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Continuous professional development of secondary school teachers in Rwanda: Evidence from a census of Rwandan secondary schools

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Authors:
Panchi Cheriyan and Dr. Phil Leonard were the lead authors of this brief. Dr. Carlo Menon and Daniela Prigozhina provided the first drafts and analysis.

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Laterite and the Research for Equitable Access and Learning (REAL) Centre at the University of Cambridge are learning partners for the Leaders in Teaching initiative, responsible for generating evidence on improved teacher performance and student learning in Rwandan secondary schools, particularly at schools where students are at most risk of not learning.

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Introduction

The context

Education is a key focus sector for Rwanda and is considered critical to meet the country's development objectives. A core sustainable development goal for the nation is to establish Rwanda as a globally competitive knowledge-based economy. The government therefore emphasises teaching science and technology at all levels, and promoting girls' education especially in the science and technology fields (Ministry of Education (MINEDUC), 2019).

Having a highly trained teaching workforce plays an important role in supporting the young Rwandan population to develop critical skills. One of the strategic priorities outlined by MINEDUC is strengthening Continuous Professional Development (CPD) and management of teachers across all levels of education in Rwanda (MINEDUC, 2019).

The study

In this brief, we provide an overview of the STEM and ICT teacher workforce in Rwanda in 2017 with respect to their self-assessed skills, demand for training, and participation in training activities. This note has been prepared as part of Laterite and the REAL Centre's work as learning partners for the Mastercard Foundation's Leaders in Teaching initiative. The note aims to provide background on the state of teacher continuous professional development in Rwanda to inform future research and programming for Leaders in Teaching and beyond.

The data for this note was collected by Laterite in the context of a 2017 study, done in partnership with the African Institute of Mathematics and Science (AIMS) and the Mastercard Foundation, focusing on ICT education in secondary schools in Rwanda (Laterite 2017; see methodological note). The study was a survey of 1,391 STEM and ICT subject leaders from all secondary schools across Rwanda.

The findings

- In 2017, STEM and ICT teachers across secondary schools in Rwanda expressed a **lack of confidence** in their main subject areas and ICT skills in general and believed that they would **benefit from additional training** in English and ICT, as well as their own subject.
- However, **87% of teachers had attended at least one type of training** since they began teaching. Less qualified teachers and those who had been teaching for longer were less likely to have attended training.

- Around a **quarter of all teachers**, and almost half of those with no or only secondary level qualifications, **were enrolled in part-time tertiary education to upgrade their qualifications.** Teachers that were enrolled in part-time education also attended more training offered by schools or external organisations
- **The Rwanda Basic Education Board (REB) was the largest provider of teacher training** and teachers usually attended training events that were local to them.
- **Costs of attending training,** particularly travel costs, were often borne by teachers and could be a barrier to universal teacher training.
- Most teachers regarded **school-based mentorship and intensive short courses** as the preferred methods of training delivery.
- **Training seems to have a positive effect on teacher confidence;** teachers that had attended ICT training in the past reported being more confident in their ICT skills.

Methodology

The analysis is based on a study conducted by Laterite in partnership with AIMS and the Mastercard Foundation in 2017 which aimed to obtain a detailed picture of the current state of delivery of STEM and ICT in general secondary education in Rwanda (Laterite, 2017). The quantitative study consisted of interviews with headteachers, STEM and ICT subject leaders, and a sample of students from all secondary schools in Rwanda.

The subject leader survey was designed in order to understand motivations of teachers for entering the STEM/ICT fields, take stock of their experiences with various training and teaching practices, challenges faced in the classroom, and interaction of teachers with students and other teachers through mentorship. The final dataset contained responses from one subject leader in ICT/STEM from each of the 1,391 schools in the country that offered general secondary education (Ordinary or Advanced Levels), and forms the dataset for the analysis in this brief.

