

Qatar's Edtech Testbed:

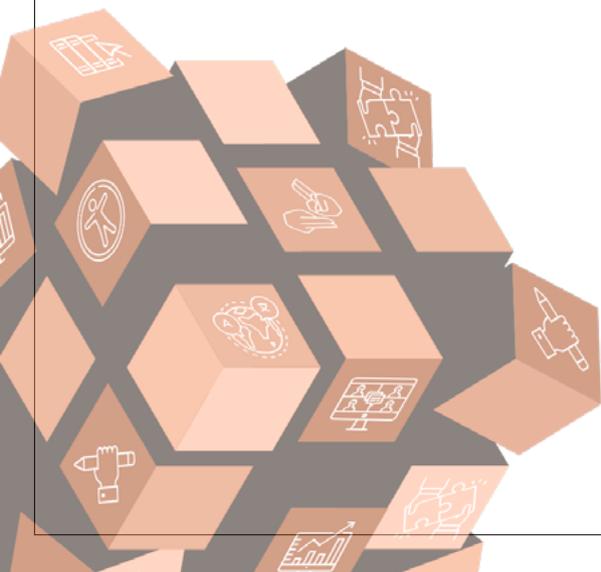
Challenges and Opportunities for Building Collaborative Partnerships
Toward Innovative, Tech-Enabled Teaching and Learning

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Executive Summary



From open educational resources, gamification, computer-aided testing platforms, adaptive learning applications, and generative AI-enabled personalised learning, educational technology (edtech) has been imagined as a force of progress and innovation for education (Mirrlees & Avi, 2019; Krishnamoorthy & Keating, 2021). While there is a wealth of information on *what* teachers should be achieving, there is little information on *how* they can best utilise and employ a plethora of edtech solutions in the classroom. Moreover, the lack of reliable, relevant evidence on the effective selection of edtech makes it even more difficult for teachers and school leaders to make informed decisions about the *what* and the *how* of integrating and implementing edtech solutions in their respective classrooms and school contexts (Cukurova et al., 2019).

Subsequently, edtech testbeds have gained popularity as a way to fill the gap between schools and edtech providers by providing an environment to test and experiment with edtech solutions in real-world settings. The idea behind an edtech testbed is relatively simple: provide a school with a piece of technology and develop a tool that meets the needs of a modern classroom through teacher feedback, observations, and data analysis by the research partner (Eriksson et al., 2018; Batty et al., 2019).

Previous studies of edtech testbeds found a need for collaboration and evidence creation to design and implement effective testbeds (Lee & Basma, 2022; Vanbecelaere et al., 2023). Edtech testbeds have the potential to become collaborative projects that can become a springboard for implementing a broader set of innovative practices in various contexts, including the classroom (Franzo et al., 2023). Recognising the importance of partner identification and selection for collaboration for innovation (Chesbrough et al., 2009; Franzo et al., 2023), this report asks: how can edtech testbeds effectively build edtech venture-school partnerships to foster an environment where new edtech products can be tested and utilised towards innovative practice in the classroom?

Drawing upon experiences and findings from WISE's second full iteration of its edtech testbed, the report finds that teachers, despite seeing the potential benefits of the edtech platform to enhance teaching and learning of Arabic, face challenges to engagement, resulting in underutilisation of the platform and limited pedagogical changes or innovation. In fact, the limited autonomy of teachers to design and deliver Arabic curricular plans and lessons is a key barrier, as teachers are expected to deliver a large amount of content in a short amount of time, and the rigid curricular standards do not provide teachers much room for creativity or innovation. Given this challenge, teachers who are self-motivated to fully explore and engage with the edtech tool and have seen the benefits of the edtech platform are the ones who work within the constraints to incorporate the edtech platform into teaching and learning practice in the classroom.

Reflecting on its findings, the report raises questions and key considerations for engaging schools and teachers meaningfully in edtech and how edtech testbeds can be designed to support edtech ventures' growth and sustainability through participation in the testbed. The report concludes by recommending how edtech testbeds can leverage its resources and play an intermediary, coordinating role to support edtech ecosystem growth.

1. Introduction



From open educational resources, gamification, computer-aided testing platforms, adaptive learning applications, and generative AI-enabled personalised learning, educational technology (edtech) has been imagined as a force of progress and innovation for education (Mirrlees & Avi, 2019; Krishnamoorthy & Keating, 2021). The proliferation of technology has also presented new depths of student data, allowing teachers to adapt and evolve their practice to meet each individual's reported needs (Ostrow et al., 2017). In essence, technology, specifically educational technology, has offered educators the opportunity to address various problems of practice, innovate pedagogy, further engage students in the learning process, help reduce administrative work, and respond rapidly to education disruptions so that teachers and students can focus on what matters most: teaching and learning.

Despite advances in and rapid expansion of edtech over the past few decades, the potential and “promise” of edtech have not met expectations (Weller, 2018; Scanlon et al., 2013). For example, whilst AI, gamification, VR, and AR have certainly begun to alter how we design learning experiences, studies have shown that the impact of technology on student learning remains mixed at best (OECD, 2015; Vanbecelaere et al., 2023). In fact, edtech has received criticism recently for offering technical solutions without sound pedagogy or research (Hodges et al., 2020) or for simplifying and reducing learning to ‘fit’ into technology (Knox et al., 2020). Others have criticised edtech for prioritising commercialisation and profits rather than actual teaching and learning (Teräs et al., 2020).

Whilst there is a wealth of information on *what* teachers should be achieving, there is little information on *how* they can best utilise and employ a plethora of edtech solutions in the classroom. First, although technology has increasingly been integrated into the classroom in recent years, teachers often do not fully understand how to use edtech solutions effectively, including analytics provided by

edtech solutions to meaningfully inform their learning design (Batty et al., 2019; Pihlajamaa & Rantaperö-Laine, 2020). Curricular and technology frameworks and standards stipulated by organisations such as the International Society for Technology in Education (ISTE) and the International Baccalaureate (IB) program are examples of efforts to provide school leaders and teachers with tools to better integrate technology in the classroom and promote digital literacy in the classroom. However, the frameworks and standards alone have been limited.

Moreover, the lack of reliable, relevant evidence on the effective selection of edtech makes it even more difficult for teachers and school leaders to make informed decisions about the *what* and the *how* of integrating and implementing edtech solutions in their respective classrooms and school contexts (Cukurova et al., 2019). Additionally, there is a lack of studies that examine how schools can create productive partnerships with edtech providers, both so that they can receive feedback from users and so that those users—central stakeholders like teachers, parents, and students—can play a role in influencing the design and implementation of classroom solutions.

