19 pandemic. Similarly to the respondents from Cameroon, they were also much more certain that the government *had* issued guidance on how to use EdTech during the pandemic.

There were also other areas about which those working in Rwanda were especially positive. Rwandan respondents were among those who were most likely to say that they had had professional development prior to the pandemic on distance learning. However, like respondents in most countries, the majority still had not received any such training. There were a few further key differences in the responses received from those working in Rwanda, namely:

- radio, as opposed to TV, was seen as the most important medium for primary students;
- the best device for a rapidly deployable, short-term replacement for face-to-face learning was seen as laptops and not smartphones;
- students in low-income households were seen to be just as disadvantaged as those in rural communities.

Table 8. *Summary of survey statistics on Rwanda.*

Topic	Top Response(s)
Students who are most educationally disadvantaged by the pandemic	Students from rural communities (40%) Students from low-income households (40%)
Stage of education most disadvantaged by the pandemic	Primary (41.8%)

Stage of education least disadvantaged by the pandemic	Higher (7.3%) Vocational (5.5%)
Best distance learning solutions	Primary: Radio Secondary: Online learning
Best device for rapidly deployable, short-term replacement for face-to-face learning	Laptop (32.6%)
% respondents who believe the views of teachers were taken into account	64.6%
% respondents who are aware of falsehoods circulating about Covid-19	26.2%
% respondents who received professional development on distance-based learning	34.1%
Biggest obstacle to effectively using EdTech during the pandemic	Affordability of connectivity (25.6%)
Most significant obstacle facing students during Covid-19	Lack of access to technology

3.9. Senegal

In March 2020, the Senegalese government declared a state of emergency and closed its schools. Schools were reopened on November 12, 2020 (↑AfricaNews, 2020).

3.9.1. Summary of survey findings for Senegal

The respondents working in Senegal did not diverge from other countries in any meaningful way except on perceptions of the most significant obstacle facing students during the Covid-19 pandemic. Whereas in other countries, the most significant obstacle facing students was seen as the lack of access to technology, in Senegal, it was the lack of a good learning environment at home. Notably, respondents in the other countries selected the lack of a good learning environment at home as the second

most significant obstacle. Key information on responses from Senegal is highlighted in the table below.

Table 9. *Summary of survey statistics on Senegal.*

Topic	Top Response(s)
Students who are most educationally disadvantaged by the pandemic	Students from rural communities (47.8%)
Stage of education most disadvantaged by the pandemic	Primary (37%)
Stage of education least disadvantaged by the pandemic	Higher (2.2%)
Best distance learning solutions	Primary: TV, online and paper-based learning Secondary: Online learning
Best device for rapidly deployable, short-term replacement for face-to-face learning	Smartphone (42.5%)
% respondents who believe the views of teachers were taken into account	41.7%
% respondents who are aware of falsehoods circulating about Covid-19	54.2%
% respondents who received professional development on distance-based learning	31.7%
Biggest obstacle to effectively using EdTech during the pandemic	Availability of connectivity (30%)
Most significant obstacle facing students during Covid-19	Lack of a good learning environment at home

3.10. South Africa

South African schools were closed in March 2020. A national lockdown was also implemented on March 26, 2020, but was lifted in phases, beginning in May 2020, with the reopening of schools starting on June 17. However, schools were once again closed in July for one month following a surge in cases. By October, many of the restrictions that had been put in place had been lifted after a reduction in cases. However, the appearance of a new Covid-19 variant in South Africa once again led to the tightening of restrictions in December, including a delay to the reopening of schools in January 2021, for the new term. Schools were ultimately reopened and restrictions were once again eased, more widely, in February 2021 (↑Ongmu, 2021; ↑ISSAfrica, 2021).

3.10.1. Summary of survey findings for South Africa

Respondents from South Africa differed from the majority of other respondents across the focus countries in one particular area. Respondents working in South Africa were the most likely to have received professional development on distance learning prior to the pandemic. Despite having some of the highest levels of development in this area, the majority of participants from South Africa nonetheless noted that they had not received professional development.

Table 10. *Summary of survey statistics on South Africa.*

Topic	Top Response(s)
Students who are most educationally disadvantaged by the pandemic	Students from low-income households (48.1%)
Stage of education most disadvantaged by the pandemic	Primary (30.8%) Secondary (26.3%)
Stage of education least disadvantaged by the pandemic	Vocational (6.8%) Higher (5.3%)
Best distance learning solutions	Primary: TV Secondary: Online learning

Best device for rapidly deployable, short-term replacement for face-to-face learning	Smartphone (37.3%)
% respondents who believe the views of teachers were taken into account	40.7%
% respondents who are aware of falsehoods circulating about Covid-19	39.3%
% respondents who received professional development on distance-based learning	37%
Biggest obstacle to effectively using EdTech during the pandemic	Affordability of connectivity (36.3%)
Most significant obstacle facing students during Covid-19	Lack of access to technology

3.11. Tanzania

The day after the first reported case in Tanzania (March 16, 2020), the government closed all schools, followed by universities the next day. Upper-secondary and tertiary schools were reopened on June 1, 2020, and other educational institutions were reopened on June 29. By July 2020, all Covid-19-related restrictions had been lifted across the country (↑AfricaNews, 2020).

3.11.1. Summary of survey findings for Tanzania

The responses of survey participants highlighted ways in which Tanzania is unique. Those surveyed in Tanzania were, for example, among the least likely to believe that falsehoods about Covid-19 were in circulation in the country. Levels of optimism about the accuracy of Covid-19 knowledge were only similarly high in Rwanda. Further, respondents working in Tanzania were the most likely to have reported that they received professional development on distance learning prior to the pandemic. Notably, however, while the reported levels of professional development

were highest in Tanzania, the majority of respondents still had not received any such training.

Table 11. *Summary of survey statistics on Tanzania.*

Topic	Top Response(s)
Students who are most educationally disadvantaged by the pandemic	Students from rural communities (38%)
Stage of education most disadvantaged by the pandemic	Primary (44%)
Stage of education least disadvantaged by the pandemic	Vocational (2%)
Best distance learning solutions	Primary: TV Secondary: Online learning and TV
Best device for rapidly deployable, short-term replacement for face-to-face learning	Smartphone (44.7%)
% respondents who believe the views of teachers were taken into account	49.1%
% respondents who are aware of falsehoods circulating about Covid-19	26.4%
% respondents who received professional development on distance-based learning	43.9%
Biggest obstacle to effectively using EdTech during the pandemic	Availability of connectivity (31.6%)
Most significant obstacle facing students during Covid-19	Lack of access to technology

3.12. Uganda

On March 18, 2020, prior to the first reported case of Covid-19, Uganda began implementing measures to ensure that the virus would not spread in the country. These measures included the closure of schools. Schools were partially reopened for exam classes in October 2020. Further, although the process is not as yet complete, schools are gradually reopening (↑Kyeyune, 2021).

3.12.1. Summary of survey findings for Uganda

There was one area where the responses from Uganda differed from those of the other countries. This was in respect to the medium that respondents considered the most important for primary students — 'paper-based materials' as opposed to the more usually selected 'TV'.

Table 12. *Summary of survey statistics on Uganda.*

Topic	Top Response(s)
Students who are most educationally disadvantaged by the pandemic	Students from rural communities (53.2%)
Stage of education most disadvantaged by the pandemic	Primary (26.6%) Secondary (23.4%)
Stage of education least disadvantaged by the pandemic	Higher (6.4%)
Best distance learning solutions	Primary: Paper-based learning Secondary: Online learning and TV
Best device for rapidly deployable, short-term replacement for face-to-face learning	Smartphone (28%)
% respondents who believe the views of teachers were taken into account	36.5%
% respondents who are aware of falsehoods circulating about Covid-19	41.7%

% respondents who received professional development on distance-based learning	21%
Biggest obstacle to effectively using EdTech during the pandemic	Affordability of technology (25.3%) Availability of connectivity (24%)
Most significant obstacle facing students during Covid-19	Lack of access to technology

3.13. Zambia

After almost three months of closure, schools partially reopened to examination classes on June 1, 2020. Schools fully reopened on September 14, 2020.

3.13.1. Summary of survey findings for Zambia

Like Senegal, the respondents working in Zambia did not diverge in their responses from the overall sample in any significant way. Information on their responses is shown in the table below.

Table 13. *Summary of survey statistics on Zambia*

Topic	Top Response(s)
Students who are most educationally disadvantaged by the pandemic	Students from rural communities (62.5%)
Stage of education most disadvantaged by the pandemic	Primary (50%)
Stage of education least disadvantaged by the pandemic	Higher (2.5%) Vocational (0%)
Best distance learning solutions	Primary: TV Secondary: Online learning
Best device for rapidly deployable, short-term replacement for face-to-face learning	Smartphone (32.1%)

% respondents who believe the views of teachers were taken into account	46.5%
% respondents who are aware of falsehoods circulating about Covid-19	55.8%
% respondents who received professional development on distance-based learning	25.8%
Biggest obstacle to effectively using EdTech during the pandemic	Availability of devices (21.4%)
Most significant obstacle facing students during Covid-19	Lack of access to technology

4. Cross-country comparisons

This section builds on the previous analysis by presenting comparisons between the 13 countries summarised above. It synthesises the survey data under eight themes in order to give an overview of cross-country trends and differences. The themes were selected by summarising the key topics of the original survey questions (see Annex B):

1. Perceived level of threat of Covid-19 (Qs. 15 and 16)
2. Government responses to Covid-19 (Qs. 21 and 22)
3. Knowledge of Covid-19 (Qs. 23 and .24)
4. Obstacles to learning (Qs. 25, 26, 27, and 30)
5. Distance learning (Qs. 28, 29, 31, 32, 33, and 42)
6. Effectiveness of planning and response (Q. 34)
7. Long-term impact of Covid-19 (Qs. 48 and 54)
8. Educational technology — challenges and solutions (Qs. 49, 50, 51, and 53)