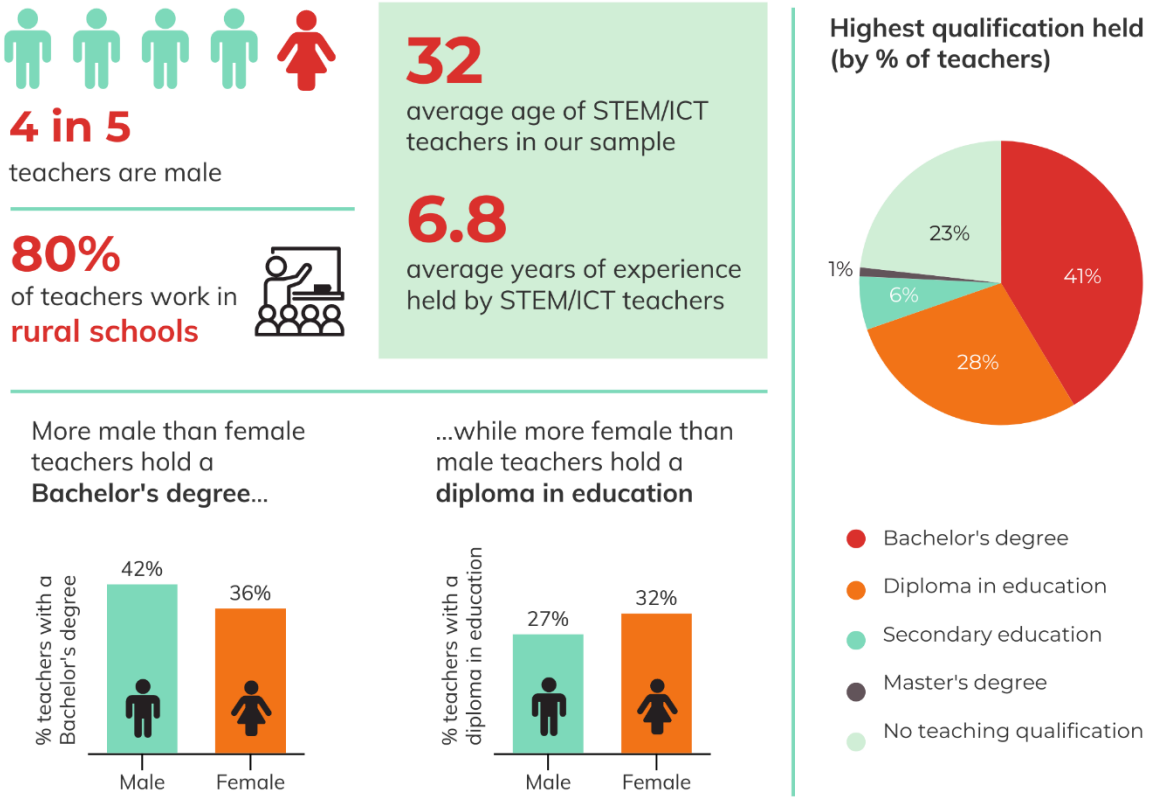
The state of teacher training in Rwandan secondary schools: a 2017 snapshot

STEM and ICT teachers in Rwanda

The 1,391 teachers interviewed for this study were subject leaders in STEM and ICT subjects, specifically Physics, Chemistry, Biology, Mathematics or ICT, across all secondary schools in Rwanda. Every school in the country has a subject leader who

is responsible for overseeing activities for that subject area in the school. The dataset used to prepare this brief includes responses from secondary school teachers from all 812 government-aided schools, 452 public schools and 127 private schools in the country in 2017.[1] 1,108 (80%) schools in our sample are rural schools. Figure 1 outlines the key characteristics of the STEM and ICT teachers profiled in this brief.

