

Developing a Proof of Concept for a Regional Learning Hub for Eastern and Southern Africa

Part 2: Insights from user research

Date March 2022

Authors Asad Rahman
Caspar Groeneveld

DOI 10.53832/edtechhub.0076



THE WORLD BANK

About this document

Recommended citation

Rahman, A., & Groeneveld, C. (2022). *Developing a Proof of Concept for a Regional Learning Hub for Eastern and Southern Africa Part 2: Insights from user research*. EdTech Hub, UNICEF.
<https://doi.org/10.53832/edtechhub.0076> Available at <https://docs.edtechhub.org/lib/CI5UZ5R4>. Available under Creative Commons Attribution 4.0 International,
<https://creativecommons.org/licenses/by/4.0/>.

Licence

Creative Commons Attribution 4.0 International
<https://creativecommons.org/licenses/by/4.0/>
You—dear readers—are free to share (copy and redistribute the material in any medium or format) and adapt (remix, transform, and build upon the material) for any purpose, even commercially. You must give appropriate credit, provide a link to the license, and indicate if changes were made. You may do so in any reasonable manner, but not in any way that suggests the licensor endorses you or your use.

Notes

EdTech Hub is supported by UK aid (Foreign, Commonwealth and Development Office), Bill & Melinda Gates Foundation, UNICEF and the World Bank. The views expressed in this document do not necessarily reflect the views of UK aid (Foreign, Commonwealth and Development Office), Bill & Melinda Gates Foundation, UNICEF and the World Bank.

Acknowledgements

This report was commissioned by UNICEF and produced under UNICEF and EdTech Hub's global partnership. Many thanks to Asim Latif (INEE), Awol Endris (UNESCO), Jacqueline Strecker (UNHCR), Clara van Praag (UNHCR), Guillaume Michels (UNICEF) and Tom Kaye (EdTech Hub) for their support and input to develop this report.

Contents

Abbreviations and acronyms	4
1. Introduction and background	5
2. Methodology and approach	7
3. Key insights	9
4. Key dilemmas	12
Bibliography	14
Annex 1. Comprehensive list of comments testing our assumptions	15
Annex 2. User personas	25
Annex 3. Interview guidelines	27

Abbreviations and acronyms

ESARO	UNICEF Eastern and Southern Africa Regional Office
KICD	Kenyan Institute for Curriculum Development
INEE	Inter-agency Network for Education in Emergencies
MoE	Ministry of education
NGO	Non-governmental organisation
OER	Open Educational Resources
RLH	Regional Learning Hub
SMS	Short Message Service
UNHCR	United Nations High Commissioner for Refugees
UNESCO	United Nations Educational, Scientific and Cultural Organization

1. Introduction and background

In 2021 the UNICEF Eastern and Southern Africa Regional Office (ESARO), UNESCO, UNHCR, the Inter-agency Network for Education in Emergencies (INEE) and EdTech Hub (henceforth referred to as ‘the partners’) began collaborating to develop a Regional Learning Hub (RLH). The aim of the Regional Learning Hub (RLH) is to try to solve one particular problem in the process of implementing digital or remote learning solutions for governments in sub-Saharan Africa and other regions: the provision of enough content that is aligned with the respective curricula and that is appropriate to local contexts. The RLH is envisaged as a platform where digital learning content has been pre-aligned with national curricula to enable use by governments and education stakeholders to facilitate quick selection of content for educational use within their regions.

The proof of concept of the RLH is a learning exercise that delivers two short content modules with curriculum-aligned content. It also describes the processes used to deliver this and documents any observations on challenges and opportunities that are relevant to bring the RLH to scale. The proof of concept focuses on four countries: Kenya, South Africa, South Sudan, and Somalia, and on two small content modules (topics from Primary Level 2nd Grade Literacy and Secondary Level Biology). However, the ultimate aim of the RLH is to be useful for a large variety of countries and for a wide variety of grades and subjects.

Development of the proof of concept entailed five distinct activities that have all been thoroughly documented and which include recommendations for the next step in the development of the RLH (Final Report). The five reports documenting these activities are:

1. [Inception report](#)
2. [User research](#) (this document)
3. [Skills taxonomy](#)
4. [Content curation](#)
5. [Final report](#)

The goal of the RLH is to make remedial, catch-up, accelerated, lifewide, and lifelong education and learning resources accessible and ready to deploy by governments across Eastern and Southern Africa.

As part of the proof of concept, the EdTech Hub conducted user research interviews to better understand whether the RLH would be feasible, sustainable, and impactful. This report summarises the interviews with users.

2. Methodology and approach

A sample of respondents emerged from a modified snowball sampling process. Email messages were sent by EdTech Hub, UNICEF ESARO, the United Nations High Commissioner for Refugees (UNHCR), and the United Nations Educational, Scientific and Cultural Organization (UNESCO), who referred the researchers to relevant persons.