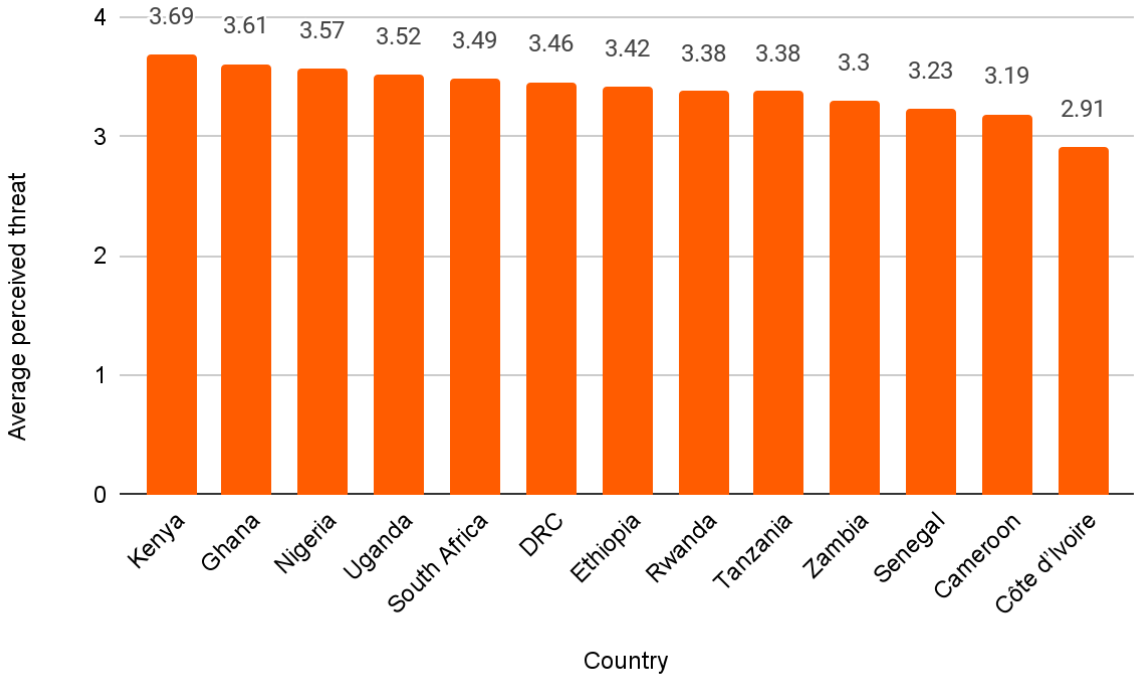
4.1. Perceived level of threat of Covid-19

The survey sought to understand respondents' perceptions of the level of threat of Covid-19, both in the country that they worked in and across Africa as a whole. Participants were asked to rate their perceived threat of Covid-19 on a scale of 1 to 4, with 1 being the lowest perceived threat and 4 being the highest. Across all 13 countries, the perceived level of threat within-country was 3.46 (SD = .688) on average, and for Africa as a whole, it was 3.5 (SD = .642) on average.

There were some significant differences between individual countries in perceptions of the level of the within-country threat of Covid-19 ($F(12, 1023) = 6.733$, $p < .001$). The greatest sense of fear, on average, was recorded in Kenya (M = 3.69, SD = 0.482) and Ghana (M = 3.61, SD =0.69) and the lowest in Côte d'Ivoire (M = 2.91, SD = 0.714) and Cameroon (M = 3.19, SD = 0.764). There were also some differences in how participants viewed the threat of Covid-19 when they considered not just the country they worked in, but Africa as a whole. There were still significant differences in this statistic, by

country ($F(12, 1023) = 6.884$, $p < .001$). The countries within which participants felt that Covid-19 was the biggest threat to Africa as a whole were Uganda, Ghana, and Kenya. The countries where the least threat was perceived were Côte d'Ivoire, Senegal, and Cameroon. Figure 1 below illustrates the average perceived threat of Covid-19 in each country. More statistical details regarding perceived threat levels from each country can be seen in Annex C.

Figure 1. *Perceived level of threat of Covid-19 — by country.*



4.2. Government responses to Covid-19

Each government in the 13 focus countries has responded to the threat posed by Covid-19 with mitigating action to sustain education. This subsection presents comparisons of whether or not respondents considered government action on education in their respective countries to be sufficient.

There was some notable variation across countries as to whether or not survey respondents were satisfied with the steps that their governments had taken to minimise the impact of the Covid-19 pandemic on education ($x^2(24,1036) = 171.97$, $p = 0.000$). Respondents were more likely than not to

be satisfied with the steps that their governments had taken in relation to education (58% of the responses indicated satisfaction overall, while 13.9% were unsure, and 27.3% were explicitly dissatisfied) but this varied by country. Countries with particularly low levels of satisfaction included Côte d'Ivoire (35.1%) and the DRC (39%). However, in Côte d'Ivoire, while 35.1% of respondents explicitly indicated satisfaction with the government's response, only 17.5% explicitly indicated dissatisfaction. The remaining participants were unsure about whether or not they were satisfied (47.4%). Indeed, in Côte d'Ivoire, both the counts for 'satisfaction' and 'dissatisfaction' were lower than might be expected given the trend in other countries, and the count for those who did not have a particular view was higher than would be expected. The situation in the DRC was somewhat different. Fewer respondents than might be expected were explicitly satisfied, and more respondents than might be expected (31.7%) had no opinion, but the level of explicit dissatisfaction was comparable to other countries (29%).

The countries on the other end of the scale — those that stood out for having high levels of satisfaction with their governments' responses were:

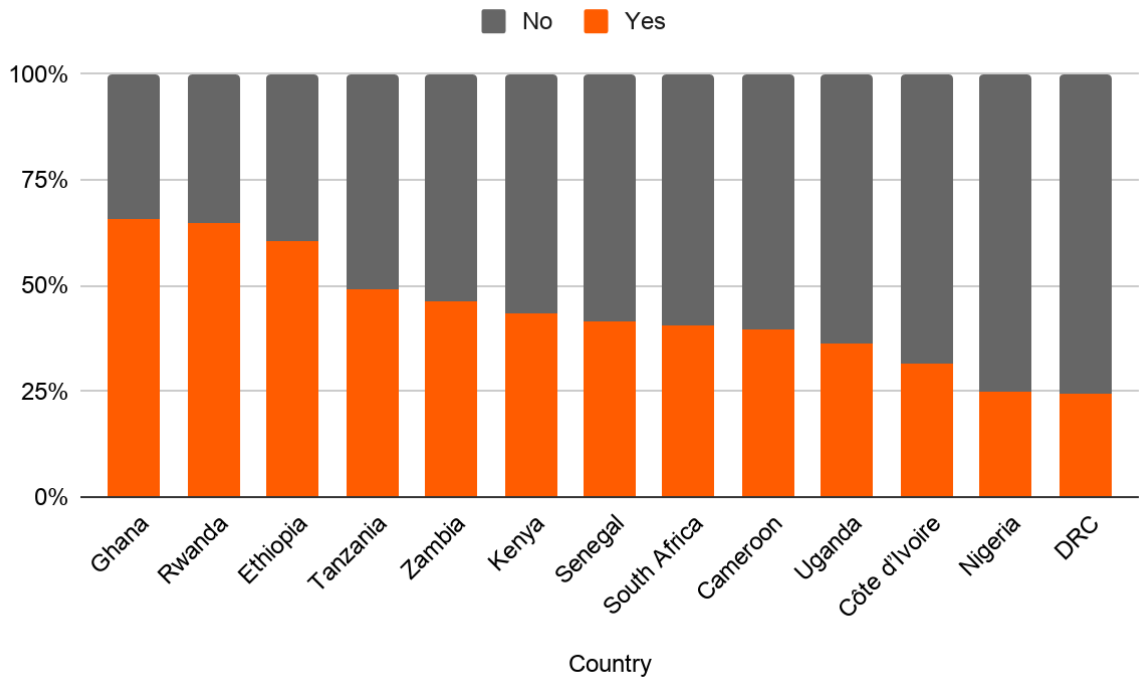
- Rwanda (89.2%)
- Ethiopia (72.9%)
- Zambia (72.1%)
- Ghana (70.5%).

In all of these countries, based on trends across all countries, participants were more likely to be satisfied with their governments' responses than might be predicted. In Zambia, participants were explicitly dissatisfied to an extent comparable to other countries (27.9% of participants indicated dissatisfaction) and no one was unsure about whether they were satisfied or dissatisfied with their respective government's response. Further details on this topic can be seen in Annex D.

Survey respondents were also asked if they thought that their respective governments had taken sufficient account of the views and experience of teachers in developing its response to the impact of the Covid-19 pandemic on education. Overall, 59.1% of respondents indicated that their governments had *not* taken teachers' views into account. However, there was some notable variation in the responses by country ($x^2(12, 1035) = 70.11$, $p = 0.000$). The countries with the highest proportion of participants reporting that the government took teachers' views into account were

Ghana (65.6%), Rwanda (64.6%), and Ethiopia (60.4%). The countries with the lowest reported proportion of participants thinking that the government took into account teachers' views were the DRC (24.4%) and Nigeria (24.8%). Further details are given below in Figure 2.

Figure 2. *The extent to which governments had taken account of the views and experience of teachers in developing their responses to the impact of the Covid-19 pandemic on education — by country.*



4.3. Knowledge of Covid-19

Participants were also asked to reflect on the knowledge of Covid-19 in their respective countries. Specifically, they were asked if they were aware of any specific falsehoods in circulation about the nature or origins of the virus. They were also asked about how good they thought the knowledge of Covid-19 and related public health measures to stop its spread was among students in their countries. A total of 56.3% of respondents said they were not aware of specific falsehoods about Covid-19 in circulation in their countries. However, a substantial 43.7% of respondents were aware that falsehoods about the virus were circulating. Furthermore, there were clear differences, by country, as to whether falsehoods were seen to be in circulation or not ($x^2(12, 1035) = 51.45$, $p = 0.000$). The countries with the lowest awareness of falsehoods in circulation were Tanzania (26.4%

awareness), Rwanda (26.2%), and Cameroon (30.2%). The highest awareness by far was in the DRC (70.7%), with Zambia (55.8%) being a distant second and much closer to the level of other countries, where there was low awareness.

An ordinary least squares (OLS) regression was used to explore whether there was any difference across countries in the degree to which students had knowledge about Covid-19 and measures to mitigate its spread. Survey respondents were asked to give a score ranging from 0–3 – with 0 meaning that they believed that students had no knowledge and 3 meaning that they believed that students' knowledge was very high. The results show that the country that a participant worked in explained 4.3% of the variance in their response about students' knowledge on Covid-19 (R^2 = .043, F(12, 1021)= 4.846, p<.001). The countries where students seem to be the most knowledgeable regarding Covid-19 were Rwanda (M = 2.31, SD = 0.635), Ethiopia (M = 2.08, SD = 0.647), and Zambia (M = 2.00, SD = 0.662). The least knowledgeable students appear to be in the DRC (M = 1.44, SD = 0.550), Senegal (M = 1.77, SD = 0.598) and Côte d'Ivoire (M = 1.77, SD = .627).