Figure 1: Characteristics of STEM and ICT teachers interviewed (2017 data)



Provision of and participation in training

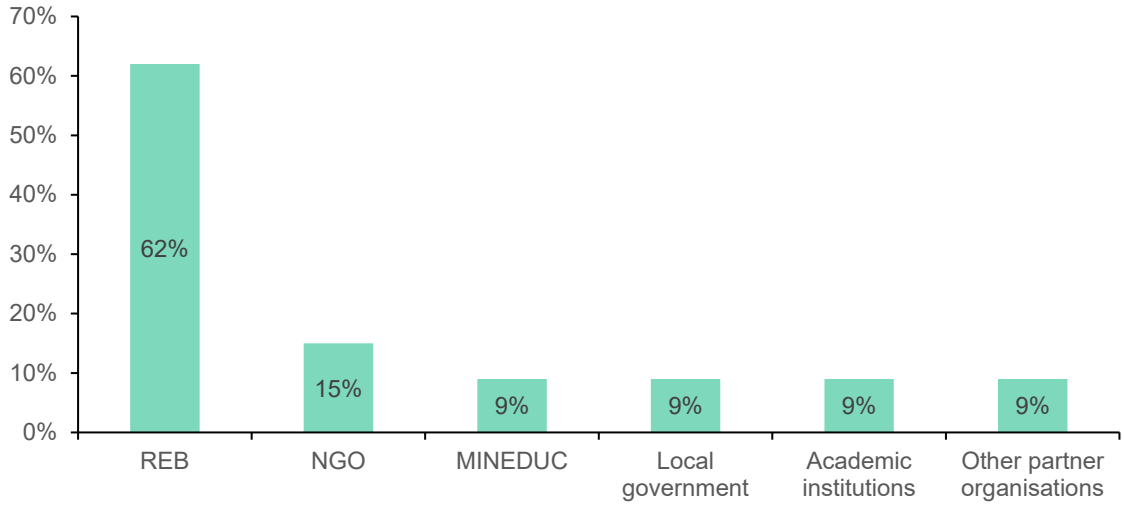
MINEDUC's Education Sector Strategic Policy outlines the policy on provision of teacher training. MINEDUC identifies this as one of the key challenges of the education sector in the strategic plan (MINEDUC, 2019), stating that 'insufficient teacher competencies in subject content, pedagogy and languages of instruction' would hinder curriculum delivery, inclusion, and ultimately negatively impact student learning outcomes.'

Under the objective to strengthen teachers' CPD, the policy focuses on ensuring that teachers are trained to deliver the newly implemented competency based curriculum; that school-based mentoring is available and used by all newly recruited teachers; and that there is increased training in pedagogy and English language proficiency for all teachers. Additionally, provision of effective ICT literacy training programs for all

teachers at all levels is a key objective outlined in MINEDUC's ICT in Education policy (MINEDUC, 2016).

In 2017, by far the largest provider of teacher training was REB. Over 60% of teachers reported having attended training organised by REB since they started their career, 15% had attended training organised by non governmantal organisations (NGOs), and almost 10% had attended training by MINEDUC or academic institutions. In the two years prior to data collection, REB had provided training that was attended by 54% of all teachers. Figure 2 provides an overview.

Figure 2: Who provides most of the teacher training attended?



Other forms of capacity building for teachers include school-based mentorship, opportunities to observe lessons delivered by more experienced teachers, and/or conferences. The school-based mentorship program was introduced by REB in 2012 with the aim of ensuring that schools are equipped with a highly-trained teacher in-house, who is able to organise and provide training, and support the professional development of other teachers. Initially, each school-based mentor was selected by REB and was required to have at least a degree in education (ideally in languages). Selection now takes place at school level, with school subject leaders choosing one candidate with good communication skills among themselves (Mastercard Foundation, 2019). By 2017, all schools in Rwanda were expected to have a school-based mentor (Inspire, Educate and Empower Rwanda, IEE, 2019). At the time this data was collected, teachers in over half (55%) of the secondary schools in Rwanda reported that they had a school-based mentor.