Subsequently, edtech testbeds have gained popularity as a way to fill the gap between schools and edtech providers by providing an environment to test and experiment with edtech solutions in real-world settings. The idea behind an edtech testbed is relatively simple: provide a school with a piece of technology and develop a tool that meets the needs of a modern classroom through teacher feedback, observations, and data analysis by the research partner (Eriksson et al., 2018; Batty et al., 2019). In fact, edtech testbeds are particularly useful in that they help schools test and experiment with edtech products suited to their needs, with hands-on support in understanding what works and generating actionable insights for schools and edtech ventures. This then allows learners, teachers, and schools to use technology and data more effectively. Indeed, an iterative and experimental approach to testing edtech solutions

2. The WISE Edtech Testbed: 2022-2023 Cycle

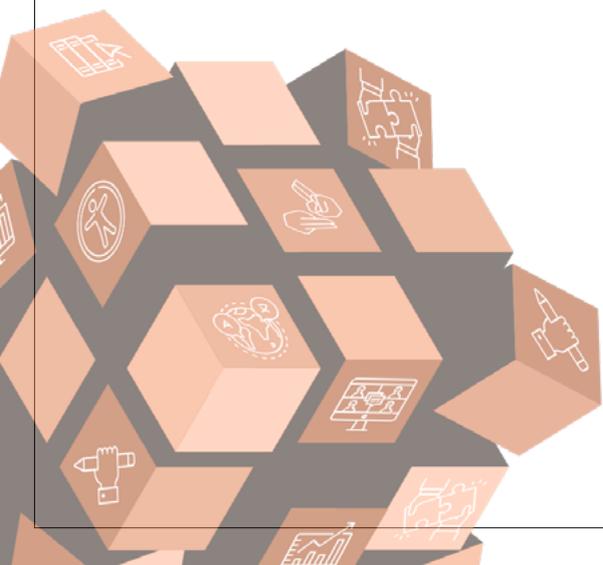


Since 2016, World Innovation Summit for Education (WISE) has worked with and supported entrepreneurs and edtech startups focused on creating better access to quality education globally through its WISE Edtech Accelerator program. To further accelerate edtech innovation and influence positive educational change, WISE launched its first edtech testbed pilot in Doha in 2020, leveraging its Accelerator participants to create a pipeline of potential service providers for the edtech testbed.

At its launch, the WISE team considered the approaches of other global benchmarks with similar objectives, such as those of EdTech Impact, UCL EDUCATE, and Nesta (Batty et al., 2019). In some cases, schools had had the opportunity to nominate the systems they wanted to implement, whilst, in others, stakeholders had instead chosen the platforms they tested from a select batch offered by the project holders. With that in mind, WISE had decided to offer a compromise: conduct a deep needs assessment with the schools that had agreed to participate before assessing which Accelerator alumni members could match those needs. Needs assessment interviews with school directors revealed a need for comprehensive resources and digital learning tools aligned with national and IB standards and a desire to encourage independent inquiry for Arabic learning. Interviews also revealed a need to provide teachers with training on the effective use of digital learning tools, namely, how digital tools can guide instruction. These identified needs did, of course, limit the pool of ventures they could apply to and, indeed, the schools they could work with. However, the Accelerator offered an inherent vetting system that proved the functional viability of the application and its focus on impact and efficacy.

The selected edtech ventures for the testbed are trusted, established partners, giving WISE and participating schools confidence in the ability of the selected venture's product to meet the schools' needs. In essence, WISE serves not only as a broker and coordinator between the edtech venture and local schools in Qatar but also as an identifier of edtech products that could provide value and solutions to teaching and learning needs in the schools.

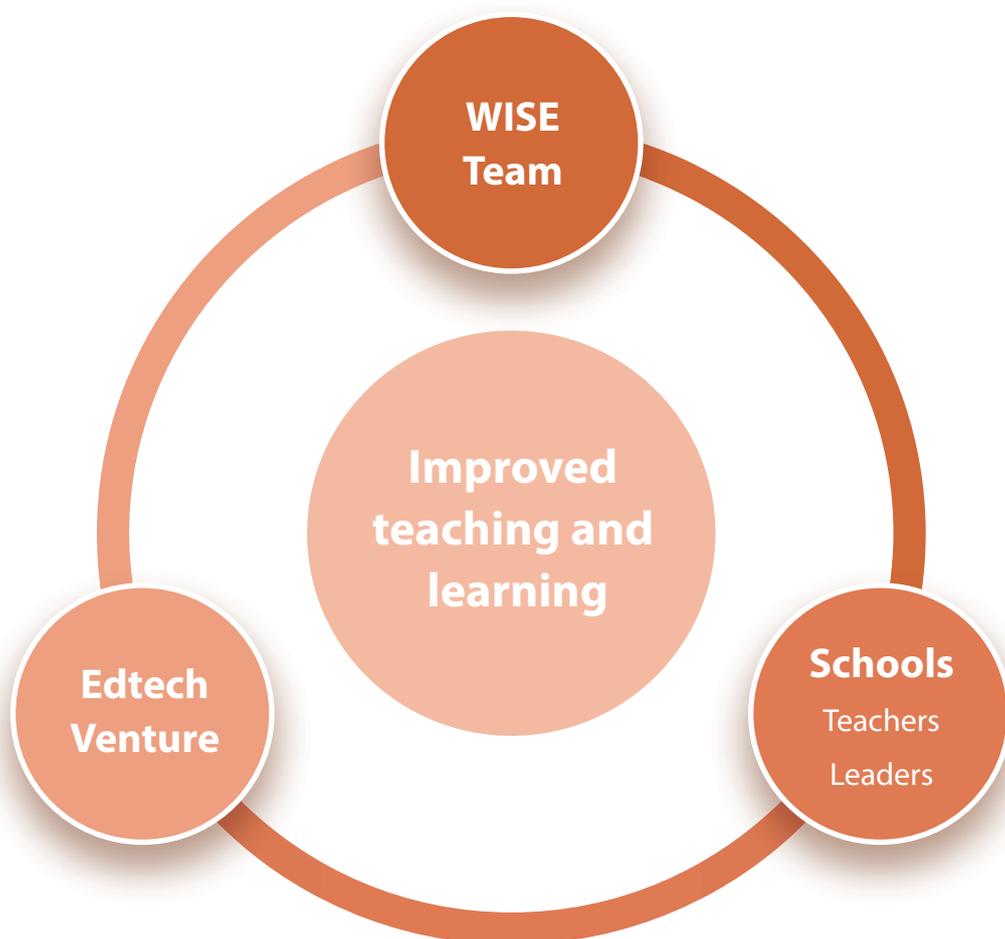
Previous iterations of the Edtech Testbeds (Lee & Basma 2021, 2022) revealed the importance of recognising that both the edtech venture and schools operate in complex contexts with various goals, priorities, and pressures. Edtech ventures need to be able to test their product or solution and receive feedback from participating schools to improve it to meet the needs of users (i.e., students and teachers). Schools need to observe whether an edtech product or solution helps meet the identified needs and challenges (e.g., improving student outcomes in specific subjects, better management of lesson plans, and student assessments). Not only so, but previous cycles of the testbed also demonstrated how fostering a relationship beyond that of service provider-client relations between the edtech venture and the schools is critical. Involving the edtech venture in the training and development process for schools and their teachers was critical to increasing teacher engagement and use of the edtech platform. This was also important for building a collaborative environment between the edtech ventures and participating schools. It resulted in a feedback loop where teachers received guidance, resources, and support to better utilise the edtech learning platform and where the edtech ventures had opportunities to receive real-time feedback on their products. WISE's previous lessons learnt and key takeaways for the iterative design of the testbed are consistent with the experiences of other edtech testbeds from around the world. For example, MindCET enables two-way exchanges between early-stage startups and teachers, building relationships between these stakeholder groups to empower all stakeholders to improve the quality of edtech tools (MindCET, n.d.).