The RLH's primary target group is governments, official curriculum developers, education providers, and similar stakeholders. This user research focused on **government officials** and **official curriculum developers** in the four countries identified by the partners to be the focus of the proof of concept. Interviews were held in the following countries:

- **South Africa:** 2 interviews
- **Kenya:** 1 interview
- **Somalia:** 1 interview
- **South Sudan:** 2 interviews

In addition, we interviewed Edmond Gaible, the consultant who undertook user research for the Regional Learning Hub in June 2020. Although this user research mostly targeted different countries (Rwanda, Botswana, Somalia, Zambia, and Malawi), many of the findings of Edmond Gaible's work are applicable to the four countries listed above, which are the focus of the proof of concept.

All interviews lasted between 45–60 minutes.

More information about the user research method, including the user personas, is available in [Annex 2](#) (user personas) and [Annex 3](#) (interview guidelines).

The user research conducted by Edmond Gaible is available [here](#).

Interviews were conducted over Zoom or via WhatsApp calls, with interviewee selection based on the preference of and connectivity available to the participant.

2.1. Limitations

Overall, it was challenging to secure time with government stakeholders. In total, 7 out of 13 interviews were no-shows or eventually cancelled.

As a result, the sample is smaller than the eight interviews targeted initially. However, all participants were key government officials involved in implementation of Edtech and education in their country. We, therefore, believe that the insights listed below are valid and should shape the trajectory of the Regional Learning Hub.

3. Key insights

The insights below are structured against the key assumptions identified at the beginning of this work, both based on the research conducted in the summer of 2020 and as formulated in the problem statement of the Inception Report. The insights focus on areas of significant convergence emerging from the interviews. Where the insight is only from one participant, it is included if it was emphasised or is of particular relevance to the assumptions. We have, for the sake of clarity, used the term ‘country’ or the country name instead of ‘government officials from the country’. Table 1 presents a summary of the tested assumptions. [Annex 1](#) provides a full list of responses, including quotes.

Table 1. *Tested assumptions for the Regional Learning Hub.*

Assumption	Validated or invalidated?	Insights
The proposal for the RLH is clearly defined.	Validated	The country representatives understood what the RLH is and could describe it in their own words.
Target users (ministries of education) understand what the RLH is and what it is not.	Validated	The country representatives understood the regional nature of the RLH <i>and</i> that it is intended as a resource for them to adapt, deploy, and use as they see fit in their context.
The proposed design of the RLH fills a need in the target countries.	Largely invalidated	Representatives of the two countries with significant access to digital content (South Africa and Kenya) did not feel there was a need for more content. Representatives from South Sudan and Somalia feared that any resources on the RLH could not be used in their context due to infrastructure constraints.
There is demand for the RLH solution in the target countries.	Largely invalidated	See previous assumption.
Teachers and relevant stakeholders are not currently able to access enough high-quality, ready-to-deploy content to support learning	Partially validated (in some countries)	<p>In Somalia and South Sudan, high-quality, ready-to-deploy content is needed and cannot currently be accessed. Where platforms exist, they are incomplete.</p> <p>Representatives from South Africa and Kenya emphasised that many digital learning resources were already available in their countries, with wide coverage of the curriculum and of high quality.</p>

Technology can help to effectively provide content to teachers and relevant stakeholders to support learning	Largely invalidated	<p>The representatives from South Sudan and Somalia expressed concern that the level of digital infrastructure was insufficient to offer any digital learning solutions. These constraints included a lack of connectivity, hardware, electricity, and digital literacy among teachers and students, and applied to some degree to low-tech resources, such as radio, worksheets, or short message service (SMS) messaging.</p> <p>Kenya reported concerns about digital literacy, particularly among teachers, and about connectivity.</p> <p>In contrast, South Africa reported that many schools have access to the internet and that users can access offline solutions as well.</p>
Governments and education systems in focus countries are willing and able to take ownership of an RLH.	Partially validated	<p>The representatives from South Africa and Kenya felt that government involvement would be essential to guarantee quality, accuracy, and curriculum alignment. In South Africa, this responsibility is devolved to the provinces. Kenya emphasised the different partners in government who need to be involved from the start.</p> <p>Likewise, the representatives from South Sudan and Somalia expressed the need for government involvement but recognised the countries lack capacity for working on an RLH.</p>
The RLH can provide linguistically and culturally relevant digital resources.	Partially validated	<p>The representatives from all four countries recognised the importance of local alignment, in terms of curriculum and linguistic and cultural properties. Yet there was doubt that much content could be found that crossed linguistic and cultural barriers and most content was likely to be in English.</p>
Digital OER can be used to help teaching of early years literacy	Largely invalidated	<p>The utility of OER for early years literacy is expected to be limited. Countries have either developed their own (South Africa and Kenya) or have institutional or technical constraints in accessing technologies.</p>
Digital OER can be used to help teaching of secondary level maths or science	Partially validated	<p>The same objections were voiced as with early years literacy. However, some countries mentioned the universality of maths and science suggesting these are good areas to start with.</p>