Almost 56% of teachers in rural schools and 48% of teachers in urban schools indicated having a school-based mentor in their school. About 59% of public schools, 57% of government-aided schools, and 21% of private schools indicated that they had school-based training. 9% of teachers surveyed indicated that they were

school-based mentors. When asked how often they met with teachers to provide mentorship, 26% indicated a few times a week, 31% once a week, and 15% a few times a month.

Schools with mentors appeared to be more focused on teacher learning. The proportion of teachers who reported having observed lessons delivered by other teachers was much higher ($p<0.01$) in schools that also had a mentor, even when controlling for the gender and age of teachers, or type of school. About 60% of teachers in schools with a mentor had observed lessons delivered by other teachers, compared to 47% of teachers in schools without a mentor. Similar patterns held true when it came to training.

Around 13% of teachers indicated they had not attended any type of training since they started working. A large proportion of teachers (87%) had attended various types of training since they started teaching and almost 74% had attended training in the two years prior to data collection (2016-17). Older and more experienced teachers, along with teachers with fewer qualifications, were less likely to have attended training in the previous two years (2016-17). This group was evenly divided between urban and rural schools and by school type (public, government-aided, or private). This suggested that a generational divide accounted for the divergence in the amount of training attended, rather than a geographic or school-level one. Teacher qualification was also relevant here; teachers that were less qualified were significantly ($p<0.05$) less likely to have attended any training since they started teaching. Teachers who had no teaching qualifications or had a diploma in education (A1)[2] were 6.4 percentage points less likely to have attended training than those with a Bachelor's degree. These teachers were also more likely to report that they would benefit from training in English ($p<0.05$).

Teachers attended training that was delivered locally. Most teachers attended training held in their sector, and only about 17% have travelled to training at the province level and 2% for training abroad. Costs may represent an obstacle to travel for training purposes: among the teachers who did travel, around 23% indicated that their expenses were not always fully covered. Transport represented the largest component of costs that teachers have to bear. Teachers that attended subject specialisation or pedagogy training reported having paid for their training significantly more often compared to other types of training like ICT or curriculum design. Increased provision of pedagogical training is identified as one of the key activities under the recent Education Sector Strategic Plan (MINEDUC, 2019). Teachers that paid for training or covered some costs were also likely to have attended more training. Teachers that reported attending training given by NGOs seem to have paid for their training significantly more ($p<0.05$) than teachers attending training from other sources.

Training was positively correlated with teacher confidence. For example, teachers that took ICT training in the past were significantly more likely ($p<0.01$) to score their ICT skills higher, compared to those that had not attended training. Teachers who were less confident in their English skills were also significantly more likely ($p<0.01$) to want more training and believe it would be beneficial, controlling for other teacher characteristics.

Training needs reported by teachers

Training in the main subject field

Around half of the STEM/ICT subject leaders expressed confidence in their main subject field. About 50% of teachers rated their skill level as low or quite low – 1 or 2 on a scale of 5 – in their main subject field (Figure 3). Additionally, almost all (97%) of surveyed teachers declared that they would benefit from additional training in their main subject field. There were no significant observable differences in self-perceived skills in main subject area between teachers of different subjects. When asked how they would like to be trained in their main subject field, teachers showed a preference for school-based mentorship followed by short intensive courses (Table 1).

Figure 3: Teacher perceptions of knowledge of their main subject field.

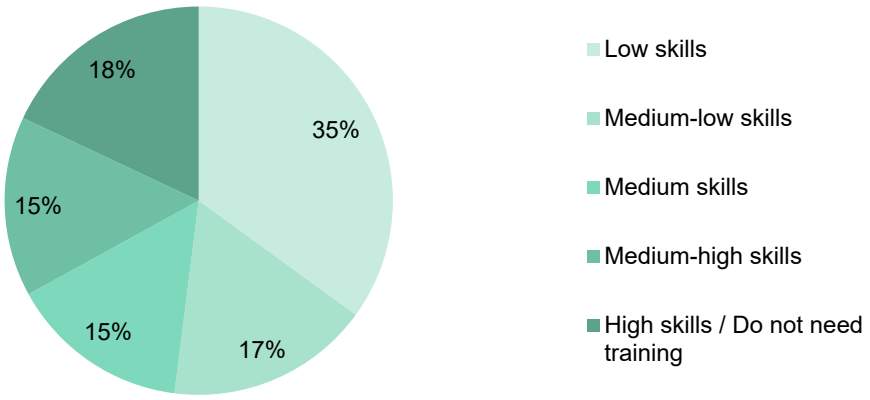


Table 1: How did teachers want to be trained in their main subject field?

