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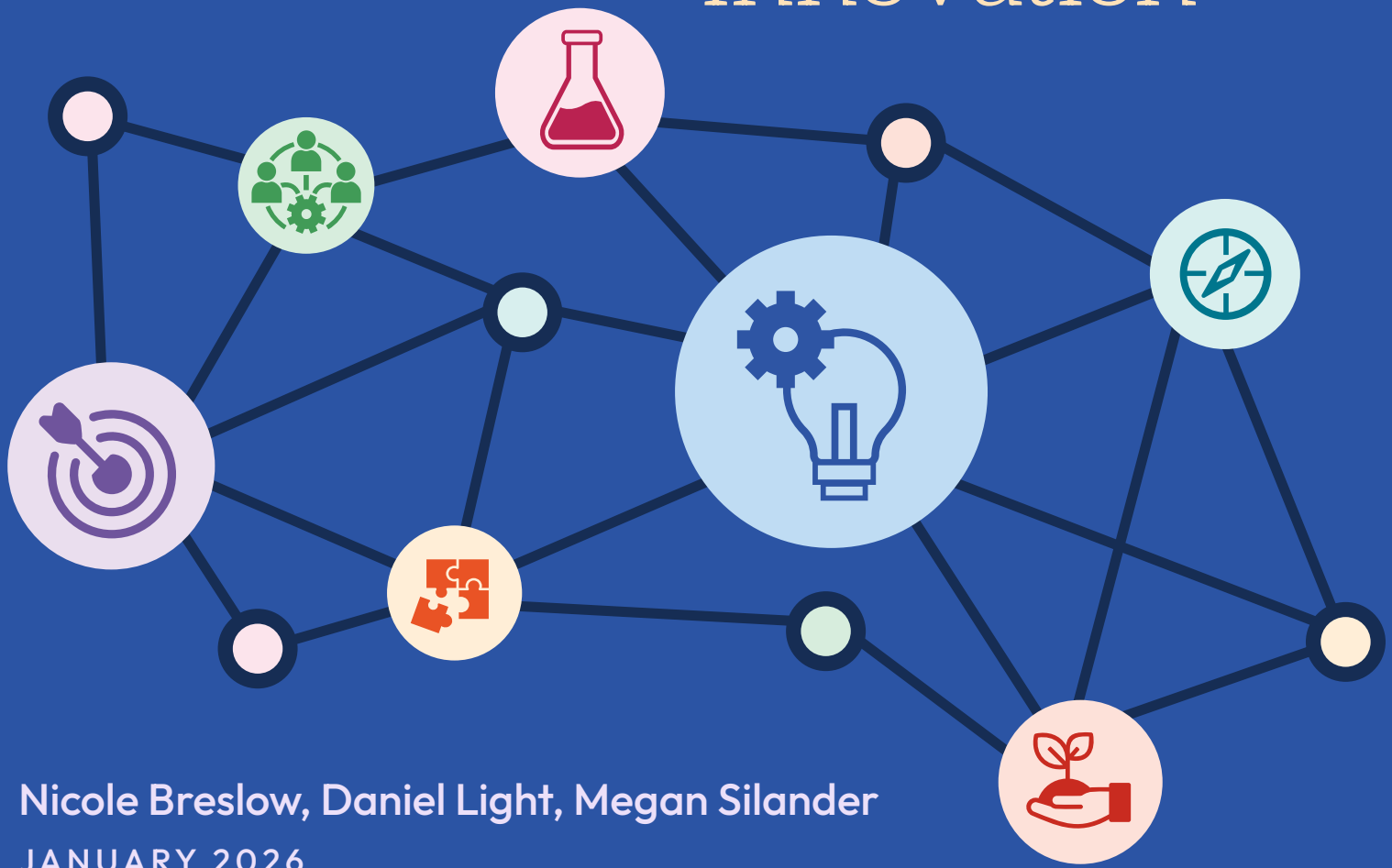
The Edtech Design Toolkit: A Human-Centered, Collaborative Approach to Sustainable Innovation



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This idea first took shape during a research team retreat in Kenya, where our teams came together to synthesize lessons from the LEGO Foundation's Tech and Play initiative. Through that reflection, we recognized the importance of creating a practical resource to help others design future edtech initiatives in ways that would be responsive to local contexts and grounded in collaboration, thereby setting them up for long-term success. The toolkit grew from our shared commitment to make those lessons actionable, so that others can build on what worked and navigate more smoothly some of the challenges the Tech and Play initiative faced.

We also thank the government officials and NGO leaders in Kenya who participated in the two-day workshop to pilot test the toolkit's design approach and activities. Their thoughtful feedback and enthusiasm for the toolkit's potential were invaluable in shaping its final form.

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Introduction

Despite good intentions, many educational technology (edtech) initiatives struggle to achieve their promise. Too often, they are designed around the technology rather than the learning need—**overestimating what a tool can do and underestimating the importance of context, relationships, and system capacity.**

Programs may start with a platform and then search for a problem to solve, or they may introduce new tools without considering classroom realities such as large class sizes or limited connectivity. In both cases, teachers are left without meaningful support, and technology ends up reinforcing rote instruction instead of promoting deeper learning and student agency.

Introduction

This toolkit was created to aid teams in designing edtech initiatives that work in practice, not just in theory. It offers step-by-step guidance for developing solutions that are grounded in local realities, responsive to the people who will use them, and sustainable over time. It encourages teams to ask the right questions early, test ideas before scaling, and use technology in ways that strengthen the human relationships that make learning meaningful. Using a collaborative design process, the toolkit also helps build shared ownership among partners and equips teams to create solutions that are both innovative and achievable in context.

Audience

This toolkit is for teams working to design or strengthen edtech initiatives, particularly those who are operating in low- and middle-income contexts where resources are limited and systems are complex. **It is meant for implementers, educators, and decision-makers who want to ensure that technology meaningfully supports teaching and learning.**

The primary audience includes implementing partners such as nongovernmental organization (NGOs) and education program teams who design and deliver programs in collaboration with ministries and schools. This toolkit will also be useful to education officials and system leaders seeking to align technology initiatives with curriculum and teacher professional development priorities, and to researchers and technical partners working to generate and apply evidence that strengthens program design.

While each kind of stakeholder plays a different role in the design process, all share a common goal—to develop solutions that are contextually grounded, serve a clear instructional purpose, and are sustainable. The toolkit offers a shared language and process to guide collaboration across these roles, helping diverse partners translate insights into coordinated action and build collective capacity for improvement.

What the Toolkit Offers

The toolkit provides a practical step-by-step process to guide teams from understanding local needs to designing and testing solutions to planning for sustainable implementation. Each phase includes structured activities, workshop facilitation guides, and tools to help partners collaborate effectively, generate and test ideas, and make evidence-informed decisions. Teams can use the toolkit as a full design process or adapt selected phases and tools as needed to strengthen ongoing work.

More than a sequence of steps, the toolkit is a shared way of working. It helps partners build a deeper understanding of the systems in which they operate, clarify where technology can best add instructional value, and determine the supports required for success. It also provides structure for that collaboration, helping teams organize their work and connect insights across roles and expertise.

The toolkit is intended to strengthen both design quality and team capacity. Partners who use it will develop more **coherent and sustainable initiatives** while also **building habits of reflection, collaboration, and continuous learning** that extend beyond a single project.

Guiding Principles

The toolkit reflects a set of shared values about how effective, sustainable innovations are developed. The following principles guide both the design of the process and how teams are encouraged to collaborate and learn as they progress through it.

- **Start with people, not products.** Rather than starting with the latest technology and building a program around that, we start by asking what students, teachers, and education systems need to improve learning.
- **Design for context.** Grounding design in local realities helps teams create solutions that align with existing structures and can last over time.
- **Collaborate at every stage of design.** Strong solutions emerge when teachers, system leaders, and technical experts design together, bringing different perspectives to a shared challenge.
- **Build learning into every phase.** Every phase of the process includes opportunities to reflect, test, and adapt. Regular cycles of learning lead to stronger, more sustainable results.
- **Use technology to strengthen human connection.** Technology should strengthen rather than erode human connections and teacher and learner agency.

Foundations from Research and Practice

This toolkit brings together three complementary approaches—**design thinking, continuous improvement**, and **implementation science**—to provide a process that is both creative and disciplined as well as innovative and practical. Each contributes a different kind of strength to the design process.

- **Design thinking** is a method for generating creative user-centered solutions, and it starts by understanding the experiences of those most affected by the challenge being addressed. This method emphasizes empathy, creativity, and collaboration.
- **Continuous improvement** complements design thinking by providing a disciplined way to develop, test, and refine a theory of change over time. It helps teams articulate how they believe a change will happen, test their assumptions through small cycles of learning, and use evidence to refine their designs for greater impact and sustainability.
- **Implementation science** focuses on how to build the conditions that allow innovations to succeed at scale. It emphasizes clear models, strong leadership, supportive systems, and continuous feedback. From this evidence-base, the toolkit draws strategies for building capacity, aligning policies and structures, and monitoring quality during scale-up.

Together, these three approaches provide a balanced foundation for designing and implementing edtech initiatives that last. By integrating empathy, disciplined testing, and systems thinking, they help teams create solutions that are both innovative and practical, and that can be scaled and sustained over time.

Overview of the Design Process

The toolkit is organized into seven phases that move teams from identifying needs to planning for sustainable implementation. While the process is presented in sequence, teams may move back and forth between phases, deepening their understanding, refining ideas, and adapting as they learn.

Phase 1:

Engage Stakeholders

The process begins with people. In this phase, teams identify and bring together the right mix of partners, including teachers, school leaders, policymakers, and others who influence implementation. The focus is on building trust, defining shared goals, and establishing clear roles so the design reflects diverse perspectives and benefits from collective ownership.

Phase 2:

Understand Strengths and Needs

Effective design depends on a clear understanding of the context. Teams work collaboratively to explore existing strengths, challenges, and priorities within the education system. Through a structured needs assessment, they identify where technology can add instructional value and what system supports or conditions are needed for it to succeed.

Phase 3:

Define the Problem and Identify Levers for Change

In this phase, teams analyze the insights gathered in Phase 2 to define the specific problem they aim to solve and the factors that shape it. They then identify the key levers that must shift to reach the goal so that the idea generation and prototype creation in Phase 4 target what matters most.

Phase 4:

Generate and Prototype Solution Ideas

With a shared definition of the problem in place, teams move into creative design. They brainstorm and develop solution ideas that address the root causes identified earlier, then build simple prototypes to bring those ideas to life. Prototyping allows teams to gather early feedback and strengthen ideas before investing in full implementation.

Phase 5:

Test, Reflect, and Refine Prototypes

In this phase, teams test their prototypes on a small scale to learn what works and what doesn't work and why. Structured reflection helps teams make sense of findings, adjust their designs, and build confidence in the components that can be carried forward to form an intervention.

Phase 6:

Plan for Implementation

This phase connects design to delivery. Teams use insights from testing to define the core components of their model; identify what can be adapted to different contexts; and establish a concrete plan to guide implementation and monitor progress.

Phase 7:

Plan for Scale and Sustainability

The final phase helps teams ensure their initiative can grow and endure over time. Teams assess what capacities, leadership, and resources are needed for scale, plan how key costs will be sustained, and establish routines for continuous learning and improvement. By the end of this phase, teams have a clear, realistic pathway for scaling while maintaining quality.

These seven phases offer a clear yet adaptable road map for designing edtech initiatives that are relevant, practical, and sustainable. The process enables teams to collaborate purposefully, translate insights into action, and build solutions that last.