Learning from previous cycles of the testbed and key takeaways from other edtech testbeds around the world, the 2022-2023 cycle of the WISE Edtech Testbed was developed based on the following:

1. WISE Edtech Testbed is the “bridge” between the schools and edtech ventures, facilitating rapport and communications between the entities.
2. Schools will self-select to participate in the testbed, with the expectation that participating school leaders will communicate with their relevant teachers regarding the testbed and commit to actively testing and utilising the edtech product in the classroom
3. The edtech venture, in collaboration with the WISE team, provides teachers with monthly professional development and technical support.
4. Participating teachers are expected to take the learning from sessions with the WISE/edtech venture teams and apply them in their lesson planning and classroom practice.
5. The WISE team observes lessons and communicates with participating teachers and school leaders to provide further support as needed.
6. Teachers have opportunities to provide feedback on the edtech product, helping edtech ventures further validate and improve their product through monthly professional development and debriefing sessions.

Figure 1. The WISE Edtech Testbed Model



2.2 School Context

At the beginning of the 2022-2023 school year, three schools opted to participate in the WISE Edtech Testbed. All three schools are co-educational international schools, where two schools are part of a larger umbrella organisation (QF), and one school is under the purview of an international school network regarding governance. Despite the different governance structures, all three schools are under the observation and mandate of the Ministry of Education when it comes to the Arabic curricular standards and syllabus. In each of these schools, Arabic classes are offered at two levels. In these schools, Arabic Class “A” is offered at a more advanced level than Arabic Class “B” to accommodate the learning needs of both native Arabic speakers and Arabic as second language learners.

Table 1. Participating Schools

	School A	School B	School C*
Number of participating teachers	5	3	2
Grade levels	Grades 4 - 10	Grades 4 - 10	Grade 5, 8
Previous Engagement with WISE Edtech Testbed	Yes	No	No
School Type	Private, QF	Private, non-QF	Private, QF

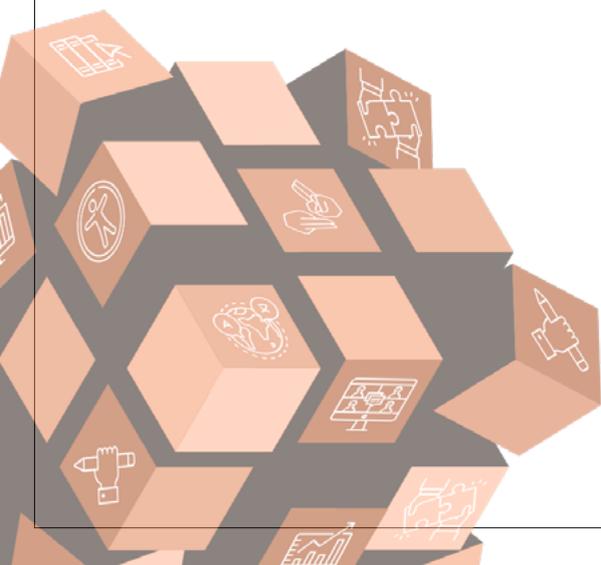
*It is worth noting that School C, despite its initial interest and commitment to participate at the beginning of the testbed cycle, opted out of participation of testbed. Instead, School C decided to use Kamkalima independently without involvement in the WISE Edtech Testbed.

2.3. Introducing the Edtech Platform (Kamkalima) in Schools

Given the culture of schools in Qatar, the WISE team first engaged with school leaders towards the end of the 2021-2022 academic year. The schools were invited at this time to express interest in first-time or renewed participation in the testbed for the academic year.

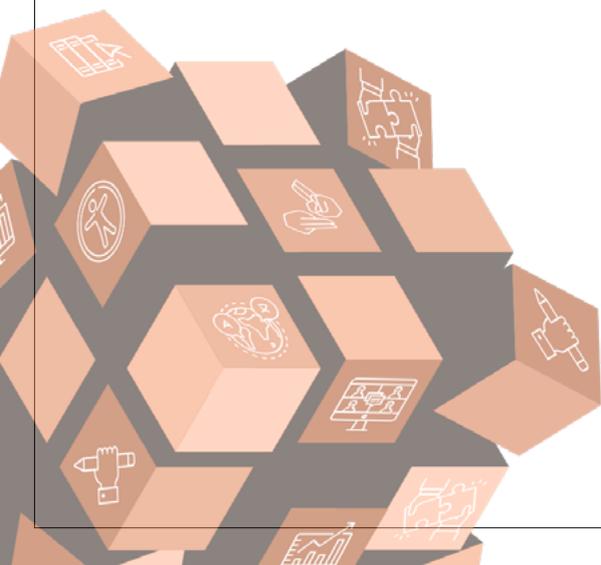
Surveys and interviews revealed continued interest among school leaders in identifying and testing various edtech products that could facilitate the teaching and learning process. Specifically, school leaders expressed the desire for digital support to help reduce student learning gaps in literacy and numeracy skills. The Arabic language was continuously identified as a subject lacking varied teaching and learning tools for heritage and non-heritage speakers. School leaders wanted to maintain a sense of consistency with the platforms they were using (or would be introducing). They believed that having teachers and students using different digital tools year after year and spending additional time learning the new platforms could be further disruptive for both. Some school leaders reported that teachers generally did not have enough training on the effective use of digital learning tools and that some teachers thought that non-digital or traditional tools were more effective than digital learning tools.