Most preferred methods	Least preferred methods
School-based mentorship (44%) Short intensive courses (40%)	Through radio/tapes (1%) Self-study online (<1%)

Note: No significant variation was found in preferences between rural/urban or older/younger teachers.

English

Teachers reported the need for English-language training, irrespective of their self-evaluated proficiency. Around 70% of respondents declared having an intermediate knowledge of English, while 30% rated themselves as fluent (Figure 4). However, 9 out of 10 teachers believed they would benefit from additional training. Teachers in urban schools, and male teachers reported being more confident ($p<0.01$) about their English language skills compared to female teachers or those from rural schools, even when controlled for other characteristics. Older teachers were significantly less likely ($p<0.05$) to expect that English language training would benefit them. School-based mentorship was teachers' preferred method of training in English skills (Table 2).

Figure 4: Teachers' self-reported proficiency in English language

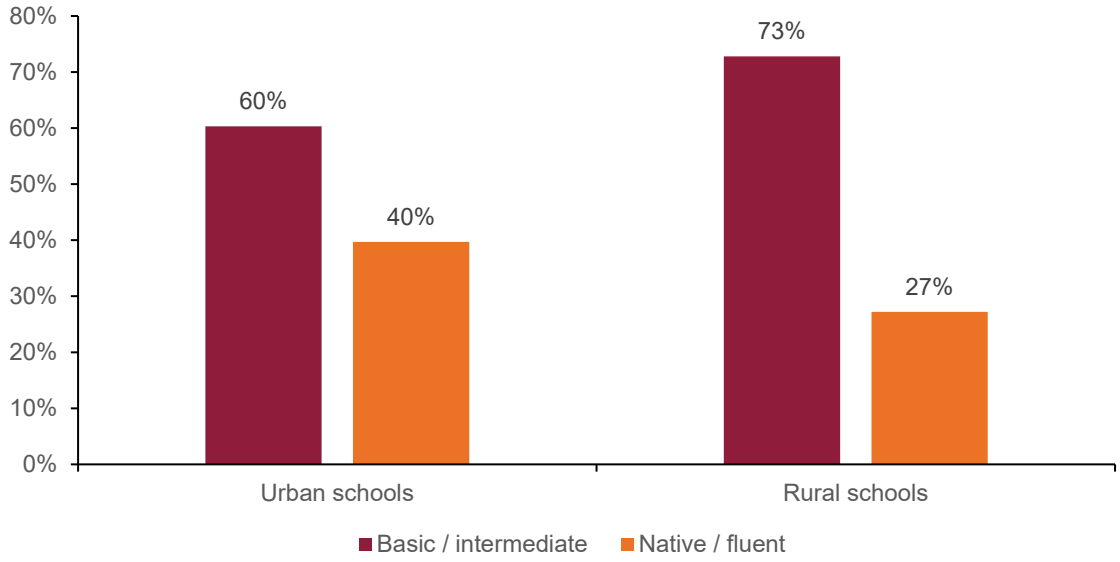


Table 2: How did teachers want to be trained in English?

