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Effects of school closures on secondary school teachers and school leaders in Rwanda: Results from a phone survey

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Keywords:

COVID-19, Rwanda, secondary education, STEM, teachers, school closures, phone surveys.

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Introduction

The context

On 14 March 2020, the government of Rwanda announced the closure of all schools following the identification of the first COVID-19 case in Rwanda. Subsequently, on 1 May, the government announced that the school calendar year would shift, with the intention to change to a September to June school year. The Ministry of Education (MINEDUC) announced on October 13 that secondary and upper primary schools would start reopening in phases in November 2020.[1] Along with the change in the school year, students would return to the grade they were in before school closures (so effectively would repeat part of the year).

Following school closure, the Rwandan government implemented several initiatives to ensure student learning could continue. The Rwanda Education Board (REB)[2] began broadcasting education programs on national TV and radio, and launched a YouTube channel called REB eLearning[3] with educational content for students. REB also strengthened its online learning portal[4] to support remote learning for schools and teachers. In addition, the platform provides professional development for teachers and school leaders, with a focus on digital skills.

The study

Following these events, Laterite and the Research for Equitable Access and Learning (REAL) Centre at the University of Cambridge conducted phone interviews with 298 head teachers and 297 teachers from 298 schools in August 2020 to assess their experiences with supporting students during school closures, and issues to consider when schools reopen.

This work was carried out as part of Laterite and the REAL Centre's work as learning partners for the Mastercard Foundation's Leaders in Teaching initiative. Leaders in Teaching responds to the opportunities that a quality secondary education represents for the African continent. Through a variety of programs, it supports teachers throughout their careers and prepares them to deliver high-quality, relevant education, with a focus on science, technology, engineering and mathematics (STEM) subjects in Rwanda.

This brief summarises the findings of the phone surveys across the following themes:

The effects of school closures on:

a. **continuation of schooling (including via distance teaching and learning)**: to identify whether those who have already been using technology are more prepared.

b. **continuation of teacher and school leadership training**: to identify whether and how this is able to continue at a distance.

On reopening, school preparedness to:

c. **resume in-school classes, with adaptations as needed** (for example, in terms of curriculum catch-up).
d. **mitigate potential future health outbreaks**: (e.g., the extent to which water and sanitation facilities are in place, the need for continued social distancing).

It is important to note that associations listed in this brief are simple correlations and cannot be interpreted as causal. More information on the methodological approach to the analysis is included in the methodological note at the end of this brief.

Head teachers and teachers in this survey

The head teachers and STEM teachers in our study were initially recruited for our quantitative baseline data collection conducted in February and March 2020, from 14 districts in Rwanda where Leaders in Teaching programs are active. This existing data collection was intended to provide evidence on student and teacher outcomes. Planned follow-up data collection at the end of the school year was delayed as a result of the COVID-19 shutdown.

We had a sampling frame of 309 head teachers and 1,564 STEM teachers at 309 schools. We aimed to interview all the head teachers. For the teachers, we purposively sampled by teacher's gender and years of experience with the aim of having a similar proportion of each. We also purposively sampled a larger proportion of teachers with disabilities (see Table 1). To take account of this, we used inverse probability weights in the analysis that follows. In order to have a matched sample of head teachers and teachers, we interviewed only one teacher from each school. This restriction meant that we fell short of our target of 50% female teacher respondents, as we were only able to include 38% of female teachers.

Table 2 shows the distribution of different school types in our sample. Schools of excellence (about 75% of which are boarding schools) were deliberately oversampled in the original Leaders in Teaching research design, which is also the case for this study. This is because we wanted to be able to make comparisons between these schools and regular schools, and the ratio of schools of excellence to regular schools is low.

Schools of excellence were established by the Ministry of Education to promote sciences with a focus on practical classes, and act as models for other schools.[5] The main distinguishing feature between these schools and other schools is a well-equipped computer and science laboratory, and a library. Given schools of excellence are well equipped with ICT equipment such as computers, it may follow that teachers

and head teachers from these schools are better prepared to use technology to support students with remote learning, and to engage in remote teacher and school leadership training. Given this, we disaggregate our findings according school types where appropriate in order to see whether these schools are indeed better prepared.

Furthermore, due to their importance to stakeholders, we disaggregate some of our findings according to: 1) provinces, 2) boarding versus day schools, 3) urban versus rural, and 4) schools with primary and secondary versus secondary only. These breakdowns help us to assess whether there are any significant differences across these groups.

Of the 309 interviews that were planned with head teachers and teachers, we were able to interview 298 head teachers and 297 teachers from the same 298 schools. As such, we were able to reach almost the whole sample. This positive response rate could partly be due to the fact that the team had recently undertaken surveys in the schools, so researchers were known.