The above insights helped the researchers to identify four observations that are particularly relevant to any potential expansion of the RLH. First, the two better-resourced countries — Kenya and South Africa — cite that they have a

sufficient offer of digital learning resources already. In the case of Kenya, we know that caregivers cannot find these resources and that its Kenya Education Cloud¹ (↑Groeneveld et al., 2021) does not offer sufficient content. However, what matters is whether or not there is a *perceived need* for an RLH. If no need is perceived, the likelihood of adoption is small and there is a significant need for advocacy and awareness-raising within government.

Second, low-resource countries — South Sudan and Somalia — were sceptical about the RLH being adopted due to a lack of digital literacy and infrastructure. To some extent, this can be mitigated by focusing on offline technologies and low-cost, accessible devices like radio or feature phones. However, even if high-quality content could be curated for these platforms, those countries feared it would not be adopted due to a lack of literacy and awareness.

Third, countries require curriculum alignment and quality assurance to be undertaken by governments. While this need is obvious and clear, it suggests that the ambition level of the RLH should be to preselect content and have governments pick from that content whatever fits their curriculum. A wider offering, giving governments real choice, is what is required.

Finally, governments have expressed the need for deep government involvement from the beginning. This desire is both an opportunity and a risk. The opportunity is clear: involving the target audience from the beginning and having them commit time and resources greatly increases the likelihood of addressing an actual need and of the final product being adopted. However, this also entails considerable risk. South Africa has recognised the role of the provinces and notes that they must be included; Kenya has identified several agencies that must be involved. South Sudan and Somalia have expressed the need for their government's involvement, yet lack the capacity to work on an RLH. For multilateral stakeholders to work and navigate different government agencies will be time-consuming at the least and may not deliver a usable product in the end. Should the RLH become a collaborative effort with governments, the leading partners must have one, committed partner in the country who liaises with all local stakeholders.

¹ Resource available at kec.ac.ke

4. Key dilemmas

The results of the user research have brought to light a number of key dilemmas that can help inform decisions on the next steps.

4.1. Close collaboration with governments

A consistent opinion among governments is that they want to be involved with an RLH from the beginning. They note that they do not want to be presented with a finished product, but want to co-design this tool. According to the Digital Principles ([↑Principles for Digital Development, n.d.](#)), we should design with the user. In this case, the user is the government of each of the countries the RLH is targeting.

Working with governments will greatly increase the likelihood of adoption and of working on an actual need. However, co-creating the RLH with governments carries risk when different local stakeholders have to be involved and could lead to a prolonged process without a desirable or usable deliverable. This risk is especially present in countries with devolved educational systems, such as South Africa, or countries that need to involve and align different, autonomous bodies in the design of an RLH, such as Kenya. Further, different governments can have different expectations, interpretations and needs for an RLH that may not be compatible with those of others.

One caveat is that the desire to be involved in the RLH from the beginning may also result from a limited understanding of what the RLH entails and is trying to achieve. The RLH will not target learners and teachers directly but will provide opportunities for education stakeholders to take whatever pre-aligned content they think is appropriate and add it to whatever implementation they have or are designing.

As we proceed, the RLH steering committee must determine whether and how it will engage with governments to ensure ownership of and engagement with the final product, while simultaneously considering how best to ensure that the development of the RLH can be achieved in an efficient manner.

4.2. Levels of infrastructure

The two countries with relatively significant levels of digital infrastructure — South Africa and Kenya — stated that there are sufficient digital learning resources on offer in their countries. Whether this statement accurately reflects reality — we do not believe that it does — is less relevant than whether countries note or express a need for digital learning resources.

The two countries with a low level of digital infrastructure, South Sudan and Somalia have noted that they do not need digital learning resources. They have expressed a need for low-tech learning resources, such as TV, radio, and feature-phone content. However, we know that the availability of openly licensed low-tech learning resources is very low in these countries.

The user research has demonstrated that the two categories of countries in our focus have different needs. To proceed, the RLH steering committee must determine whether and how it will attempt to target countries in these (or even more) categories, or whether the work should focus on a subset of countries.

4.3. Choice of countries

The purpose of the RLH is to reach scale and be usable by any country in the region. To create a usable model, close collaboration with the ministries of education of a small number of countries that will result in a workable model may set a standard that can be presented and expanded to more countries. We know that the need for an RLH is sometimes articulated by countries in the region — Zanzibar is an example — and that an RLH and interface that works for them may also work for other countries. This approach, however, carries the risk that the model will not suit other countries.

