SUMMARY:
SCOPING SURVEY RESULTS

EDTECH IN LOW-RESOURCE SETTINGS

Challenges, opportunities, and conditions for success

November 2023

Overview of this report

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Table of abbreviations

- EdTech = Educational Technology
- EiE = Education in Emergencies
- IT = Information technology
- MENA = Middle East and North Africa
- MOE = Ministry of Education
- NGO = non-governmental organization
- OSS = open-source software
- SEL = social and emotional learning

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Executive summary

Goals

In July of 2023, the Gobee team launched a survey to better understand the experience of stakeholders in the Education in Emergencies (EiE) sector when it comes to EdTech in low-resource settings, with a special focus on **digital assessments** and what it takes to develop and maintain **open-source models** (OSS) and **data protection regulations**. To do so, we first sought to understand the goals, needs, and challenges faced by organizations within the EdTech ecosystem; those that develop, use, plan to use, or fund EdTech. Then, we inquired about their experiences with OSS and data protection, and the helpfulness of the many areas we are exploring in our learning agenda to their organizational goals. With the invaluable inputs from survey respondents we aim to (1) tailor the learning agenda to make informed decisions on the future of the Gobee tool, and (2) share back key findings and outstanding questions about the EdTech landscape in low-resource settings.

What is Gobee?

Gobee is a gamified digital assessment developed to support teachers in the formative assessment of students' academic and social and emotional learning (SEL) skills.

Open-source software?

For the purpose of this study, open-source software (OSS) was defined as software with freely accessible source code for users to modify and distribute

Methodology

The scoping survey was distributed to approximately120 researchers, donors, and organizations providing educational programming affiliated with EdTech and/or education and development. While we targeted stakeholders working across low- and middle-income countries, The Kingdom of Jordan is somewhat overrepresented due to our strong partnerships there. Data was collected remotely using Kobo Toolbox and analyzed using R Version 4.1.2.

Key findings: EdTech, OSS, and data protection

Key findings from the survey focused on three main areas: (1) overall barriers in developing and using EdTech in low-resource settings, (2) challenges in utilizing open-source software (OSS) principles, and (3) challenges with data protection. Specifically what we heard was that:

- **insufficient funding and a lack of access to technology, infrastructure, and resources** is a common problem organizations in low-resource settings face both when trying to develop or use EdTech in such contexts broadly.
- **barriers to the development and implementation of OSS EdTech models include a lack of technical expertise** within organizations developing/implementing/maintaining EdTech for low-resource contexts and a need for **advocacy** for OSS needs/challenges.
- Challenges related to data protection include **a lack of information sharing, guidelines and frameworks**. Namely, a lack of context-specific best practices for secure data collection and use, legal data protection frameworks, and capacity/infrastructure to adhere to regulations.

Executive summary

Key findings: Formative assessment

The overwhelming majority of respondents would find it fairly-very helpful to have more information on:

- low-tech methods of conducting formative assessments
- how teachers interpret formative assessment data on students' academic
- how teachers interpret formative assessment data on students' SEL skills.

Recommendations from participants

While the survey has indeed provided invaluable information to the Gobee team, below are a few key recommendations for those interested in developing, using, or funding EdTech for low-resource contexts more broadly:

- **Determine the level of technology and infrastructure in the context** you are interested in serving, and **ensure that the EdTech solution you are proposing is fit for such a context**
- Expand opportunities to use open-source software principles through:
  - **Developing opportunities for technical training and professional development** related to OSS
  - **Support regional and national advocacy** to develop and maintain OSS models
  - **Organize working groups** within governments comprised of EdTech developers, both within and beyond the context, who advocate for OSS
- Improve data protection through:
  - **Sharing best practices** from similar organizations
  - **Increasing the infrastructural capacity** to adhere to regulations in place
  - **Developing a community of practice to share best practices**, what works within a context, what doesn't, and how to get around it
  - **Funding the infrastructure** to support the secure collection, use and sharing of data derived from EdTech

Please note: this scoping survey inquired about the above topics from a set of experts in the MENA region, largely those within our network. While it provides insight into the experiences of stakeholders in the sector, the Gobee team plans to use these findings as a piece in the puzzle that makes up our broader learning agenda. With acknowledgement of the value of our participants' insights, we encourage these findings to be used as complementary evidence to support your understanding of these topics in the contexts in which you may apply them to.

If you would like to stay looped in the findings of our learning agenda, do subscribe to our mailing list at the bottom of this webpage!

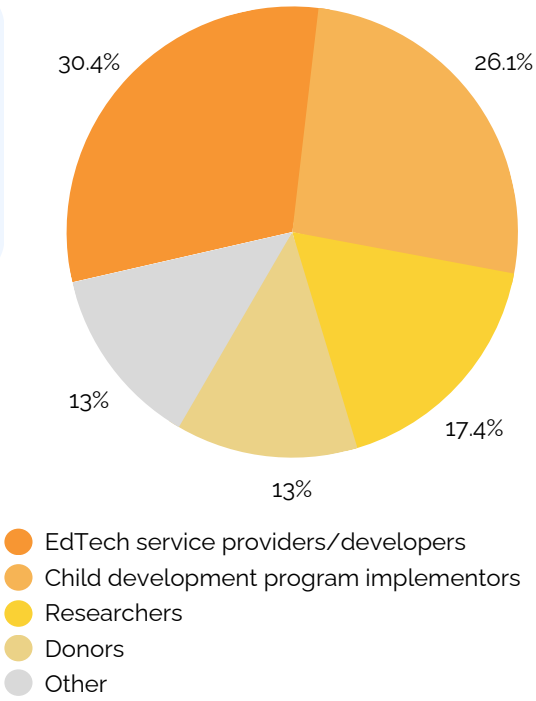
For detailed findings and additional recommendations, continue reading!

Please note: the sample largely consists of our partners and those working in Jordan. Given the small sample size, we caution against interpreting the results as representative of the larger field.

Participants: who are they?