Table 1: Distribution of teacher characteristics in the sample and sampling frame

Characteristics		**Sampling Frame (Population) N=1564**	**Sampling Targets**	**Actual respondents N=297**
Gender	Female	27%	50%	113 (38%)
	Male	73%	50%	184 (62%)
Disability	Yes	3%	10%	30 (10%)
	No	97%	90%	267 (90%)
Experience	0-8 years	49%	33%	117 (39%)
	9 - 15 years	40%	33%	116 (39%)
	+15 years	11%	33%	64 (22%)

Table 2: Distribution of type of schools in the sample

School characteristics		**Proportion**	**Total**
School type	School of excellence	13%	40
	Non-school of excellence	87%	258
Day/Boarding	Day schools	13%	40
	Both boarding and day	87%	258
Level	Primary and secondary	73%	218
	Secondary only	27%	80
Location	Rural	92%	274
	Urban	8%	24

Ability to continue schooling during the pandemic

In this section, we aim to understand the prevalence and nature of remote learning support provided by teachers to students during school closures. We also assess whether there is any association between 1) access to ICT equipment, 2) prior online experience, 3) guidance to schools and teachers, and remote learning support. To be able to support students through the REB eLearning portal for example, teachers need to have at least a smartphone with a browser. However, support to students can also be in the form of voice call or messages, in which case a feature phone would be sufficient. By online experience, we mean experience with learning, teaching or school management online.

Further, we examine any differences in remote learning support at the school and individual level. In the phone survey, we collected data on the following: 1) whether teachers have been supporting students; 2) whether head teachers have been supporting teachers at their school to support students; 3) head teacher and teacher access to ICT equipment (e.g., smartphones and internet); 4) prior (before the pandemic) online experience; and 5) whether head teachers and teachers received guidance on how to continue student learning during school closures.

1) Distance learning support

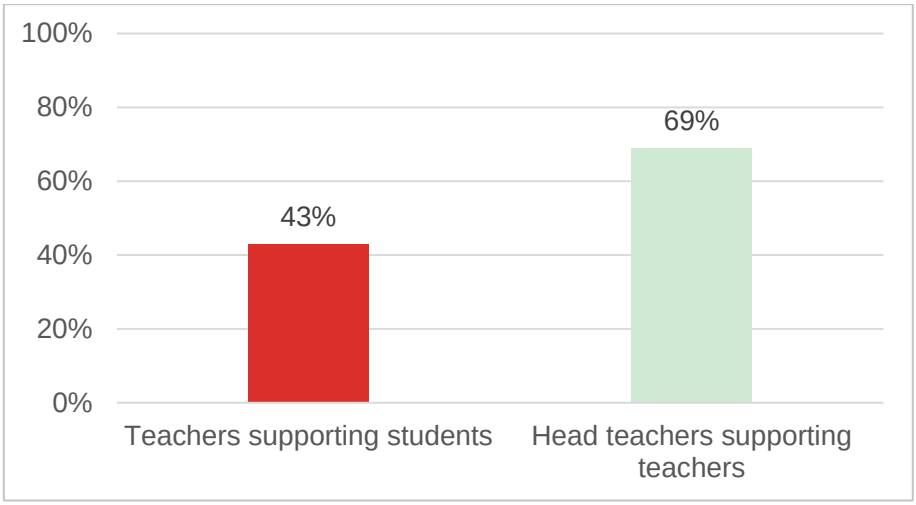
Approximately 43% of STEM teachers are supporting students with distance learning, and 69% of head teachers are supporting teachers at their schools to support student learning during school closures (see Figure 1). The most common types of support provided by teachers to students are as follows: mentoring parents and guardians of students, and answering questions from students via messages or voice calls. Head teachers mainly supported teachers by providing guidance on how to use radios to support students' learning, and guidance on how to use platforms for sharing information such as Google Drive and WhatsApp.

For teachers, there is a small but significant difference in the age and years of experience between teachers who supported students with distance learning and those who did not. The average teacher who reported supporting students is approximately 33 years old with 8 years of experience, compared to an average of approximately 35 years of age and 10 years of experience for those who did not. We did not find a statistically significant difference across gender and disability in terms of student support.

For head teachers, there is a weak but significant positive association between age and support to teachers. The average age of head teachers who supported teachers is 44 years, compared to 42 years of those who did not. We did not find a statistically significant difference in support to teachers across gender and disability.

We observed a gap between schools of excellence and other schools in terms of student support. 66% of teachers in schools of excellence reported supporting students, compared to 39% in other schools. As noted earlier, schools of excellence are well equipped with ICT equipment. It therefore follows that teachers from these schools are well trained and relatively comfortable using ICT equipment such as computers to support students, compared to teachers from other schools.

Figure 1: Student and teacher support during school closure (% of teachers and head teachers reporting giving support)



Across provinces, the South province has the highest proportion (51%) of teachers that reported supporting students with remote learning, followed by West (43%), North (37%), and East (36%) (see Table 3). Note that our sample does not include schools from Kigali province.