Given these concerns, the WISE and Kamkalima teams decided that sufficient time would be provided to teachers in the newly participating schools to “test” and “play around” with the tool so that they would become familiar with the platform to integrate it with their teaching practice. Additionally, the Kamkalima team provided professional development (PD) sessions during the “testing period” to provide teachers with practical resources, tools, insights, and examples of how the teachers could use the platform with the students.



These offered PD sessions, which integrated elements for how to use the Kamkalima platform to enhance teaching, included modules on “Teaching Arabic for the 21st Century,” “Critical Thinking in the Classroom,” “Teaching Reading for Understanding,” “Teaching Speaking,” “Teaching Listening,” and “Teaching Writing.” The expectation was that teachers would develop familiarity with the edtech platform during the “testing period” and plan for integration into the lesson plans for active use for the Spring 2023 term, the “full implementation stage” of the edtech testbed cycle.

To further facilitate testing and implementation of the edtech platform, schools were offered the opportunity to work with the Kamkalima team closely, where the Kamkalima team would highlight platform modules and content that would be most relevant and applicable to the learning objectives and targets according to grade level and curricular standards. Only one school (School A) opted to take part in this content mapping opportunity. School B did not opt-in to participate in the content mapping opportunity but continued to participate in the testbed via PD sessions and regular check-ins with the WISE and Kamkalima teams. Despite its interest at the beginning of the cycle, School C opted to disengage with the testbed but chose to use the Kamkalima platform independently. The varying levels of engagement with the testbed across the three schools allowed us to explore the extent to which the school context and its characteristics influence how an edtech platform becomes introduced and implemented.



The goal of the testbed is to encourage effective implementation of the edtech platform in the classrooms toward innovative pedagogical practice and improved student learning throughout the testbed. Since the focus of this year's testbed cycle is to investigate how venture-school partnerships can be developed to foster an environment where there is a collective approach to experimentation with new digital tools towards innovative pedagogy, we focus on the dynamics and interactions between the edtech venture (i.e., Kamkalima), teachers, and school leaders. To this end, we take an ethnographic approach and draw from classroom observations, teacher debrief session observations, surveys, and semi-structured interviews with teachers, administrators, and members of the Kamkalima team.

In analysing various sources of data, we take an abductive approach (Timmermans & Tavory, 2012) and identify overarching themes (Charmaz, 2006) for how teachers utilise Kamkalima and how various participants and stakeholders of the testbed interact and engage with each other to encourage the use of Kamkalima. We pay particular attention to the interactions between teachers and the Kamkalima team to understand how the relationship between edtech providers and users develops over time for more effective use of the edtech platform.



4. Findings



Surveys with participating teachers across Schools A and B revealed that teachers, when first introduced to the Kamkalima platform, thought that the platform,

**“Is a great resource for teachers and students alike. The platform provides a comprehensive set of tools and resources that can be used to enhance the teaching and learning of Arabic”
(Teacher #5, School B).**

Other teachers, especially those in School A who had already used the platform in the previous academic year, expressed similar, positive sentiments when invited to continue using the Kamkalima platform through the edtech testbed.

**“There is no doubt that the Kamkalima platform can have a good impact and be a part of a good lesson plan”
(Teacher #2, School A)**

“It is a platform rich in various resources that takes into account individual differences. The presence of audio is something that counts for the platform. It also launches competitions that can motivate schools, teachers, and students to use them.” (Teacher #3, School A)

Despite the teachers' early excitement and interest in Kamkalima as a tool to enhance Arabic teaching and learning, classroom lesson observations found that Kamkalima was largely used as a reading resource. Across schools A and B, the Kamkalima platform was used to access chosen texts for reading comprehension in class. Although students had access to the platform themselves, most teachers did not have the students access the platform in class to access the materials. When students accessed the platform themselves, it was mostly to complete optional homework assignments on Kamkalima. In other words, Kamkalima was not actively used as part of planning material. The teachers did not make use of the platform's features that allow teachers to tailor questions for student level or assign additional content to differentiate and personalise learning to student abilities. Instead, most teachers preferred to display the Kamkalima platform on the smartboard for the class and used the display as a live text for collective “read-aloud” or printed the text and questions out in worksheet form for students.

There were, of course, teachers who did make use of the platform. For example, a teacher in School A participated in Kamkalima's competitions, used the platform to differentiate learning for students, and incorporated the platform into the lesson plan as part of the closing or ways to enrich language skills building. In particular, the teacher in School A used the student competition feature of Kamkalima to engage younger students in the Arabic learning process. As student-led competitions were low-stakes supplementary exercises, this feature was a creative way for the teacher to activate the platform in ways that would be engaging and fun for the students while not creating additional work for the teacher.

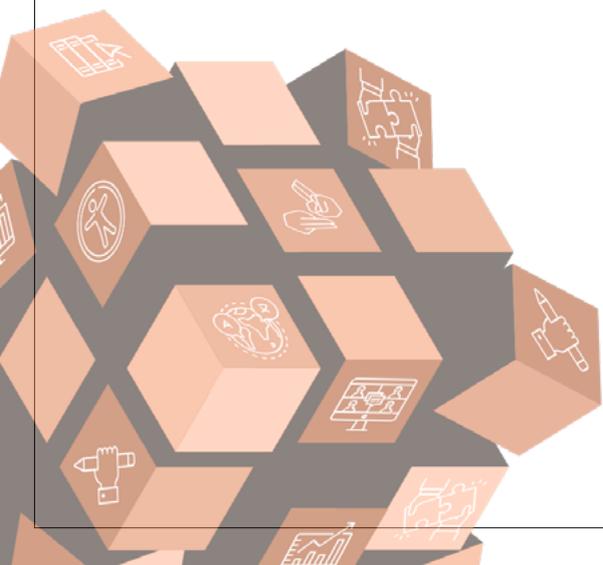
Overall, teachers in Schools A and B who participated in the PD sessions found that the sessions focused on listening, writing, and speaking tasks for students were helpful. But more importantly, teachers found that the sessions centred on the platform (e.g., step-by-step instructions) were more helpful than the aspects of the PD sessions that focused on more general pedagogical methods and theories around Arabic language instruction. For example,

**“The most helpful aspects were the comprehensive onboarding sessions, responsive support channels, and user guides that provided practical guidance on using Kamkalima effectively.”
(Teacher #7, School B)**

After a few PD sessions, teachers expressed a desire for more personalised and tailored support sessions to ensure they feel supported and equipped to use Kamkalima effectively in their teaching. Additionally, the teachers expressed that practical examples of using specific tools and features to integrate Kamkalima into quizzes and other aspects of their lesson plans would help teachers reinforce what they learned from the more generic PD sessions towards implementation in the classroom.