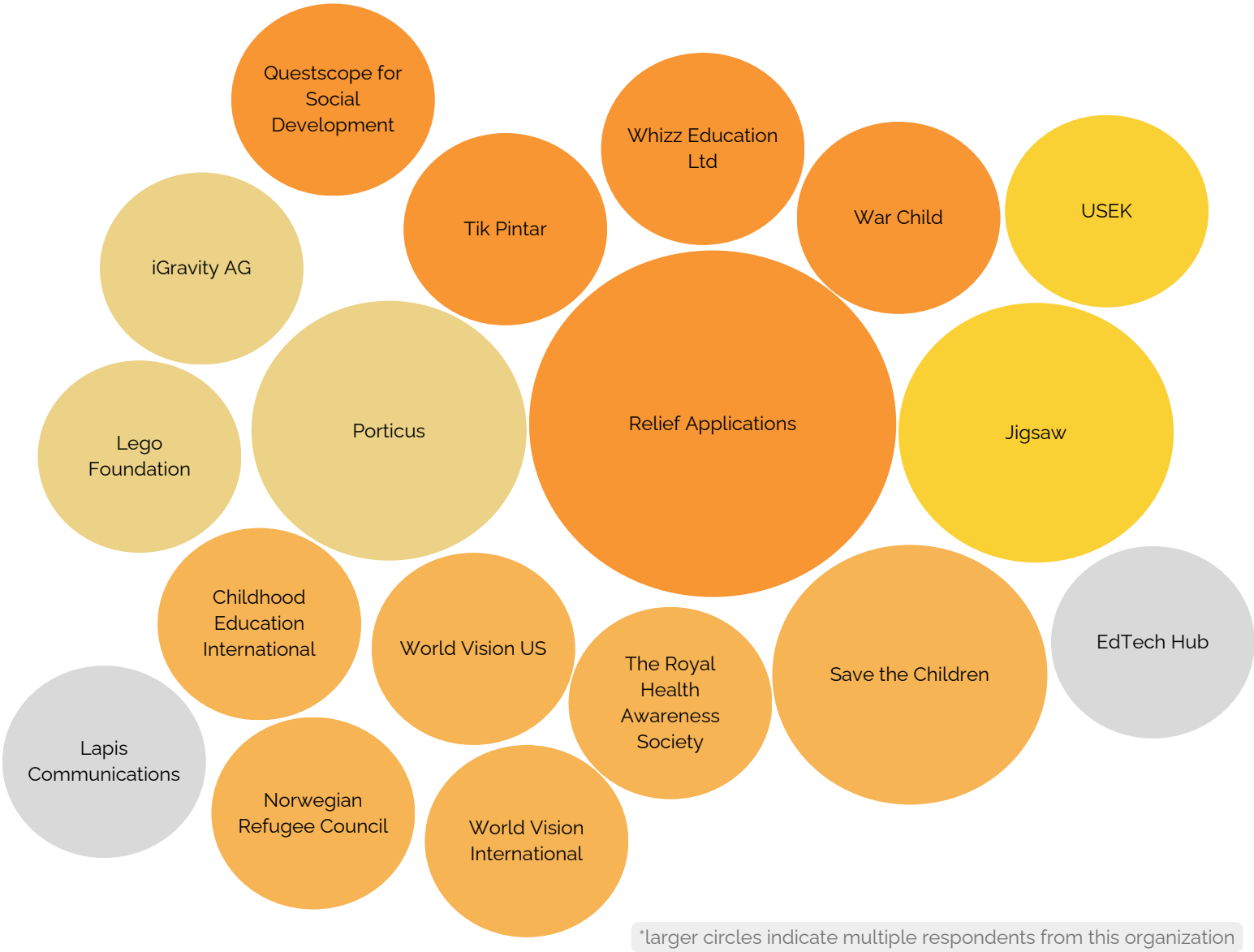
Twenty-three stakeholders responded to the survey. Most were **EdTech service providers/developers** (30.4%), **child development program implementors** (26.1%), **researchers** (13%) and **donors** (13%), and organizations that wear multiple hats were also included.

"[We are a] multi-partner initiative which undertakes and funds research but also a collaboration which provides technical assistance to Ministries, donors and EdTech providers (for profit and not for profit) without clear guidance on data protection national and international best practice."



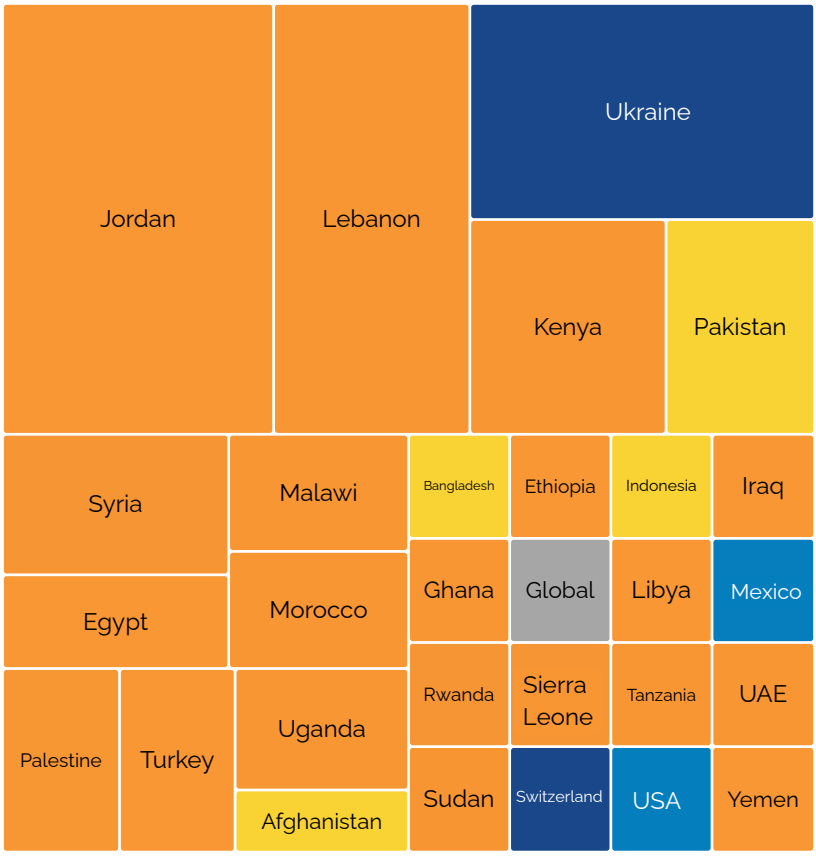
*applies to both graphs on this page

Where do they work?



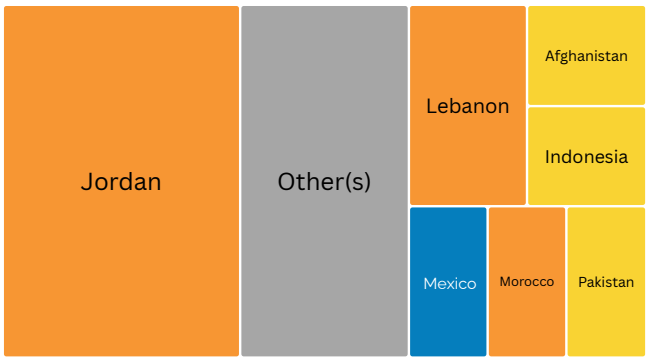
*larger circles indicate multiple respondents from this organization

Which countries do you operate in?



While respondents reported working across 29 countries, the majority focused on the **Middle East and North Africa** region.