Table 3: Proportion of teachers supporting students with remote learning during school closures

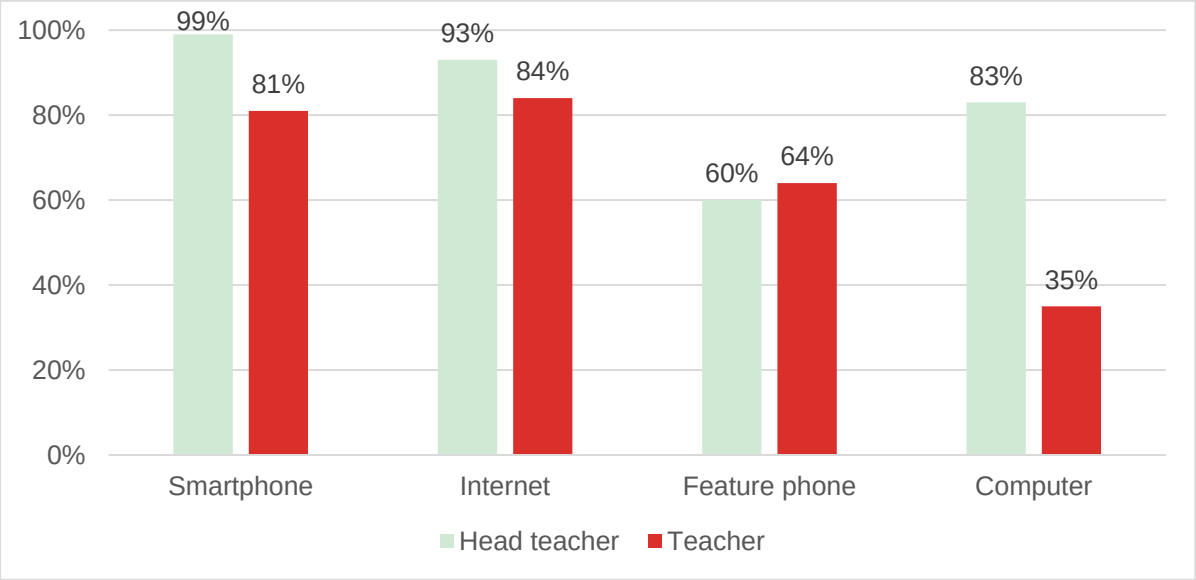
Province	**Proportion of teacher supporting students**
South (N=70)	51%
West (N=133)	43%
North (N=52)	37%
East (N=42)	36%

2) Access to ICT equipment

Head teachers and teachers have ICT equipment required for supporting students with distance learning from home. The majority of head teachers and teachers have access to smartphones, internet, and feature phones but fewer than half of the teachers have access to computers (see Figure 2). We find a large and significant gap between head

teachers and teachers in terms of access to computers: 82% of head teachers reported having access to computers, compared to only 35% of teachers.

Figure 2: Head teacher and teacher access to ICT equipment



For both teachers and head teachers, we do not find statistically significant differences in access to smartphones, internet, feature phones, and computers (head teachers only) across gender and disability. However, for teachers, there is a small but significant difference ($p<0.1$) in access to a computer between male and female teachers. 38% of male teachers reported access to computers, compared to 28% of female teachers.

We observe a small but statistically significant difference in access to computers, smartphones and internet between teachers from schools of excellence and other schools (see Table 4).

Table 4: Access to resources between teachers from schools of excellence and teachers from other schools

Resources	**Schools of excellence**	**Non-schools of excellence**	**Difference between School Types**	**Statistical Significance**
Smartphones	98%	79%	19%	***
Internet	98%	82%	16%	***
Computer	66%	31%	35%	***
*** indicate statistical significance at the 1% critical level.				

There is a statistically significant positive association between access to a smartphone and distance learning support to students. 87% of teachers who reported supporting students with distance learning have access to smartphones, compared to 77% who do not. However, since most teachers who do not support students still had smartphones, it is not likely that this is a main cause for their lack of support. We did not find a statistically significant association between having access to a computer, feature phone or internet and distance learning support to students.

There is a small but statistically significant difference in access to computers and internet between schools with primary and secondary, and secondary only.
Table 5 below shows that on average 96% of teachers in secondary only schools have access to internet, and 47% to computers, compared to 80% and 31% respectively for teachers in primary and secondary schools.

Table 5: Access to resources between teachers from schools of excellence and teachers from other schools

Resources	**Primary and Secondary (N=217)**	**Secondary Only (N=80)**	**Difference between school types**	**Statistical Significance**
Smartphones	80%	85%	5%	
Internet	80%	96%	16%	***
Computer	31%	47%	15%	**
***, **, and * indicate statistical significance at the 1%, 5%, and 10% critical level, respectively.				

3) Prior experience with online learning, teaching, or school management

Around 18% of teachers and 41% of head teachers reported prior (pre-COVID-19) online experience. The most common online experiences for both teachers and head teachers are: taking an online class/course and receiving training on e-learning. Over two-thirds of the head teachers and teachers with prior online experience believe it has been helpful for them to adapt to supporting distance learning during school closure.