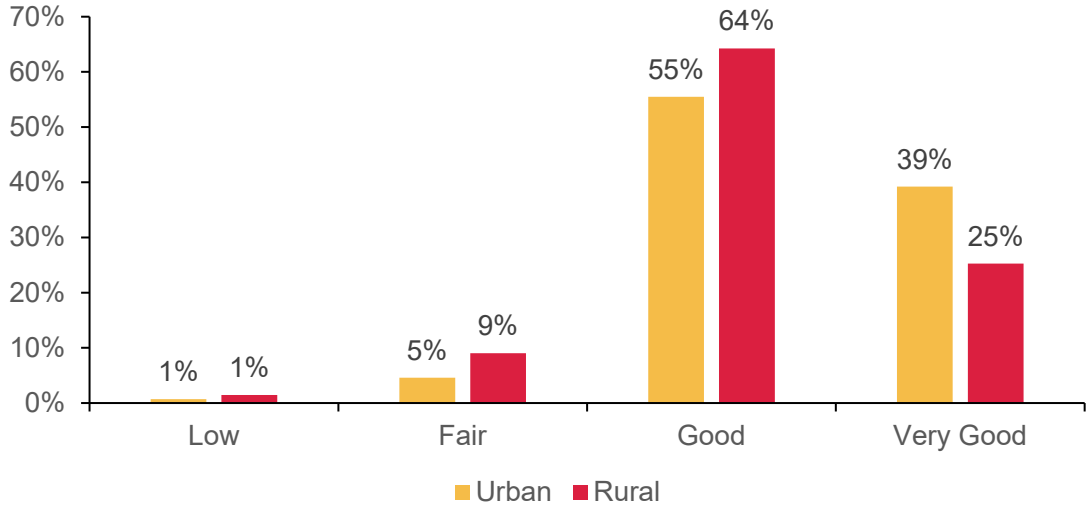
Most preferred methods	Least preferred methods
School-based mentorship (45%) Short intensive courses (35%)	Long-term courses (5%) Self-study through textbook, radio/tapes or online (1%)

Note: Training preferences are quite similar amongst teachers in rural and urban areas and by qualification level.

ICT

Confidence in ICT skills varied significantly with location, age and gender and past training in ICT. 62% of teachers in rural areas declared they had intermediate competency with computers and ICT, including Word, Excel or PowerPoint. Significantly ($p<0.01$) more urban teachers rated their competency with computers and ICT as "very good" compared to rural teachers (Figure 5). Male teachers, and younger teachers, were likely to rate their ICT skills significantly ($p<0.01$) higher than their counterparts. Teachers in private schools rated their computer skills much higher ($p<0.01$) than those in public or government-aided schools, even when controlling for characteristics like gender, age, and urban/rural status. Teachers that attended ICT training in the past were significantly ($p<0.01$) more likely to score their ICT skills higher, compared to those that had not. All the above associations held controlling for other characteristics like gender/age of teachers or school location and type.

Figure 5: Teacher responses to "How would you rate your competency with computers/ICT?"



A quarter of the teachers interviewed felt they needed additional ICT training. Among these, 25% indicated they had attended ICT training since they started teaching. Further, over 60% of the teachers that felt they needed extra training had

attended two or fewer training opportunities of any kind throughout 2016 and 2017. Teachers identified short intensive courses as their most preferred method of training in ICT, followed by school-based mentorship (Table 3).

Table 3: How did teachers want to be trained in ICT?