4.4. Obstacles to learning

Survey respondents were also asked what they considered to be the most significant obstacles to learning in the context of the pandemic. While there was notable variation in the proportion of responses accorded to different obstacles by country (x^2 (72, 984) = 161.97, p = 0.000), the factors that seem to be most and least important remained fairly consistent. The lack of access to technology was considered the most significant obstacle facing students in all countries except the DRC and Senegal, where it was the second most significant obstacle behind the lack of a good learning environment at home. Overall, 47.6% of respondents considered the lack of access to technology to be the biggest obstacle — this was, by a fair margin, the biggest obstacle. Other factors that were commonly considered significant were the lack of a good learning environment at home (21.2%), followed by the lack of access to learning materials (11.1%). Students' lack of interaction with other students was consistently among the least important obstacles that the respondents said faced students (2.1%), followed by concerns over the health risks to students in school (5.6%). However, a higher percentage of responses (8%) from Tanzania considered the lack of interaction with other students an obstacle. Furthermore in Côte d'Ivoire and Cameroon, 17.5% and 16.7% of

respondents, respectively, considered the health risks to students in schools to be a significant obstacle. A more detailed breakdown of these figures can be seen in Annex E.

The finding that access to technology was generally greater for students at higher education levels, builds on the finding that a lack of access to technology was the most significant obstacle facing students overall. Respondents were asked to rate how much access to technology they thought different educational levels of students had on a 5-point scale: '1' represented '0–20%' access and 5 represented '81–100%' access. On average, younger students or those in secondary school or below had an average score of 1.69 and those above secondary level had an average score of 2.55. This suggests that approximately 21–40% of younger students across the focus countries are considered to have access to the technology required for learning, with this figure increasing to 41–60% of older students.

Further, an analysis of variance test (ANOVA) was conducted to explore whether the average levels of access at each educational level differed by country. It was found that respondents across different countries were more united in the view that younger students had less access to technology, but less united with respect to older students. There was no significant difference in the average access of students across countries in early childhood education ($F(12, 969) = .504$, $p>0.5$). The lowest average access score for early childhood access came from the DRC ($M = 1.18$, $SD = .549$) and the highest from Cameroon ($M = 1.48$, $SD = 1.042$). Across all countries, early childhood access was approximately between 0–20%. There was also no significant difference in the average access of students across countries in primary education ($F(12, 969)=1.185$, $p>0.5$). The lowest average access score for primary access came from the DRC ($M = 1.35$, $SD = .7$) and the highest from South Africa ($M = 1.77$, $SD = .867$). Across all countries, primary access was approximately between 0–40%. There was a marginally notable difference in the average access of students across countries in secondary education ($F(12, 969) = 1.738$, $p = 0.54$). The lowest average access score for secondary access came from the DRC ($M = 1.65$, $SD = .864$) and the highest from South Africa ($M = 2.23$, $SD = .997$).

The variation in average levels of access to technology was even more pronounced when older students were considered. There was significant variation by country in access to technology among vocational students ($F(12, 969) = 3.960$, $p<.001$) and those in university ($F(12, 969) = 3.057$, $p<0.001$). The country with the lowest level of access among vocational

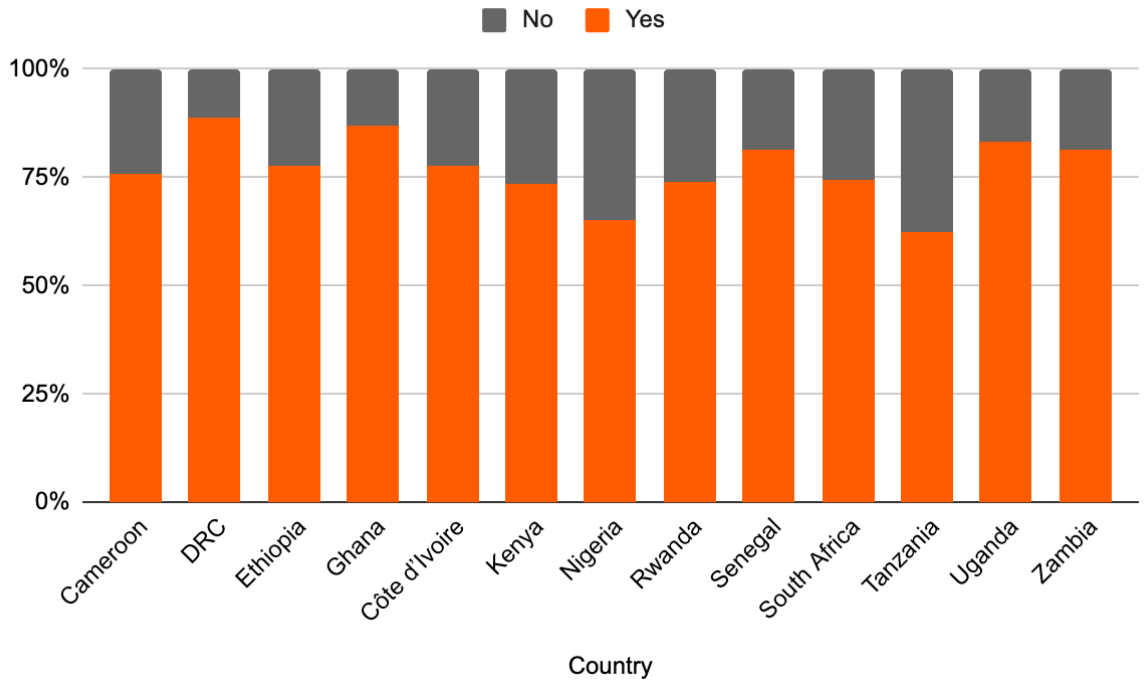
students, the DRC (M = 1.75, SD = 1.127), was much lower than the country with the highest access, South Africa (M = 2.63, SD = 1.097). Further, the country with the lowest level of access among university students, the DRC (M = 2.23, SD = 1.025), was much lower than the country with the highest access, Ghana (M = 3.1, SD = 1.087).

These findings, indicating that access to technology was highest for older students and lowest for younger students across all countries, was also reflected, to some extent, in participants' responses concerning the stage of education they thought would be most disadvantaged as a result of the crisis. Of all participants, 35.9% thought that primary level education would be most disadvantaged by the pandemic. This was followed by early childhood education (19.4%) and secondary education (18.3%), with some notable variation between countries in whether secondary students or those in early childhood were seen as the second most disadvantaged group (x^2 (72, 984) = 106.932, p<0.01). The countries within which secondary education was seen as the second most disadvantaged were the DRC, Côte d'Ivoire, Rwanda, Senegal, South Africa, and Uganda. Vocational students were generally considered to be the least disadvantaged by the pandemic(4.9%), although they were only seen as marginally less disadvantaged than higher education students (6.7%). Notably, however, students in higher education were considered to be the least disadvantaged in Zambia, Uganda, South Africa, Senegal, the DRC, and Cameroon. However, in Ethiopia, they were seen as much more disadvantaged as compared to the other countries. In Ethiopia, 17.8% of respondents indicated that students in higher education were the most disadvantaged group — even more so than secondary students and those in early childhood — compared to the 6.7% of respondents sharing this view when all countries were considered together. Further details are presented in Annex F.

Perceptions about which type of student, regardless of educational stage, would be the most educationally disadvantaged as a result of the pandemic were also examined. In all countries, except in Rwanda and South Africa, students from rural communities were seen as the most disadvantaged by the crisis, with 43.8% of respondents highlighting this group as the most disadvantaged. In Rwanda, they were seen as just as disadvantaged as those from low-income households, and in South Africa students from low-income households were seen as the most disadvantaged. Among disadvantaged students, those considered least

likely to be additionally disadvantaged because of the pandemic were female students (0.7%), those in ethnic / linguistic minorities (1%) and students with difficult domestic circumstances (5%). As with the results concerning obstacles faced by students, however, there were notable differences in how disadvantages among groups of students were ranked within countries (x^2 (72, 984) = 154.234, p = 0.000). This was the case despite general trends in the groups as to who was considered the most and least disadvantaged. Among the notable differences was that 18% of respondents from Tanzania thought that students with special educational needs were the most disadvantaged — this is in contrast to the 7.4% overall who shared this view overall. A more complete set of these statistics can be seen in Annex G. As a final point on disadvantaged students, it is worth noting that most respondents (75.1%) believed that a move to more online learning would increase inequality and disadvantage poorer and more marginalised students.

Figure 3. *The extent to which a move to more online learning will increase inequality and disadvantage poorer and more marginalised students.*



4.5. Distance learning

When students have been able to engage in learning throughout the Covid-19 pandemic it has often been through distance-based learning. The

responses from the survey indicate that all governments of the 13 focus countries in this report have announced a distance learning strategy in response to the pandemic. The majority of respondents in each country were aware of such a strategy in their respective countries, with the lowest awareness being in South Africa (64.4%) and the highest in Zambia (94.3%).

Respondents were asked to select as many components of distance learning strategies as they thought their governments had incorporated. Television was the most commonly selected component of distance learning strategies overall. Television was selected in 27.57% of all responses, followed by online learning (24.36%) and radio (21.15%). However, there were some key differences by country regarding what were considered key components of distance learning strategies. Notably, in Uganda, paper-based learning was selected (22.55%) more than online learning (15.32%). Television (26.38%) and radio (24.68%) were still, however, the most popular responses. Further, in Ghana and South Africa, mobile learning (16.53% and 17.65% respectively) was selected more than radio (12.40% and 13.73% respectively). Online learning was by far the most popular strategy in South Africa (30.39%), followed by television at 19.12%. Further details can be seen in Figure 4 and Table 14 below.

Figure 4. *Components of distance learning strategies incorporated by governments — by country.*