For teachers, prior online experience appears to have no significant association with distance support to students. By contrast, head teachers with prior online experience are more likely to provide support to teachers at their school: 49% of head teachers who declared supporting teachers have prior online experience, compared to 24% who reported not supporting teachers.

There is a gender difference in prior online experience. Male teachers are more likely to have prior online experience than female teachers: 22% of male teachers reported

having prior online experience compared to 9% of female teachers. By contrast, for head teachers, there is no statistically significant difference in online experience across gender.

For both head teachers and teachers, we do not observe any statistically significant difference in prior online experience across disability.
There is no statistically significant difference in prior online experience between head teachers and teachers from rural schools and urban schools. 38% of head teachers and 23% of teachers in urban schools reported prior online experience, compared to 42% and 18% respectively, in rural schools (Table 6).

Table 6: Prior experience between head teachers and teachers from schools in urban and rural areas

	Urban (proportion)	**Rural (Proportion)**	**Difference between school types**	**Statistical Significance**
Teachers (N=297)	23% (N=24)	18% (N=273)	5%	-
Head teachers (N=298)	80% (N=24)	96% (N=274)	16%	-
***, **, and * indicate statistical significance at the 1%, 5%, and 10% critical level, respectively.				

4) Guidance to head teachers and teachers to keep education going

In the survey, we asked both head teachers and teachers whether they had received guidance on how to continue schooling during school closure, and the nature and source of that guidance.

42% of head teachers reported receiving guidance on how to keep education going during school closures. The most common types of guidance to schools as reported by head teachers are: support on how to use platforms for sharing information (e.g., Google Drive, WhatsApp), and guidance on how to use radio and TV to support student learning at a distance. This guidance to schools is coming from REB, the Building Learning Foundations (BLF[6]) program, and local authorities (sector or district level).

33% of teachers declared receiving guidance on how to support student learning during school closures. This guidance comes from their school and external organisations such as Leaders in Teaching implementing partner the African Institute for Mathematical Sciences (AIMS), and REB (see Table 7). Schools are mainly supporting teachers by sharing websites/resources to find books online and providing computers. Out of the 33% of teachers who reported receiving guidance, 6% reported

receiving both support from the schools and an external organisation. Support from external organisations is in the form of providing internet connections and sharing websites/resources to find books online.

Table 7: Providers of guidance to head teachers and teachers to keep schooling going during school closures

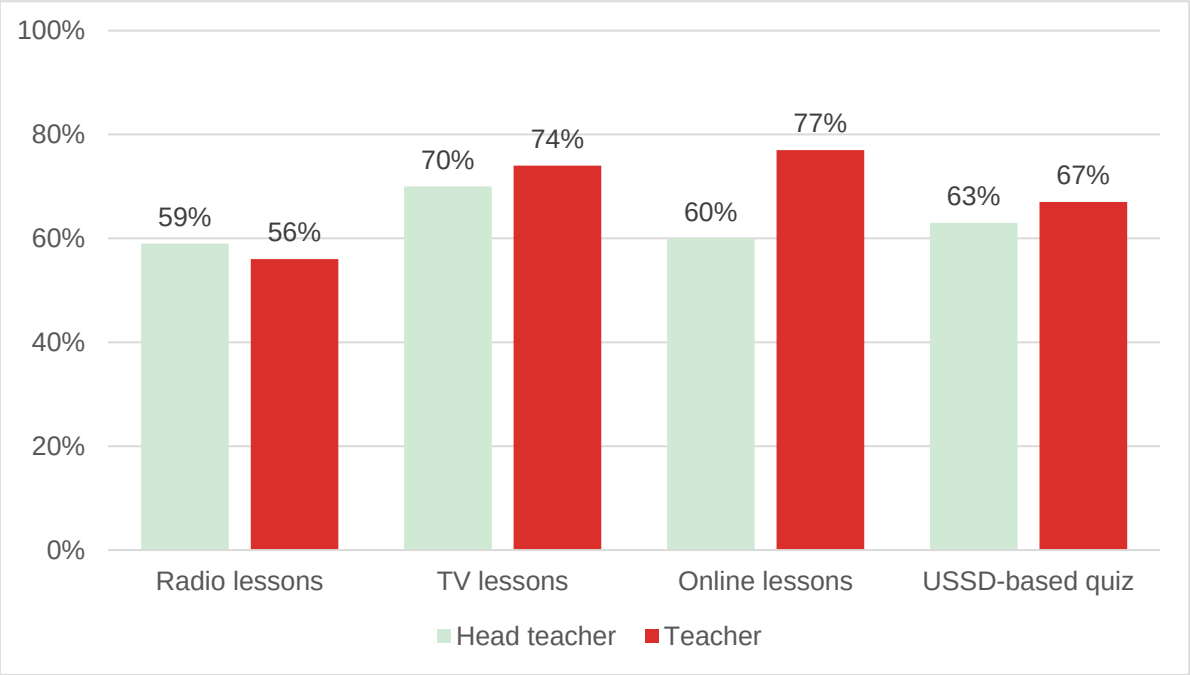
Provider of guidance	**Proportion of head teachers receiving guidance**	**Proportion of teachers receiving guidance**
REB	29%	26%
AIMS	4%	47%
BLF	26%	0%
Local Authorities (Sector level or district level)	19%	2%
Soma Umenye (USAID)[7]	11%	1%
School	0%	20%
Other organisation	11%	4%

Teachers who received guidance on how to support student learning are more likely to support students. 53% of teachers who reported receiving guidance on how to support students during school closures also reported supporting students with distance learning, compared to 38% of teachers who did not receive guidance.