Overview of Collaborative Design Process

PHASE	STEPS	TOOLS, TEMPLATES, AND WORKSHOP GUIDES
1: Engage Stakeholders	1. Identify critical perspectives 2. Assess alignment with project goals 3. Analyze engagement 4. Plan for collaboration	Levels of Engagement Stakeholder Mapping Table: Planning for Stakeholder Engagement
2: Understand Strengths and Needs	1. Plan your needs assessment strategy 2. Collect data and summarize insights 3. Synthesize insights and identify implications	Needs Assessment Framework Needs Assessment Planning Template Facilitator's Guide for Workshop 1: Synthesize Insights and Identify Implications
3: Define the Problem and Identify Levers for Change	1. Select a high-leverage problem 2. Conduct a root cause analysis 3. Develop a problem statement 4. Define a measurable goal 5. Identify levers for change	Fishbone Diagram Template and Example Moving from Problem to Problem Statement to Goal Problem Statement Checklist Driver Diagram Facilitator's Guide for Workshop 2: Clarify the Problem and Identify Levers for Change
4: Generate and Prototype Solution Ideas	1. Translate drivers in "How might we?" questions 2. Brainstorm possible solutions 3. Prioritize for prototyping 4. Develop selected prototypes	EdTech Alignment Checklist Facilitator's Guide to Workshop 3: Generate Solution Ideas and Prototype Early Concepts
5: Test, Reflect, and Refine Prototypes	1. Plan prototype testing 2. Conduct tests 3. Analyze testing data and identify improvements 4. Refine prototypes	Types of Prototype Tests Ways to Document Learning Prototype Testing Plan Template Facilitator's Guide for Workshop 4: Prepare for Prototype Testing Facilitator's Guide for Workshop 5: Analyze Results and Refine Prototypes
6: Plan for Implementation	1. Define your core model 2. Develop an implementation plan 3. Develop a monitoring and learning plan	Defining Core Components Table Implementation and Monitoring Tool Facilitator's Guide for Workshop 6: Define Your Core Model and Plan for Implementation
7: Plan for Scale and Sustainability	1. Identify and address capacity gaps for scale 2. Plan for financial sustainability 3. Establish routines for learning and improving	System Capacity for Scale Planning Tool Facilitator's Guide for Workshop 7: Identify System Capacity for Scale Financial Sustainability Planning Tool Learning Reflection Protocol for Continuous Improvement Facilitator's Guide for Workshop 8: Plan for Financial Sustainability and Continuous Improvement

Phase 1:

Engage Stakeholders

Phase 1 AT A GLANCE

Step 1: Identify Critical Perspectives. Determine whose voices, expertise, and influence are essential for designing a relevant and feasible initiative.

Stakeholder Mapping Table

Step 2: Assess Alignment with Project Goals. Explore how stakeholder priorities connect to your project's goals to anticipate areas of synergy or tension.

Step 3: Analyze Engagement. Decide what meaningful participation looks like for each group and what might support or hinder it.

Levels of Engagement

Step 4: Plan for Collaboration. Map out how to initiate and sustain engagement over time.

Designing an education technology initiative that truly works in context begins with **people, not products.**

This section helps you identify and engage stakeholders whose insights, experience, and influence will shape the success of your design process. Engaging stakeholders early and intentionally builds shared ownership, strengthens relationships, and ensures that diverse perspectives inform every stage of the work. Each group brings distinct expertise—technical, pedagogical, or experiential—that is essential for designing a solution that is both effective and feasible.

Phase 1:

Engage Stakeholders

To ensure your initiative works in practice, it is especially important to engage the people who will be most affected by it. Those closest to a challenge, such as students, teachers, and community members, often hold the most valuable insights for creating meaningful solutions. Building relationships and establishing trust with stakeholders takes time but is an investment that strengthens every stage of design and implementation. The connections you forge early on create a foundation for authentic collaboration, honest feedback, and sustained engagement, from defining needs to testing solutions on the pathway to long-term sustainability.

Effective **stakeholder engagement** does not mean involving everyone in identical ways. Rather, it requires ensuring that all key perspectives are considered and that each stakeholder group is engaged in ways that respect their capacity, expertise, and role in the project. Project leads will have to select a smaller core design team to participate consistently and guide the process from start to finish. This team will meet regularly, coordinate design activities, and ensure that insights from other stakeholders are integrated throughout the work. Beyond this core group, additional stakeholders will be engaged strategically at key points in the process, such as during **needs assessment**, **idea generation**, or **testing**, based on their expertise, experience, and capacity to contribute.

Phase 1:

Engage Stakeholders

This section will **guide you through a stakeholder mapping process**

to identify critical perspectives to engage in the design process, analyze potential barriers and facilitating factors for participation, and create a plan for stakeholder outreach and ongoing collaboration. Record your thinking in the **Stakeholder Mapping Table** as you move through the steps, building a roadmap for purposeful engagement that honors both the complexity of your stakeholder landscape and the importance of each voice within it.

Stakeholder Mapping Table, on the following page

Stakeholder Mapping Table

1	2	3	4	5	6	7	8	9
Critical perspective	Why this perspective is important	Specific individual or group with this perspective	Alignment between stakeholder and project goals	Level of engagement	Potential barriers to engagement	Potential facilitators to engagement	Plan for outreach	Plan for ongoing collaboration

To edit this handout as a .doc file, click here. We suggest downloading the file to your desktop, as opening it in Google Docs may lead to formatting changes or layout issues.

Step 1: Identify Critical Perspectives

Begin by asking what perspectives you require to understand the experiences of the learners and educators in the systems you intend to serve. The answers to this question will shape the foundation of your stakeholder engagement strategy.

Start populating your **Stakeholder Mapping Table** by recording the critical perspectives you have to include in the design and implementation process to ensure your edtech initiative will be successful. In the **first column**, list each stakeholder group or perspective. In the **second column**, describe why that particular perspective is important—what unique insights, expertise, or influence this group brings. In the **third column**, identify whether a specific individual on your team already represents this critical perspective. Where gaps exist, note others who could be invited to participate in the design and implementation effort.

Use the following guiding questions to help you identify the right mix of voices:

Identifying Expertise

Who can help us design something that works in this specific context?

Who understands the day-to-day realities of teaching and learning in this context?

Who has strong content knowledge in the subject areas this initiative will address?

Who brings deep pedagogical expertise with the proposed pedagogical model that can inform how student learning and teacher support should happen?

Who has experience integrating technology with instruction in similar low-resource settings?

Identifying System Influencers

Who shapes whether this initiative is adopted, adapted, or sustained?

Who oversees or coordinates curriculum, teacher support, or resource allocation?

Who at the school level influences how new approaches are introduced or supported?

Who are the informal leaders that others listen to within schools, communities, or networks that influence how things get done?

Strategic Considerations

Are we including both decision-makers and those with lived experience in classrooms and communities?

Whose voices are often excluded from design conversations, and how can we bring them in?

Are we engaging people who understand both the current system and where change is possible?

Who might champion this work if engaged early and who might resist it if left out?

Who might help sustain the work if government and ministry priorities shift?

WHO TO ENGAGE FOR EDTECH SUCCESS

Edtech projects may require engagement with stakeholders beyond the traditional education sector, depending on the scope of the technology component. Will the initiative build on existing infrastructure or introduce new systems that could overwhelm schools' current capacities? If the latter, it may be important to involve telecom and internet service providers or the Ministry of ICT. You might not have all the answers yet, but there are several ways to start thinking about this.

1. Clarify funding parameters

Does the funder limit how much of the budget can be spent on technology infrastructure? This can help you determine the extent of new hardware the project can realistically support.

2. Assess the strength of existing infrastructure

Consider both school-level and system-wide technology capacity, including maintenance and back-end support. For example, introducing student email accounts, connecting classrooms to the internet, or using AI tools may create new demands for data storage, tech support, cybersecurity, and other safeguards.

3. Identify relevant technology stakeholders

As you begin to determine the scale of the edtech component, consider which perspectives will be critical to involve:

Edtech expertise: ICT officers, edtech NGOs, or edtech researchers who know what's feasible given infrastructure and digital literacy skills.

ICT infrastructure expertise: Edtech NGOs, ICT ministry officials, MOE officials in charge of infrastructure.

Classroom realities: Teachers and students who understand how technology is (or is not) actually used in daily learning.

System influencers: Heads of school, curriculum officers, and policymakers who influence budgets, priorities, and support structures.

Designing solutions with these perspectives at the table will help ensure that technology strengthens, rather than replaces, human relationships by building trust and agency.

Step 2: Assess Alignment with Project Goals

Once you've identified the key stakeholders and why their perspectives matter, consider how their priorities align with your initiative's goals. This will help you anticipate where there is strong shared purpose and where expectations may differ.

Consider the following questions:

- How does this stakeholder's priorities and motivations connect to what our initiative aims to achieve?
- What incentives or organizational priorities might shape their engagement in this work?
- What opportunities exist to strengthen alignment through dialogue or collaboration?

Step 3: Analyze Engagement

Not every stakeholder will be required to act as a co-designer of the initiative, but everyone should have a level of involvement that is appropriate for them. This step helps to clarify what meaningful engagement looks like for each stakeholder and what might help or hinder that engagement.

Use the **Levels of Engagement** graphic below to assess what type of participation is most appropriate for each stakeholder group. In the **Stakeholder Mapping Table**, assign each stakeholder an engagement level in **column 5.**

Levels of Engagement

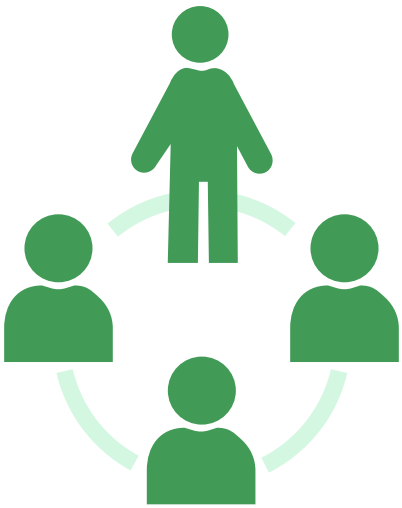
CO-CREATE:
Stakeholders lead decision-making and action.

COLLABORATE:
Stakeholders share decision-making through collaborative learning and strategy development.

INVOLVE:
Stakeholders contribute to shaping strategies through dialogue, but do not make decisions.

CONSULT:
Stakeholders are asked for feedback to improve assumptions or plans.

INFORM:
Stakeholders are kept informed of progress and decisions through clear communication.



Adapted from National Implementation Research Network (2023). Guidance for Engaging Critical Perspectives. https://implementation.fpg.unc.edu/wp-content/uploads/Guidance-for-Engaging-Critical-Perspectives.pdf

For each stakeholder, consider what might support or hinder meaningful engagement. Record your thinking in **columns 6 and 7** of the **Stakeholder Mapping Table**, considering the following guiding questions:

- What might motivate this stakeholder to participate?
- What relationships or incentives could facilitate their involvement?
- What conflicts of interest might exist between a stakeholder's goals and project goals?
- What might limit their time or interest?
- What logistical, language, or cultural barriers might prevent some stakeholders from participating?

COMMON BARRIERS AND FACILITATORS TO MEANINGFUL ENGAGEMENT

Common barriers:

- time and availability
- limited digital access
- travel constraints
- low literacy levels
- lack of trust

Common facilitators:

- alignment with personal or professional goals
- alignment with policy
- trusted relationships
- opportunity to feel heard
- participation in related networks or initiatives

Step 4: Plan for Collaboration

Building on your analysis of the appropriate level of engagement and potential barriers and facilitators to collaboration, the next step is to determine your plan for initial outreach to new stakeholders **(column 8 in the Stakeholder Mapping Table)** and ongoing collaboration **(column 9).**

As you plan your initial outreach to new stakeholders, consider the following:

- Who is best positioned to reach out? Are there existing relationships you can draw on to make connections and build trust?
- What's the best outreach method (phone call, WhatsApp, face-to-face) to match local norms?
- What do you want to communicate about the purpose of the initiative, the value of the potential stakeholder's perspective, and the level of commitment you are requesting?

It is also important to plan how you will maintain meaningful and appropriate involvement of all stakeholders across the design and implementation process:

- What frequency and format of engagement is appropriate for each stakeholder based on their identified level of engagement?
- What activities or touchpoints will support that engagement over time?
- What mechanisms can we use to gather feedback?
- How can we build trust and co-ownership over time?