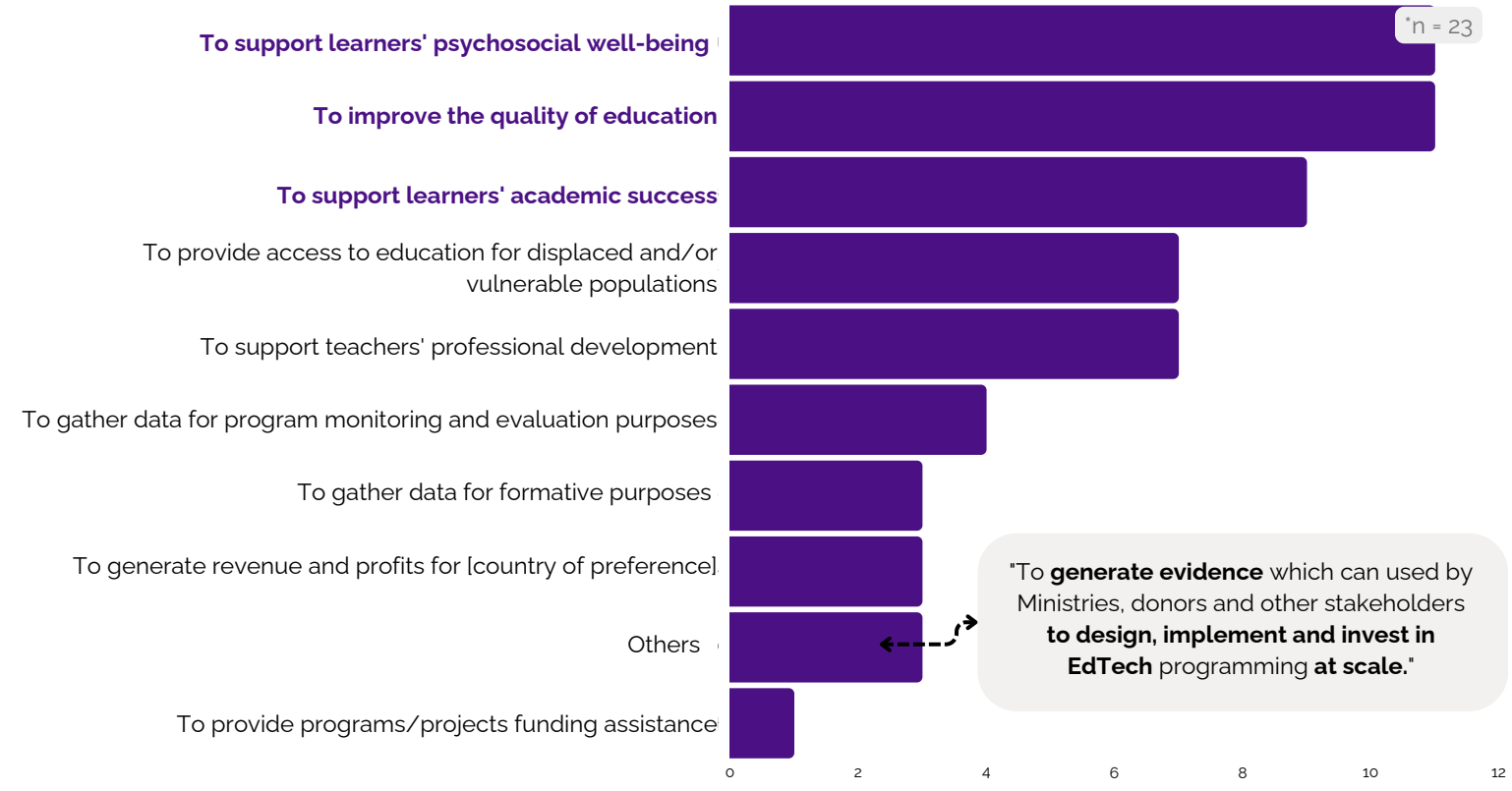
Which country are you most comfortable reporting on?



*n = 19 for this variable as responses that reported on multiple countries of preference were dropped

Organizational goals

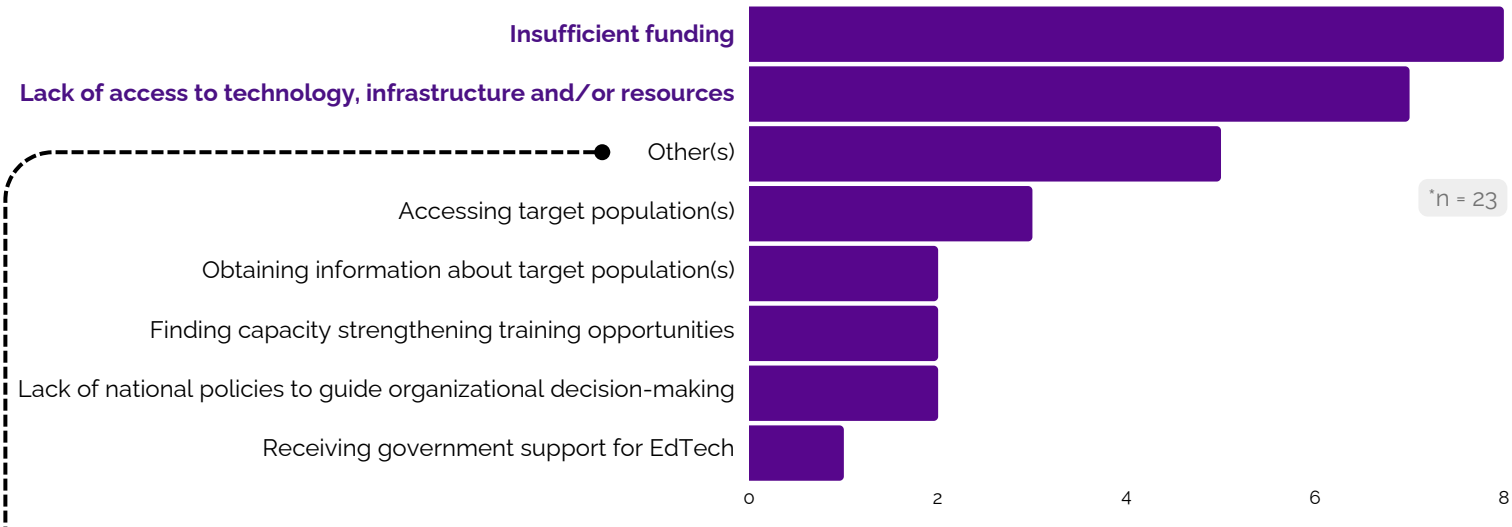
The top 3 organizational goals most highly endorsed were the **support of learners' psychosocial wellbeing** (18.6%), the **improvement of the quality of education** (18.6%). and the **support of learners' academic success** (15.3%).



"To **generate evidence** which can used by Ministries, donors and other stakeholders **to design, implement and invest in EdTech** programming **at scale.**"

What are the challenges with **using/developing EdTech** in low-resource settings?

When inquired about the challenges of using and/or developing EdTech in such settings, the majority of participations reported **insufficient funding** (13%) and a **lack of access to technology, infrastructure and/or resources** (8.7%).



"Finding EdTech with **evidence of impact on learning outcomes,** as well as with a sufficient critical size and **enough "market-based" revenue generations**..."

While insufficient funding was the top challenge, when it came to priotities...