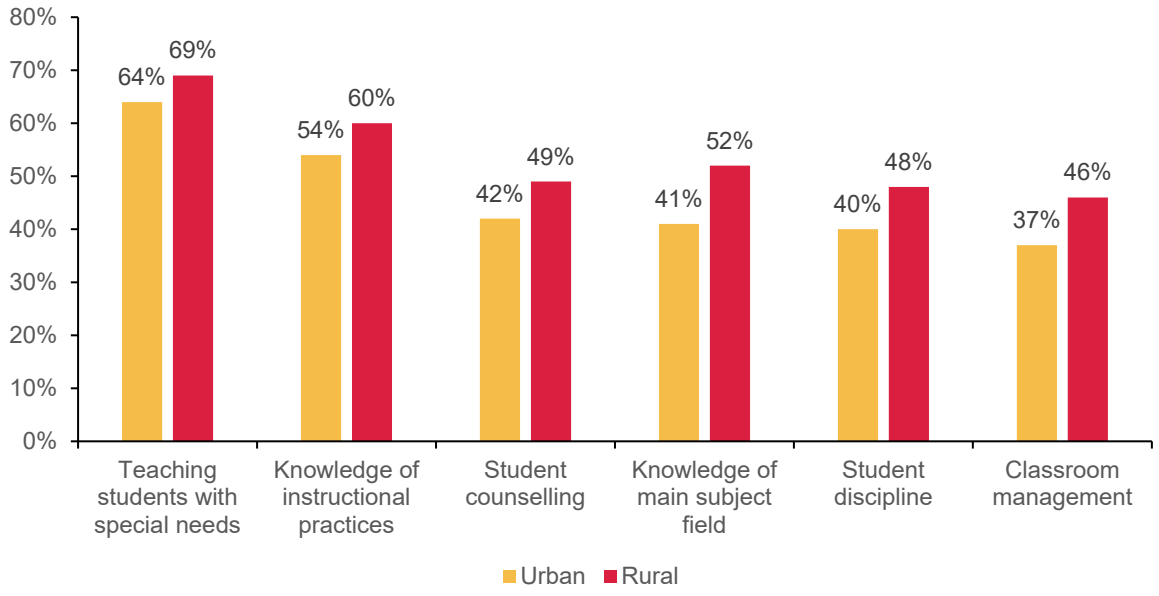
Most preferred methods	Least preferred methods
Short intensive courses (43%) School-based mentorship (40%)	Conversation groups (7%) Self-study through textbook, radio/tapes or online (2%)

Note: Preferences for school-based mentorship vary by gender; female teachers are significantly ($p<0.05$) more likely to prefer this method over others for ICT.

Additional skill development

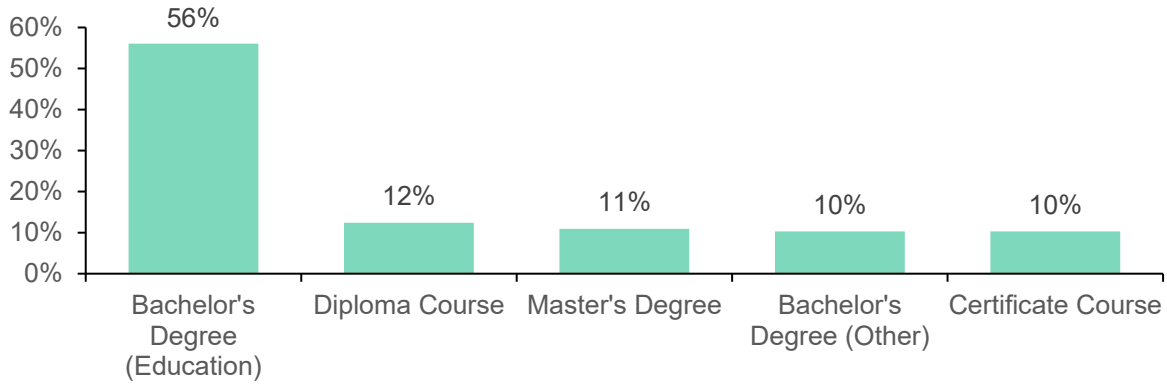
Teachers selected both hard and soft skills as areas of potential improvement. During our survey, teachers were asked to indicate the areas of general skill development in which they felt the need for additional training. The majority of teachers selected training on teaching students with special learning needs or disabilities, and instructional practices in their subject area. Others identified training needs in student discipline, student counselling and training in knowledge of their subject field (Figure 6).