By mapping and planning for purposeful stakeholder engagement, your team has established the foundation for collaborative design. The relationships cultivated through this process will be essential as you move into the next stage—understanding the system you are designing for. The **needs assessment** process builds directly on your stakeholder map, drawing on the expertise and experience of the people you've identified to discover strengths and challenges.

STORY FROM THE FIELD:

Stakeholder Lessons from Rwanda

As part of Rwanda's Plug-in-Play (PiP) initiative, led by Right To Play in partnership with the Ministry of Education, the country has been integrating play-based approaches to teaching Science and Elementary Technology (SET) in upper primary schools. The program introduces students to hands-on experimentation with tinkering, coding, and robotics, helping teachers bring the competency-based curriculum to life through creative learning.

From 2022 to 2024, Keza Education Future Lab, a local edtech partner, collaborated with Right To Play and GIZ, an NGO with robotics expertise, to develop seven different robotics kits for Rwandan primary schools. Because the Ministry of Information Communication Technology and Innovation (MINICT) and the Rwanda Education Board (REB) were actively involved from the start, the project benefited from strong government buy-in. Robotics was already a national education priority and government engagement helped ensure the kits were tailored to the SET curriculum and that they supported Rwanda's broader vision for advancing digital literacy and innovation in education.

While this alignment established a strong foundation for relevance and sustainability, scaling and distribution proved more difficult. Only 41 schools have received kits so far, due in part to limited electricity in some schools and uneven teacher digital skills. The most significant obstacle emerged from the supply chain: Raw materials were costly to import, taxes increased production expenses, and limited local manufacturing capacity required reliance on international suppliers.

Looking back, the team recognized that supply chain and logistics partners should have been engaged from the outset. Their early input could have identified affordable local materials and simplified production. This experience highlighted that successful edtech design requires both government alignment with national priorities and the inclusion of nontraditional stakeholders, such as supply chain and production partners, who are not traditionally seen as part of the education sector but are critical to making edtech work at scale.

Looking Ahead: Phase 2

In Phase 1, your team focused on identifying and engaging the stakeholders who shape teaching and learning within the system. By surfacing diverse viewpoints and establishing relationships early, Phase 1 laid the groundwork for a collaborative design process that is informed by both system-level priorities and on-the-ground realities.

In Phase 2: Understand Strengths and Needs, your team will build on this foundation by systematically examining existing practices, resources, and constraints. This phase will guide you to gather and analyze evidence about what is already working, where gaps exist, and what conditions shape implementation in classrooms and schools. Phase 2 will help you establish the understanding you need to ensure design decisions are grounded in real challenges and opportunities.

Phase 2:

Understand Strengths and Needs

Phase 2 AT A GLANCE

Step 1: Plan your needs assessment strategy. Design and plan an assets and needs assessment to gain vital contextual information.

Needs Assessment Framework

Needs Assessment Planning Table

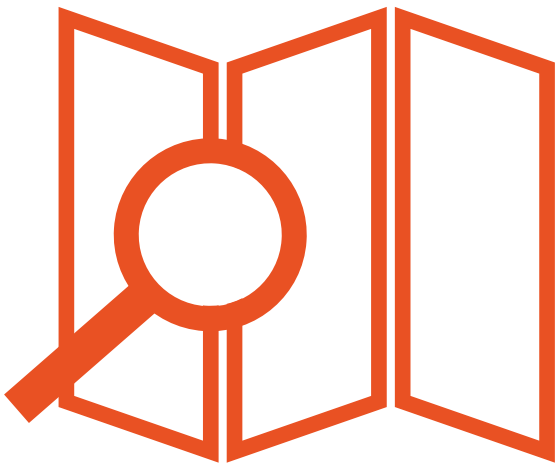
Step 2: Collect data and summarize insights. Conduct your needs assessment and summarize what you learn to prepare for discussion.

Step 3: Synthesize insights and identify implications. Hold a collaborative workshop to discuss needs assessment findings and implications.

Facilitator's Guide for Workshop 1: Synthesize Insights and Identify Implications

Designing an effective edtech initiative requires a **deep understanding of the context** in which it will operate.

Too often, programs are built on assumptions rather than evidence about what students, teachers, and schools actually need. Equally problematic, many new initiatives are developed in isolation from existing interventions, policies, and resources. When designs do not account for what is already in place—such as curriculum reforms, teacher professional development programs, or infrastructure limitations—they often duplicate efforts, create misalignment, and make implementation and long-term sustainability more difficult.



Phase 2:

Understand Strengths and Needs

A thoughtful **assets and needs assessment** is an essential first step toward designing solutions that are relevant, realistic, and sustainable in context. The goal is not to collect every possible data point, but to uncover meaningful insights that will inform the design of the initiative. A well-designed needs assessment helps teams do the following:

- Identify the most pressing instructional priorities where edtech can add value
- Uncover the assets and expertise that can be leveraged to strengthen design and implementation
- Anticipate potential barriers to proactively address

When conducted collaboratively, a needs assessment also strengthens relationships with stakeholders, builds trust, and creates a shared understanding of the opportunities and constraints that will influence future design choices.

Phase 2:

Understand Strengths and Needs

While a small core design team should coordinate the needs assessment process, the process should draw on the perspectives of many of those identified in your **Stakeholder Mapping Table**.

These stakeholders might include students, teachers, head teachers, curriculum leaders, technology specialists, ministry leaders, and community members. Involving stakeholders in this process improves the quality of your analysis while also building shared ownership of the needs assessment findings.

COLLECT INFORMATION ABOUT EDTECH RESOURCES AND USE EARLY IN THE DESIGN PROCESS

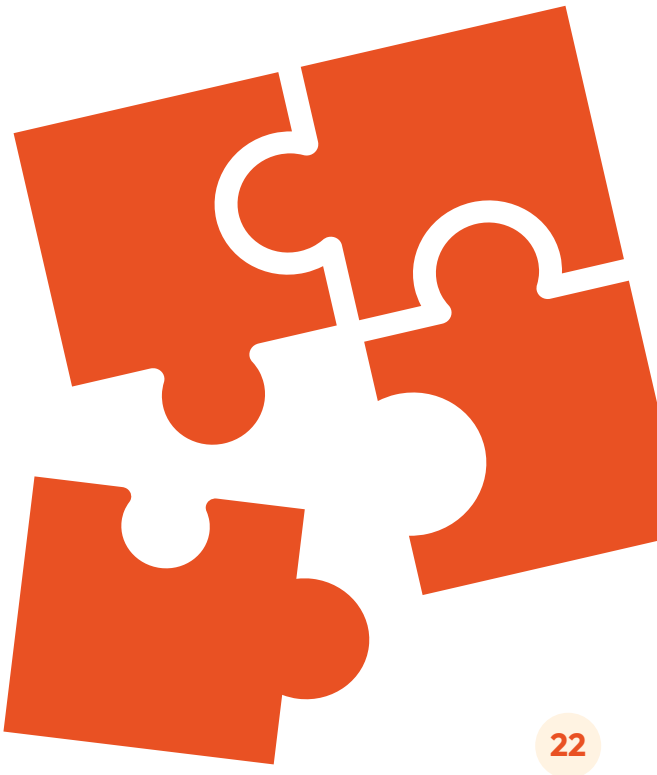
Collecting key information at the start of the design process ensures that technology decisions later in the process are grounded in reality. Be sure to gather information about the following:

- What technology is already in place and whether or not it works
- What resources exist to keep technology functioning over time
- What role technology currently plays in the curriculum
- How teachers feel about using technology in their classrooms
- Whether teachers have had adequate opportunities to train on using technology as an instructional tool

Step 1: Plan Your Needs Assessment Strategy

The first step is to plan how your team will gather the information needed to understand the system and context for which you are designing. In many cases, design teams begin with an initial goal, concept, or hypothesis in mind. The needs assessment is an opportunity to further develop those early ideas by testing your assumptions about the challenges, opportunities, and user needs the edtech initiative aims to address.

The **Needs Assessment Framework** on pages 23-25 identifies nine key domains that influence the success of an edtech initiative, along with examples of guiding questions. If you have limited time or resources, you may want to prioritize three to four domains to investigate in depth. Selecting the most relevant domains to explore will help you uncover strengths that you can leverage and constraints that the intervention design must address.



Needs Assessment Framework

Overarching Questions

- What are the most pressing priorities and challenges that an edtech initiative could help address?
- What existing assets and potential constraints should be considered in designing an effective and sustainable edtech initiative?

DOMAIN	SUBTOPICS	SAMPLE GUIDING QUESTIONS	DATA SOURCES
Student performance	Areas of strength and challenge by: • Content area • Grade level • Region • Gender • School resource level • Student well-being and mental health • Challenges to student progress, such as interrupted learning	• What does student data suggest about the areas of greatest strength and need? • Are there noteworthy patterns in the student data, for example, by region, school resource levels, or student demographics? • In the target content areas for the program, what are the skills and subskills where students need the most support?	• International, national, and regional assessments • School administrative data • Secondary research
Leadership	• Vision and priorities • Role of head teachers and other school leaders in supporting instructional change	• What are the system leaders' vision and priorities for instruction and learning? • How aligned are school-, regional-, and national-level leaders in their vision for instructional improvement?	Leadership interviews (e.g., ministry, district officials, head teachers)
Technology infrastructure	• Availability of devices • Internet connectivity and reliability • Electricity access • Maintenance and tech support capabilities • Urban and rural disparities	• What technology tools and devices are currently working and available in schools? How many? On which operating systems? Are they interoperable? Do they have sufficient memory to run the required apps or programs? • Do schools and classrooms have reliable electricity and Internet access sufficient to support simultaneous use by a whole class? • What support is available to maintain tech tools and devices and to help teachers gain skills to use them	• Document review (e.g., tech infrastructure plans) • School administrative data • Leadership interviews (e.g., ministry, district officials, head teachers)

Teacher knowledge and practice	• Teacher-centered vs student-centered • Use of play-based, inquiry-based, or creative pedagogies • Experience integrating edtech tools into instruction • Teacher digital literacy, knowledge, and skills • Teacher content-area and pedagogical knowledge • Teacher workforce issues	• How often are teachers using student-centered instructional practices? • How experienced are teachers in integrating technology tools into their instruction? • Are most teachers trained and certified in their content areas? • What support do teachers most need to connect content goals with technology-enabled pedagogical strategies?	• Teacher focus groups • Teacher observations
Professional learning	• Existing professional learning structures (e.g., professional learning communities, coaching, scheduled training) • Frequency and quality of teacher training • Mechanisms for feedback, reflection, and peer collaboration	• What structures are currently in place to support teachers' professional learning? What barriers (i.e., time, cost, travel, lack of release time, relevance) limit teachers' participation? • Do teachers feel that professional learning opportunities are relevant to their classroom challenges? What are examples of recent effective approaches? • Are there opportunities for teachers to collaborate with peers? What supports peer collaboration? How else do teachers receive feedback and reflect on their practice?	• Teacher focus groups • Leadership interviews (e.g., ministry and district officials, head teachers)
Curriculum and assessment	• Alignment of national curriculum with edtech initiative goals • Flexibility of curriculum to incorporate edtech and creative learning approaches • Curricular model of learning progression for the targeted content areas • Teacher satisfaction with how well classroom activities reflect curriculum goals	• To what extent do the current curriculum and classroom activities incorporate technology tools and creative learning approaches? • Is there room within the current curriculum and assessment practices to experiment or innovate at the classroom level? • Are there specific curriculum areas where edtech integration seems more feasible or desirable?	• Document review (e.g., curriculum guides, policy docs) • Leadership interviews (e.g., ministry and district officials, head teachers)
Classroom conditions	• Class size • Physical classroom space • Diversity and inclusion (e.g., gender, ability, socioeconomic) • Availability of instructional resources • Language of instruction and teacher and student proficiency	• How does the physical layout of classrooms support or constrain group work, movement, or technology use? • What language(s) are used for instruction, and how confident are teachers and students in using them?	• Teacher focus groups • Teacher observations

Organizational culture	• Openness of school culture to experimentation and innovation • Teachers' openness to new approaches • Value of continuous improvement • Routines and norms	• Is the school system focused on compliance, or do teachers have flexibility to incorporate new activities or approaches? • What are typical daily and weekly routines that might affect how teachers use an intervention (e.g., lesson structures, assessment practices, processes and routines to share, take out laptops, remembering passwords)?	• Teacher focus group • Leadership interviews (e.g., ministry and district officials, head teachers)
Sociocultural, linguistic, and economic context	• Historical and regional context • Cultural and religious values • Community norms and gender roles • Language environment • Economic conditions • Education infrastructure and access • Perceptions of education	• What historical or regional patterns have shaped educational opportunities and local attitudes toward formal education? • How do parents envision education will help their families' future and their children's futures? • What languages are used at home, in the community, and in instruction? How proficient are teachers and students in the language of instruction?	Interviews with teachers, parents, and religious or community leaders

Once your team has selected priority domains, use the **Needs Assessment Planning Table** on page 27 to describe what you want to learn, what data you will collect, how you will collect it, who will be responsible, and when activities will take place. Using data from multiple sources—including interviews, focus groups, classroom observations, and document reviews—can give you a fuller picture and richer insights. Use your **Stakeholder Mapping Table** to help you think strategically about who to engage in the assessment to gain a range of perspectives, establish trust, and build a shared understanding of needs.