In response, the Kamkalima team, in coordination with the WISE team, offered individualised coaching support and the opportunity to connect with other teachers in the Arab Gulf who were actively utilising Kamkalima to enhance their pedagogical practice. Despite the efforts of the Kamkalima team to engage with the teachers and encourage them to fully utilise the platform in their pedagogical practice, only School A chose to further engage with the Kamkalima team via one-to-one consultations as needed. Furthermore, there was pushback on inviting other teachers to provide exemplar lessons or models for how to integrate Kamkalima into daily pedagogical practice. This was surprising given that teachers had first expressed the desire for more tailored professional development sessions with models and examples, including peer-to-peer learning. These experiences were in contrast to that in School C, where there was the active use of the Kamkalima platform despite the school’s choice to opt out of any PD sessions or additional support activities provided by Kamkalima.

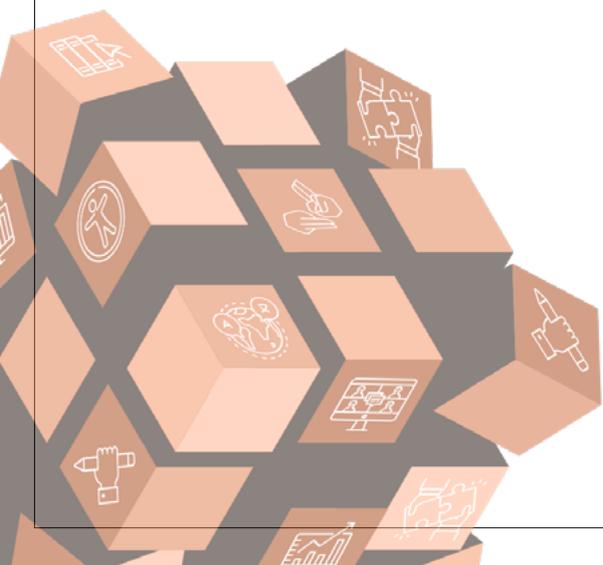
But why was there such pushback when further support offered by the Kamkalima team was developed in response to teacher feedback? Why was School A more willing to engage with the Kamkalima team than School B? Observations and interviews with the teachers, school leaders, and the Kamkalima team revealed that two factors were key determinants for both engagement with and utilising Kamkalima in pedagogical practices. The first was the presence of willing, self-motivated teachers. The second, which we found to play a greater role, was the influence of the external, macro ecosystem under which the teachers and schools operate.



4.2. Is a Teacher Champion necessary for Effective Edtech Testbed Implementation?

It is important to note that unlike teachers in School B, teachers in School A had familiarity with the edtech testbed and the Kamkalima platform, as they had a full “testing period” in the 2021-2022 academic year. Additionally, in the previous cycle of the testbed, School A had a “Chair of Digital Learning” who played the role of a champion. The position continued in School A, which, though limited, helped sustain some momentum from the previous year. What further facilitated Arabic teachers in School A’s engagement with and use of the platform was that a teacher saw the value of Kamkalima and used it with students in and outside the classroom. As with the previous year, this teacher in School A enjoyed not only the resources and content provided but also a competitive element that the platform brought, as Kamkalima reports, where a teacher’s class and school are positioned relative to all the other classes subscribed to the platform. The fact that there was a teacher actively using the platform in School A helped build teachers’ collective trust in and positive attitudes towards the edtech tool (Nazaretsky et al., 2022), increasing School A teachers’ willingness to use and apply the edtech tool with their students.

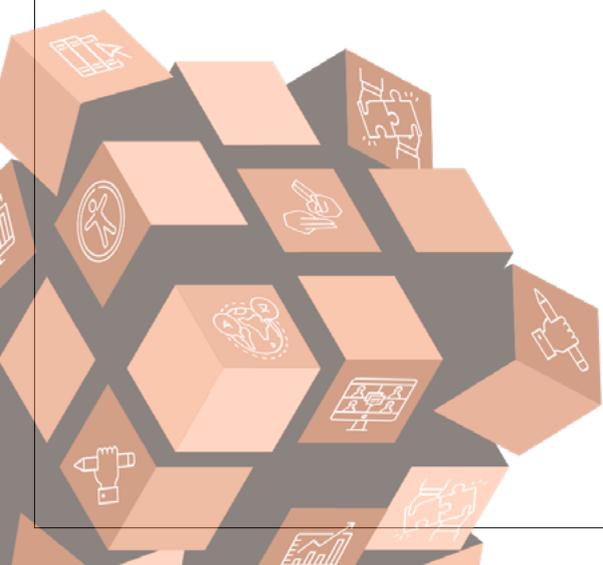
This differed from the experience in School B, where a “champion” was absent. The Kamkalima team found that without the presence of a peer who could act not only as an ambassador of the platform but also as a champion of edtech testing in the classroom more generally, it was not easy to build momentum towards this goal during the testbed cycle and encourage teachers to actively use and test the platform as a part of their teaching practice. In contrast, despite not participating in PD sessions or engaging with the testbed, School C took the initiative and utilised Kamkalima in their teaching and learning practice on their own. This suggests how a teacher’s engagement with the testbed and the edtech platform varied not only based on teacher self-motivation but also on the department and school culture.



School administrative leaders further provided insights for teacher engagement with new edtech platforms. In an interview, School Leader A expressed,

“A challenge in introducing new projects like the testbed, or introducing any new tool or digital technology for that matter, is that teachers sometimes feel like they are doing something extra. It is a bit tricky. They engage with it and see that it is helpful in the long term. So, they see the benefit when they engage, but there is also an unwillingness to engage.”

This suggests that teachers’ self-motivation and interest in fully implementing the edtech platform is more important than school-level commitment or mandates in being able to test whether an edtech platform is an effective tool to enhance teaching and learning experiences for students.