Figure 6: Topics for additional training needs identified by teachers, by proportion of teachers



Around a quarter of STEM/ICT teachers were enrolled in part-time tertiary education to upgrade their qualifications. Tertiary qualifications these teachers were pursuing were mostly Bachelor's degrees in education, but also included Diploma courses and Master's degrees (Figure 7). Teachers who did not hold any teaching qualifications, or held qualifications in secondary education (A2), were most likely to be upgrading their qualifications via tertiary education: almost half of both these groups were pursuing a part-time qualification. Younger teachers ($p<0.01$) and those from rural areas were also more likely to be pursuing additional qualifications. Teachers who were pursuing any type of degree to upgrade their qualifications also attended significantly more ($p<0.05$) training in 2016 and 2017. This held controlling for other teacher characteristics.

Figure 7: Type of tertiary education being pursued by teachers actively upgrading their qualifications



Policy take-aways

Reduce barriers to attending training. Teachers reported a strong desire to attend training in their main subject area (97% of teachers), English (90% of teachers) and ICT (24% of teachers), but 13% of teachers reported not having attended any training since they started teaching. Teachers that paid for training or covered some costs were likely to have attended more training; implying that there are might be some costs to attending training that some teachers cannot or do not want to bear. This may result in more training being attended by those who can afford to pay. Subsidising transport costs to better support teacher mobility, and delivering most training locally where teachers are able to attend, might help address this. Delivering training at the school level using mentors, in schools with sufficient teachers to make this option feasible, may also be a good option.

Support teachers who are interested in upgrading their qualifications and enrolling in part-time education at the tertiary level. Teachers appeared to be actively invested in upgrading their qualifications, especially those who did not already

have a Bachelor's degree or Diploma. Up to half of these teachers were actively involved in upgrading their qualifications of their own initiative, and were enrolled in university-level courses. When effective in-school training is difficult to deliver, encouraging teachers to seek university level education part-time might be a good complement. Policy-makers might also consider providing interested teachers with stipends to study or arranging concessions on university fees.

Smaller schools need a different training approach to larger schools. About 63% of schools in Rwanda's general secondary education system had fewer than 400 secondary-school pupils in 2017. Smaller schools had less experienced teachers, and fewer peers that teachers could learn from in their subject area. Smaller schools might therefore require a different and stronger focus of training efforts. Providing additional resources and incentivising or subsidising training delivery, and ensuring teachers are equipped with a support network of external mentors and trainers, could help offset these disadvantages.

Additional research is necessary to determine why some teachers do not participate in regular training. Older and less qualified teachers attended less training. Older teachers were less likely to think that training in English or their subject would be beneficial. Teachers with an A1 qualification reported that they would benefit from training in English or their subject areas, more than other groups. But both these groups of teachers were less likely to have attended any training since they started teaching. It could be that training attendance has been mandated as a part of the teacher orientation processes more recently, as a qualification requirement, or is delivered online or through other media that dissuade older teachers from attending. Further, as mentioned above, costs appear to be a barrier to attending teacher training. Further research can help identify the areas in which these teachers might find it useful to receive training, identify the reasons teachers don't attend training and the extent to which cost affects participation, and explore ways to support teachers to overcome these barriers.

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Endnotes

[1] There are three main types of secondary schools in Rwanda – public schools, fully funded operated by the government, private schools that are managed by private entities or organisations, and government-aided schools which are privately managed schools (often run by religious entities), that are subsidised by the government. We disaggregate our findings by type of school because different school-types are likely to have a different socio-economic characteristics of students, availability of resources, as well as be covered by different government policies. Subject leaders and head teachers at these schools are likely to have differences in responsibilities as well as face different training and resource constraints.

[2] In Rwanda, qualifications are categorised in the following way:
A0 qualification = Bachelor's degree; A1 qualification = diploma in education; A2 qualification = certification of secondary school completion.

REAL Centre
Faculty of Education
University of Cambridge
184 Hills Road, Cambridge,
CB2 8PQ, UK
@REAL_Centre
www.educ.cam.ac.uk/centres/real
Email: realcentre@educ.cam.ac.uk

Laterite
Amy's House, Plot 1563,
KG 12 Avenue,
Gaculiro, Kinyinya,
Kigali, Rwanda

@Laterite_Africa
www.laterite.com

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