Consider assigning data collection roles based on team members' expertise and access. For example, one person might be better prepared to lead teacher focus groups while another may have experience reviewing national curriculum documents. When possible, pair team members with someone local who can help navigate the context, make connections, and help build trust.

Needs Assessment Planning Table

The **Needs Assessment Planning Table** will help your team organize and plan how you will gather information about the system or context in which your edtech initiative will operate. The **Needs Assessment Framework** provides a list of domains, example guiding questions, and possible data sources to prompt your team's thinking. It is not meant to be exhaustive or prescriptive. Use it as a starting point to identify what areas to explore and how deeply to investigate each one. Feel free to develop your own questions or data sources that reflect your context and priorities.

Following are tips for completing each column of the Needs Assessment Planning Table. The first row is completed as an example.

Domain: Identify the domain(s) from the **Needs Assessment Framework** that you will explore (e.g., student performance, teacher knowledge and practice, curriculum and assessment).

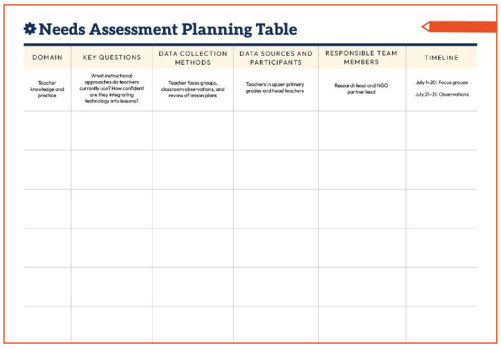
Key Questions: Write two or three focused questions that describe what you want to learn and why. Answering these questions should help uncover what is working well and what needs improvement.

Data Collection Methods: Specify the methods you will use to gather data, such as interviews, focus groups, classroom observations, document reviews, or surveys. Consider using both qualitative and quantitative approaches to capture a fuller picture of the system.

Data Sources and Participants: Identify who or what will provide the information you need (e.g., teachers, students, head teachers, ministry officials, community members, or existing datasets). Aim for diverse perspectives to ensure your analysis reflects the experiences of those most affected.

Responsible Team Members: Assign roles to team members who will lead or support data collection and organization. Pair technical or research expertise with local contextual knowledge whenever possible.

Timeline: Outline when each data collection activity will occur. Build in time to review and synthesize findings before your **Synthesize Insights and Identify Implications** workshop at the end of Phase 2.


Needs Assessment Planning Table

DOMAIN	KEY QUESTIONS	DATA COLLECTION METHODS	DATA SOURCES AND PARTICIPANTS	RESPONSIBLE TEAM MEMBERS	TIMELINE
Teacher knowledge and practice	What instructional approaches do teachers currently use? How confident are they integrating technology into lessons?	Teacher focus groups, classroom observations, and review of lesson plans	Teachers in upper primary grades and head teachers	Research lead and NGO partner lead	July 1–20: Focus groups July 21–31: Observations

Needs Assessment Planning Table, on the following page

Needs Assessment Planning Table

DOMAIN	KEY QUESTIONS	DATA COLLECTION METHODS	DATA SOURCES AND PARTICIPANTS	RESPONSIBLE TEAM MEMBERS	TIMELINE
Teacher knowledge and practice	What instructional approaches do teachers currently use? How confident are they integrating technology into lessons?	Teacher focus groups, classroom observations, and review of lesson plans	Teachers in upper primary grades and head teachers	Research lead and NGO partner lead	July 1–20: Focus groups July 21–31: Observations

To edit this handout as a .doc file, click here. We suggest downloading the file to your desktop, as opening it in Google Docs may lead to formatting changes or layout issues.

Step 2: Collect Data and Summarize Insights

Once your team has finalized a plan, approach the needs assessment process with curiosity and humility rather than with assumptions about what you think the challenges and priorities are. Ask open-ended questions, explore both pain points and strengths, and seek to understand people's lived experiences.

Encourage team members to capture observations that reveal not only what is happening, but why. For example, if teachers are not using available technology, explore deeper to understand whether barriers relate to infrastructure limitations, lack of confidence or preparation, or misalignment with the curriculum.

Each person participating in the needs assessment should summarize findings from their activities and organize them by domain. Identify one member of the core design team who will be responsible for collecting these summaries and preparing a brief synthesis of insights across domains to bring to the **Synthesize Insights and Identify Implications Workshop.**

EDTECH WARNING SIGNS: WHEN TO RETHINK YOUR APPROACH

As you begin gathering information from your needs assessment, look for early warning signs that edtech may not be the right starting point, such as the following:

- No reliable electricity and no clear plan for backup.
- No budget for devices, connectivity, or ongoing maintenance.
- New devices are not compatible with existing devices.
- Devices exist but sit unused due to lack of training or policy barriers.
- Teachers have not had opportunities to acquire basic digital literacy skills.
- There is not a clear role for technology in the curriculum.

If you encounter multiple warning signs as you conduct your needs assessment, consider starting with low-tech solutions, or solutions that do not require technology at all, while working to build conditions for successful technology integration later.

PREPARING NEEDS ASSESSMENT SUMMARIES FOR YOUR WORKSHOP

Once you gather information, organize it by domain so the team can see patterns, compare perspectives, and identify insights together during the **Synthesize Insights and Identify Implications Workshop.**

Next, each core design team member responsible for compiling needs assessment results related to a given domain will compile a clear, factual, and domain-specific summary that gives the design team a shared picture of what was learned. They should be careful not to add personal interpretations or draw their own conclusions.

The needs assessment summary should:

- Organize findings by domain and stakeholder group:
  - Within each domain (e.g., teacher knowledge and practice, curriculum and assessment), group findings by stakeholder perspective (e.g., teachers, head teachers, system leaders, parents, or students).
  - Use brief bullet points or short quotes to capture what each group said or what was observed.
  - This structure allows the team to identify where perspectives align and where they diverge.
- As you note findings, note the data sources:
  - Use simple notations (e.g., T = teacher focus group, L = leader interview, O = observation, and D = document review) beside each point.
  - Noting sources helps the team during the workshop to see which findings are supported by multiple sources.
- Capture both strengths and challenges:
  - Note what is working well and what resources can support implementation, as well as barriers or gaps you documented.
  - When possible, include examples or direct quotes that illustrate each point.
- Use a simple visual format:
  - If possible, use tables, charts, or color-coding to make patterns easier to spot during the workshop.
  - Keep language short and factual so the team can make sense of it quickly.

Step 3: Synthesize Insights and Identify Implications

After collecting data, the core design team should reconvene to discuss and interpret the findings in order to build a shared understanding of key insights and potential implications for designing your edtech initiative.

Moving Through the Steps

The following workshop facilitation guide provides a step-by-step plan to discuss insights and identify implications. The plan includes:

- Workshop objectives
- Suggested timing
- Activities to help your team analyze findings, discuss what they mean for program design and implementation, and agree on the most important priorities to address moving forward

For all workshops in this toolkit, be sure to add short breaks to the agenda as needed so participants can move about and connect informally.

WORKSHOP 1:

Synthesize Insights and Identify Implications

Facilitator's Guide

Workshop Objective: This workshop helps teams collaboratively reflect on needs assessment findings and identify what the insights mean for the design and implementation of an edtech initiative.

Participants: Participants include the core design team as well as those who gathered data or who bring deep system knowledge to ensure their lived experiences informs your interpretation of the needs assessment findings.

Pre-work:

- Identify one person on the core design team who can further summarize insights from the team's needs assessment activities.
- Ask everyone who participated in the needs assessment to submit a bulleted list of key insights they learned through their interviews, focus groups, observations, document reviews, and other needs assessment activities.
- Have the designated core design team member organize the collected insights by domain in a format convenient for participants to use together during the workshop.

Agenda (2.5 hours)

TIME	ACTIVITY	MATERIALS NEEDED
10 min.	Welcome participants and review workshop objectives and agenda	Slides with objects and agenda
10 min.	Overview of needs assessment process and findings	**Needs Assessment Framework** **Stakeholder Mapping Table** Slide summarizing needs assessment activities
60 min.	Small group activity: Synthesize the needs assessment findings by domain	Summary of needs assessment findings by domain (pre-work) Chart paper and markers
20 min.	Gallery walk: Review small group work, provide feedback, and add missing insights	Sticky notes
35 min.	Full-group discussion: What stands out?	Chart paper
15 min.	Closing reflections and next steps	List of next steps

Guidance for Facilitators

Welcome participants and review workshop objectives and agenda (10 minutes):

- Begin the meeting with a welcome and review of the workshop agenda and goals.
- If participants do not already know one another, include extra time for introductions and a short get-to-know-you activity.
- Reinforce the importance of having a learning mindset and leading with curiosity, openness, and a willingness to question their assumptions.

Overview of needs assessment process and findings (10 minutes:)

- Provide a brief recap of the needs assessment process, the data collection methods used, and which domains the process explored from the **Needs Assessment Framework.**
- Summarize who participated in the needs assessment process, highlighting that diverse stakeholders were included. Refer to your **Stakeholder Mapping Table** to note any stakeholder types not included.
- Explain how you summarized the data by domain to support today's group work.

Small group activity: Synthesize the needs assessment findings by domain (60 minutes):

- Strategically assign participants to small groups (3–5 people), ensuring that each group includes a mix of different perspectives.
- Assign 2–3 domains to each group, depending on how many small groups you have. Provide the relevant summaries by domain for each group.
- Give each group three pieces of chart paper and markers to record key insights, implications for design and implementation, and questions or gaps in understanding.
- Emphasize that groups should not aim to be exhaustive in their review. Instead, the goal is to surface meaningful insights and consider what they might mean for design and implementation.

Gallery walk: Review small group work, provide feedback, and add missing insights (20 minutes):

- Ask each group to post their completed chart papers around the room.
- Have participants walk around the room, reviewing other groups' summaries and adding sticky notes with additional insights and clarifying questions.
- Ask participants to return to their own charts to review and incorporate the feedback they received.

Full-group discussion: What stands out? (30 minutes):

- Facilitate a whole-group discussion to reflect on patterns, challenges, and opportunities that emerged across domains. Consider the following questions to guide the conversation:

  What patterns or themes are emerging across domains?

  Which insights seem especially meaningful or surprising?

  Where do we see strengths that could be built upon?

  Are there particular challenges that feel especially urgent to address?