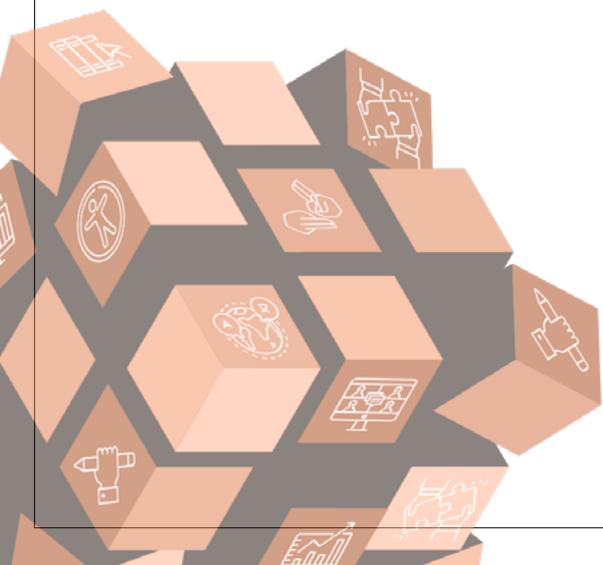
Key Insight & Putting WISE Edtech Testbed in a Global Context

Working with teachers who have a “knack” for educational technology and are motivated to try new digital learning tools and platforms may be critical for a testbed’s success. After all, these teachers are more likely to spend time and effort seeing how the edtech platform can be integrated and implemented to meet student needs, provide feedback to the edtech venture, and encourage other teachers to use the tool as a champion if they find it useful. Such teachers could also serve as champion-leaders to form communities of practice within their departments and schools to engage with educational technology effectively towards innovative pedagogical practice and improved student outcomes.

In fact, Testbed Helsinki, an experimental platform offering opportunities to develop and test new products and services in Finland, relies on motivated teachers to test smart innovations in Helsinki’s primary schools, secondary schools, and other learning environments. In an interview, Testbed Helsinki staff emphasised the importance of working with motivated

teachers to develop and test new edtech products to ensure that they are relevant and rooted in the interests of teaching and learning. To ensure this, Testbed Helsinki works directly with individual teachers who apply to be a part of the testbed instead of working with school leaders first to identify needs and then working with teachers in the relevant department. In working with the teachers, Testbed Helsinki works with the teacher and the venture to develop a co-creation process where the value of participation and goals are identified for the teacher. For Testbed Helsinki, this is key for keeping the teachers motivated.

Testbed Helsinki can pursue this model of working directly with teachers largely because teachers have autonomy in how they teach and their goals for their students. Therefore, the model may have to be adjusted and adapted for contexts where school administrative leaders or the Ministry of Education may have more direction over what and how teachers teach in the classroom. Nonetheless, a key insight from both the WISE Edtech Testbed and Testbed Helsinki is that motivated teachers are crucial for effectively testing edtech products.



Another teacher stated,

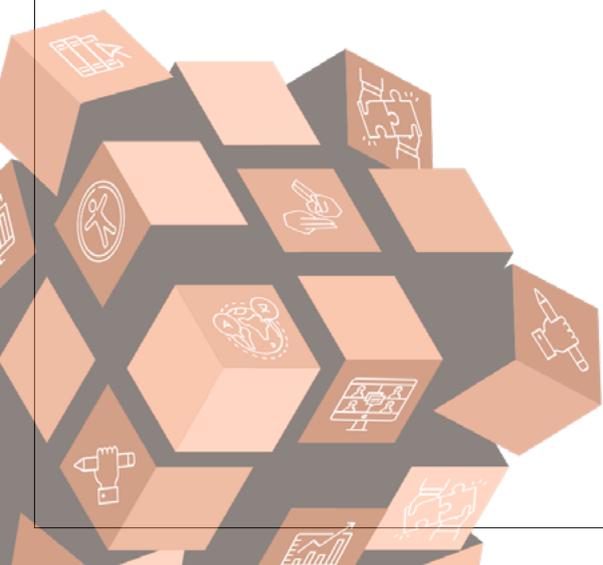


“Because of the need for harmonisation of standards with the Ministry of Education standards and the International Baccalaureate (IB) standards, it means that with the resources available, extra preparation time is required from the teacher to tweak the questions from the Kamkalima platform and make them more relevant or related to the needed standards. For example, one text for a reading comprehension had a certain set of questions added to it, but they did not include the IB standards I need for my class. Some of the questions may have met the IB standards, but maybe not.”



In Qatar’s education context, the Ministry of Education oversees all curricular standards and plans for Arabic language across public, private, and international schools, and representatives from the Ministry conduct regular observations of the teachers to ensure that the curricular plans and standards are followed and met. The limited autonomy may pose challenges for teachers to creatively and innovatively integrate edtech platforms such as Kamkalima to their day-to-day lessons, especially if it necessitates additional work to demonstrate how what students are doing and learning via Kamkalima maps onto the Ministry’s requirements. Likewise, though less stringent, the need to simultaneously meet other curricular standards such as the IB standards may pressure the teachers to default to what they know to do best instead of trying new ideas and approaches to teaching.

Given that Kamkalima’s content is developed with various national and international curricular standards in mind, it is highly likely that the materials on the edtech platform can easily be integrated and mapped onto curricular standards. Though not pursued, this was a service that Kamkalima was willing to engage in if the teachers



(or schools) shared lesson/unit objectives and plans with the Kamkalima team. Nonetheless, the feedback from the teachers around how being able to easily observe how the available content and questions map directly onto various curricular standards, especially the IB standards, was communicated to the Kamkalima team as they develop and expand their product.

Although the limited autonomy of teachers to adjust and modify curricular and lesson plans did pose barriers for effective engagement in the testbed and the edtech platform, the fact that the teachers and schools are held accountable to various curricular and pedagogical standards by the IB program and the Ministry of Education can also be areas of opportunity to further encourage edtech use in teaching and learning. Discussions of how edtech can be an effective tool for the IB classroom of the future are robust. Qatar's Ministry of Education is also interested in integrating innovative educational technologies into the classroom and promoting digital learning and literacy among students to prepare them for the future.

Helping teachers link how using edtech tools will support the needs of the IB learner and how edtech implementation is a priority for the Ministry in furthering Arabic language instruction could serve as motivators for teachers to actively engage with and test edtech tools in their day-to-day teaching practice. Additionally, for edtech ventures such as Kamkalima, they can leverage and capitalise on the growing interests and priorities in edtech integration to align their content and resources to the goals, priorities, and curricular standards of the Ministry and other programs in ways to cut additional steps that may have to be pursued by teachers to ensure that the selected resources are aligned to curricular standards.