As we proceed, the RLH steering committee must determine whether it wishes to first focus on developing a fully-fledged RLH in one environment (including implementation processes). Alternatively, the steering committee may determine that for the concept to be validated, rollout and piloting need to happen in multiple countries.

Bibliography

This bibliography is available digitally in our evidence library at <https://docs.edtechhub.org/lib/Ci5UZ5R4>

Groeneveld, C. (2022). *Developing a Proof of Concept for a Regional Learning Hub for Eastern and Southern Africa Part 3: Skills taxonomy* (Technical Report No. 3). EdTech Hub. <https://doi.org/10.53832/edtechhub.0077>. Available from <https://docs.edtechhub.org/lib/VFV5SG9H>. Available under Creative Commons Attribution 4.0 International. ([details](#))

Groeneveld, C. (2022). *Developing a Proof of Concept for a Regional Learning Hub for Eastern and Southern Africa Part 4: Content curation* (Technical Report No. 4). EdTech Hub. <https://doi.org/10.53832/edtechhub.0078>. Available from <https://docs.edtechhub.org/lib/9VKXVKGI>. Available under Creative Commons Attribution 4.0 International. ([details](#))

Groeneveld, C., Kimenyi, E., & Kaye, T. (2021). *SWOT Analysis of the Kenya Education Cloud*. EdTech Hub. <https://doi.org/10.5281/zenodo.4745991>. Available from <https://docs.edtechhub.org/lib/UMJTLGUE>. ([details](#))

Groeneveld, C., Michels, G., & Kaye, T. (2022). *Developing a Proof of Concept for a Regional Learning Hub for Eastern and Southern Africa Part 1: Inception Report* (Technical Report No. 1). EdTech Hub. <https://doi.org/10.53832/edtechhub.0075>. Available from <https://docs.edtechhub.org/lib/EW94QPAA>. Available under Creative Commons Attribution 4.0 International. ([details](#))

Groeneveld, C., Michels, G., & Kaye, T. (2022). *Developing a Proof of Concept for a Regional Learning Hub for Eastern and Southern Africa Part 5: Final report* [Technical Report]. EdTech Hub. <https://doi.org/10.53832/edtechhub.0079>. Available from <https://docs.edtechhub.org/lib/5XBMPDX6>. Available under Creative Commons Attribution 4.0 International. ([details](#))

Principles for Digital Development. (n.d.). *Principles for Digital Development*. <https://digitalprinciples.org/>. ([details](#))

Rahman, A., & Groeneveld, C. (2022). *Developing a Proof of Concept for a Regional Learning Hub for Eastern and Southern Africa Part 2: Insights from user research* (Technical Report No. 2). EdTech Hub. <https://doi.org/10.53832/edtechhub.0076>. Available from <https://docs.edtechhub.org/lib/Ci5UZ5R4>. Available under Creative Commons Attribution 4.0 International. ([details](#))

Annex 1. Comprehensive list of comments testing our assumptions

Direct quotes from participants are included in *italics*. Where the specific country context is relevant, the country of the respondent is included. *NB: in this table 'the Hub' is used as shorthand for Regional Learning Hub.*

Assumption	Validated or invalidated	Insights
The proposal for the RLH is clearly defined.	Validated	<p>Government officials understood the RLH, and could describe it in their own words.</p> <p>Little clarification was needed in explaining the overall concept to government officials.</p> <p><i>I see. Packaging it by subject, by topic. Putting all those resources on there. So, you also have some kind of a playlist.</i></p>
Target users (Ministries of education) understand what the RLH is and what it is not.	Validated	<p>As stated above, government officials understood that the RLH is an overarching set of resources that could help them.</p> <p><i>If I want to search for a specific type of material, it becomes easy for me to go through and find exactly what I'm looking for. [The structure means] users aren't overwhelmed by the sea of resources that are there. So, they can navigate the Hub easily to drill down to what they are looking for.</i></p> <p>Government officials felt that the RLH would require navigation from them, as it is a resource for countries across East and Southern Africa.</p> <p>This demonstrates that they understood both its regional nature <i>and</i> that it is a resource for them to adapt, deploy, and use as they see fit in their context.</p> <p><i>The most important feature of the Hub would be the home page. That it will be easy to navigate without following a thousand steps for where you want to go. The homepage, the click of a button will direct users to where they want to go.</i></p> <p><i>The research and analysis you have done in terms of the types of skills and knowledge that each of the countries has packaged their own curriculum will assist.</i></p> <p>One government official expressed excitement at the pan-African nature of the platform — allowing them and their</p>