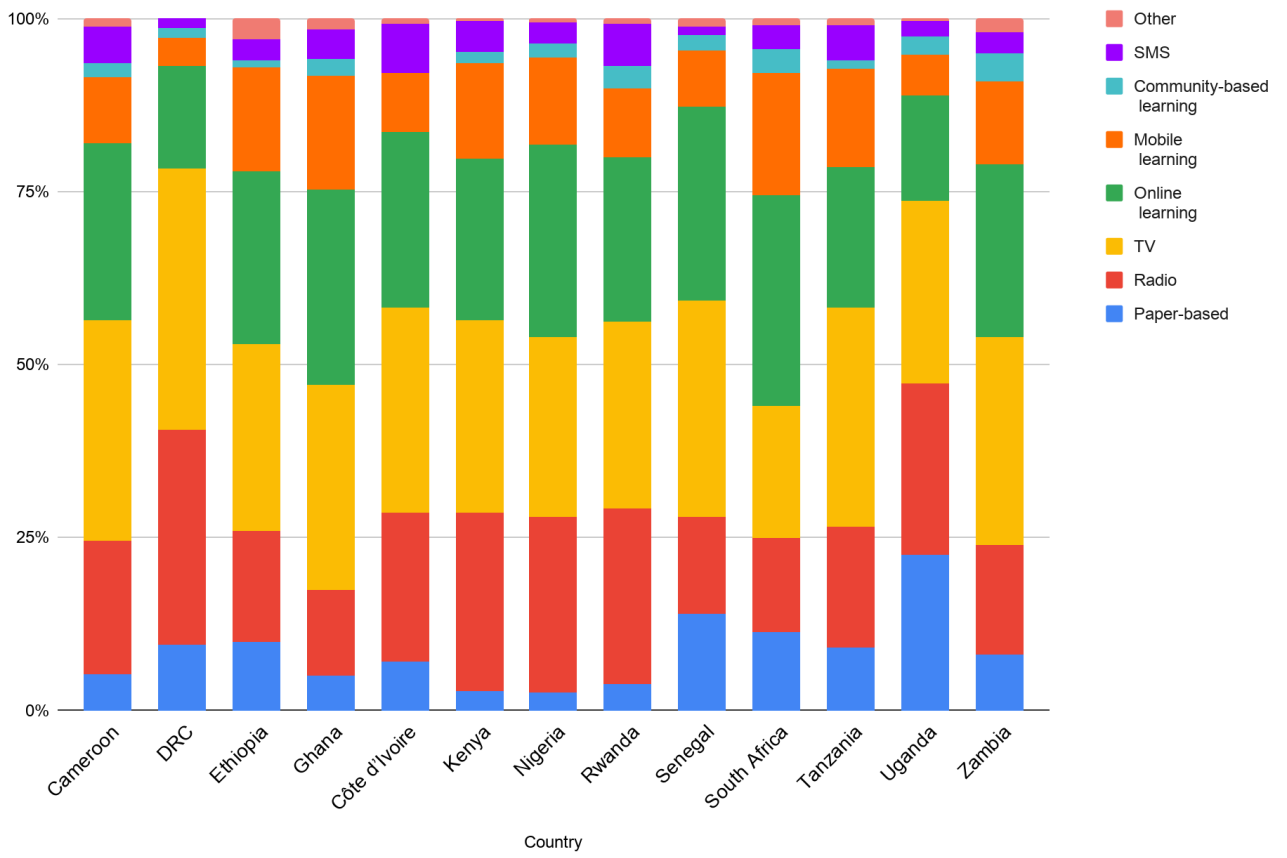


Table 14. *Components of distance learning strategies incorporated by governments — by country.*

	Paper-based	Radio	TV	Online learning	Mobile learning	Community-based learning	SMS	Other	Total
Cameroon	5.32	19.15	31.91	25.53	9.57	2.13	5.32	1.06	100
DRC	9.46	31.08	37.84	14.86	4.05	1.35	1.35	0.00	100
Ethiopia	10.00	16.00	27.00	25.00	15.00	1.00	3.00	3.00	100
Ghana	4.96	12.40	29.75	28.10	16.53	2.48	4.13	1.65	100
Côte d'Ivoire	6.98	21.71	29.46	25.58	8.53	0.00	6.98	0.78	100
Kenya	2.78	25.79	27.78	23.41	13.89	1.59	4.37	0.40	100

Nigeria	2.65	25.37	25.96	27.73	12.68	2.06	2.95	0.59	100
Rwanda	3.85	25.38	26.92	23.85	10.00	3.08	6.15	0.77	100
Senegal	13.95	13.95	31.40	27.91	8.14	2.33	1.16	1.16	100
South Africa	11.27	13.73	19.12	30.39	17.65	3.43	3.43	0.98	100
Tanzania	9.18	17.35	31.63	20.41	14.29	1.02	5.10	1.02	100
Uganda	22.55	24.68	26.38	15.32	5.96	2.55	2.13	0.43	100
Zambia	8.00	16.00	30.00	25.00	12.00	4.00	3.00	2.00	100
Total	8.31	21.15	27.57	24.36	11.82	2.14	3.72	0.92	100

There were also more nuanced responses concerning which distance learning solution was the most useful for primary-level students and secondary-level students. Generally speaking, television was considered the most useful distance learning medium for primary students (receiving 34.9% of the responses) and online learning was considered most useful for secondary students (receiving 40.7% of the responses). However, this was not the case in all countries. In the DRC and Uganda, paper-based materials were the most important for primary students and radio was the most important in Ethiopia, Kenya, and Rwanda. SMS messages were generally seen as the least important medium for primary students.

For secondary-level students, online learning was seen as the most important medium overall. However, this was not the case for all 13 countries. In the DRC, paper-based materials were seen as the most important for these students, but only marginally more important than online learning. Generally speaking, SMS messages were again seen as the least important medium. Notably, in Ghana, at 5.2%, SMS messages were tied for least important medium, with radio. In all other countries, SMS messaging was seen as the least important medium. Further details can be seen in Annex H.

The consensus across most countries was that governments' distance learning strategies were not effective. Overall, 57.6% of respondents stated that their respective governments' strategies were 'not effective', with only 29.6% saying that they were 'quite effective'. Similar numbers of

respondents thought the strategies to be either 'very effective' (3.5%) or 'damaging' (3.1%), while 6.1% of respondents had 'other' perspectives. As already highlighted, there were also some significant differences across countries in perceptions of distance-learning strategies (x^2 (48, 733) = 111.597, p = 0.000) and Rwanda, Ghana, and Cameroon were all more positive than the average.

These differences were clearly seen when respondents' ratings were ranked and an average 'effectiveness' score was calculated for each country, with 'damaging' being coded as '-1' and 'very effective' as '2'. An ANOVA also demonstrated the significance of differences between country averages: F(12, 675) = 5.093, p = .000. The perception of the effectiveness of the government's distance learning strategy was, on average, the highest in Ghana (with a score of 0.67 or approximately 'quite effective'), Cameroon (with a score of 0.65 or approximately 'quite effective'), and Rwanda (with a score of 0.63 or approximately 'quite effective'). The lowest scores came from the DRC (with a score of -0.08 or approximately 'not effective'), Senegal (with a score of 0.21 or approximately 'not effective') and Kenya (with a score of 0.22 or approximately 'not effective'). Country is a significant 'predictor' of differences in the government's distance learning strategy for Covid-19; F(12, 640) = 5.228, p = .000. Notably, participants from all countries thought that school curricula should be reviewed to make it easier to adapt to distance learning (x^2 (12, 827) = 7.990, p>0.5).

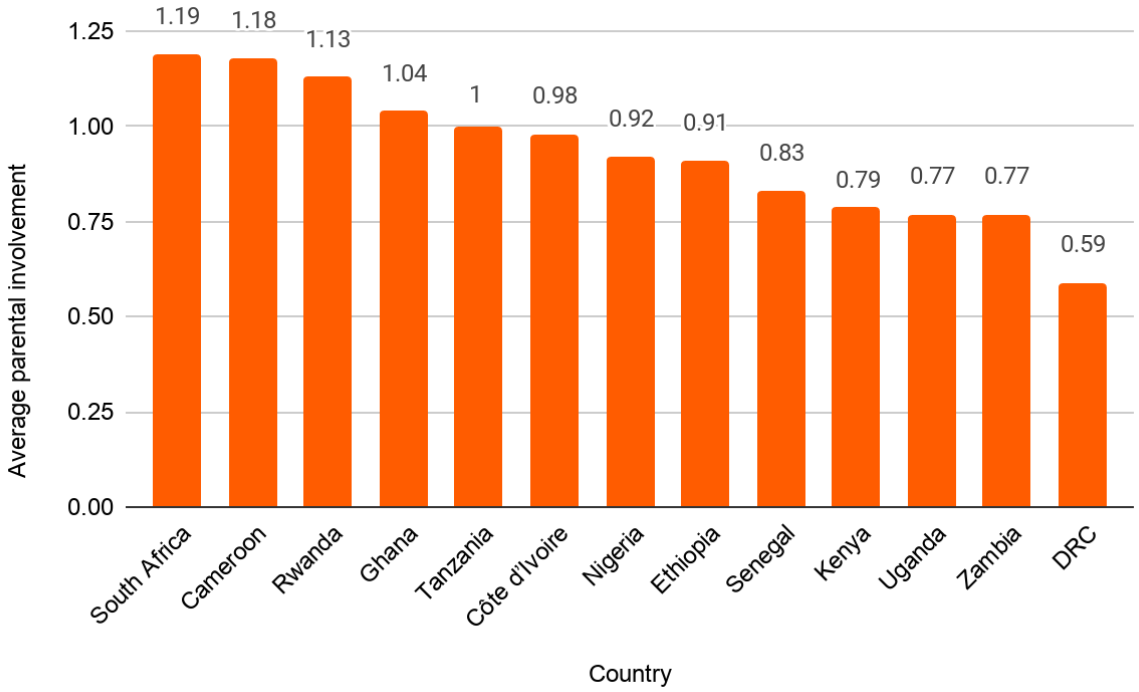
As a final note, it is worth highlighting that there were also significant country-specific differences in the professional development support which survey respondents had received prior to the pandemic concerning how to provide distance-based learning for students; x^2(12, 827) = 25.74, p = .012. Respondents from Tanzania (43.9%), South Africa (37%), Rwanda (34.1% and Côte d'Ivoire (33.3%) were the most likely to say they had received support. Participants from the DRC (97.2%), Uganda (79%) and Cameroon (78.9%) were the most likely to say that they had not. However, generally speaking, across the sample, respondents were more likely to have *not* received professional development; only 28.7% of respondents stated that they had received any such support.

4.6. Effectiveness of planning / response

The survey respondents were asked for their views on how successful their school, college, or institution had been at involving parents in planning

new arrangements for children's education during the pandemic. Thirty-two per cent of respondents rated their schools as 'not successful', 46.9% rated it as 'slightly successful', 16.5% as 'successful', and 4.7% as 'very successful'. In order to get an approximate sense of the views within countries, participants' responses were also ranked. Thus, a choice of 'not successful' was scored as 0 and 'very successful' as 3. The countries where schools were on average perceived as most successfully involving children's parents in planning new educational arrangements were South Africa, where the sense was that schools were generally 'slightly successful' (M = 1.19, SD = 0.927) and Cameroon, where the sense was also that schools were generally 'slightly successful' (M = 1.18, SD = 0.914). Countries that appeared to involve parents the least were the DRC (M = 0.59, SD = 0.677), Uganda (M = 0.77, SD = 0.75) and Zambia (M = 0.77, SD = 0.77). There were therefore significant differences between the countries $F(12, 862) = 2.986$, p = 0.000. Further details can be seen in Figure 5 below.

Figure 5. *The average level of parental involvement in planning new arrangements for children's education, during the pandemic — by country.*



4.7. Long-term impact of Covid-19

The long-term impact of Covid-19 on education was also addressed in responses to the survey. Significant differences were found in what

respondents thought would be the long-term impact of Covid-19 with respect to the level of use of educational technology in Africa ($x^2(24, 792) = 98.784$, $p<0.001$). However, the greatest difference primarily concerns the DRC. In all countries, except the DRC, at least 75% of respondents thought that the use of technology would become more widespread as a result of the pandemic, while at most 9% thought that technology use would become less widespread, and at most 16% thought that there would be no change in levels of technology use. In the DRC, however, only 40% of respondents thought that the use of technology would become more widespread as a result of the pandemic, while 28.6% thought that technology use would become less widespread and 31.5% believed that there would be no change in levels of technology use. The DRC was the only country where there was some uncertainty about whether the lasting impact of Covid-19 on educational technology would be an increase in its use.