The lack of access to technology, infrastructure and/or resources (21.7%) was most frequently reported as the highest priority to address, followed by the lack of national policies (8.7%) to guide organizational decision-making, and insufficient funding (8.7%).

What are the challenges of **using/developing OSS** EdTech in low-resource contexts?

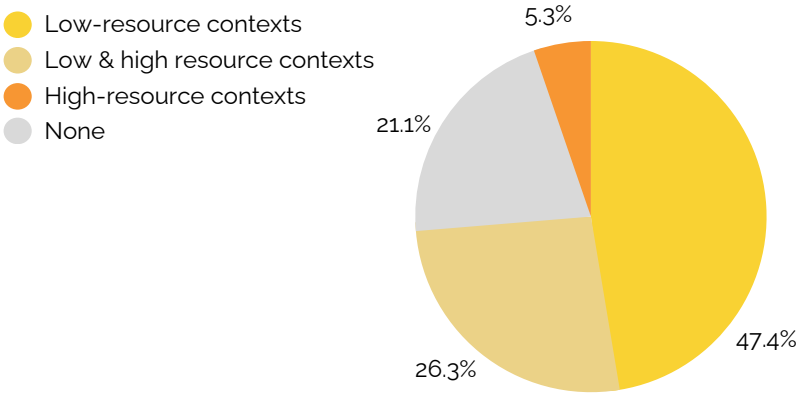
* n = 19 for all questions related to OSS as 19/23 participants were familiar with OSS practices.

The Gobee team's intial assumption

In developing Gobee, we strived to create a model that would be **sustainable**, independent of the original developers...but what does that entail? In trying to answer this question, we considered the benefits of an "open source model". But what open source model is best? And how do we ensure quality and data security?

83% of participants were familiar with **OSS practices**
and
65% of participants were familiar with **data protection practices**

Where do you have experience with OSS EdTech?



Are there unique challenges?

88% of participants who have worked with/on or funded OSS EdTech in low-resource contexts reported that using OSS EdTech models is especially challenging in such contexts.

"There may be an **absence of a legal data protection framework**, or...[it] may be impractical in practice, for example a requirement to store student data in the country itself, when there are no effective commercial cloud service options."

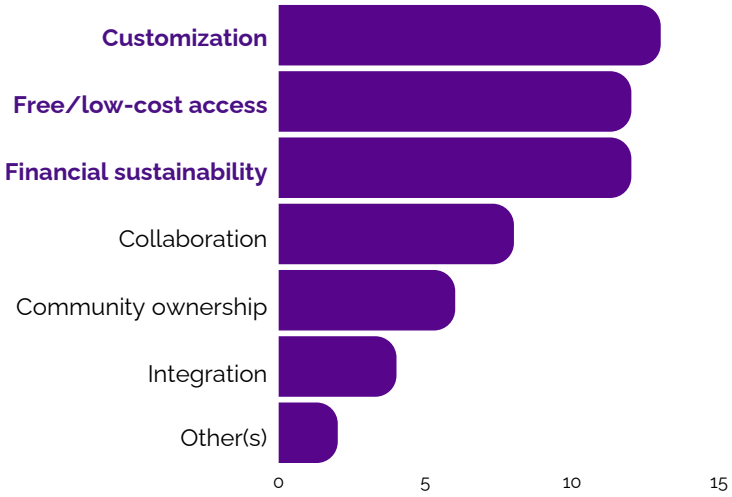
"MoEs in low-resource environments have often developed multiple EdTech projects across the specific ministry, sometimes **without clear guidance on data protection national and international best practice**...It is difficult for MoEs to guide different MoE agencies in **how to consistently apply good data protection practices** so lots of different practices pop up."

What are the challenges of **using/developing OSS** EdTech in low-resource contexts?

* n = 19 for all questions related to OSS as 19/23 participants were familiar with OSS practices.

Our prior investigations into OSS highlighted differences in, not only how it is defined, but an *inkling* that much like data protection regulation, the features of OSS that are valued would be context-dependent, so we asked participants:

Which features of OSS tools/technology do you think are most important to your work?

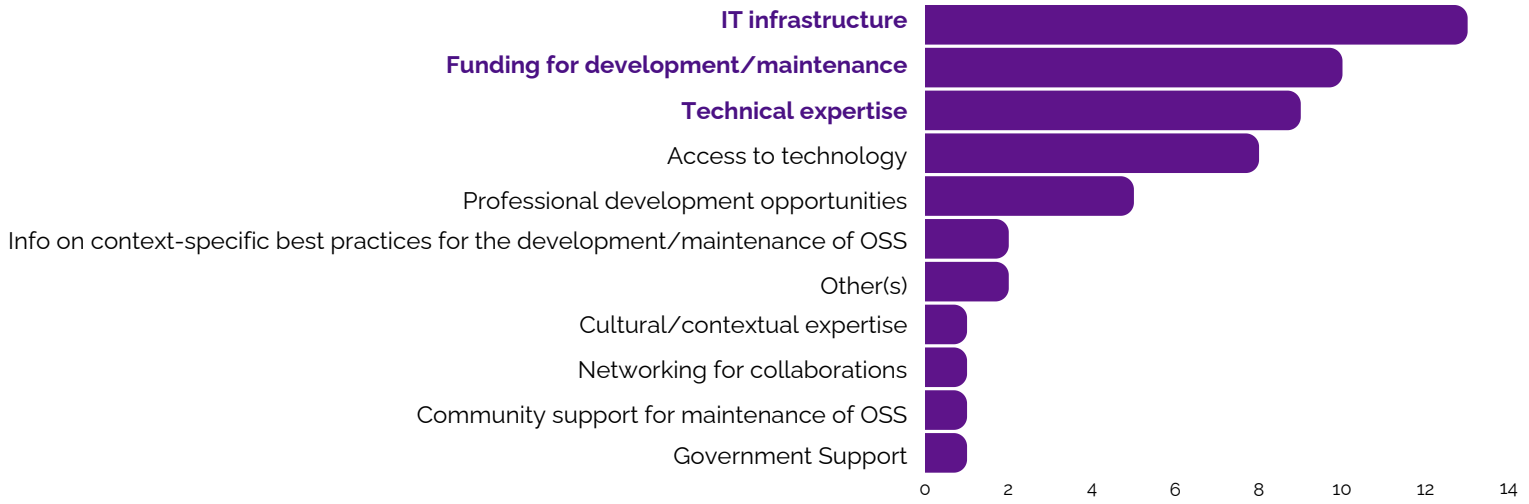


Customization (16.3%), **free/low-cost access** (15%), and **financial sustainability** (15%) were the top 3 features of OSS tools participants reported were important to their work.

Our findings also confirmed our inkling! In comparing the results of the full sample study to a subset of participants who reported on Jordan, customization was less of a priority than financial sustainability and low-cost access. This also suggests that **the OSS frameworks employed in the higher-resource contexts they usually exist in may need to be further adapted for use in low-resource contexts**.