  What challenges or gaps could technology realistically help address in this context?

  What infrastructure or support systems would need to be in place for an edtech solution to succeed?

  How might teachers' technology skills and experience influence what kind of edtech design is feasible?

Closing reflections and next steps (15 minutes):

- Invite participants to reflect in pairs on the following questions:

  What is one challenge or opportunity that you view as particularly urgent to address but which also seems feasible to address?

  What is one insight you'd like to learn more about before we move into design?

- Ask a few pairs to volunteer to share the thinking from their conversations.
- Preview that the next workshop will focus on selecting a specific focus area for the edtech initiative and defining a problem statement, which will launch the design phase of your work together.
- Share key details about the next session, such as date and location.

After the workshop:

- Designate one or two people from the core team to synthesize key takeaways from the workshop:

  They will review gallery walk charts and notes from the full-group discussion to document the group's insights on the most urgent challenges or opportunities that your team could feasibly address and in which edtech could play a key role.

  They will then distill these ideas into a list of up to six problems, framing each one in terms of what is observable or experienced in the system. They should avoid making assumptions about causes or solutions.

  You will start with this list of problems in Phase 3.

STORY FROM THE FIELD:

Starting with Digital Literacy in Rwanda's Plug-in-Play Program

As part of Rwanda's broader Plug-in-Play (PiP) initiative, implemented by Right To Play in partnership with the Ministry of Education, teachers are being supported to integrate tinkering, coding, and robotics into the Science and Elementary Technology (SET) curriculum for upper primary grades. The team's ability to adjust its approach to teacher training based on emerging needs became one of the program's greatest strengths.

When the program first launched in 2021, the design team focused on developing creative professional learning and classroom materials for coding and robotics. But early in the implementation, it became clear that many teachers had not received adequate training to use computers confidently, such as opening files, navigating software, or connecting devices. Because this information had not been gathered during the initial design phase, the first trainings assumed a higher level of digital readiness than teachers were prepared for.

In response, Right To Play worked closely with teacher training college tutors and local edtech partners to develop and deliver foundational digital literacy training tailored to teachers' needs. These sessions began with the basics (e.g., turning on a computer, using common applications such as Microsoft Word and Excel, and navigating online learning platforms) and then gradually built toward integrating technology into classroom instruction.

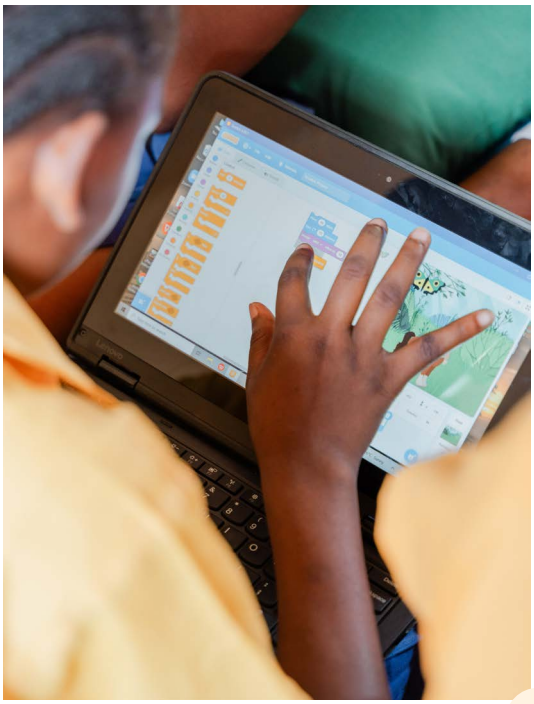
Thanks to this foundational support, teachers gained the confidence and skills to apply what they learned about coding and robotics. The experience highlighted a key lesson for edtech initiatives—gathering information early about teachers' digital literacy and designing support that takes training needs into account are critical for success.

Looking Ahead: Phase 3

With a shared understanding of the system's strengths, needs, and priorities, your team is now ready to move from analysis to focus. The insights gathered through the needs assessment will guide you in selecting a specific **high-leverage problem** to address. In **Phase 3: Define the Problem and Identify Levers for Change**, you will use this evidence to:

- Clearly define the **problem**
- Explore the **root causes** of the problem
- Identify the key conditions, or **drivers**, that must change to improve teaching and learning

This phase ensures that your edtech initiative is grounded in real needs and designed to make a meaningful difference.



Phase 3:

Define the Problem and Identify Levers for Change

Phase 3 AT A GLANCE

Step 1: Select a high-leverage problem. Select a problem of focus from the list you made at the end of Phase 2.

Step 2: Conduct a root cause analysis. Investigate and reflect on the underlying causes of your selected problem.

Fishbone Diagram Template and Example

Step 3: Develop a problem statement. Use insights from your root cause analysis to articulate the problem in a specific, evidence-based, and actionable statement.

Moving from Problem to Problem Statement to Goal

Problem Statement Checklist

Step 4: Define a measurable goal. Identify the improvement that could result from addressing your problem and what evidence will help you measure that improvement.

Step 5: Identify levers for change. Use insights from your root cause analysis to pinpoint the levers that most directly affect achieving your goal.

Modified Driver Diagram Template and Example

Facilitator's Guide for Workshop 2: Clarify the Problem and Identify Levers for Change

In Phase 2, you gained a strong understanding of strengths and needs and considered the implications of what you learned.

Here in Phase 3, you will **define the specific problem** you aim to solve and **specify the factors that contribute** to that problem.

Phase 3:

Define the Problem and Identify Levers for Change

The work you do now forms **the foundation** for everything that follows.

A clear, well-defined **problem statement** will help ensure your initiative is focused, coherent, and strategically designed to improve what matters most for students and teachers.

It is tempting to jump straight from needs assessment into brainstorming solutions. But without a clear understanding of the problem—including whom it affects, why it exists, and what system conditions shape it—you may risk creating solutions that are misaligned or fragmented or that treat only surface symptoms. Phase 3 will help you carefully define the right problem to solve, grounded in both empathy and evidence. This phase will also help you identify the key levers, or **drivers**, that must shift to achieve your goal, so that your design targets the levers that matter most.

Step 1: Select a High-Leverage Problem

Begin by reviewing a list of potential problems that surfaced during your needs assessment. These should reflect patterns observed across data sources and the voices of teachers, students, and other stakeholders. As a team, you will now select a single **high-leverage problem** on which to focus. To do so, consider which problem on your list:

- Feels most urgent to address
- Could, if addressed, lead to meaningful improvement in the quality of learning experiences
- Could be addressed with a solution involving edtech
- Aligns with education system priorities
- Could realistically be influenced by your team

Remember to remain focused on selecting a problem that is observable, meaningful, and not yet addressed. Avoid jumping to causes or proposing solutions at this stage.

Step 2: Conduct a Root Cause Analysis

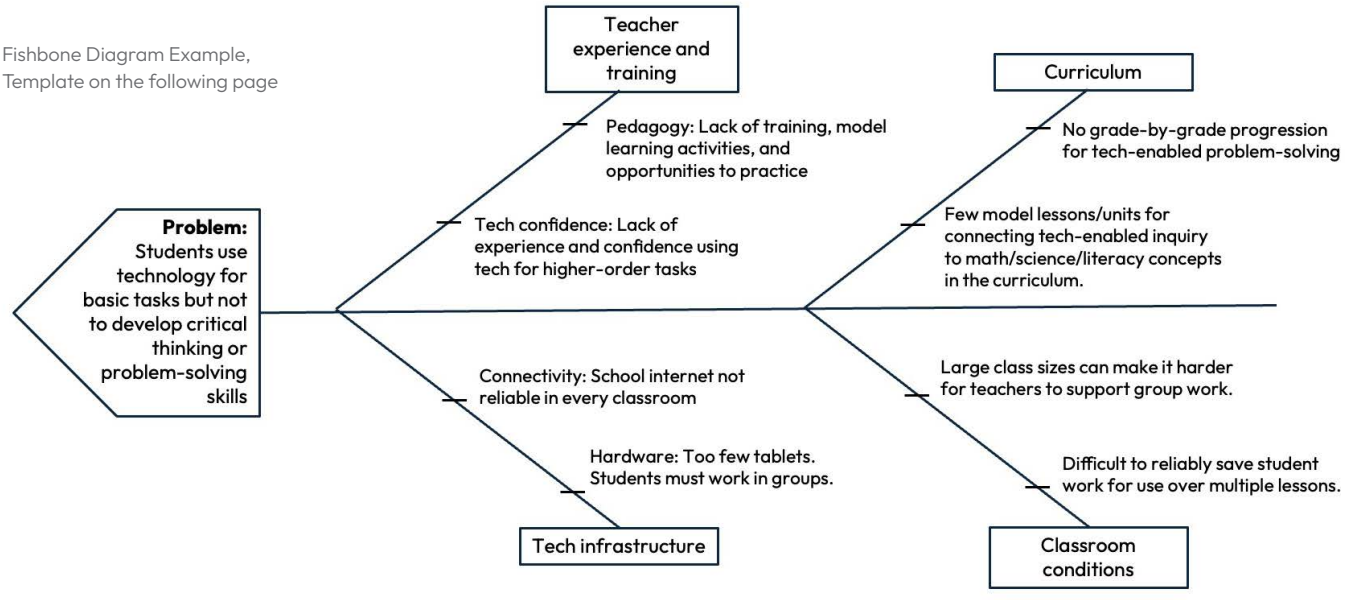
After identifying a high-leverage problem, your team's next step is to understand why the problem occurs. You can gain understanding by conducting a **root cause analysis**, in which you (1) examine the data, (2) ask "why" repeatedly, and (3) explore the underlying causes contributing to the problem.

A root cause analysis can help you move beyond surface-level symptoms to the deeper interconnected causes of the issue. The goal of such an analysis is to identify the most fundamental reason a problem exists—the core issue or issues that, if addressed, will eliminate or greatly reduce the problem and prevent it from reoccurring.