Another related question asked what participants thought would be the most significant long-term educational effect of the Covid-19 pandemic. The most popular response overall (47.4%) was that participants thought that there would be new opportunities for educational systems. The second most popular consideration, overall, was that there would be both damage and opportunities in equal measure (38.5%). However, in the DRC, the second most popular response was that there would be damage to educational systems; 41.7% of the respondents working in the DRC held this view, compared with only 14.2% overall. Despite this, the most common response in the DRC was still a belief that new opportunities for educational systems would arise (44.4%). Further, there were similar highly negative outlooks about the effect of the pandemic on education in Côte d'Ivoire, where 30% of respondents thought it would damage educational systems, 50% thought it would provide new opportunities for educational systems, and 20% thought it would both damage and provide new opportunities in equal measure. More details can be seen in Annex I.

4.8. Educational technology: challenges and solutions

There was a high degree of cross-country consistency regarding the biggest challenges of using educational technology effectively during the Covid-19 pandemic. The challenges reported were usually the affordability or availability of connectivity. Overall, 23% of respondents from the 13 focus

countries stated that the affordability of connectivity was the biggest challenge and 17.2% stated that it was the availability of connectivity. Notably, most participants (73.6%) thought that the state of communications infrastructure in their country was likely to lead to a widening of the gap in educational outcomes between rural and urban areas. The exception, to some extent, was Tanzania. In Tanzania, roughly equal numbers of participants believed that the state of communications infrastructure would (51.4%) or would not (48.6%) widen the gap.

There were also some notable deviations from the trend of considering the affordability and availability of connectivity to be the biggest challenges in using educational technology during the pandemic. In Cameroon, the biggest concern was the availability of electricity, with 29.4% of participants stating that this was the biggest challenge. The affordability and availability of technology were seen as equally important as the availability and accessibility of devices, with 11.8% of the respondents working in Cameroon stating these were the biggest challenges. Rwanda similarly stands out for participants considering the affordability (25.6%) and availability (27.9%) of devices as being the main challenges. Further, although the respondents in Côte d'Ivoire largely rated the availability and the affordability of connectivity as the top two biggest challenges, they were also the largest proportional group within a country to consider the relevance of materials a challenge. In Côte d'Ivoire, 14.6% of respondents thought that accessibility of relevant content was the biggest challenge, compared with the 3.2% of respondents overall, and 12.2% who thought that the availability of relevant content was a challenge, compared with 4.4% of respondents overall.

When asked what they considered to be the most important contribution the use of technology can make to enable the continuation of education in their countries during the pandemic, participants largely agreed that it was 'Providing the means for formal classes to continue online' (34.3%) and 'Enabling students to continue studying on their own' (32.2%). There was, however, notable variation. 'Helping teachers to communicate with students' was seen as the most important contribution in the DRC, with 37.1% of respondents stating this. 'Enabling students to continue studying on their own' was the second most common response at 28.6% and 'Providing the means for formal classes to continue online' was a distant third place at 5.7%. Notably, teachers' communication with students was also the second most popular response in Zambia (28.6%), behind

technology 'providing the means for formal classes to continue online' (39.3%).

The device that participants thought would be the best for a rapidly deployable, short-term replacement for face-to-face learning during the pandemic was the smartphone — with 33.1% stating this overall. However, the DRC again stands out because respondents there chose the radio as the top device. Radio was considered the best device by 31.4%, with laptops being the second most popular by 20%. Radio was also a popular choice in Rwanda (18.6%), Uganda (22.7%), and Ethiopia (17.9%). Ethiopia also stands out for having equal responses for smartphones, laptops and tablets — all at 20.5%. Notably, those working in Rwanda tended to choose laptops (32.6%), with smartphones being the second most popular choice (20.9%). Finally, it should be mentioned that in Cameroon, television was the second most popular choice, with 20.6% of participants choosing it. Only 8.5% of respondents chose the television overall. A more detailed breakdown of figures can be seen in Annex J.

Issues of security, privacy, fraud, and malware in online learning were also considered by the respondents. They were asked to rank their level of concern about these issues, from 1 — 'not concerned' to 3 — 'very concerned'. Most respondents were 'very concerned' (44.1%) or 'quite concerned' (39.1%). Only a few were 'not concerned' (14.8%). An ANOVA revealed that there was, however, noteworthy variation by country, $F(12, 762) = 2.786$, $p = 0.001$. The average level of concern was lowest in South Africa (2.05: quite concerned), Ethiopia (2.08: quite concerned) and Senegal (2.13: quite concerned). The highest average level of concern was in the DRC (2.62: very concerned) and Uganda (2.45: quite concerned).

5. Findings by theme

This final section of analysis makes links between the survey data and the broader socio-economic landscape across Africa. It summarises trends across all 52 countries that were found through correlational analysis of a combination of the survey data and key economic indicator data from the World Bank. As wealth and rurality are commonly related to access to technology in the literature (↑Bakibinga-Gaswaga, et al., 2020), it was considered worthwhile to explore how they might relate to some of the most prominent, scaled variables from the original survey.

5.1. Wealth

Perceptions regarding knowledge about Covid-19, the effectiveness of governments' Covid-19 strategy and access to technology were significantly higher in wealthier African countries. Schools in wealthier countries were also considered to be better at involving parents in planning new arrangements for their children's education.

There was a negative relationship between a country's wealth and the percentage of its population that was rural (r = -.085, p<.001) . However, there were other factors that the survey found to be related to wealth. Among these were:

- the knowledge students had concerning Covid-19;
- the effectiveness of the government's distance learning strategy;
- access to educational technology;
- parental involvement in students' learning.

Specifically, it was found that students' knowledge about the Covid-19 virus and the public health measures necessary to reduce its spread was significantly higher in wealthier African countries (r = 0.127, p<.001). This was also true of beliefs about the effectiveness of the government's Covid-19 strategy (r = .163, p<.001). Further, and not unexpectedly, access to technology during school closures was significantly higher at all levels of education in wealthier countries:

- early childhood (r = .171, p<.001)
- primary (r = .264, p<.001)
- secondary (r = .262, p<.001)
- vocational (r = .204, p<.001)

- higher education (r = .231, p<.001)

Further, the effectiveness of respondents' school / college / institution in involving parents in planning new arrangements for their children's education during the Covid-19 pandemic was positively related to the wealth of the country that they worked in (*r* = .142, *p*<.001).

5.2. Rural populations

The effectiveness of governments' Covid-19 distance learning strategy was considered to be less effective in countries with higher rural populations.

Apart from the previously mentioned negative relationship between the percentage of a population living in rural areas and a country's wealth, there was only one other factor that related to rurality. This was with respect to the effectiveness of governments' Covid-19 distance learning strategy: the strategy was seen as less effective in countries with higher rural populations (*r* = -.067, *p*<.05). This finding echoes other responses from the survey, in particular, that respondents believed that rural communities to be the most educationally disadvantaged by the Covid-19 crisis. Of the respondents, 48.3% believed those living in rural areas to be most disadvantaged, with students from low-income households being a distant second (29%). Notably, there was no significant relationship between the percentage of the population that was rural and access to educational technology at any level.

5.3. Threat of Covid-19

Access to technology, at all levels of education, is thought to decrease as the threat of Covid-19 in a country is thought to increase.

The survey also shed light on respondents' beliefs about the level of threat posed by the Covid-19 pandemic to the country that they worked in, as well as to Africa more broadly — both of which were strongly correlated with each other (*r* = .739, *p*<.001). The threat of the pandemic to a country was found to be negatively related to the steps its government was taking to minimise the impact of the Covid-19 pandemic on education (*r* = -.091, *p*<.001) and its government's effectiveness at providing distance learning during school closures (*r* = -.066, *p*<.05). Further, access to technology, at all levels of education, decreased as the threat of Covid-19 in a country was thought to increase: early childhood (*r* = -.053, *p*<.05), primary (*r* = -.063,

p<.05), secondary (r = -.071, p<.01), vocational (r = -.109, p<.001), higher education (r = -.079, p<.01).

5.4. Government strategies

There was greater satisfaction with governments' action in minimising the impact of Covid-19 on education in less populous countries. Wealthier countries with smaller populations, especially if a smaller percentage of those populations were rural, were also more likely to report that they have effective distance learning strategies. The effectiveness of those distance learning strategies was also considered to be much greater in countries where educational institutions worked to have parents involved.

There were a number of significant relationships between the perceived effectiveness of government actions related to minimising the impact of Covid-19 on education and other variables. Older respondents were significantly more satisfied with their government's action in this regard (r_s = .058, p<.05), as well as people in less populous countries (r = -.055, p<.05). Access to educational technology, across all education levels — early childhood (r = .087, p<.01), primary (r = .127, p<.001), secondary (r = .126, p<.001), vocational (r = .118, p<.001), higher education (r = .158, p<.001) — as well as educational institutions' involvement of parents in planning new educational arrangements (r = .185, p<.001) were also perceived to be higher in countries where the government was seen as being effective in managing the crisis. In these countries, there were also lower levels of the perceived threat of Covid-19 in the countries (r = -.091, p<.001) and respondents believed students to possess a higher level of knowledge in these countries about the Covid-19 virus and the public health measures necessary to reduce its spread (r = .284, p<.001).

Governments that were seen as effective at minimising the effect of the pandemic on education more broadly were also, perhaps unsurprisingly, seen to have effective distance education strategies during school closures (r = .304, p<.001). Effective distance learning strategies were also significantly more likely to be perceived in wealthier countries (r = .163, p<.001) with smaller populations (r = -.084, p<.01), and especially if a smaller percentage of those populations were rural (r = -.067, p<.05). The perceived effectiveness of a government's distance learning strategies was also much greater in countries where educational institutions worked to have parents involved in planning new educational arrangements (r = .440, p<.001).

Finally, in those countries with more effective distance education strategies, the perceived threat of Covid-19 in the countries was seen to be lower (r = -.066, p<.05), students' knowledge about virus and public health measures was considered to be higher (r = .307, p<.001), as well as access to digital technologies at all levels of education: early childhood (r = .218< p<.001), primary (r = .280, p<.001), secondary (r = .287, p<.001), vocational (r = .288, p<.001) and higher education (r = .299, p<.001).

5.5. Access to educational technology

Wealthier countries had greater perceived access to technology. Assessment of governmental effectiveness at minimising the impact of Covid-19 was also related to greater access.