Challenges: implementing OSS in low-resource settings

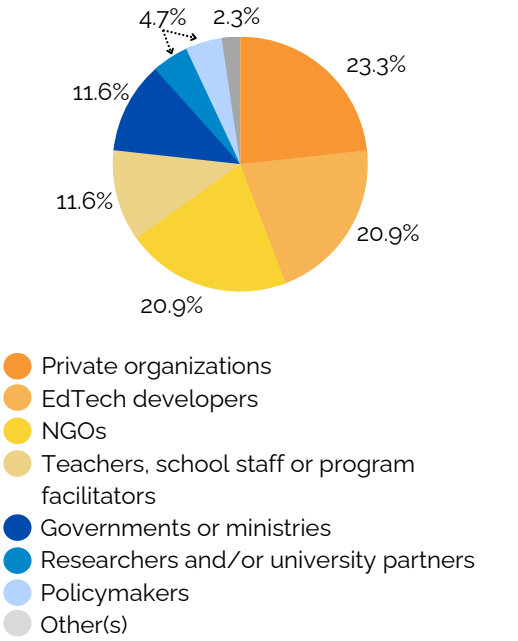
The top 3 challenges with implementing OSS in low-resource settings were **limited IT infrastructure** (24.5%), **funding for the development and maintenance of OSS** (18.9%), and **technical expertise** (17%).



What kind of support would be needed to address these challenges?

Technical training and professional development (18%), **regional and/or national advocacy for OSS needs and challenges** (16%), **networking opportunities with collaborators** (14%), and **learning best practices fro similar organizations** (12%) were the supports participants reported would be most helpful in overcoming the challenging of implementing OSS EdTech in low-resource settings.

Who should provide support?



The Gobee team's intial assumption

We assumed that donors would be more directly called upon by EdTech developers, program implementors and researchers for support. While this was not the case, the kind of support flagged - such as technical trainings, regional advocacy, and networking opportunities with collaborators, nonetheless require donor support - partly given that insufficient funding was reported as one of the most frequent challenges by the other stakeholders operating in the sector.

Bonus recommendations: from challenges to actionable support - a few ideas

- Private organizations & EdTech developers:
  - **Develop guidelines and resources** tailored to low-resource settings for OSS adoption.
  - Share best practices with similar organizations on what's worked for you and what hasn't!
- NGOs & governments:
  - **Provide training and capacity-building programs** for technical expertise.
  - **Invest in improving IT infrastructure** in low-resource contexts.
- All:
  - Set up **networks to encourage collaborations and partnerships** in the OSS community
  - **Promote the adoption of OSS solutions** in EdTech sector
  - **Facilitate knowledge-sharing** among organizations experienced in OSS implementation.

OSS EdTech: who is in charge of what?

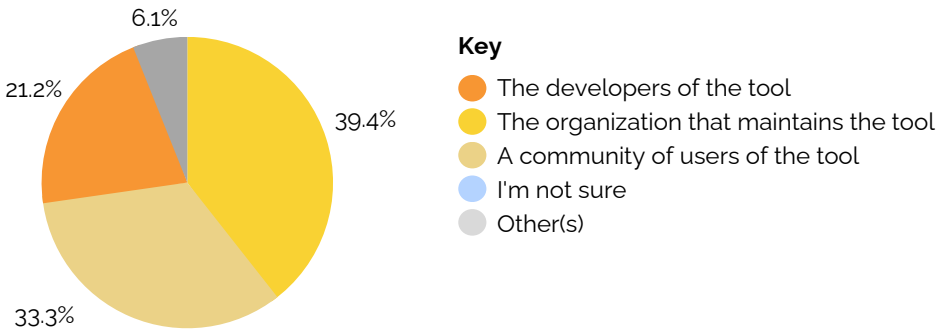
Different groups are believed to be primarily responsible for different parts of the maintenance of OSS EdTech. When it comes to:

- **Content contextualization:** participants believed that this should be the responsibility of the organization that maintains the tool (39.4%) and the tool and a community of users (33.3%).
- **Quality control**: participants believed that this responsibility was more evenly split between the organization who maintains (36.4%) the tool, and those that develop (24.2%) it and a community of users (24.2%).
- **Staff training and implementation costs**: while most participants did report that the organization that maintains the tool is responsible (39.4%), some did also believe that the organization that develops the tool (24.2%) and a community of users (24.2%)have a role to play here, in addition to a mix of donors, government and teacher trainers and EdTech experts.

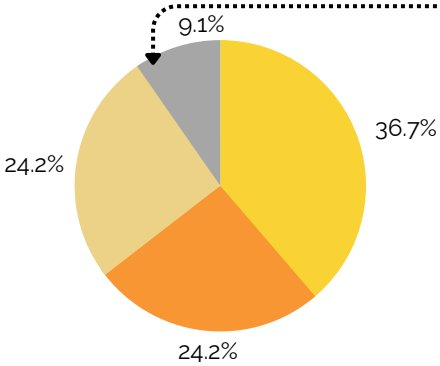
In your understanding of an open source EdTech tool, who is typically in charge of..

* n = 19

...Content Contextualization?

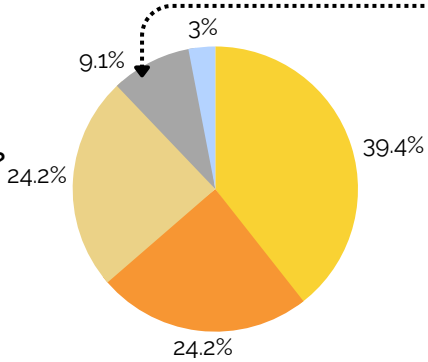


...Quality control?



"**External evaluation agencies** can validate... the tool. While they may not be in charge of quality control they can undertake the process."

...Staff training/implementation costs?

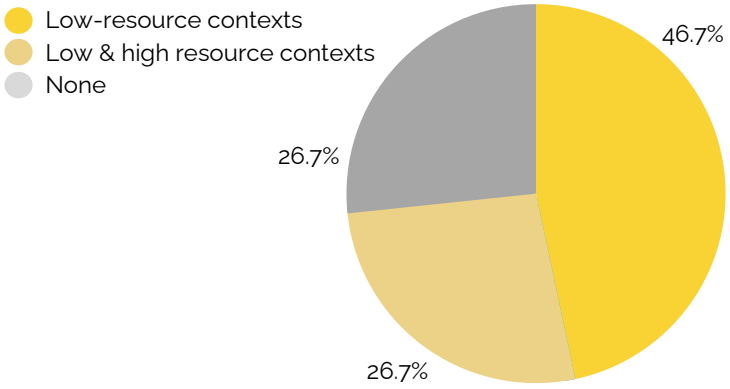


"I assume a **diverse group** that would be context dependent but someone **involved in teacher training** (pre and in service) as well as **donors + government** and the **key international partners**, including a group of **EdTech experts/advisors**."