5) Perceived effectiveness of distance lessons

Head teachers and teachers generally believe remote lessons are effective. The majority of head teachers and teachers believe that radio lessons, TV lessons, online lessons, and Unstructured Supplementary Service Data (USSD)-based quizzes[8] are effective (see Figure 3).

Figure 3: Percentage of head teachers and teachers finding remote lessons effective



When asked how to improve remote lessons, head teachers and teachers suggest making them more interactive and relevant to students. Other ways suggested by both head teachers and teachers to improve lessons on all platforms include making lessons more engaging and having them more frequently.

6) Head teachers' and teachers' perceived ability to effectively deliver online learning

Approximately 35% of head teachers interviewed report being confident in their school's ability to effectively deliver distance learning. 63% of teachers at schools of excellence report being confident, compared to 30% of teachers at other schools. The major barriers preventing schools from effectively delivering distance learning are lack of internet access and technical equipment such as computers and tablets.

Approximately three quarters of teachers report being confident in their ability to effectively deliver distance learning. Age and years of education experience are negatively associated with confidence in delivering distance learning, meaning older teachers are less confident than younger teachers. Teachers cited lack of access to the internet, ICT equipment and online experience as the barriers to delivering distance learning.

Head teachers and teachers believe students from poor families and rural areas benefit the least from distance learning. Approximately 58% of head teachers and 59% of teachers believe students from poor families benefit the least from distance learning (see Table 8). Under the school reopening plan[9], REB plans to procure and distribute

solar-powered radios and e-learning devices to lower-income quintile families to address this.

Table 8: Students benefiting the least from distance learning

	Proportion of head teachers reporting	**Proportion of teachers reporting**
Students from poor families	58%	59%
Rural students	28%	35%
Weak learners	10%	4%
Students with disabilities	4%	2%

Continuous professional development

Leaders in Teaching implementing partners, such as VVOB Rwanda and AIMS, were already providing continuous professional development (CPD) to teachers and school leaders before the pandemic, and had to adapt to deliver CPD remotely following school closures.[10] In the survey, we asked both head teachers and teachers whether they have had an opportunity to engage in CPD during school closures. For head teachers, we also asked whether or not they have supported teachers at their school to undertake CPD during school closures.

Approximately 48% of head teachers and 31% of teachers have engaged in CPD during the school closures. In 17% of the schools surveyed, both teachers and head teachers reported engaging in CPD during school closures.

Around 52% of head teachers have supported teachers at their schools to engage in CPD during school closures. Head teachers who engage in CPD are also likely to support teachers at their schools to engage in CPD: 72% of head teachers who reported engaging in CPD also reported supporting teachers at their school to undertake CPD, compared to 33% of head teachers who did not engage in CPD.

Prior online experience and access to ICT equipment such as a computer are positively associated with engaging in CPD. For teachers, prior online experience appears to be strongly and positively associated with engaging in CPD. In addition to prior online experience, access to computers and internet are positively associated with engaging in CPD for head teachers (see Table 9). We did not observe any statistically significant difference in engaging in CPD across gender and disability for either head teachers or teachers.

Table 9: Engaging in CPD and prior online experience, and access to ICT equipment

	Resources	**Engaged in CPD**	**No engagement in CPD**	**Significance**
Head teacher	Prior online experience	54% (N=144)	30% (N=154)	***
	Access to internet	97% (N=144)	90% (N=154)	**
	Access to computer	92% (N=144)	75% (N=154)	***
Teacher	Prior online experience	25% (N=85)	15% (N=212)	**
***, **, and * indicate statistical significance at the 1%, 5%, and 10% critical level, respectively.				

Preparedness and adaptations needed to resume schooling

This section covers head teachers' and teachers' perceptions of how prepared schools are to reopen in terms of physical facilities and adaptations to COVID-19, the challenges expected when schools reopen, and strategies for catching up on missed time at school.

1) Handwashing facilities, social distancing, training and health officers at the school

45% of head teachers believe their schools are equipped with the necessary handwashing facilities (soap and clean water) to prevent the spread of COVID-19 when schools reopen. The majority (70%) of head teachers in boarding schools indicated that they are equipped, compared to a smaller proportion (42%) of head teachers in day schools. Under REB's Rwanda school reopening plan, WASH facilities will be constructed in all public schools with Pre-primary to Secondary 3, and this is clearly a priority for many schools.