Many of the findings related to access to educational technology, during school closures, have already been stated above. High access was positively associated with a country's wealth, a government's effectiveness at minimising the impact of Covid-19 on education and the effectiveness of governments' distance education strategies. Alternatively, it was negatively associated with the perceived threat of Covid-19 in a country. Apart from those associations, access to educational technology at all levels was also positively correlated with perceptions of students' knowledge of Covid-19 and public health measures, and perceptions about the extent to which educational institutions had involved parents in planning new educational arrangements.

6. Conclusions

It is clear that countries across Africa have faced a wide range of challenges and adopted different strategies for using technology to help sustain education during Covid-19 school closures. These challenges are significant and ongoing, and there is no universally applicable strategy for tackling them effectively.

The intention of this report is to provide a resource for those engaged in ongoing decision-making regarding effective education policies in the context of Covid-19 by highlighting noteworthy trends and synthesising the perceptions of a wide range of education and technology professionals working across the continent. Specifically, it is hoped that researchers and policymakers can build on the data presented in this report, undertaking further work in order to understand more about the reasons underlying the observed trends and emphases. The report closes by re-emphasising three of its cross-cutting findings: the importance of engaging parents, the variety of response between countries, and the particular risks to primary education and the most marginalised students in light of the pandemic.

Governments' distance learning strategies are considered to be much more effective in countries where institutions worked to involve parents in planning arrangements for their children's education during Covid-19. It may therefore be important for government policymakers to consider how best they can work alongside educational institutions, and vice versa, to involve parents in their children's education.

Many differences in responses were also found across countries. This cements the point that there is no single solution to educational challenges across Africa. Each country's unique contexts should be taken into account in decision-making. An example of these differences can be seen in the finding that the level to which governments considered the views of teachers within the Covid-19 education response varied significantly by country. In Ghana and Rwanda, two-thirds of respondents said teachers' views would be taken into account, and this dropped to one quarter in DRC and Nigeria. Similarly, participant assessment of the most useful devices for replacing face-to-face learning during the pandemic varies significantly by country. In the DRC radio was considered most useful, in Rwanda laptops, and in Cameroon smartphones.

Finally, primary-level education was considered to be the educational stage most disadvantaged by the pandemic, and moving to online learning was generally seen as having the potential to increase inequality and disadvantage poorer students. Specifically, students from rural communities were considered to be most educationally disadvantaged by the pandemic. Despite this, in 12 of the 13 countries (DRC being the exception) the majority of respondents also think that the use of technology in education will become more widespread as a result of Covid-19.

The specifics of these differences and generalisations may change as the Covid-19 crisis evolves, as well as in its aftermath. However, it is still hoped that thoughtful consideration of the findings presented in this report may prove useful in present and future planning to address educational challenges across the 13 focus countries, and perhaps to a smaller extent, even beyond them.

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8. Annexes

Annex A: Sample details

Country	Sample Size	%
Algeria	23	1.4
Angola	9	0.6
Benin	37	2.3
Botswana	11	0.7
Burkina Faso	26	1.6
Burundi	1	0.1
Cameroon	47	2.9
Central African Republic	4	0.2
Chad	1	0.1
Comoros	5	0.3
Congo	3	0.2
Côte d'Ivoire	60	3.7
Djibouti	4	0.2
DRC	45	2.8
Egypt	25	1.6
Equatorial Guinea	1	0.1
Eritrea	5	0.3
Ethiopia	52	3.2

Gabon	4	0.2
Gambia	5	0.3
Ghana	66	4.1
Guinea	5	0.3
Guinea-Bissau	1	0.1
Kenya	154	9.6
Kingdom of Eswatini	1	0.1
Lesotho	2	0.1
Liberia	12	0.7
Madagascar	10	0.6
Malawi	16	1.0
Mali	14	0.9
Mauritania	4	0.2
Mauritius	49	3.1
Morocco	29	1.8
Mozambique	21	1.3
Namibia	29	1.8
Niger	11	0.7
Nigeria	220	13.7
Rwanda	68	4.2
Senegal	52	3.2
Seychelles	1	0.1

Sierra Leone	12	0.7
Somalia	5	0.3
South Africa	155	9.7
South Sudan	4	0.2
Sudan	12	0.7
Tanzania	56	3.5
Tchad	2	0.1
Togo	18	1.1
Tunisia	16	1.0
Uganda	107	6.7
Zambia	45	2.8
Zimbabwe	19	1.2
Other (please specify)	21	1.3
Total	1605	100.0

Annex B: eLearning Africa Survey

Questions referred to in the report, by theme

- Perceived level of threat of Covid-19 (Qs 15 and 16)
- Government's response to Covid-19 (Qs 21 and 22)
- Knowledge of Covid-19 (Qs 23 and 24)
- Obstacles to learning (Qs 25, 26, 27 and 30)
- Distance learning (Qs 28, 29, 31, 32, 33 and 42)
- Effectiveness of planning and response (Q 34)
- Long-term impact of Covid-19(Qs 48 and 54)
- Educational Technology: challenges and solutions (Qs 49, 50, 51 and 53)

The survey

1. Title (optional)

2. First Name (optional)

3. Surname (optional)

4. Age: 18–35; 36–55; >55

5. Gender: Male; Female; or I prefer not to say

6. What is your country of origin / birth?

8. In which country in Africa do you work?

9. What is your job description? Teacher / Professor / Lecturer; ICT Specialist, Advisor or Consultant; Project Manager; Trainer / Instructor; Civil Servant / Administrator; EdTech entrepreneur; Researcher; Sales Director / Manager/Consultant; Policy Advisor / Maker; Communications Director or Consultant; Student; Corporate Planner / Strategy Advisor; Marketing Director or Consultant; HR Personnel / Manager; Other

10. Which type of organisation do you work for? Government / Government-supported organisation; Privately owned organisation; Non-governmental organisation; I work independently of any

organisation; International government organisation; Donor organisation

11. Which sector(s) do you work in? (multiple selections possible): Education (Higher / Further); Education (Primary / Secondary); Education (Vocational); ICT / Telecommunications; Education (Early Childhood); Agriculture/ Rural Development/Fisheries; Public Sector; Development / Aid; Private Sector; Health; Environment; Media; Financial Sector; Tourism, Leisure and Entertainment; Energy; Industry; Law and Justice; Urban Development; Infrastructure / Transport; Police, Armed Forces, Emergency / Security Services; Other

12. Do you work in an urban or rural environment? Yes; No; Both

13. What ICTs do you most commonly use (at least weekly)? (multiple answers possible): Laptop; Smartphone; PC; Television; Tablet; Projector; Radio; Smart feature phone; Basic mobile phone; MP3 player; Games console; Other

14. What do you use ICTs for the most? (maximum five responses): Working; Teacher and training; Social / private communication; Learning; Professional networking; To connect with people from other parts of the world; To share information; To use social networks (Facebook, Twitter, Instagram, etc); Accessing News; Access services — government, online banking, health, etc. / Online banking mostly; Business purposes; Access information about crises — floods, disease, security threats, etc; Entertainment; To voice my opinion on global / local events; Other

15. How big a threat do you consider the Covid-19 pandemic to be to your country? Very Significant; Significant; Slightly Significant; Not Significant

16. How big a threat do you consider the Covid-19 pandemic to be to Africa as a whole? Very Significant; Significant; Slightly Significant; Not Significant

17. Have schools in your country been forced to close as a result of the Covid-19 pandemic? Yes; No; I don't know

18. If 'yes', were: All schools closed? Some schools closed? I don't know

19. If 'yes', have: All schools reopened? Some schools reopened? No schools reopened? I don't know

20. Do you think the closure of schools in your country is / was essential to prevent the spread of the Covid-19 virus? Yes; No

21. Are you satisfied or dissatisfied with the steps your government is taking to minimise the impact of the Covid-19 pandemic on education?: Satisfied; Dissatisfied; I don't know

22. Do you think your government has taken sufficient account of the views and experience of teachers in developing its response to the impact of the Covid-19 pandemic on education in your country?: Yes; No

23. Are you aware of any specific falsehoods in circulation in your country about the nature or origins of the Covid-19 virus? Yes; No

24. In your view, how good is the knowledge of students in your country about the Covid-19 virus and the public health measures necessary to reduce its spread? Very Good; Good; Poor; Non-existent

25. In your country, what do you consider to be the most significant obstacle facing students during the Covid-19 pandemic?: Lack of access to technology; Lack of a good learning environment at home; Lack of access to learning materials; Lack of interaction with teachers; Health risks to students in school; Lack of interaction with other students; Other

26. In your country, which group of students do you think will be most educationally disadvantaged as a result of the crisis? Learners from rural communities; Low-income learners; Learners with special educational needs; Learners with difficult domestic circumstances (e.g. single parents/orphans/no fixed abode, etc.); Female Learners; Ethnic/Linguistic minorities; None in particular – all will be equally affected

27. In your country, what percentage of students do you think are able to access the technology required to enable them to learn effectively online when schools are closed? Early Childhood (0-20%; 21-40%; 41-60%; 61-80%; 81-100%); Primary (0-20%; 21-40%; 41-60%; 61-80%; 81-100%); Secondary (0-20%; 21-40%; 41-60%; 61-80%; 81-100%); Higher

(0-20%; 21-40%; 41-60%; 61-80%; 81-100%); Vocational (0-20%; 21-40%; 41-60%; 61-80%; 81-100%)

28. Which distance learning solution do you think is most useful for primary-level students during the current crisis? Primary (Radio; TV: SMS; Online Learning; Mobile Learning; Paper-based)

29. Which distance learning solution do you think is most useful for secondary-level students during the current crisis? Secondary (Radio; TV: SMS; Online Learning; Mobile Learning; Paper-based)

30. In your country, what stage of education do you think will be most disadvantaged as a result of the crisis?: Primary; Early Childhood; Secondary; Higher; Vocational; Other; None in particular

31. Has your Government announced a distance learning strategy in response to the Covid-19 crisis? Yes; No; I don't know

32. If 'yes', does the distance learning strategy incorporate (please select as many as appropriate): Paper-based distance learning; Online Learning; Mobile Learning; Community-based learning; SMS; Radio; TV; Other

33. If 'yes', how effective do you think your Government's distance learning strategy is likely to be in providing ongoing education when schools are closed? Very Effective; Quite Effective: Not Effective: Damaging; Other. Why?

34. In your view, the way your school / college / institution has involved parents in planning new arrangements for their children's education during the Covid-19 pandemic has been: Very Successful; Successful; Slightly successful; Not successful

35. Please explain your answer.

36. Has your government issued guidelines for the use of technology in education during the Covid-19 crisis? Yes; No; I don't know

37. In your country, what is the most useful piece of advice that has been given by your government on how technology can be used effectively to sustain education in this crisis?

38. In your country, what is the most significant piece of advice you would give to your government on how technology could be used effectively to sustain education in this crisis?