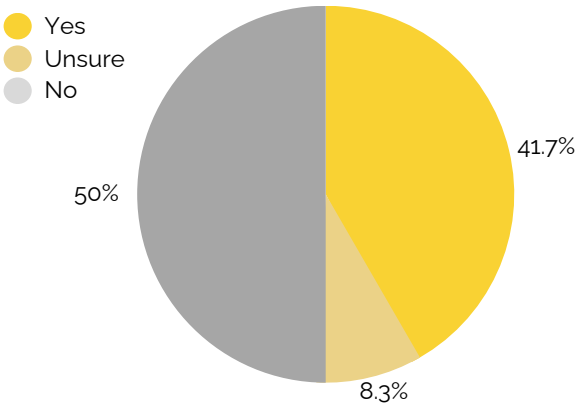
Data protection, use and sharing: which principles should we prioritize?

* n = 15 for all questions related to data protection, use and sharing

Where do you have experience with EdTech data protection regulations?



Are there national data protection regulations in [country of preference]?



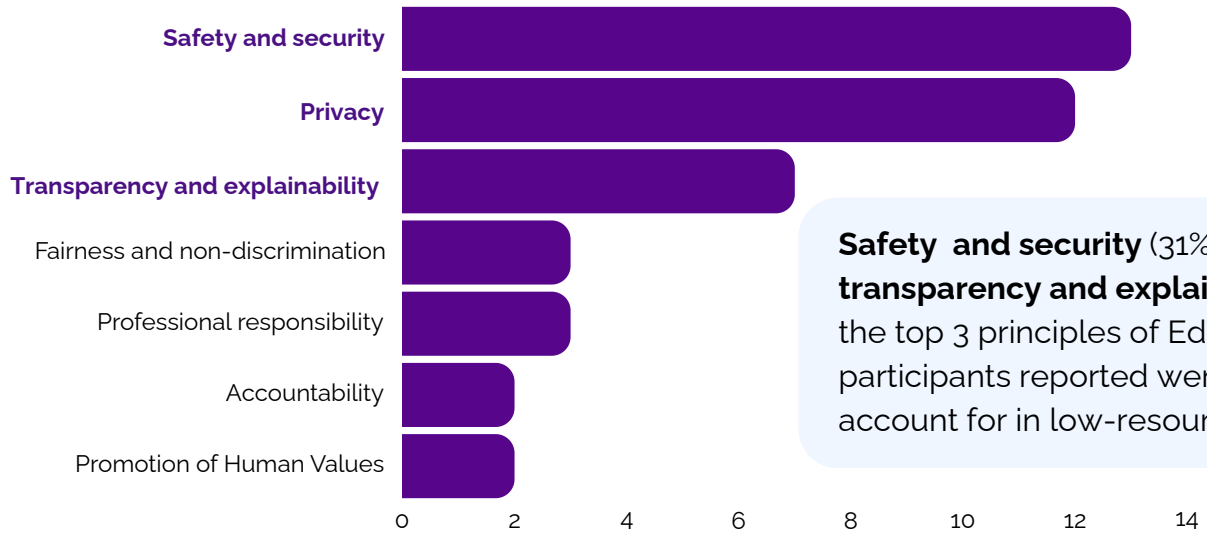
60% of participants reported that they have **standardized data protection policies used across the organization. 58%** of participants either reported that the country in which they they operate the most has no national data protections or they are unsure.

70% of participants who have engaged in data protection practices in low-resource settings reported that there are **characteristics about these settings that make it especially challenging for EdTech developers/users**.

"MoEs in low-resource environments have often developed multiple EdTech projects across the specific ministry, sometimes **without clear guidance on data protection national and international best practice.**..It is difficult for MoEs to guide different MoE agencies in **how to consistently apply good data protection practices** so lots of different practices pop up."

"There may be an **absence of a legal data protection framework**, or...[it] may be impractical in practice, for example a requirement to store student data in the country itself, when there are no effective commercial cloud service options."

Most important principles for EdTech data protection in low-resource settings



Safety and security (31%), **privacy** (28.6%), and **transparency and explainability** (16.7%) were the top 3 principles of EdTech data protection participants reported were most critical to account for in low-resource settings.

Data protection, use and sharing: what are the challenging implementing regulations?

* n = 15 for all questions related to data protection, use and sharing

Data protection: Challenges

The top 3 challenges faced by organizations challenges related to the secure collection, appropriate use, and ethical sharing of data generated by EdTech tools were a **lack of information on context-specific best practice for the appropriate use** (21.2%) **and secure collection of data** (18.8%), in addition to limitations in **funding to design and implement secure data collection, use, and/or sharing practices** (15.6%).

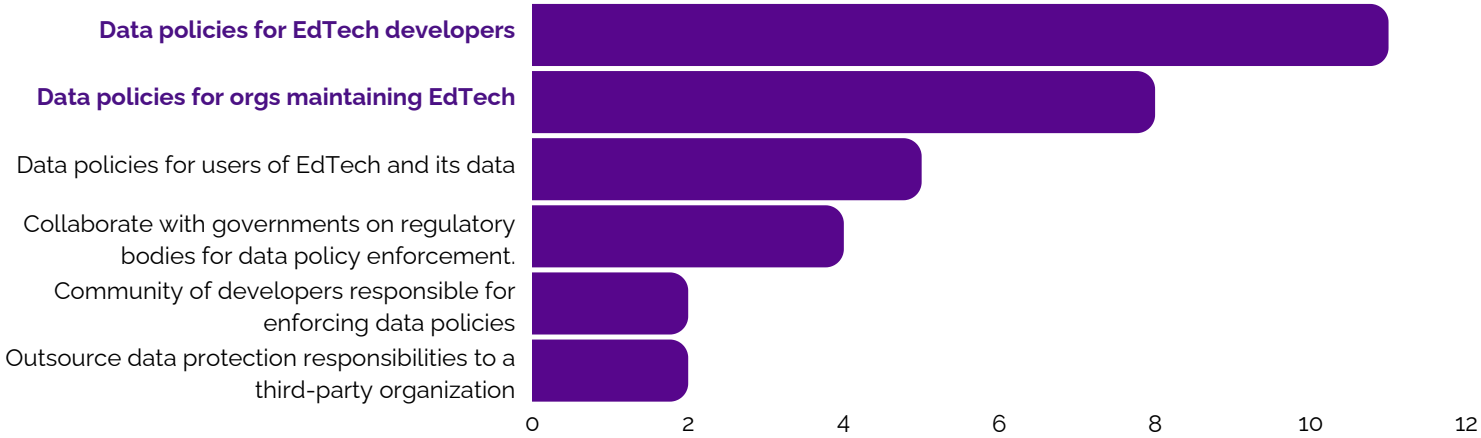
What kind of support would be needed to address these challenges?

The opportunity to **learn best practices from similar organizations** was the most frequently reported support that participants believed would help overcome these challenges.

Data protection, use and sharing: which principles should we prioritize?