Head teachers and teachers believe the best way to implement social distancing in their schools when schools reopen is to build additional classrooms. Other ways suggested include: rearranging the classroom layout (e.g., separate chairs one metre from one another/increasing the number of chairs available), and introducing shift cycles (half days). Note that in June 2020, MINEDUC announced that 22,505 additional classrooms will be constructed in all 30 districts of Rwanda by September to tackle overcrowding and long distances travelled by students to schools.[11]

One quarter of head teachers report having received training or official guidance on identifying early signs of COVID-19. 38% of head teachers in boarding schools have received training/official guidance on identifying early signs of COVID-19, compared to 23% of head teachers in day schools. Under the Rwanda school reopening plan, MINEDUC, together with development partners, will develop and implement COVID-19 training, including hygiene measures, for school staff and students. Additionally, MINEDUC and development partners will develop, print, and disseminate posters to promote handwashing in schools and to spread awareness of COVID-19 symptoms.
61% of head teachers report having received directives from the government on how to implement disease prevention measures once schools restart. Most head teachers interviewed indicated that they are relying on government directives to make decisions about how to implement disease prevention measures once schools reopen. Under the Rwanda school reopening plan, MINEDUC, together with development partners, will develop Standard Operating Procedures for school reopening for all schools (including private schools).

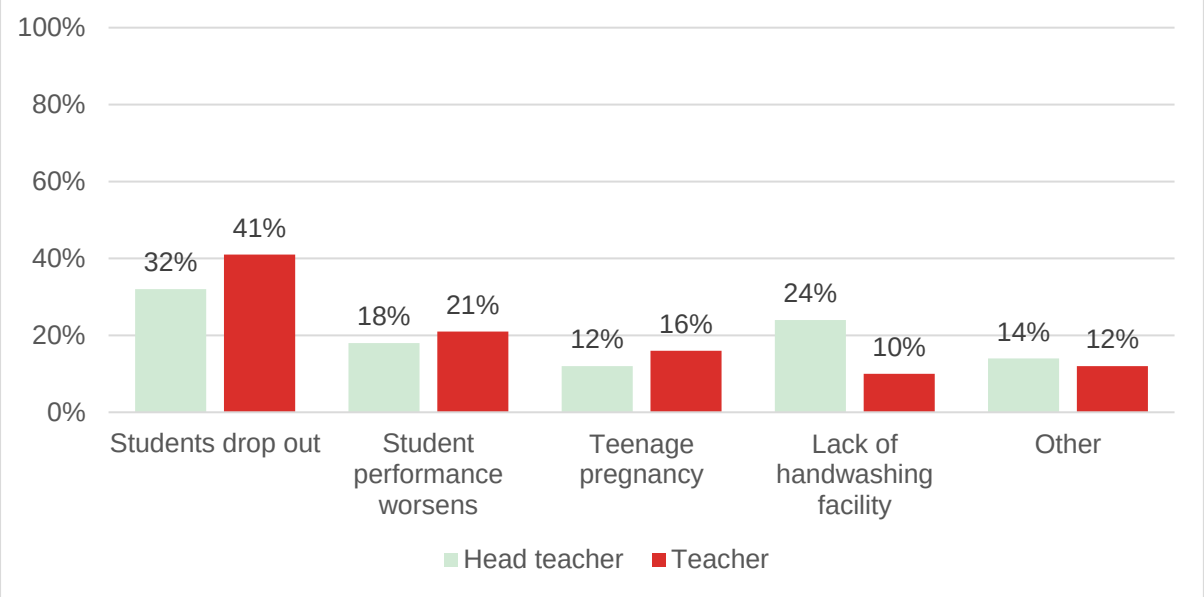
92% of schools reported having no nurses or health officers at the school. Only 23 out of 298 head teachers interviewed reported having a nurse or health officer at the

school. We did not find any plans to assign a nurse or health officer in schools in the Rwanda school reopening plan.

2) Expected challenges once schools reopen

Students dropping out, worsening of student performance and girls not returning to school due to teenage pregnancy are the most common challenges expected by head teachers and teachers once schools reopen. Figure 4 represents the expected challenges as declared by head teachers and teachers. 'Other' challenges include a reduced number of teachers and loss of teaching skills.