Key Insight & Putting WISE Edtech Testbed in a Global Context

Interview with Edtech Hub, a global research partnership that aims to “empower people by giving them the evidence they need to make decisions about technology in education,” revealed that aligning to the priorities and national strategies of the Ministry of Education (or other relevant government bodies) around edtech is key to launching effective “sandboxes,” or testbeds, that can help generate real-time evidence on edtech interventions. Another important aspect is that the organisations (e.g., NGOs) or schools that participate in the sandbox are interested in testing and growing edtech ideas. Having both these aspects met allows the “sandbox” to not only take place with buy-in from participating schools and teachers but also build on what’s already out there. It also allows for edtech interventions to scale up and influence education at the national level if evidence suggests that the edtech intervention is effective.

For Qatar’s context, engaging with the Ministry of Education, or at least framing the testbed and importance of fully engaging with the edtech product when committed to test its effectiveness in innovating and enhancing teaching and learning practice to the priorities of the schools and country, may be important.

5. Reflections, Lessons Learnt, and Recommendations



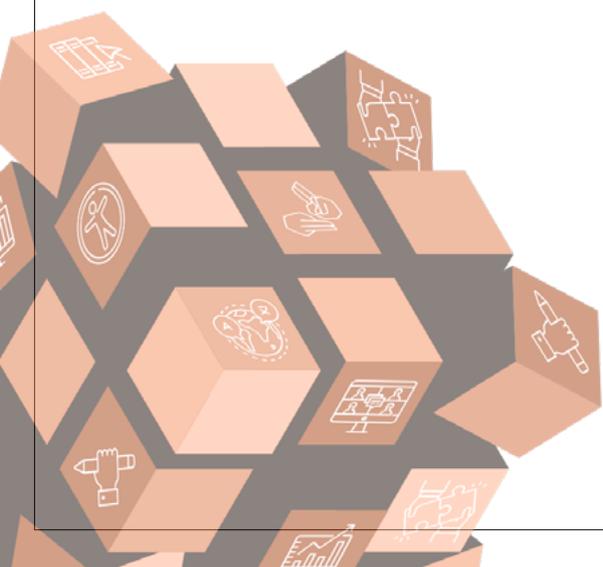
5.1 Towards Meaningful Engagement of Teachers and Schools in the Edtech Tested

Reflecting on the experience and findings of the 2022-2023 WISE Edtech Testbed cycle, we note recommendations for effective implementation of the testbed and for building an edtech ecosystem that benefits schools, startups, ecosystem builders, and other parts of the edtech ecosystem.

Our findings are consistent with previous studies that have found that integrating edtech in the classroom poses challenges for teachers, as it may not align with existing teaching practices (Voogt & McKenney, 2016). Despite professional development sessions and tailored support to build skills and capacity in teachers to be able to use the provided edtech platform, we found that teachers reverted to domesticating technology to fit their familiar teaching methods, as effectively exploring and using the platform took additional time and effort. We found that one of the greatest influencers in moving teachers from a place of seeing the potential of an edtech tool to actual use and implementation of it is the presence of a champion teacher who can attest to the benefits of the platform to other teachers and work towards creating a culture around trying a new edtech tool in day-to-day pedagogical practice.

Recommendation: Identify a “digital innovator” or “edtech champion” to help drive and motivate teachers to try out the edtech product in coordination with school leadership.

Appointing a “digital innovator” or “champion teacher” to advocate for effective use of the edtech product, think/ideate with participating teachers to address challenges --especially those around student access and student digital literacy-- could help sustain energy and enthusiasm. This can extend engagement with the edtech and increase the likelihood that exploring more deeply will produce favourable assessments and outcomes. This advocate among peers can help create a culture of reflection, iteration, and innovation among teachers. Testbed success largely relies on teacher willingness to engage with the edtech in their practice. Collaborative co-creating with edtech partners in the testbed contributes to improvements in the venture. It may not require



the creation of a new position. Rather, what will be important for identifying a champion is identifying a teacher who is self-motivated and interested in utilising edtech in their pedagogical practice.

In fact, a way to identify motivated teachers and potential champion-leaders is to set up the edtech testbed model that works more directly with individual teachers instead of departments is to conduct a “call for application” for teachers, in coordination with the schools or central bodies such as the Ministry of Education. Under this set up, teachers would articulate their motivations, goals, and the kind of edtech tool that they would find beneficial for innovating their pedagogical practice. Then, the teachers would have the opportunity to explore and select an edtech tool to test in coordination with the testbed and edtech venture.

At the same time, however, it is important to recognize that a peer teacher champion for edtech and digital innovation may be insufficient for motivating teachers to engage with digital tools towards a culture of edtech integration and digital learning in

the classroom. In fact, studies have found that provision of incentives that address barriers that impede the training, development, and implementation process of technology adoption are critical (Vanatta & O’Bannon, 2002; Rodriguez-Segura, 2021).

Recommendation: Create incentives for teachers to engage in digital innovation and celebrate those who integrate edtech tools well to enhance teaching and learning practice in the classroom

Consistent with other studies (Bush & Mott, 2009; Batty et al., 2019; Voogt & McKenney, 2016), findings revealed that integrating new edtech tools in the classroom can pose challenges for teachers. Unless a teacher is intrinsically motivated or believes in the edtech product, it may be challenging for teachers to let go of their default pedagogical practice and adapt to and implement changes brought about by the new edtech tool. Therefore, creating incentives such as teacher recognition, opportunities to engage in policy discussions, or other levers may motivate and nudge teachers to engage in pedagogical innovation through edtech.



and compensation for delivery of professional development sessions were covered by the edtech testbed. However, the resource strain that ongoing need and demands for school support placed on the Kamkalima team cannot be ignored, especially as limited use of the platform by teachers did not allow for the Kamkalima team to generate data and evidence they were hoping to generate to inform their product development and venture growth strategies. Furthermore, the edtech venture's continued participation in the testbed is unsustainable for both the testbed and the venture in considering the long-term health and sustainability of the edtech venture. Establishing a clear timeline and goals for the testbed early on and planning for when the edtech venture-school/teacher partnership will "graduate" from the testbed could be a way to provide boundaries for the edtech venture and allow for the testbed to provide the support needed to generate the kind of data and evidence that will help edtech ventures in the long-term for financial and organizational sustainability.

Furthermore, establishing specific timelines and goals with the participating teachers and schools for the testbed could also be a space to set and agree upon expectations and commitments from all involved stakeholders.