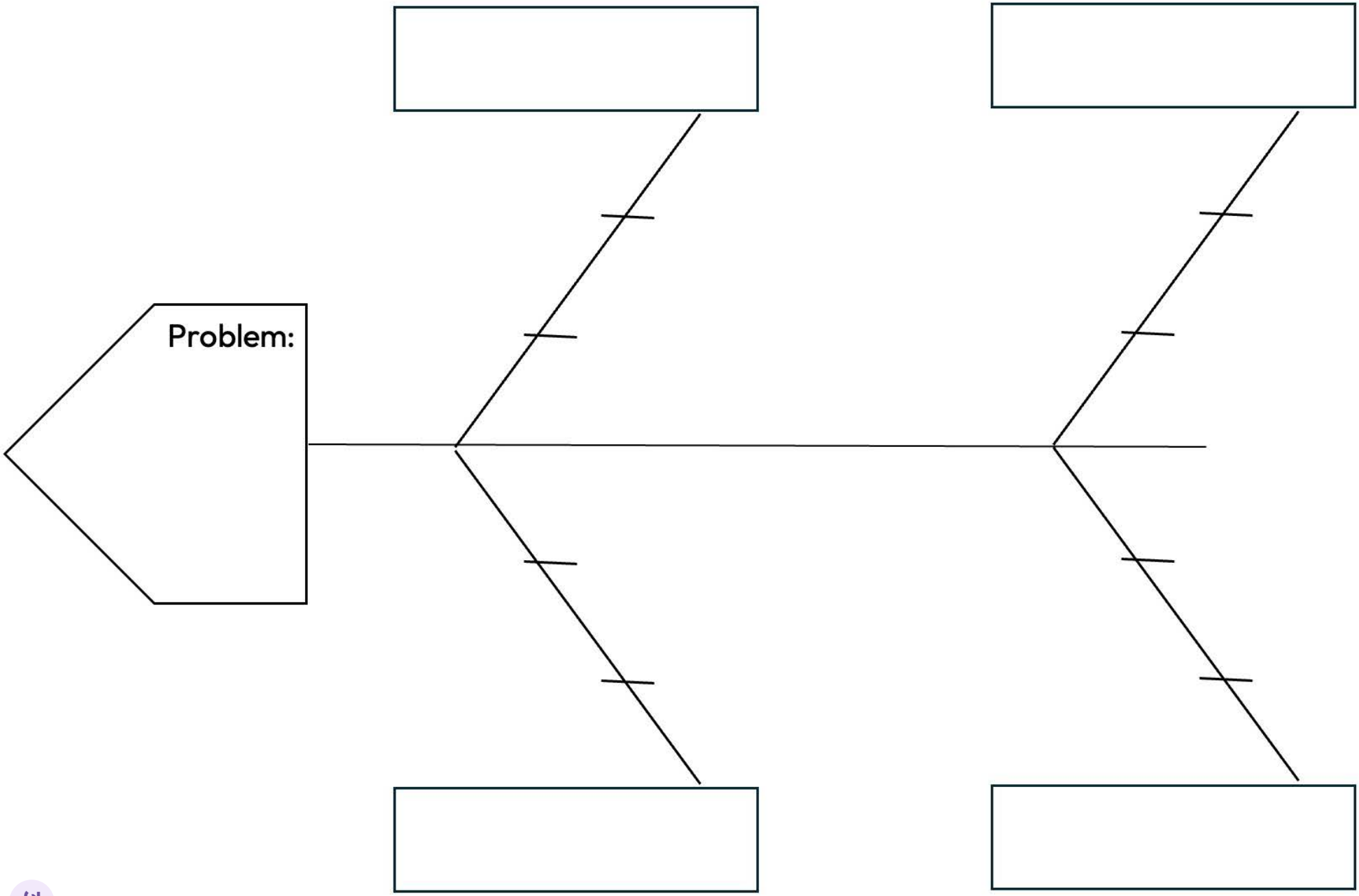
Your team will use the **Fishbone Diagram** to categorize and examine these causes. (See the example below and template on the following page). For example, if students have few opportunities to use technology to develop critical-thinking and problem-solving skills, causes could relate to the teachers' level of knowledge and skills, curriculum, infrastructure, or classroom conditions.

Diagramming root causes is critical for understanding where to intervene. This step will prepare your team to design solutions that target the causes rather than the symptoms of problems.

Fishbone Diagram Example, Template on the following page



Fishbone Diagram Template



Step 3: Develop a Problem Statement

Once you have identified the root causes, you can then develop a **problem statement**. The problem statement translates the broader high-leverage problem into a clear, specific, and actionable description of what is happening, who is affected, and why it matters. It connects the evidence from your root cause analysis to a concrete issue your team can address.

Drawing on the root cause analysis, this problem statement should clearly describe who is affected, what challenge they face, why it matters, and what is contributing to it. A strong problem statement does the following:

- Describes who is affected and what challenge they face
- Explains why the issue matters
- Identifies what factors contribute to the problem
- Is evidence-based and free of solutions (focuses on understanding the problem, not on prescribing an answer)

With a deeper understanding of the problem, your team will then move from the high-leverage problem to developing a final problem statement. (See examples of problem statements in **Moving from Problem to Problem Statement to Goal**, on the following page.) You will then define a **measurable goal** in Step 4.

PROBLEM STATEMENT CHECKLIST

A final problem statement should be:

- ☐ **Meaningful** – Addressing the problem will positively impact students' learning or well-being
- ☐ **User-centered** – Reflects the needs and perspectives of those most affected
- ☐ **Actionable** – Feasible and within your team's sphere of influence
- ☐ **Specific** – Narrow enough to target, broad enough to allow a range of solutions
- ☐ **Evidence-based** – Grounded in data or direct observation
- ☐ **Measurable** – Tied to indicators that can track improvement
- ☐ **Aligned** – Supports local or national priorities
- ☐ **Clear** – Easy to understand and communicate

Moving from Problem to Problem Statement to Goal

PROBLEM	PROBLEM STATEMENT	CORRESPONDING GOAL
Lower primary teachers lack structured, ongoing support to improve how they teach foundational reading.	**Problem:** We have noticed that lower primary teachers lack structured, ongoing support to improve how they teach foundational reading. Teachers receive little or no coaching on how to teach reading after attending *Competency-Based Curriculum (CBC)* training sessions. **Importance:** This matters because many students continue to struggle with early literacy, and teachers report reverting to traditional methods after training. **Cause:** We believe this is happening in part due to limited follow-up, weak peer learning structures, and low instructional modeling.	Increase the proportion of teachers reporting access to regular practice-based professional support for reading instruction from baseline to 70% over one academic term.
Students mainly use tablets or laptops for rote tasks such as typing or drawing shapes.	**Problem:** We noticed that students primarily use digital devices for basic tasks such as copying notes from the board or following step-by-step directions to draw simple shapes. **Importance:** This matters because these uses do not help students develop critical skills, such as problem-solving, engineering-thinking, or creative expression skills. **Cause:** We believe this is happening because (1) teachers lack support to design tech-rich lessons and (2) training emphasizes basic use over conceptual learning.	Increase the proportion of observed technology lessons that engage students in open-ended, problem-based, or design-oriented tasks from 0% to 50% across participating classrooms in two years.
Many students struggle with reading comprehension by grade 3, despite being able to decode words.	**Problem:** We have noticed that many students in grades 2 and 3 can decode words but struggle to understand what they read. **Importance:** This matters because comprehension is essential for future learning. **Cause:** We believe this is because many children in rural Kenya do not speak English, and teachers lack sufficient instructional strategies to support student reading comprehension in English.	Improve the percentage of grade 2 and 3 students demonstrating basic reading comprehension on classroom tasks by 20% in eight pilot schools over two terms.
Many students in early grades struggle to understand subtraction and place value concepts.	**Problem:** We have noticed that students in lower primary classes show limited understanding of key math concepts such as subtraction and place value. **Importance:** This matters because weak number sense slows progress in later grades. **Cause:** We believe this results from large class sizes, a lack of concrete materials, and an overreliance on rote methods, as seen in classroom observations.	Increase the percentage of students in grades 1–3 demonstrating accurate use of place value and subtraction strategies on classroom tasks by 20% in six pilot schools over two terms.

Step 4: Define a Measurable Goal

Your team will now define what success will look like if the problem is addressed. A strong goal is measurable, specific, and achievable within the time and scope of your initiative. It should reflect meaningful change for users and connect directly to the problem statement. Teams will consider what evidence would show that the problem is improving and how they will know they are on the right track. Refer back to example goals in **Moving from Problem to Problem Statement to Goal** on the previous page.

Step 5: Identify Levers for Change

In this final step, your team will identify the key conditions that must change to achieve your goal. Using a modified **Driver Diagram**, you will map the logical pathway from your goal to the specific drivers that influence it.

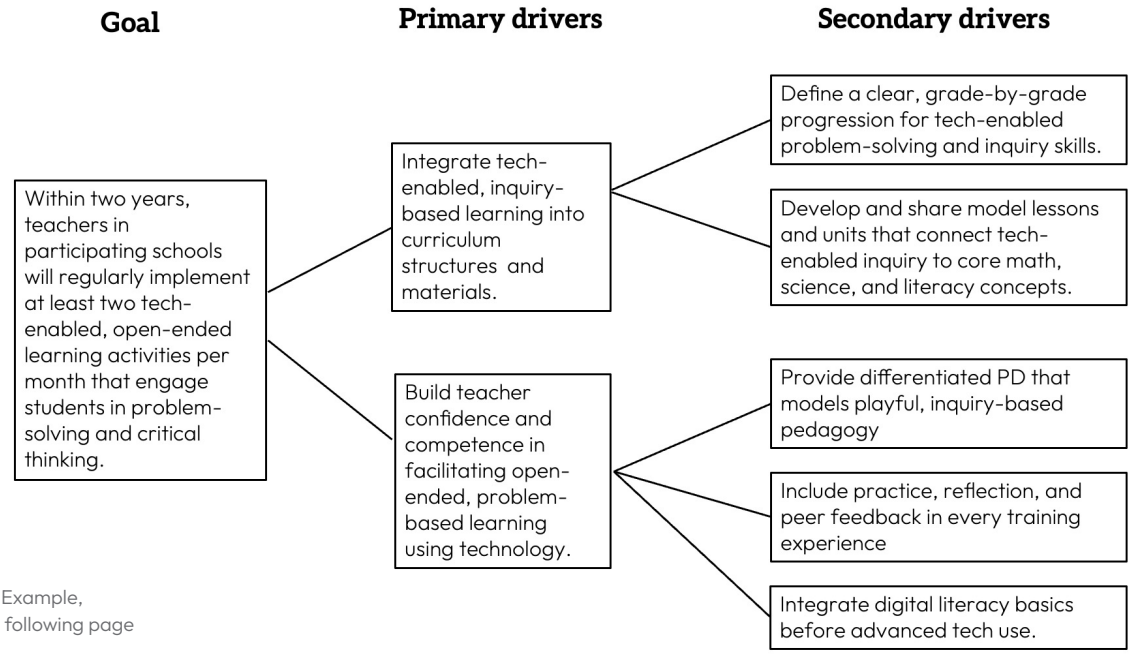
There are two types of drivers in this process:

- **Primary drivers** are factors that have a direct impact on the goal. Taken together, the primary drivers represent how the aim might be achieved.
- **Secondary drivers** are specific leverage points or actions that directly influence the primary drivers.

See the **Driver Diagram Example** below and **Template** on the following page.

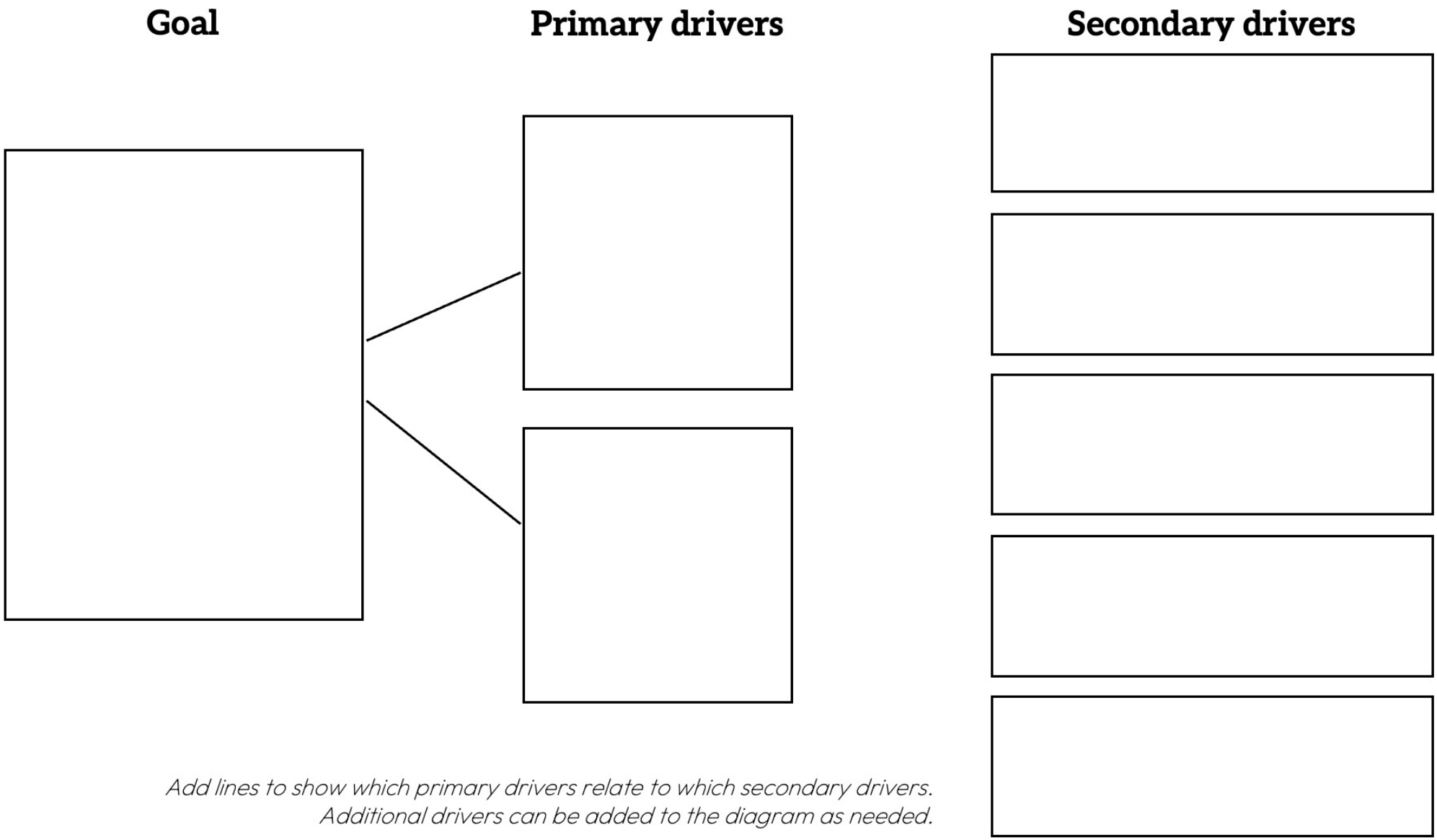
Each driver highlights a strategic area where change is needed. The **Driver Diagram** helps ensure your initiative is targeted and strategic, and it gives your team a road map for generating solution ideas in the next phase.