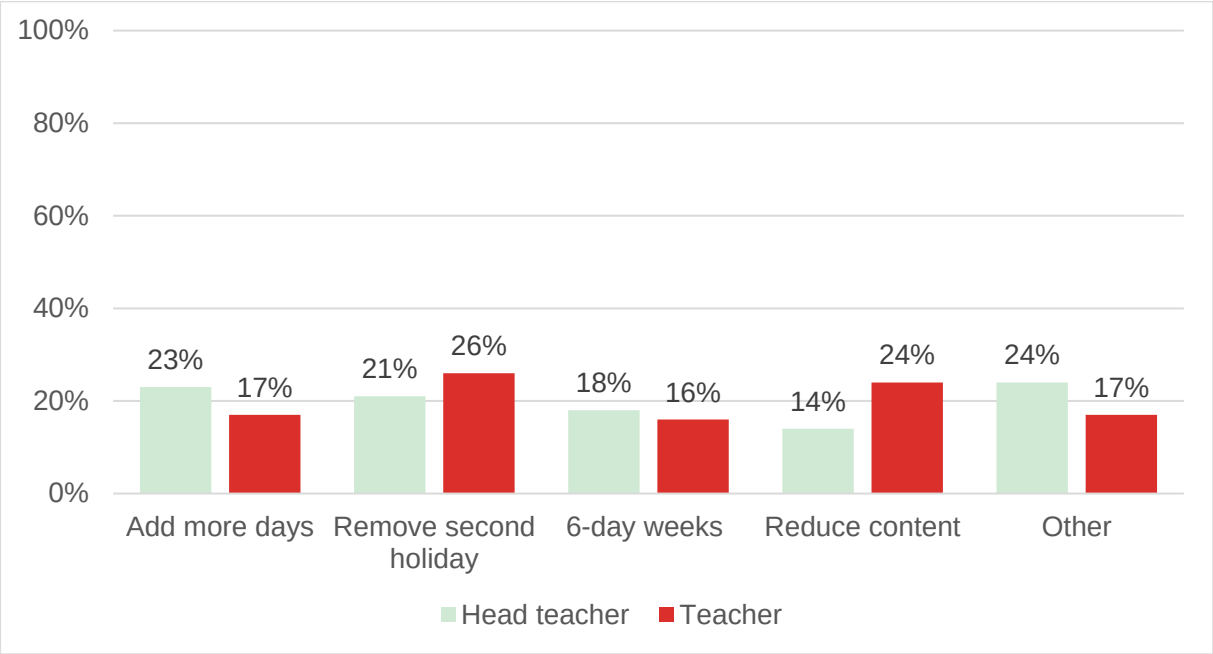
Figure 4: Expected challenges declared by head teachers and teachers



3) Strategies for catching up on missed time in school

Head teachers and teachers believe that the best strategy to catch up on missed time in school is removing or reducing second-term holidays and reducing the amount of curriculum content. School reopening for the first term was scheduled for September 2020. However, due to rising cases of COVID-19 in Rwanda, the government decided to wait until a thorough health assessment had been completed.[12] MINEDUC announced on October 13 that secondary and upper primary schools would start reopening in phases in November 2020.[13] Figure 5 shows the catch-up strategies suggested by teachers. 6% of teachers indicated that no catch up will be needed.

Figure 5: Best catch-up strategies declared by head teachers and teachers

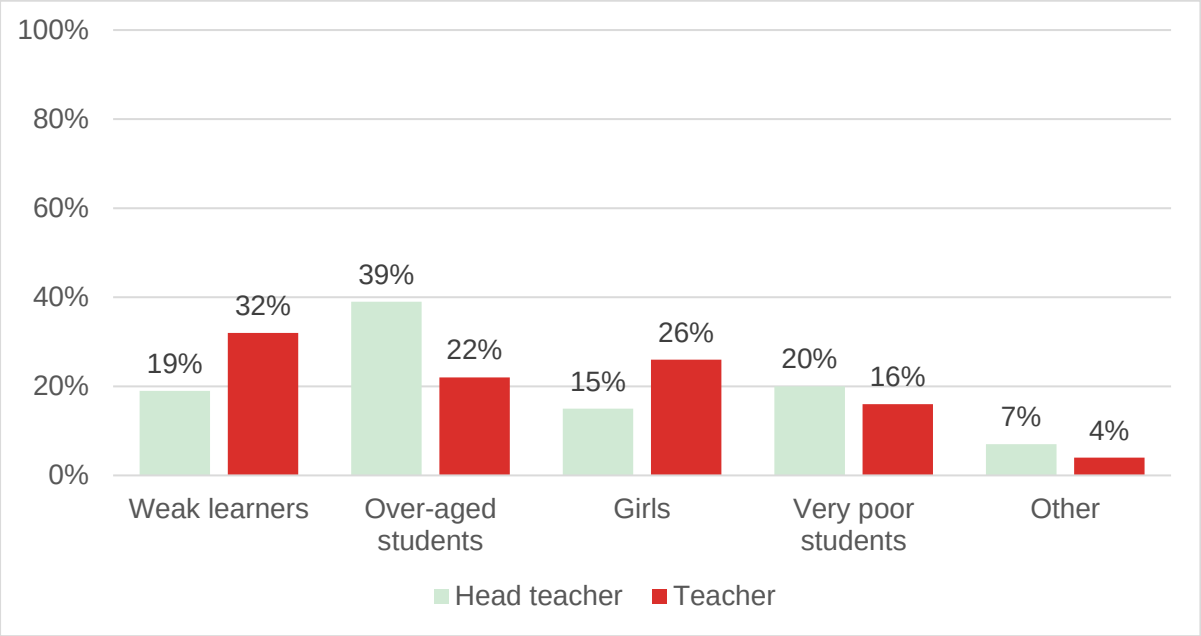


Note: Other suggestions include adding more hours to school day.