		<p>colleagues to see resources from different countries.</p> <p>One government official also recognised the importance of assessments as well as learning content — showing a depth of understanding.</p> <p><i>I think it must not only have content but must have assessment tools to assist both learners and teachers to assess their progress in using those tools.</i></p>
<p>The proposed design of the RLH fills a need in the target countries.</p>	<p>Largely invalidated</p>	<p>As highlighted in more detail below, countries split into two categories, namely:</p> <p>Countries with significant access to digital content (Kenya, South Africa), and countries with very limited access to digital content due to infrastructure constraints (Somalia, South Sudan).</p> <p>Government officials in countries with significant access to digital content (Kenya, South Africa) were very hesitant about the additional value added by the RLH. They felt access to digital resources was not a current problem.</p> <p><i>To a limited extent... RLH could address our needs to a very limited extent. It is already a crowded space.</i></p> <p><i>Its place and its role will have to be defined clearly and how it will complement and support what is already happening.</i></p> <p><i>We must leverage what is already there in an organised systematic way. There are quite a number of resources available, but people aren't aware. Need to make them accessible, known, available for learning and teaching.</i></p> <p><i>Yes, [the RLH is useful] if we align it to the education systems in Kenya. If it's coming to fill in a gap — but what is the gap? It is not useful if it plays the same role as existing resources.</i></p> <p>Government officials in countries with infrastructure constraints expressed concern that the RLH would not be used.</p> <p><i>The number of people who have accessed the [existing digital] platform was lower than expected.</i></p> <p><i>We had some research commissioned by INEE [which showed that learners had interest in accessing digital content]. But there is no existing platform to broadcast this content to learners.</i></p>

		<p>In South Africa and Kenya, government officials suggested alternatives to the digital platform. These alternatives are helpful suggestions, and also indicate limited demand in the original concept.</p> <p><i>Could we provide teachers with an opportunity for a community of practice? Sharing ideas with other teachers in other countries on how best to teach certain topics... that's how I see it.</i></p> <p><i>[How about] an observatory of tools and resources for policymakers? This would give value if decision-makers are your primary audience.</i></p> <p><i>Can we include gamification — it is exciting teachers. It makes teaching and learning fun.</i></p>
There is demand for the RLH solution in the target countries.	Largely invalidated	See above.
Teachers and relevant stakeholders are not currently able to access enough high-quality, ready-to-deploy content to support learning	Partially validated (in some countries)	<p>As stated above, the countries identified are split into two groups: those with abundant access to digital resources (South Africa, Kenya), and those with limited infrastructure and therefore limited feasibility of digital learning resources (South Sudan, Somalia).</p> <p>In Somalia and South Sudan, high-quality, ready-to-deploy content is needed and not currently able to be accessed.</p> <p>In Somalia, a platform (named the <i>School Platform</i>) was developed and built by the Ministry of Education in response to COVID-19.²</p> <p><i>Concept of digitisation and tech mostly came with Covid-19. First time that it became important.</i></p> <p><i>We called all stakeholders of technology together, alongside engineers from the Ministry. Together, we developed a platform — the School Platform.</i></p> <p>By the admission of government in Somalia, the platform needs some improvement:</p>

² EdTech Hub have requested access to this platform, but have not yet received a response.

The content — it will need development and improvement. For example, we will want to put textbooks on the platform. Also, video files.

In South Sudan, content has been uploaded onto the Ministry of Education website and is publicly accessible.³ The platform is incomplete, covering only uploaded textbooks across some subjects and grades.

Additionally, the Ministry has realised that most schools were not able to access the content due to connectivity and energy issues.

Most schools could not access them as they did not have internet facilities. Even in Juba. Schools do not have power either.

If the service is only digital learning resources, it won't work.

In South Africa, government officials emphasised the existence of many digital learning resources.

Schools and teachers access learning resources through various modes of technology.

We have a multiplicity of platforms to support teaching and learning, these are critical resources that both teachers and learners can utilise.

Government officials were able to go into detail about the digital learning resources available, which suggests a deep and broad array of resources with some sophistication of approach.

Players in South Africa have been developing digital learning resources since 2004.

We have developed other platforms to specifically support Grade 12 learners with Matric [final exam taken after Grade 12 in South Africa, required to enter university]. We have another portal that has resources for learners with Grade 1 to Grade 11

We designed a remote and digital learning strategy that incorporates use of low-end technologies: community radio, and education TV with 5 different channels incl. free to air)

³ See: moge.org

We have 20–30 digital platforms to reach the widest possible audience. Done that quite successfully. You can have a look at Woza Matrics, Telkom Lightbulb, Vodacom eSchool, MTN online School, Tswelopele, WCED ePortal.

We have integrated M&E, real-time feedback data on how we can continuously improve design and implementation.

In South Africa, cost was also cited as a barrier to development of digital learning resources, given limited government and donor budgets.

It's costly to create content on digital platforms, especially when you need to make it interactive.