To build your driver diagram, revisit the **Fishbone Diagram** from Step 2. Look across the root causes and identify which factors appear most essential to address and most feasible to change. These should form the basis of your drivers. However, not every category or cause from the **Fishbone Diagram** needs to be included—focus on the ones that offer the greatest opportunity for improvement within your team's scope of influence. Primary drivers are derived from your root cause categories, and secondary factors are derived from specific causes. See an example of a modified driver diagram below. (Driver diagrams often include change practices. We do not include those in this version, which is why we call it a modified driver diagram.)



Driver Diagram Example,
Template on the following page

Driver Diagram Template



Add lines to show which primary drivers relate to which secondary drivers.
Additional drivers can be added to the diagram as needed.

By completing these five steps, your team will gain a shared evidence-informed understanding of the problem you are working to address and the conditions that shape it. These steps will help ensure that your initiative is coherent, strategically targeted, and grounded in both system priorities and user experience.

Moving Through the Steps

The following workshop guide provides structured activities and tools to help your team move through each of these five steps collaboratively.

WORKSHOP 2:

Clarify the Problem and Identify Levers for Change

Facilitator's Guide

Workshop Objectives:

- Select a focused problem to address based on insights from the needs assessment
- Deepen understanding of the problem by exploring its root causes
- Develop a clear problem statement
- Define a clear, measurable goal that reflects the intended change
- Use a modified driver diagram to identify what conditions need to shift to achieve the goal

Participants: The core design team plus selected stakeholders who bring content and technology expertise, pedagogical insight, implementation experience, and system perspective. Participants may include teachers, head teachers, technology specialists, district officials, curriculum specialists, or researchers.

Prework: Prepare the list of problems synthesized following Workshop 1.

Agenda (3 hours)

TIME	ACTIVITY	MATERIALS NEEDED
10 min.	Welcome and overview	Slides with objectives and agenda
15 min.	Review key insights from the needs assessment	Slide summarizing insights from the last workshop List of problems synthesized from Workshop 1 (on slide or chart paper)
25 min.	Select a high-leverage problem	List of up to 6 problems Dot stickers for voting
30 min.	Conduct a root cause analysis	**Fishbone Diagram Example** and **Template** Chart paper Sticky notes
30 min.	Develop a problem statement	**Problem Statement Checklist** **Moving from Problem to Problem Statement to Goal**
15 min.	Define a measurable goal	**Moving from Problem to Problem Statement to Goal** Chart paper and markers
45 min.	Identify levers for change	**Modified Driver Diagram Example** and **Template**
10 min.	Reflection and next steps	Slide or chart paper list with next steps

Guidance for Facilitators

Welcome and overview (10 minutes):

- This workshop marks the shift from exploring needs to starting to shape the initiative. Remind participants of what they have accomplished so far, namely, they have gathered insights, surfaced challenges, and identified design implications. Today is about focusing that learning into a clear problem to solve.
- Explain that the team will work together to define both the problem and the pathway forward. Today's outputs will set the foundation for meaningful grounded solutions in Workshop 3.
- Emphasize that this phase focuses on the following:
    - Asking the right questions
    - Understanding root causes
    - Establishing a shared vision for what success looks like

  Note: It is important to avoid jumping to solutions at this stage.
- Set a collaborative tone and reinforce that everyone present brings valuable experience and perspective, and the design process will be stronger because of the diversity of voices contributing.

Review key insights from the needs assessment (15 minutes):

- Briefly review major insights from the needs assessment, highlighting key themes or recurring challenges that emerged across domains.
- Explain that you distilled a list of problems based on areas where participants expressed the most energy and interest during the previous workshop.
- Walk through the list of problems and provide any necessary context.

Select a high-leverage problem (25 minutes):

- Distribute dot stickers and ask participants to vote for the 2–3 problems they believe:
    - Reflect the most urgent needs for teachers or students
    - Represent areas where meaningful change feels feasible
    - Align with ministry priorities
- After voting, tally the results and identify the top 2–3 problems. Facilitate a discussion to explore the top-voted problems and move the group toward consensus:

  In which problems do participants feel most invested or interested?

  Which of these challenges would the team be most equipped to address?

  Are there any concerns or considerations the team should explore before selecting one focus problem?
- Select one problem to focus on moving forward.

Conduct a root cause analysis (30 minutes):

- Exploring root causes helps ensure that the team addresses the underlying conditions contributing to the problem, not just its symptoms. This exploration lays the foundation for designing solutions that lead to lasting change.
- Explain that a **Fishbone Diagram** helps identify root causes of a problem by sorting contributing causes into categories. These categories will help structure the group's thinking.

- Refer to the provided example and template to draw a **Fishbone Diagram** with the problem statement written in the box at the "head" of the fish. Make the diagram large enough so participants can add their contributions on sticky notes.
- Ask participants to brainstorm possible categories for contributing causes (e.g., teacher knowledge, curriculum, infrastructure, leadership):

    Write these along the main "bones" of the diagram.

    Share a few common examples but prompt the group to generate categories based on the problem.

    Leave space for an "Other" in case additional categories emerge later in the process.
- Ask participants to silently brainstorm possible causes based on their experience and the needs assessment findings. Have participants write each cause on a sticky note and place it under the category it best fits.
- Facilitate a group discussion to review, cluster, and clarify the sticky notes. Highlight which categories have the most contributing causes and discuss any surprises. Consider the following questions to guide the discussion:

    Which causes feel most foundational or systemic?

    Are there causes that could be addressed more easily or quickly?

    What root causes feel most critical to address through design?

Develop a problem statement (30 minutes):

- The next step is to use what you learned from the root cause analysis to articulate your selected problem as a well-framed **problem statement** that clearly communicates what challenge your initiative will address. This statement should describe the following—without assuming a solution:

    Who is affected

    What they are experiencing

    Why it matters

    What appears to be contributing to the issue
- Distribute the **Moving from Problem to Problem Statement to Goal** handout and the **Problem Statement Checklist.** Review one or two examples together, pointing out how the initial problem evolved into a full statement using evidence and empathy gathered earlier in the process.
- Ask participants to work in small groups to draft a problem statement using the format from the handout. Encourage them to refer back to their **Fishbone Diagram** and consider the following:

    Who is most affected by this challenge?

    What is the specific problem they have observed?

    Why does this problem matter for teaching, learning, or equity?

    What root causes appear to be contributing to the problem?
- Invite groups to write their draft problem statements on chart paper and share them with the full group. Use the checklist to provide feedback and to refine wording as needed until the group agrees on a final statement that meets the criteria.
- Post the agreed-upon statement somewhere visible so all participants can reference it during the following steps.

Define a measurable goal (15 minutes):

- The next step is to define a clear goal that describes the specific outcome your team is trying to achieve that is tied directly to the problem. Invite participants to reflect on the question, "If this problem were addressed, what would look different for teachers, students, or the system?"
- Facilitate a group discussion to draft a goal that is:
    - Specific and clearly stated
    - Measurable
    - Achievable within the initiative's scope and timeline
    - Directly tied to the identified challenge
- Refer participants to examples of measurable goals from **Moving from Problem to Problem Statement to Goal.**
- Write the final goal on chart paper or put it on a slide for the group to reference during the next activity.

Identify levers for change (45 minutes):

- Explain that a **Driver Diagram** will help the team map how their goal might be achieved by identifying key conditions that must change. Remind them that primary drivers are conditions that directly affect the goal, while secondary drivers are specific actions that shift the primary drivers. Using the **Driver Diagram** (see example and template), participants will build on the root causes identified in the **Fishbone Diagram** and begin to translate the root causes into strategic areas of focus.
- Display the **Driver Diagram** template with the goal on the left and space for causes and categories of causes flowing to the right. Explain that a driver diagram includes the following:
    - Goal: The measurable goal
    - Primary drivers: Major conditions that influence the goal
    - Secondary drivers: More specific factors that feed into the primary drivers
- Smaller groups may prefer to develop the **Driver Diagram** together. With larger groups, consider breaking participants into small groups or partners and assigning each group a category from the **Fishbone Diagram** (e.g., teacher knowledge, infrastructure, leadership).
    - These categories can be used as starting points for identifying possible primary drivers.
    - Each group uses their assigned category to brainstorm a primary driver and then identify 2–3 corresponding secondary drivers, based on the specific causes identified on the **Fishbone Diagram.**
- Bring the full group together to share, refine, and organize the full set of drivers. Ask the group:

    Which root causes from the **Fishbone Diagram** are addressed by each driver?

    What drivers might be missing that could be critical to reaching the goal?

    Are all of these drivers necessary to achieve the goal, or are some more essential than others?

    Which drivers can we most readily influence?
- Capture ideas on chart paper.

Reflection and next steps (10 minutes):

- Ask participants to reflect on what stood out most from the workshop and how those insights may influence how the team designs a solution.
- Preview that the next workshop will focus on generating and prototyping possible solutions.
- Share any logistical details about the next session, such as date and location.

After the workshop: Prepare for Workshop 3

- Gather the refined problem statement, completed **Fishbone Diagram**, measurable goal statement, and completed **Driver Diagram.**
- Organize these materials to share with participants in Workshop 3. For example, consider highlighting in the **Fishbone Diagram** factors that relate to the key drivers that participants identified.
- To prepare for Workshop 3, ask participants with relevant expertise in content, pedagogy, technology, or local context to reflect on 1–2 key considerations to share during the brainstorming element in Workshop 3. These might include:
    - Content-specific or pedagogical principles that should guide solution design
    - Critical success factors or barriers they have seen in similar initiatives
    - Practical insights about implementation or usability
- Optional: Invite someone with research expertise to prepare a one-page summary or slide highlighting insights from research related to your problem statement and drivers to inform idea generation.

STORY FROM THE FIELD:

Using Evidence to Redefine the Problem

When the KPLAY program launched in Kenya's coastal counties, its goal was to introduce teachers to coding, tinkering, and robotics as part of a new approach to creative learning. The idea was to spark curiosity, collaboration, and problem-solving in classrooms through playful use of technology.

But as implementation progressed, the team began to see a mismatch between problem the program was designed to address and the most important challenges facing teachers. Data from KPLAY's own research provided a clearer picture of where change was most needed. Two-thirds of grade 3 students in participating schools were struggling with math and reading.