A key insight from our findings is that the education system and context can pose barriers to the effective implementation of edtech in pedagogical practice, even if there is an emphasis on integrating digital learning tools to encourage digital literacy in students. For example, pressures to follow a strict national curriculum and the need to focus on accreditation requirements led to deprioritisation of digital innovation in pedagogy as it was considered to be something "extra" by the teachers.

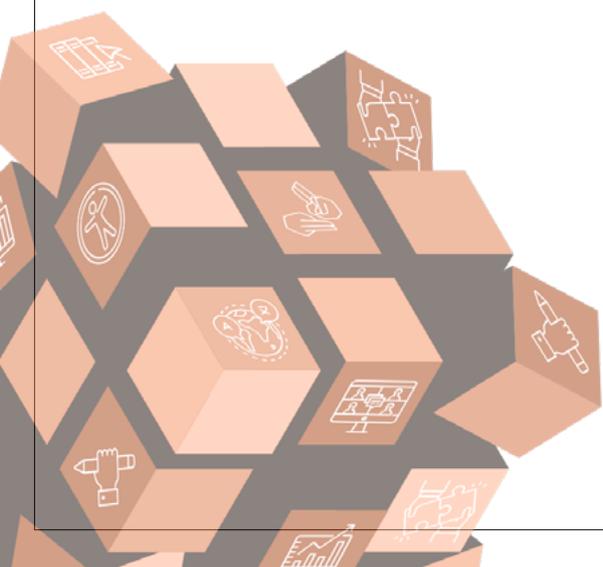
Recommendation: Engage key system stakeholders and leverage policy-level priorities on digital literacy and technology integration

5.3. Pursuing a Holistic Approach to Building Edtech Ecosystems

In sum, this report explored how edtech testbeds can build edtech venture-school partnerships to foster an environment where new edtech products can be tested and utilised towards innovative pedagogy. The report identified barriers and opportunities for schools and teachers in introducing and implementing edtech tools in the classroom and observed the extent to which professional development opportunities offered by the edtech venture influenced the use of the edtech tool in their pedagogy. Furthermore, the report considered the influence of the education system and wider external ecosystem to posit how external factors influence teacher engagement with the testbed and implications for how external system stakeholders can be engaged to take a holistic approach to foster a sustainable edtech ecosystem.

Drawing upon experiences and findings from WISE's second full iteration of its edtech testbed, the report found that teachers, despite seeing the potential benefits of the edtech platform to enhance teaching and learning of Arabic, face challenges to engagement, resulting in underutilisation of the platform and limited pedagogical changes or innovation. In fact, the limited autonomy of teachers to design and deliver Arabic curricular plans was identified as a key barrier. What was found to be influential in encouraging edtech use was the presence of a champion teacher who saw the value of the edtech tool and encouraged its use by other teachers.

Reflecting on these findings, the report offered recommendations and considerations for motivating teachers to engage in the edtech testbed, supporting sustainability and growth of participating edtech ventures beyond the testbed, and engaging with external education system stakeholders toward a holistic approach to building edtech ecosystems.



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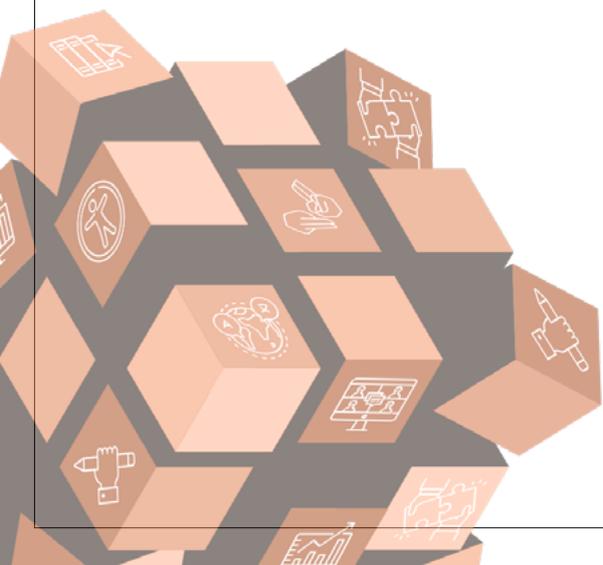
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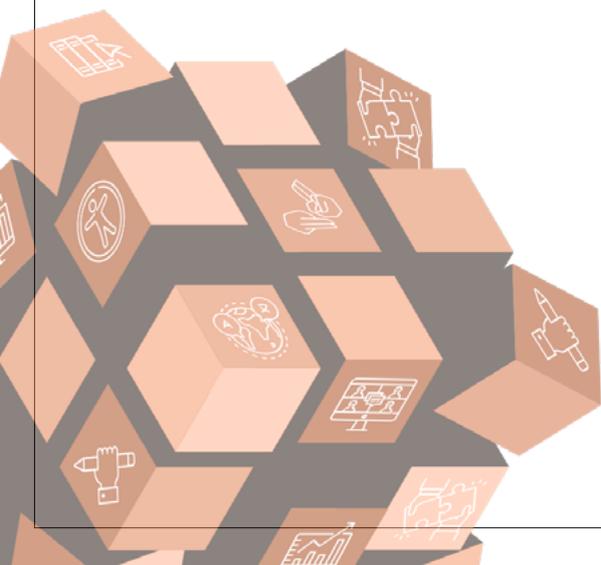
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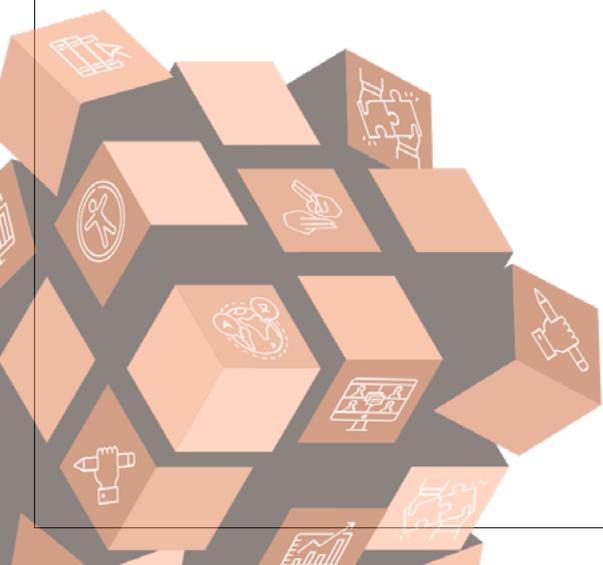
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