So, ICT is a priority but it's not the only priority. The budget has to be sliced in such a way that it addresses all these things... and the cost of providing ICT is huge.

In Kenya, the Kenya Education Cloud is a centrally managed dissemination platform.

The Kenya Education Cloud is a dissemination platform for every school. We have content access points in primary schools for children to access updated content.

Through the Kenyan Institute for Curriculum Development (KICD) and a range of partners, they have developed large amounts of content.

KICD is a dissemination institute. Content developers develop the content. Some content is free, others are proprietary. Vendors use the platform — they are able to sell the content.

The quality of content was deemed to be high, due to the role of KICD. However, there is also a wealth of content available outside the Kenya Education Cloud, which is not regulated.

KICD is a centre of excellence in East Africa on content. It is a case study. We have documented standards for Kenya Education Cloud — curation standards that we vet content against.

A majority of the content is out there, not regulated. If I was to estimate, I would suggest the amount of content that is vetted is 40%.

<p>Technology can help to effectively provide content to teachers and relevant stakeholders to support learning</p>	<p>Largely invalidated</p>	<p>In South Sudan and Somalia, government officials expressed concern that the level of digital infrastructure could support a Regional Learning Hub.</p> <p><i>Infrastructure development is a really great challenge here — really limits access. For country-wide distribution, we would need to provide infrastructure.</i></p> <p>This includes internet connectivity:</p> <p><i>Without the internet, nothing can be accessed. We have been trying to develop offline resources.</i></p> <p><i>The cost of data becomes an inhibitor. Not that there is no connectivity, but that it is costly to log on to the internet. Some schools are unable to access these materials because the cost of data is a challenge.</i></p> <p>It also includes access to devices and a source of energy:</p> <p><i>If it is possible, the school must have computers, then it [the RLH] could be accessed. Only if a school could have computers. Seasonally, because of flooding, it is very hard to distribute hard tech like computers. We would also need solar panels, a source of electricity.</i></p> <p>A focus on 'low-tech resources' (radio, worksheets, SMS messaging) may address this concern, although infrastructure constraints would still play a role here.</p> <p>However, government officials in South Sudan and Somalia expressed concern here also.</p> <p><i>Local telephone service providers also worked on this. However, the ability to do this outside the capital was limited — even though most of the population was outside remote areas (South Sudan).</i></p> <p><i>Government and other education partners had an initiative via radio also. Access to radio is limited to state capitals.</i></p> <p>In addition, digital literacy of teachers and children is a big barrier.</p> <p><i>A huge barrier was knowledge of the technology to the children and to the teachers. They have built tech into the curriculum.</i></p>
---	-----------------------------------	---

One of the barriers is that there are no computers, etc. in schools.

Parents also don't let children use technology. Technology has affected very few, it has a very limited scope.

ICT skills would have to be upgraded [for people to use the platform]

In Somalia, the lack of infrastructure and digital literacy has led to limited uptake of technology:

The number of people who have accessed [digital learning resources] was lower than expected. Somalia's government is working with schools to provide access to the system.

As a result of these initiatives, the development of digital learning resources in South Sudan has been limited.

There is no platform right now to share learning. UNICEF was trying to provide radio sets country-wide. But we had real challenges with signal, so the programme ended (South Sudan).

It was deemed a challenge to access online resources in some schools in parts of South Africa also.

The second challenge is connectivity. You have these materials, but communities don't have internet, so they are unable to access these resources.

65% of schools have access to the internet, but largely for administrative purposes.

As stated above, schools and households in South Africa that are able to access online content have access to a range of digital learning resources. Those who do not have access to the internet can access digital learning resources via offline technologies:

National, regional, and local TV and radio stations play a critical role in pushing content to learners.

Wide range of learning resources; on a wide range of platforms... A differentiated approach that considers a spectrum of schooling landscape.

In Kenya, as stated above, there is also considerable access to

		<p>digital learning resources.</p> <p>However, in Kenya, there are also similar barriers to access around digital literacy — particularly of teachers.</p> <p><i>Having the resources is one thing, using them is another thing. Having tech is not equal to using technology.</i></p> <p><i>Teachers are aware but have the capacity gap in harnessing tech.</i></p> <p><i>A lot of teachers are aware of content but fear tech.</i></p> <p>In addition, connectivity was also stated as a barrier in Kenya, to a greater extent than South Africa but less than Somalia and South Sudan.</p> <p><i>The majority of what we have cannot be accessed with an app. The majority is web-based, there are no offline versions.</i></p> <p><i>An offline and web-based component is important. Internet connectivity is an issue in Africa. We have tried our best in Kenya, but cost and access is still an issue.</i></p>
<p>Governments and education systems in focus countries are willing and able to take ownership of an RLH.</p>	<p>Partially validated</p>	<p>In South Africa, the government would want an active role in ensuring quality, accuracy, and curriculum alignment.</p> <p><i>The Department takes responsibility to ensure quality and accuracy of content in those materials.</i></p> <p>However, much of the buy-in would have to come from the provinces of South Africa, which would implement the content in schools in their area. Provinces have significant agency and responsibility, as demonstrated by the fact that many coordinate content creation by teachers in the region.</p> <p><i>Provinces are responsible for implementing the policies developed by the national government. The provinces are responsible for schools, provision of resources to schools ... because 95% of the budget that is provided by the national treasury for basic education goes to provinces.</i></p> <p><i>Provincial departments identify top teachers and subject specialists. They then create these materials.</i></p>