* n = 15 for all questions related to data protection, use and sharing

Best ways to prevent unintended data use in the sector



In the EiE sector, participants believed the best way to prevent unintended data use are clear **data policies for organizations developing EdTech** (31.4%) - including data collection restrictions, informed consent, and transparency - and for **organizations maintaining** it (22.9%) - including encryption, authentication, and access controls.

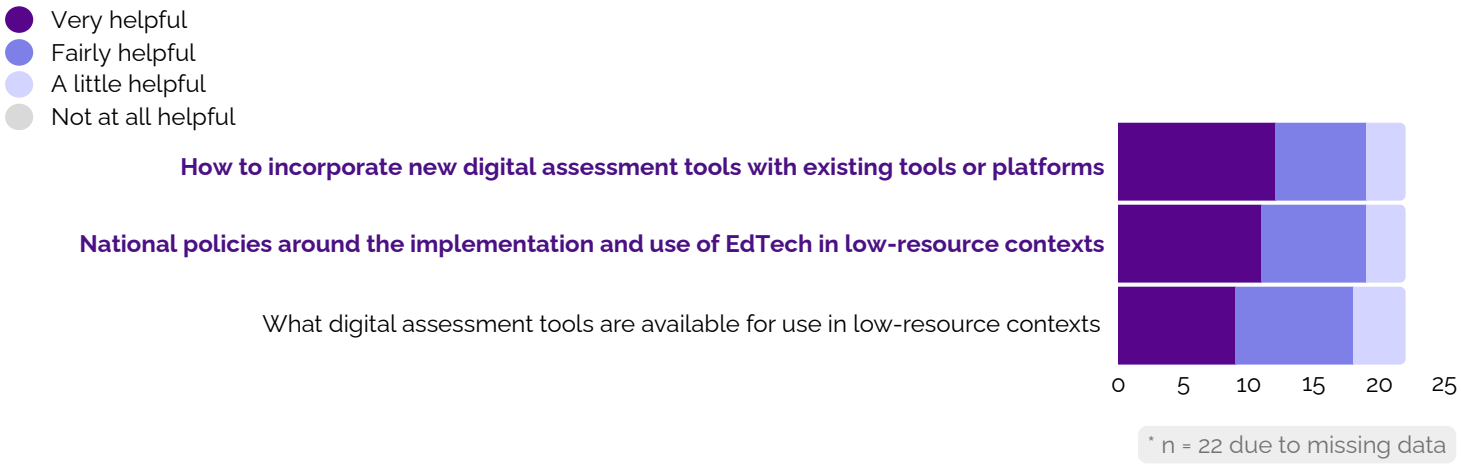
Bonus recommendations:

- **Private organizations** & **EdTech developers**:
  - Develop guidelines and resources tailored to low-resource settings for OSS adoption
  - Share best practices with similar organizations on what's worked for you and what hasn't!
- **NGOs** & **governments**:
  - Invest in the infrastuctural capacity required to safely collect and use EdTech data
- **All**:
  - Create opportunities for organizations in the sector to learn from each other
  - Facilitate knowledge-sharing among organizations experienced in EdTech development and implementation.

Gobee's learning agenda: which pieces would be most to YOU in the sector?

In the survey, we asked how helpful it would be to have more information on....

Digital assessment use, policies, and appetite



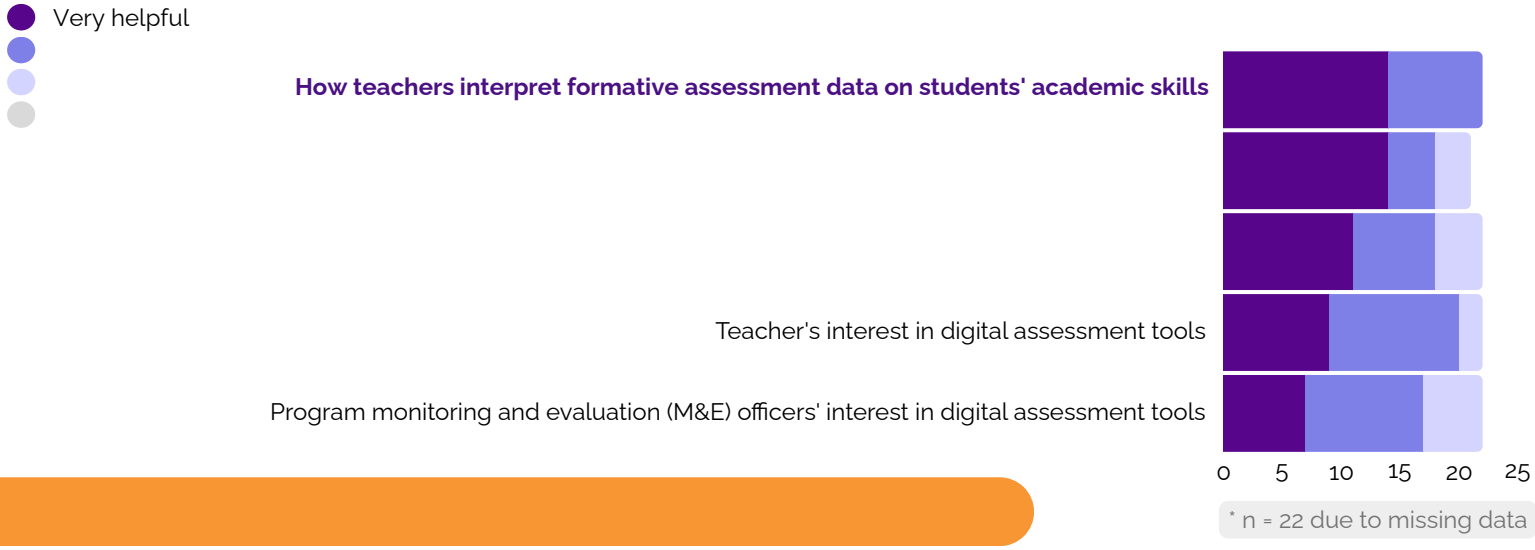
* n = 22 due to missing data

For developers and maintainers of EdTech tools, it is imperative to consider **interoperability with existing platforms or tools**. Potential users and funders don't necessarily seek revolutionary tools, but rather one that can seamlessly integrate into their current systems.

The increasing interest in national policies on the implementation and use of EdTech in low-resource settings reveals the need for context-specific best practices. This aligns with the fact that most participants operate in regions where such policies either do not exist or are unclear. In our own study of such policies in Jordan, we encountered difficulties in locating relevant information. While many organizations adhere to the GDPR in the absence of such policies, our findings indicate that the principles that should be prioritized are *context-dependent,* and the GDPR was primarily developed and implemented in the EU and UK regions. Even when such policies are in place, participants report difficulties adhering to them due to a lack of infrastructural support.

Gobee's learning agenda: which pieces would be most helpful to YOU?