39. In your country, are you aware of any initiatives from private sector companies which are offering new technology-related services to support education in this crisis? Yes; No

40. Have you been offered specific additional financial / material support for teaching and learning tools during this crisis? Yes, we have received financial support; Yes, we have received material support; No, we have not received any support

41. If 'yes', was it provided by: Your Government; Your educational institution; Parents of students; An NGO or charitable organisation; An IGO (e.g., African Union, UNESCO, World Bank, ADEA); A local company; An international company / private sector initiative; Other (please provide details)

42. Do you feel that you received adequate professional development / training prior to the Covid-19 pandemic concerning how to adjust to providing distance-based learning for students? Yes; No

43. If 'no', in what ways was support lacking? In how to conduct effective distance learning; In how to integrate technology/assisted learning into teaching; In how to devise activities and materials for students' learning online; In how to manage students outside the classroom; In digital literacy training; Other

44. During the Covid-19 pandemic, what support (if any) have you had to make the transition to distance learning?

45. Please tell us what kind of additional training / professional development support you would find useful for building preparedness to tackle future crises?

46. Do you think the school curriculum should be reviewed to make it easier to adapt to distance learning? Yes; No

47. Please give reasons for your answer and tell us about your experience.

48. In your country, what long-term impact do you think the current Covid-19 crisis will have on the level of use of technology in education in Africa? The use of technology will be more widespread as a result of the crisis; The use of technology will be less widespread as a result of the crisis; There will be no change in level of technology use

49. In your country, what do you think is the biggest challenge with regard to using educational technology effectively during the Covid-19 crisis? Availability of devices; Accessibility of devices; Affordability of devices; Availability of connectivity; Affordability of connectivity; Availability of electricity; Affordability of electricity; Availability of relevant content; Accessibility of relevant content; Affordability of relevant content; Lack of content in local languages; Other

50. What do you consider to be the most important contribution the use of technology can make, in the Covid-19 crisis, to enable education to continue in your country? Helping teachers to communicate with students; Enabling students to continue studying on their own; Providing the means for formal classes to continue online; Engaging with parents to support home learning; Helping students to connect with peers; Other

51. In your country, what device do you think provides the best prospect for a rapidly deployable, short-term replacement for face-to-face learning to support learning in the current crisis? Basic mobile phone; Smart feature phone; Smartphone; Tablet; PC; Laptop; Projector; Radio; TV; Other

52. Please give a reason for your answer.

53. How concerned are you about issues of security, privacy, fraud, or malware in online learning? Very concerned; Quite concerned; Not concerned; Other

54. In your country, do you think that the most significant long-term educational effect of the Covid-19 pandemic will be: Both damage and opportunities in equal measure; Damage to education systems; or New opportunities for education systems?

55. Please give a short reason for your answer.

56. In your view, will a move to more online learning increase inequality and disadvantage poorer and more marginalised students? Yes; No

57. Please explain your answer.

58. In your view, is the state of communications infrastructure in your country likely to lead to a widening of the gap in educational outcomes between rural and urban areas? Yes; No

59. Please explain your answer.

60. Please tell us what you consider to be the biggest mistake in the application of technology-assisted learning in schools, colleges, and universities. What should be done instead?

61. As an experienced user of technology in education, what is the most important advice you would share with others working in education, who may now have to learn quickly how to incorporate technology into their teaching?

62. Can you give an example of how you, or your colleagues, are using technology to overcome an educational challenge caused by the current Covid-19 pandemic (please tell us what is the challenge, what are you doing, what do others need to know)?

63. What is the most significant lesson about how to ensure the continuity of education in a crisis that your government should learn from the experiences of the Covid-19 pandemic in order to deal effectively with future crises?

64. In your view, what is now the biggest barrier preventing students from learning online?

65. Please can you tell us about any additional specific problems that students are facing as a result of not being able to attend school? (e.g., lack of access to meals)

66. Once educational institutions re-open, which students do you think will face the biggest challenges returning to school / college / university, and why?

Annex C: Average perceived threat of Covid-19 in each country

Country	Average perceived threat	Sample Size (N)	Standard Deviation (SD)	Standard Error (SE)
Kenya	3.69	134	0.482	0.042
Ghana	3.61	61	0.69	0.088
Nigeria	3.57	206	0.603	0.042
Uganda	3.52	97	0.679	0.069
South Africa	3.49	140	0.694	0.059
DRC	3.46	41	0.778	0.121
Ethiopia	3.42	48	0.794	0.115
Rwanda	3.38	65	0.784	0.097
Tanzania	3.38	53	0.657	0.09
Zambia	3.3	43	0.638	0.097
Senegal	3.23	48	0.692	0.1
Cameroon	3.19	43	0.764	0.117
Côte d'Ivoire	2.91	57	0.714	0.095

Annex D: Satisfaction with the steps that governments had taken to minimise the impact of the Covid-19 pandemic on education

Country	Dissatisfied	I don't know	Satisfied
Cameroon	8 (18.6%)	14 (32.6%)	21 (48.8%)
DRC	12 (29.3%)	13 (31.7%)	16 (39%)
Ethiopia	9 (18.8%)	4 (8.3%)	35 (72.9%)
Ghana	12 (19.7%)	6 (9.8%)	43 (70.5%)
Côte d'Ivoire	10 (17.5%)	27 (47.4%)	20 (35.1%)
Kenya	34 (25.4%)	11 (8.2%)	89 (66.4%)
Nigeria	77 (37.4%)	16 (7.8%)	113 (54.9%)
Rwanda	3 (4.6%)	4 (6.2%)	58 (89.2%)
Senegal	10 (20.8%)	17(35.4%)	21 (43.8%)
South Africa	48 (34.3%)	23 (16.4%)	69 (49.3%)
Tanzania	19 (35.8%)	6 (11.3%)	28 (52.8%)
Uganda	29 (29.9%)	3.0 (3.1%)	65 (67%)
Zambia	12 (27.9%)	0.0 (0%)	31 (72.1%)
Total	283 (27.3%)	144 (13.9%)	1036 (100%)

Annex E: The most significant obstacles to learning in the context of the pandemic

Country	Health risks to students in school	Lack of a good learning environment at home	Lack of access to learning materials	Lack of access to technology	Lack of interaction with other students	Lack of interaction with teachers	Other (please specify)
Cameroon	7 (16.7%)	8 (19%)	8 (19%)	9 (21.4%)	2 (4.8%)	8 (19%)	0 (0%)
DRC	1 (2.5%)	17 (42.5%)	4 (10%)	15 (37.5%)	0 (0%)	2 (5%)	1 (2.5%)
Ethiopia	1 (2.2%)	7 (15.6%)	4 (8.9%)	28 (62.2%)	0 (0%)	4 (8.9%)	1 (2.2%)
Ghana	1 (1.7%)	13 (22.4%)	7 (12.1%)	34 (58.6%)	0 (0%)	3 (5.2%)	0 (0%)
Côte d'Ivoire	10 (17.5%)	11 (19.3%)	3 (5.3%)	20 (35.1%)	1 (1.8%)	10 (17.5%)	2 (3.5%)
Kenya	4 (3.1%)	27 (20.8%)	15 (11.5%)	72 (55.4%)	3 (2.3%)	9 (6.9%)	0 (0%)
Nigeria	13 (6.7%)	27 (13.9%)	15 (7.7%)	111 (57.2%)	4 (2.1%)	9 (4.6%)	15 (7.7%)
Rwanda	2 (3.6%)	12 (21.8%)	9 (16.4%)	23 (41.8%)	0 (0%)	6 (10.9%)	3 (5.5%)
Senegal	4 (8.7%)	18 (39.1%)	5 10.9%)	13 (28.3%)	2 (4.3%)	4 (8.7%)	0 (0%)
South Africa	7 (5.3%)	27 (20.3%)	11 (8.3%)	62 (46.6%)	3 (2.3%)	13 (9.8%)	10 (7.5%)
Tanzania	2 (4%)	17 (34%)	2 (4%)	21 (42%)	4 (8%)	3 (6%)	1 (2%)
Uganda	1 (1.1%)	19 (20.2%)	20 (21.3%)	40 (42.6%)	1 (1.1%)	8 (8.5%)	5 (5.3%)
Zambia	2 (5%)	6 (15%)	6 (15%)	20 (50%)	1 (2.5%)	5 (12.5%)	0 (0%)
Total	55 (5.6%)	209 (21.2%)	109 (11.1%)	468 (47.6%)	21 (2.1%)	84 (8.5%)	38 (3.9%)

Annex F: The stage of education most disadvantaged as a result of the pandemic

	Early Childhood	Primary	Secondary	Vocational	Higher	None in particular	Other. Please give a reason for your answer.
Cameroon	7 (16.7%)	15 (35.7%)	16.70%	5 (11.9%)	1 (2.4%)	3 (7.1%)	4 (9.5%)
DRC	5 (12.5%)	14 (35%)	17.50%	0 (0%)	1 (2.5%)	5 (12.5%)	8 (20%)
Ethiopia	7 (15.6%)	16 (35.6%)	6.70%	2 (4.4%)	8 (17.8%)	6 (13.3%)	3 (6.7%)
Ghana	13 (22.4%)	21 (36.2%)	19.00%	3 (5.2%)	3 (5.2%)	3 (5.2%)	4 (6.9%)
Côte d'Ivoire	9 (15.8%)	29 (50.9%)	21.10%	2 (3.5%)	3 (5.3%)	2 (3.5%)	0 (0%)
Kenya	25 (19.2%)	46 (35.4%)	18.50%	4 (3.1%)	7 (5.4%)	9 (6.9%)	15 (11.5%)
Nigeria	44 (22.7%)	64(33%)	12.90%	8 (4.1%)	21 (10.8%)	11 (5.7%)	21 (10.8%)
Rwanda	8 (14.5%)	23 (41.8%)	23.60%	3 (5.5%)	4 (7.3%)	1 (1.8%)	3 (5.5%)
Senegal	9 (19.6%)	17 (37%)	23.90%	3 (6.5%)	1 (2.2%)	2 (4.3%)	3 (6.5%)
South Africa	23 (17.3%)	41 (30.8%)	26.30%	9 (6.8%)	7 (5.3%)	6 (4.5%)	12 (9%)
Tanzania	12 (24%)	22 (44%)	16.00%	1 (2%)	3 (6%)	3 (6%)	1 (2%)
Uganda	14 (14.9%)	25 (26.6%)	23.40%	8 (8.5%)	6 (6.4%)	7 (7.4%)	12 (12.8%)
Zambia	15 (37.5%)	20 (50%)	5.00%	0 (0%)	1 (2.5%)	0 (0%)	2 (5%)
Total	191 (19.4%)	353 (35.9%)	18.30%	48 (4.9%)	66 (6.7%)	58 (5.9%)	88 (8.9%)

Annex G: Type of disadvantaged student that would be the most educationally disadvantaged as a result of the pandemic.