This would also require advocacy and partnership building at the local level.

Mobilising partnerships that work in rural and township communities. Number of people who have resources; make them accessible to young people.

In Kenya, there was a similar focus on engaging a broad range of partners. Although the Ministry of Education (MoE) and KICD were mentioned as central, the participant mentioned that we need to engage a range of partners to make sure we are being needs-based (given all that exists already) and that partners feel ownership from the beginning.

MoE and responsible departments need to own the Hub. We need to be involved from the beginning. Rather than someone else making it and then calling to ask if we can access it. We need to be involved from needs assessment onwards

In Somalia, ownership would be much more centralised within the government. It manages and develops the existing platform in house, and would expect to do the same for the RLH.

The Ministry invited all stakeholders onto the platform. We took a top-down approach.

School platform developed and managed by MoE.

The first training will be to the officers to Ministry of Education

Similarly, in South Sudan, ownership would also be much more centralised. However, South Sudan emphasised the reliance on UNICEF in the development of their current platform, signalling heavy donor reliance would be needed.

Soft copies [of textbooks on the platform] are given to UNICEF, and the website is also maintained by UNICEF. It is all done by UNICEF, with instructions from the Minister.

They also highlighted capacity challenges within their government.

A challenge for the government is allocation of resources for education. The budget of the government at the moment is very thin. Hope the situation will change, but this will be a big limitation in the maintenance [of the RLH].

		It is likely that the capacity of central government will be a problem in both South Sudan and Somalia, and to a lesser extent in Kenya and South Africa.
The RLH can provide linguistically and culturally relevant digital resources.	Partially validated	<p>All countries expressed the importance of alignment of resources to the national curriculum.</p> <p><i>It [the RLH] needs to 1) cover our curriculum, 2) must be packaged in such a way that it will address the key concepts in our curriculum.</i></p> <p><i>Content on the platform depends on the curriculum that has been developed. Only upload what is officially developed.</i></p> <p><i>To be relevant, the content must be aligned to the curriculum.</i></p> <p>However, several countries expressed awareness of linguistic and cultural barriers.</p> <p><i>A lot of resources are available in English, but many learners have African languages as their home language.</i></p> <p><i>It is not easy for the children from different societies.</i></p>
Digital OER can be used to help teaching of early years' literacy.	Largely invalidated	Digital OER can help to a limited extent here. As described above, some countries (South Africa, Kenya) have access to digital OER already. Other countries (Somalia, South Sudan) do not have access and have institutional constraints to accessing most technologies.
Digital OER can be used to help teaching of secondary grade maths or science.	Partially validated	<p>As above, digital OER have a limited role to play in helping teaching. However, one participant expressed a specific interest in science and maths OER. This is linked to the fact that it is easier to make them culturally relevant.</p> <p><i>Science content would be most useful. Science and mathematics would be the most valuable areas to start with because they are universal, there is not much variation.</i></p>

Annex 2. User personas

Two user personas were created to help the identification of interviewees. These personas embodied the type of government representative we thought would be most helpful during the user research and which would help the team members or colleagues in countries identify these government representatives for our user research.

A persona is a tool used in user research and product development to create realistic representations of user groups. Personas are templates that describe different categories of users in a systematic and holistic way. Though we rarely find an 'exact' fit, they help us to identify the best fit. For example, if we are unable to speak to a 'government educator', a non-governmental organisation (NGO) worker or someone with previous experience of working closely with the government will suffice.

Our goal was to speak to one 'government educator' and one 'government technologist' persona, in each of the focus countries.

Persona 1: Michelle, the Education Official

Background

Michelle is a government official working within the Ministry of Education. Her remit includes different aspects of education policy: for example, curriculum development, teacher support and training, education policy, and so on. She works closely with other government departments, local government, teachers' unions, donors, and education partners.

Professional experience

Michelle works at a Manager/Director level at the Ministry of Education. She leads the implementation of different initiatives and is involved in policy and strategy conversations.

Relationship to RLH

Although Michelle's remit is not formally around technology or EdTech, she works on several initiatives that involve technology to further education outcomes for both primary and secondary learners.