4) Expected drop out and mitigation

45% of head teachers and 63% of teachers believe students are not likely to return to school. Weak learners, over-aged students and girls are groups of students that head teachers and teachers believe are most likely to drop out during school closure (see Figure 6).

Figure 6: Group of students most likely to drop out, according to head teachers and teachers



Note: 'Other' includes boys and students from rural areas.

When asked about the best action that schools can take to ensure that students come back to school after the school closures, the following were suggested: local authority sensitisation, allowing parents to stagger school fee payments and teachers following up with students one by one (see Table 10).

Table 10: Best action that schools can take to ensure that students come back to school

	Proportion of head teachers reporting	**Proportion of teachers reporting**
Local authority sensitization	76%	68%
Allow parents to stagger school fee payment	8%	17%
Teachers following up with students one by one	10%	10%
Other	6%	5%

5) Learning areas affected by school closure

Head teachers and teachers believe motivation for learning and discipline of students will be most affected by school closures. Additionally, head teachers and teachers believe English proficiency of students and practical courses such as laboratory sessions will be most affected (see Table 11).

Table 11: Learning areas that will be most affected by school closure

	Proportion of head teachers reporting	**Proportion of teachers reporting**
Motivation for learning	44%	39%
Discipline of students in school	27%	23%
English proficiency	12%	9%
Practical courses	10%	19%

Conclusion

COVID-19, and its associated closures, have presented massive challenges to school systems the world over. Few would have envisioned such a lengthy period of school closures, and school systems everywhere were therefore understandably unprepared for rapidly converting to the virtual learning necessary during prolonged closures.

We hope that the survey results presented in this report will provide a helpful snapshot of the situation of Rwandan secondary head teachers, teachers and schools in August 2020. Many Rwandan head teachers and teachers continued to provide teaching and learning to students throughout the school closures, using a variety of remote learning methods. Further, a considerable percentage of head teacher and teachers in the sample made use of the closure period to undergo CPD, either to facilitate their ability to teach remotely or to improve their teaching more generally. Where gaps have been identified, it should not be viewed as a failing of the system, but rather as an identification of where continued emphasis needs to be placed.

Clearly, schools need practical infrastructure support to help prevent the spread of COVID-19 when they reopen. This includes more classrooms, support with how to socially distance and improved handwashing facilities - all of which are already part of REB's school reopening plan.

Efforts to provide ICT resources to head teachers and teachers and support them to carry out distance learning should focus in particular on teachers at less well-equipped schools, in particular day schools and non-schools of excellence, as well as perhaps specifically for female teachers. In addition, expanding CPD among head teachers and teachers might be an effective way to improve teacher confidence in providing distance learning.

Strategies are needed to encourage all students to return to school, with extra support for the most at-risk groups such as weak learners, over-aged students, girls and students from poor families. This support needs to be in place to encourage students to stay in school once they return.

Strategies are also needed to catch students up on learning missed during school closures, especially for those who benefited least from distance learning such as students from poor families and those from rural areas. Using teaching methods and platforms that are interactive, engaging and improving students' motivation for learning will be important in this catch-up.

Methodological note

For our analysis, we merge data from the school closure study (phone interviews) with data from our quantitative baseline data collection (collected in February and March 2020, just before the COVID-19 shutdown) to obtain school and individual characteristics of head teachers and teachers. Table 2 highlights the school-level characteristics of interest. The following individual characteristics of head teachers and teachers were obtained: age, gender, years of experience, disability status, highest education qualification level, and whether or not they have undertaken teacher and school leader training before.

In this report, we look for associations between school and individual characteristics and the variables of interest. We employ logistic regressions in our analysis and all associations presented in this report are statistically significant unless otherwise stated. It is important to note that associations listed are simple correlations and cannot be interpreted as causal.

Endnotes

[1] https://twitter.com/Rwanda_Edu/status/1316070825653612560
[2] REB one of six agencies that falls under the Ministry of Education. It has national oversight for education delivery at pre-primary, primary and secondary levels, and oversees matters such as curriculum development, development and management of teachers, assessment, and promotion of the use of information and communication technology in education.
[3] https://www.youtube.com/channel/UCCSm2s9wZC8B611SIslsUWg
[4] https://elearning.reb.rw/
[5] https://www.newtimes.co.rw/section/read/34260
[6] http://buildinglearningfoundations.rw/
[7] USAID funded Soma Umenye programme: https://www.rencp.org/about/member-organizations-1/usaidfunded-soma-umenye-activity/
[8] USSD stands for Unstructured Supplementary Service Data and allows quizzes to be delivered via cell phones in a similar fashion to SMS text messages.
[9] REB school reopening plan (draft): https://docs.google.com/spreadsheets/d/1M0dX83r-4NDtu14lP5iYiOmj1ENyuoUR/edit#gid=286240060
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