Country	Ethnic / Linguistic minorities	Female students	Students from rural communities	Students with difficult domestic circumstances	Students with special educational needs	Low-income students	None in particular
Cameroon	1 (2.4%)	1 (2.4%)	19 (45.2%)	1 (2.4%)	5 (11.9%)	9 (21.4%)	6 (14.3%)
DRC	0 (0%)	1 (2.5%)	14 (35%)	10.00%	2.50%	12.50%	37.50%
Ethiopia	2 (4.4) %	0 (0%)	20 (44.4%)	0 (0%)	13.30%	31.10%	6.70%
Ghana	0(0%)	0 (0%)	21 (36.2%)	10.30%	3.40%	31.00%	19.00%
Côte d'Ivoire	0 (0%)	2 (3.5%)	28 (49.1%)	10.50%	8.80%	19.30%	8.80%
Kenya	1 (0.8%)	0 (0%)	50 (38.5%)	4.60%	10.00%	30.80%	15.40%
Nigeria	2 (1%)	1 (0.5%)	95 (49%)	3.60%	4.60%	25.30%	16.00%
Rwanda	0 (0%)	0 (0%)	22 (40%)	3.60%	9.10%	40.00%	7.30%
Senegal	0 (0%)	0 (0%)	22 (47.8%)	4.30%	8.70%	23.90%	15.20%
South Africa	3 (2.3%)	0 (0%)	46 (34.6%)	7.50%	0 (0%)	48.10%	7.50%
Tanzania	1 (2%)	0 (0%)	19 (38%)	0 (0%)	18.00%	36.00%	6.00%
Uganda	0 (0%)	2 (2.1%)	50 (53.2%)	5.30%	11.70%	17.00%	10.60%
Zambia	0 (0%)	0 (0%)	25 (62.5%)	0 (0%)	7.50%	20.00%	10.00%
Total	10 (1%)	7 (0.7%)	431 (43.8%)	49 (5%)	73 (7.4%)	285 (29%)	129 (13.1%)

Annex H: Distance learning solution that is the most useful for primary-level students and secondary-level students

Primary-level students

	Mobile learning	Online learning	Paper-based	Radio	SMS	TV
Cameroon	4 (9.5%)	7 (16.7%)	6 (14.3%)	2 (4.8%)	0 (0%)	23 (54.8%)
DRC	3 (7.5%)	1 (2.5%)	15 (37.5%)	11 (27.5%)	0 (0%)	10 (25%)
Ethiopia	3 (6.7%)	8 (17.8%)	6 (13.3%)	17 (37.8%)	0 (0%)	11 (24%)
Ghana	8 (13.8%)	10 (17.2%)	7 (12.1%)	4 (6.9%)	2 (3.4%)	27 (46.6%)
Côte d'Ivoire	3 (5.3%)	9 (15.8%)	9 (15.8%)	8 (14%)	0 (0%)	28 (49.1%)
Kenya	12 (9.2%)	20 (15.4%)	22 (16.9%)	45 (34.6%)	3 (2.3%)	28 (21.5%)
Nigeria	22 (11.3%)	35 (18%)	18 (9.3%)	45 (23.2%)	1 (0.5%)	73 (37.6%)
Rwanda	3 (5.5%)	8 (14.5%)	7 (12.7%)	22 (40%)	0 (0%)	15 (27.3%)
Senegal	5 (10.9%)	11 (23.9%)	11 (23.9%)	5 (10.9%)	0 (0%)	14 (30.4%)
South Africa	23 (17.3%)	32 (24.1%)	15 (11.3%)	16 (12%)	1 (0.8%)	46 (34.6%)
Tanzania	3 (6%)	8 (16%)	6 (12%)	8 (16%)	0 (0%)	25 (50%)
Uganda	3 (3.2%)	9 (9.6%)	37 (39.4%)	22 (23.4%)	0 (0%)	23 (24.5%)
Zambia	5 (12.5%)	2 (5%)	3 (7.5%)	10 (25%)	0 (0%)	20 (50%)
Total	97 (9.9%)	160 (16.3%)	162 (16.5%)	215 (21.8%)	7 (0.7%)	343 (34.9%)

Secondary-level students

	Mobile learning	Online learning	Paper-based	Radio	SMS	TV
Cameroon	12 (28.6%)	16 (38.1%)	4 (9.5%)	3 (7.1%)	0 (0%)	7 (16.7%)
DRC	3 (7.5%)	12 (30%)	13 (32.5%)	3 (7.5%)	2 (5%)	7 (17.5%)
Ethiopia	4 (8.9%)	17 (37.8%)	4 (8.9%)	5 (11.1%)	0 (0%)	15 (33.3%)
Ghana	12 (20.7%)	20 (34.5%)	1 (1.7%)	3 (5.2%)	3 (5.2%)	19 (32.8%)
Côte d'Ivoire	7 (12.3%)	26 (45.6%)	4 (7%)	2 (3.5%)	0 (0%)	18 (31.6%)
Kenya	27 (20.8%)	49 (37.7%)	14 (10.8%)	18 (13.8%)	1 (0.8%)	21 (16.2%)
Nigeria	39 (20.1%)	81 (41.8%)	12 (6.2%)	15 (7.7%)	0 (0%)	47 (24.2%)
Rwanda	3 (5.5%)	23 (41.8%)	3 (5.5%)	7 (12.7%)	2 (3.6%)	17 (30.9%)
Senegal	6 (13%)	25 (54.3%)	7 (15.2%)	1 (2.2%)	0 (0%)	7 (15.2%)
South Africa	32 (24.1%)	68 (51.1%)	6 (4.5%)	8 (6%)	3 (2.3%)	16 (12%)
Tanzania	5 (10%)	22 (44%)	2 (4%)	3 (6%)	1 (2%)	17 (34%)
Uganda	12 (12.8%)	27 (28.7%)	16 (17%)	13 (13.8%)	2 (2.1%)	24 (25.5%)
Zambia	10 (25%)	14 (35%)	2 (5%)	3 (7.5%)	1 (2.5%)	10 (25%)
Total	172 (17.5%)	400 (40.7%)	88 (8.9%)	84 (8.5%)	15 (1.5%)	225(22.9%)

Annex I: Most significant long-term educational effect of the Covid-19 pandemic

	Both damage and opportunities in equal measure	Damage to education systems	New opportunities for education systems
Cameroon	14 (42.4%)	3 (9.1%)	16 (48.5%)
DRC	5 (13.9%)	15 (41.7%)	16 (44.4%)
Ethiopia	9 (25%)	5 (13.9%)	22 (61.1%)
Ghana	16 (34%)	0 (0%)	30 (65.2%)
Côte d'Ivoire	8(20%)	12 (30%)	20 (50%)
Kenya	48 (50.5%)	14 (14.7%)	33 (34.7%)
Nigeria	52(34.2%)	15 (9.9%)	85 (55.9%)
Rwanda	17 (40.5%)	8 (19%)	17 (40.5%)
Senegal	10 (26.3%)	9 (23.7%)	19 (50%)
South Africa	55 (53.4%)	11 (10.7%)	37 (35.9%)
Tanzania	17 (45.9%)	6 (16.2%)	14 (37.8%)
Uganda	32 (45.1%)	6 (8.5%)	33 (46.5%)
Zambia	8 (29.6%)	3 (11.1%)	16 (59.3%)
Total	291 (38.5%)	107 (14.2%)	358 (47.4%)

Annex J: Device that participants thought would be the best for a rapidly deployable, short-term replacement for face-to-face learning during the pandemic

	Basic mobile phone	Laptop	Other (please specify)	PC	Projector	Radio	Smart feature phone	Smart-phone	Tablet	TV
Cameroon	0 (0%)	3 (8.8%)	1 (2.9%)	0 (0%)	1 (2.9%)	3 (8.8%)	2 (5.9%)	13 (38.2%)	4 (11.8%)	7 (20.6%)
DRC	5 (14.3%)	7 (20%)	1 (2.9%)	0 (0%)	0 (0%)	11(31.4%)	0 (0%)	6 (17.1%)	4 (11.4%)	1 (2.9%)
Ethiopia	0 (0%)	8 (20.5%)	1 (2.6%)	1 (2.6%)	0 (0%)	7 (17.9%)	2 (5.1%)	8 (20.5%)	8 (20.5%)	4 (10.3%)
Ghana	3 (6.1%)	7 (14.3%)	0 (0%)	0 (0%)	0 (0%)	5 (10.2%)	5 (10.2%)	19 (38.8%)	7 (14.3%)	3 (6.1%)
Côte d'Ivoire	4 (9.8%)	5 (12.2%)	(0%)	1 (2.4%)	0 (0%)	4 (9.8%)	2 (4.9%)	14 (34.1%)	6 (14.6%)	5 (12.2%)
Kenya	14 (13.3%)	9 (8.6%)	2 (1.9%)	1 (1%)	0 (0%)	9 (8.6%)	14 (13.3%)	35 (33.3%)	15 (14.3%)	6 (5.7%)
Nigeria	14 (8.6%)	28 (17.2%)	4 (2.5%)	2 (1.2%)	0 (0%)	17 (10.4%)	8 (4.9%)	56 (34.4%)	18 (11%)	16 (9.8%)
Rwanda	2 (4.7%)	14 (32.6%)	2 (4.7%)	0 (0%)	0 (0%)	8 (18.6%)	2 (4.7%)	9 (20.9%)	5 (11.6%)	1 (2.3%)
Senegal	2 (5%)	10 (25%)	1 (2.5%)	2 (5%)	0 (0%)	3 (7.5%)	0 (0%)	17 (42.5%)	3 (7.5%)	2 (5%)
South Africa	5 (4.9%)	22 (21.6%)	3 (2.9%)	1 (1%)	0 (0%)	4 (3.9%)	8 (7.8%)	38 (37.3%)	16 (15.7%)	5 (4.9%)
Tanzania	1 (2.6%)	6 (15.8%)	0 (0%)	0 (0%)	0 (0%)	1 (2.6%)	2 (5.3%)	17 (44.7%)	7 (18.4%)	4 (10.5%)
Uganda	3 (4%)	6 (8%)	1 (1.3%)	0 (0%)	0 (0%)	17(22.7%)	6 (8%)	21 (28%)	11 (14.7%)	10 (13.3%)
Zambia	3 (10.7%)	1 (3.6%)	1 (3.6%)	0 (0%)	0 (0%)	3 (10.7%)	3 (10.70%)	9 (32.1%)	5 (17.9%)	3 (10.7%)
Total	56 (7.1%)	126 (15.9%)	17 (2.1%)	8 (1%)	1(0.1%)	92 (11.6%)	54 (6.8%)	262(33.1%)	109 (13.8%)	67 (8.5%)