She will use the RLH when needed to access resources, for example to shape content for school closures and to provide schools and school management with content for remedial programmes.

Persona 2: Kevin, the Government Technologist

Background

Kevin is a government official or contractor with a background in ICT. He is working in either the Ministry of ICT, Ministry of Education or another government department. His remit includes maintenance and ownership of IT and technology systems used by Ministry of Education personnel and partners.

Professional experience

Kevin has a strong technical background and works on various initiatives related to technology. These may be externally focused Edtech interventions, more internally focused systems (e.g., learning platforms, websites, management systems), or other citizen engagement initiatives.

Relationship to RLH

Kevin will be the focal point within government for maintaining and providing support on use of the RLH and its implementation. As such, he will work with colleagues in the Ministry of Education, as well as other stakeholders. He will also work with the technology partner(s) who build the RLH, making sure he understands what it takes to sustain it without their continuous engagement.

Annex 3. Interview guidelines

Date and time of interview

Name of person being interviewed

Name of person conducting interview

General introduction

Thank you for taking the time to speak with me today. My name is [NAME] and I work for EdTech Hub, a global research consortium that is supporting UNICEF with research and learning about educational technology. The purpose of this discussion is to help us better understand whether the idea for a Regional Learning Hub will have real-world uptake and impact.

For many of the questions, I will be asking about your experiences and perspectives. There are no right or wrong answers to the questions asked, and all of your responses will be kept confidential. No information or quotes we use will be attributable to the person, organisation, or agency who said them.

We estimate the following interview to take about 60 minutes. Do you still have that much time available to speak with me? Do you have any questions before we get started? If yes and no questions, continue.

MUST READ VERBATIM: Before we start, I would like to get your permission to record the interview. This will ensure that I accurately capture your responses. The audio recordings from all interviews will be used for internal analysis purposes only and will not be published or shared with anyone outside the study team, and they will be deleted after transcription. You will not be identified in study reports.

Do I have your permission to record the interview?

If yes, begin voice recording

If no, do not record the session

Start of the questions

Can you please tell me your name and current role?

How long have you been in that role?

Do you, or did you, have any additional roles previously that are relevant to your current work?

Questions about broader country context

The first few questions we have are about current access to digital learning resources in [COUNTRY]. When we say learning resources, we mean any form of learning content that is accessed or delivered through technology. Please answer the following questions as honestly and as openly as you can.

How do schools and teachers currently access learning resources in [COUNTRY], if at all?

Who usually creates these learning resources? For example, the MoE, NGOs, private providers, other partners.

Where do these resources currently live?

Who manages them, and who is involved in getting them into the hands of schools and teachers, if anyone?

Are there specific criteria (e.g., curriculum alignment or language) or processes to select appropriate digital resources?

What are the biggest barriers to creating and accessing learning resources in [COUNTRY]?

Probe: What challenges do schools and teachers face in accessing these resources, if any?

Probe: What challenges do others face in managing and sharing these resources, if any? Or creating and curating these resources?

How could access to learning resources be improved in [COUNTRY]?

Do you think technology has a role to play? Why or why not?

Specific questions about RLH concept

Now we would like to get your feedback on the concept of a Regional Learning Hub (RLH). This Hub is envisioned to be a digital platform that would host learning resources that governments and education stakeholders — across the region — can download, adapt, and deploy for their own purposes. This concept is still in early design phases, and we are hoping to use your feedback to inform the design.

To what extent do you think a Regional Learning Hub would address some of the barriers or gaps you mentioned above?

How could it build on the systems already in place, if at all?

Who do you think would be the primary users?

This Hub would ideally provide access to a range of content and learning resources. What types of content would be most useful to you and other education stakeholders in [COUNTRY]?

Probe: Why this type of content?

How would you want the content to be organised?

What key features or characteristics would help make it easier for you to engage with learning resources/content on a Regional Hub type platform?

What about key features to help others engage with it?

What training or support would you and others need to effectively engage with a platform like this?

Who do you think should be responsible for managing a platform like this? For example, the Ministry of Education, schools, NGOs.

Probe: Why?

What challenges or limitations do you foresee in maintaining a platform like this, if any? For example, data privacy laws or limited bandwidth of government officials.

Lastly, we ultimately want to ensure that a Regional Learning Hub and the learning resources it holds would be relevant to [COUNTRY]. What does this mean to you?

Finishing interview

Thank you very much for speaking with me today. These answers have been a big help in giving us a picture of what a Regional Learning Hub might accomplish in [COUNTRY]. Is there anything else you wish to share to help us understand how someone in your role or another role within education might use an RLH?

Thank you again! If you do not have any questions for me, this concludes our interview. Please feel welcome to contact any of us at any time to share ideas or to ask questions.