Assessment: current practices, methods, and interest in digitization



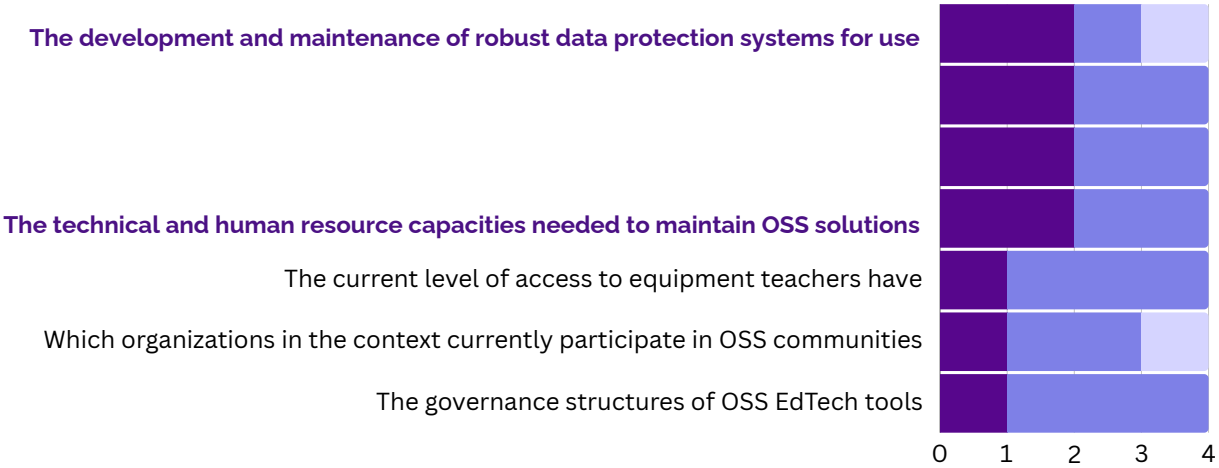
* n = 22 due to missing data

As we were developing Gobee, we assumed that **teachers would use it to support their practices**...would they?

EdTech tools collect a lot of rich data, but:

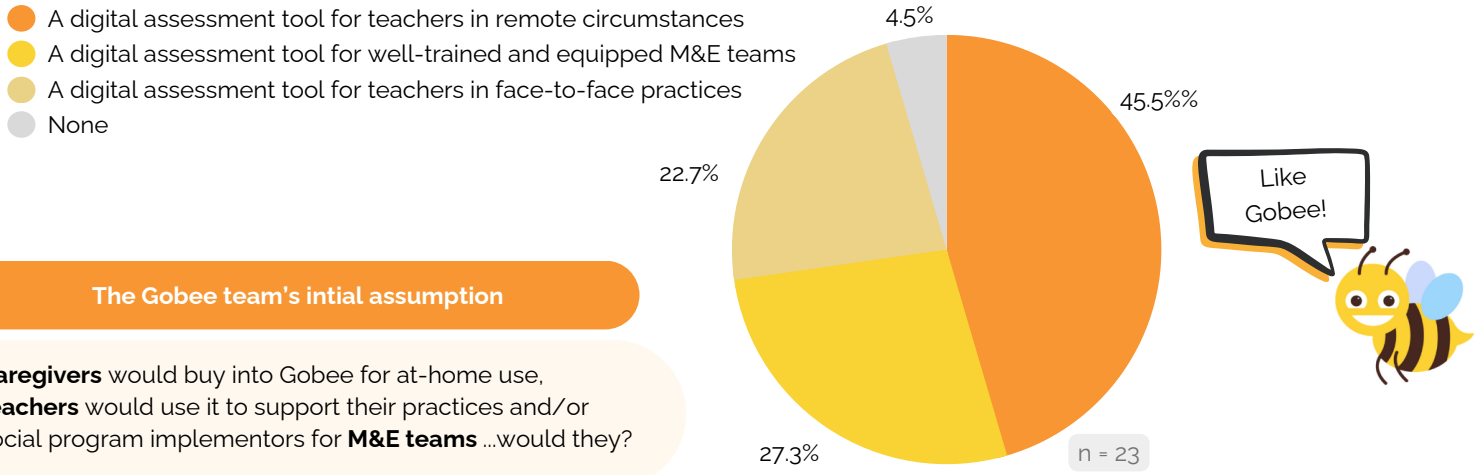
1. How is it used by practitioners to meet broader organizational goals such as supporting learners' academic and psychosocial wellbeing? In Gobee's current phase, that's what we're endeavoring to find out - stay tuned for more!
2. Participants were curious about low-tech methods of conducting formative assessment. Given the reported lack of infrastructural and technical expertise challenges of developing and maintaining it in a sustainable, secure fashion, is a technological solution that hinges on these factors the best route? If you have thoughts about this, do drop us a message (contact information is available on the last page of this report).

Capacity for OSS



* n = 4 as the OSS questions were only presented to participants who did not already report on OSS in detail in the previous section.

Which of the following do you think has the best chance of success in low-resource settings?



The Gobee team's intial assumption

Caregivers would buy into Gobee for at-home use, **teachers** would use it to support their practices and/or social program implementors for **M&E teams** ...would they?

Interestingly, of the 3 options between a tool for remote school settings, in-person settings and for M&E teams, survey respondents believed a tool for remote use would have the best chance of success in low-resource contexts, despite this perhaps being the most challenging to administer in terms of human, technical and infrastructural capacity (see here!). This may also point to differences in what "success" may mean to participants!

"The largest issue we have learned about through our experience is not so much the tool...although that needs show that efficacy in the given context. Rather, it is the **human capacity at system... and local community level to embed and fully exploit the capabilities of that tool and convert into the desired outcomes and impact**. There is so little expertise at that level and, worse, **there is limited understanding at stakeholder level that that expertise is even needed.**"

Conclusion

Our survey was guided by the goals of our learning agenda, which the Gobee team developed to answer the many questions we have about EdTech in low-resource settings and what conditions facilitate success. Of the many areas we're exploring, participants were especially interested in:

- How to incorporate new digital assessment tools existing tools and platforms
- Low-tech methods for conducting formative assessments
- How teachers interpret formative assessment data on students' academic and social and emotional skills,
- The development and maintenance of robust data protection systems for use
- The costs involved in developing, maintaining and implementing a digital assessment tool
- The interest of funders to meet the resource and infrastructure needs of scaling, sustaining and maintaining digital assessment tools
- The technical and human resource capacities needed to maintain OSS solutions

In summary we're trying to figure out: **what are the human, infrastructural and financial capacities needed for an digital assessment tool to succeed in low-resource settings?** Stay tuned to find out!

Thank you!

This scoping survey was conducted with the support of our partners at War Child, Holland and Jordan, and Porticus. We thank everyone listed below for their expertise and dedication.

Research & project leads: Abiraahmi Shankar, Roxane Caires

Development and testing: Kahina Boulegroun, Jaspal Channa, Noëmi Gerber and Lindsay Brown

Dissemination: Hussein Amoudi, Hind Yousef, Hadeel Mansour, Douha Boulares, Sergio Ozoria, Karolina Lajch

If you have questions/comments about this report, please feel free to contact Abiraahmi Shankar (abiraahmi.shankar@nyu.edu).

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