With these insights, KPLAY set out to adjust the program focus to support foundational learning. With the LEGO Foundation's encouragement, implementation partners modified the program to align with facts on the ground. KPLAY reframed its central problem to focus on strengthening teachers' ability to use student-centered approaches that improve Foundational Literacy and Numeracy (FLN). This change meant reconfiguring the program's edtech component, too.

Departing from its initial focus on new types of student activities, the revised program focused on enriching teachers' digital literacy skills to take advantage of digital tools to support literacy and numeracy. The revised program also empowered them to use technology for lesson planning and preparation, as well as to find innovative resources and to participate in virtual communities of practice, all with a focus on bolstering student achievement.

Looking Ahead: Phase 4

With a clearly defined problem, a measurable goal, and a shared understanding of the key drivers behind the challenge, your team is now ready to begin designing solutions. The work you have done in this phase provides the foundation for creative yet focused exploration in **Phase 4: Generate and Prototype Solution Ideas.**

Specifically, in Phase 4, you will use your theory of change to **brainstorm** a wide range of possibilities, prioritize the most promising ones, and begin developing **prototypes** for testing. This phase will help to ensure that your initiative responds directly to root causes and is shaped by the real-world conditions uncovered in the first stages of your design process.

Phase 4:

Generate and Prototype Solution Ideas

Phase 4 AT A GLANCE

Step 1: Translate drivers into "How might we?" questions. Use a design thinking strategy to promote creative thinking by turning problems into opportunities.

Step 2: Brainstorm possible solutions. Devise multiple creative answers to selected "How might we?" questions.

Step 3: Prioritize for prototyping. Review the set of solution ideas to select a few from which to develop early prototypes.

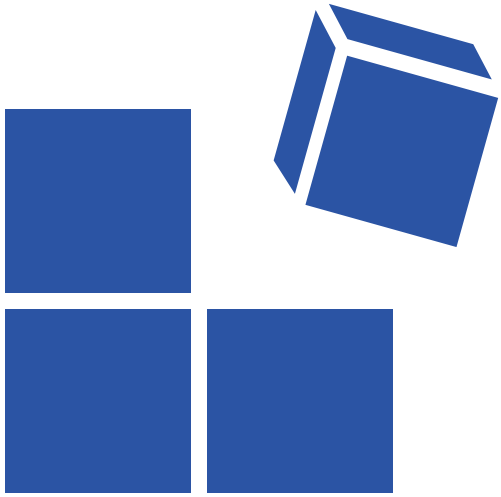
Edtech Alignment Checklist

Step 4: Develop selected prototypes. Build early prototypes to discuss with the team for initial feedback prior to testing.

Facilitators Guide for Workshop 3: Generate Solution Ideas and Prototype Early Concepts

In Phase 4, your team will begin to shift from understanding the problem to **developing ideas for possible solutions.**

It is critical in this phase to elicit the expertise of team members—including those with content, pedagogical, technological, and local implementation knowledge. This mix of perspectives will help ensure that ideas build on what is already known to work and are grounded in practical realities.



Phase 4:

Generate and Prototype Solution Ideas

Your team will begin with two creative thinking exercises: first, to generate questions based on the problem statement and drivers identified in Phase 3, and second, to generate possible answers to those questions. This part of the process encourages expansive thinking while also keeping ideas grounded in the work you have already completed and the real conditions of the system.

Once your team identifies a few promising ideas, you will develop early prototypes for each. The prototypes should be simple, concrete versions of these ideas that will enable you to learn quickly, gather feedback, and refine your thinking.

The activities in this section are designed to ensure that the solution ideas selected for prototyping are both **inventive** and **practical.**

Step 1: Translate Drivers into "How Might We?" Questions

This step calls for creative thinking! Using the **drivers** the team identified as a starting point, your team will craft questions that begin with the phrase, "How might we....?" and then brainstorm many possible approaches.

"How might we?" questions are a design thinking strategy to turn problems into opportunities. Creative expansive thinking can help ensure no possible solutions are prematurely set aside.

Asking contributors from varied roles and perspectives to collaborate in small groups for this exercise can enrich the variety of questions the group can devise. Remind them to remain grounded in the drivers and to keep an open, curious mindset to fully welcome and consider others' ideas, even the most surprising ones.

HOW TO DEVELOP STRONG "HOW MIGHT WE?" QUESTIONS

One way to develop strong "How might we?" questions is to follow this formula:
How might we *[action]* for *[subject or beneficiary]* so that *[goal]*?

For example:

- How might we create more peer learning time for teachers so that they learn from one another as they innovate?
- How might we design meaningful group work for students so that the number of working tablets matches the learning goals?

Variations on the "How might we?" phrasing that you may also want to use with your team include "What's stopping us from...?" and "What would happen if we....?"

Step 2: Brainstorm Possible Solutions

Keep your exploratory, creative mindset as your team devises creative answers to the "How might we?" questions generated in Step 1. Even wild or unconventional ideas are welcome during brainstorming!

The team will select a few "How might we?" questions to focus on in this step, enabling them to brainstorm multiple answers to each question. At the end of this step, you will have a list of ideas—ideally including some unexpected ones—that you will narrow down in the next step.

Step 3: Prioritize for Prototyping

The team will now review the full set of brainstormed ideas, group them thematically, and evaluate the ideas as a full group, being sure to include all participants' perspectives. The goal is to select a few ideas that seem most promising and to then develop prototypes based on those ideas.

Prototyping is a low-stakes, small-scale way—efficient in terms of both time and cost—to develop and test a solution idea. As an idea in concrete form, a prototype provides a chance to test assumptions, gather user feedback, and deepen your understanding of the problem the prototype is designed to address.

Even though prototypes are early versions of ideas, a full program will usually be made up of several related prototypes. As your team prioritizes which ideas to prototype, think ahead to how these pieces might eventually connect and reinforce one another as part of a coherent program. Depending on the drivers you aim to influence, your set of prototypes might include elements such as teacher professional learning and support, planning tools for teachers, instructional modules or units, and systems for maintaining and accessing technology.

As you review the ideas and select a few from which to develop prototypes, consider how well each idea aligns with the root causes and drivers you identified and how well each addresses the "How might we?" questions. Also consider the degree to which, if implemented, each idea could impact teaching and learning and how feasible it would be to implement an idea in the local context.

EDTECH ALIGNMENT CHECKLIST

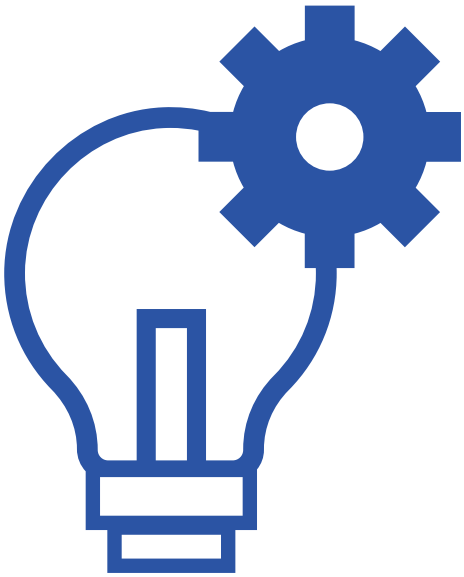
Before moving forward with a prototype, ask the following questions:

- [ ] Does the technology have a clear instructional purpose?
- [ ] Can it be used reliably with current infrastructure?
- [ ] Does it connect to the curriculum?
- [ ] Is the intended use pedagogically sound and aligned with what we know about how children learn?
- [ ] Do teachers have the digital skills and content knowledge to use this technology?
- [ ] Are there clear plans that define the teacher's role and describe how effective pedagogy will guide the use of technology?
- [ ] Is there a low-tech alternative to use when needed?

Step 4: Develop Selected Prototypes

In this step, the team will work in mixed-expertise groups to build an early prototype for each selected idea and then discuss the resulting work. To create effective mixed-expertise groups, be sure to call on stakeholders with the range of expertise most relevant for your drivers and prototyping goals. For example, if you aim to improve children's literacy learning, consider involving teachers and literacy curriculum experts. You might also want to involve school leaders, parents, or researchers.

Remember to think first about the drivers you are trying to influence, then consider how technology might enhance or support your goals. Avoid starting with what is new or exciting about a technology; instead, focus on how technology can meaningfully serve the learning process. For example, if your goal is to improve learning, begin by grounding your prototype design in what is known about how children learn effectively—including through active engagement, collaboration, and reflection.



At this stage, a prototype needs just enough detail to enable people to imagine how the prototype will be tested. If one solution idea involves a webpage, the early prototype can be a sketch on paper that shows how the webpage might look, what features it will have to support the learning process, and for whom it is designed. If the prototype is a curricular module or unit, an early prototype can be a high-level outline of the sequence of lessons and one or two example lessons.

DESIGN FOR DIFFERENT LEVELS OF TECH READINESS

When prototyping, consider designing multiple versions of the same idea that can be adapted across diverse contexts:

- No-tech: Activities that achieve the same learning goal without devices
- Low-tech: Use of phones, projectors, or simple offline tools
- High-tech: Coding, robotics, or online platforms

Moving Through the Steps

As groups share and discuss the resulting early prototypes, identify what steps will be needed to complete each prototype for testing and who will be responsible for each. The workshop that follows will guide your team through all the steps in this phase. Your team will test the prototypes in Phase 5.

WORKSHOP 3:

Generate Solution Ideas and Prototype Early Concepts

Facilitator's Guide

Workshop Objective:

- Generate a wide range of creative ideas in response to selected "How might we?" questions
- Evaluate and refine ideas based on alignment with root causes, feasibility, and context
- Select the most promising ideas to develop further
- Develop early prototypes of selected solutions to test

Participants: The core design team and additional stakeholders with relevant expertise in content, pedagogy, user needs, and implementation, including teachers, school leaders, ministry curriculum, and technical partners.

Pre-work:

- Create handouts or bring materials from the previous workshop: the selected problem statement, **Fishbone Diagram**, measurable goal, and completed **Driver Diagram.**
- Remind those participants that you had previously asked to share their perspectives to be prepared to speak before brainstorming.
- Optional: Share the one-page summary or slide with research or implementation insights if prepared in advance.

Agenda (3.5 hours)

TIME	ACTIVITY	MATERIALS NEEDED
10 min.	Welcome and overview	Slides with objectives and agenda
20 min.	Review progress and leverage expertise	Slides, handouts, or posters from previous workshop
30 min.	Craft "How might we?" questions	Chart paper and markers
45 min.	Brainstorm possible solutions	Chart paper and markers Sticky notes
30 min.	Cluster and prioritize ideas	Dot stickers for voting
60 min.	Develop prototypes from selected ideas	Chart paper and markers Sticky notes
15 min.	Share out, reflection, next steps	Slide or chart paper

Guidance for Facilitators

Welcome and overview (10 minutes):

- Begin by reminding participants of the significant work they have already accomplished! Today's work builds on that foundation. Consider showing a slide to represent the steps of the design process completed so far. The team has:
    - Conducted the needs assessment
    - Selected a problem
    - Articulated a problem statement
    - Identified root causes
    - Defined a measurable goal
    - Identified key drivers
- Share the goals of today's workshop:
    - Think expansively
    - Explore creative solutions
    - Begin refining those ideas into testable prototypes
- Review workshop objectives and agenda.

Review progress and leverage expertise (20 minutes):

- Briefly revisit the problem statement, **Fishbone Diagram**, and **Driver Diagram** to recall for participants the results of the already completed steps.
- Draw on local expertise: Invite participants with specific expertise in pedagogy, content, tech, or implementation to share 1–2 key considerations, questions, or insights based on their experience (as noted in pre-work).
- Take a few minutes to review the highlights from any research summary or slides, if prepared in advance.

Craft "How might we?" questions (30 minutes):

- Explain that "How might we?" questions turn problems into opportunities. They are open-ended prompts that invite innovation, reflect user needs, and keep the team focused on what matters most. They will be used to guide solution brainstorming later in this workshop.
- See examples of "How might we?" questions (page 51).
- Ask participants to draft a few "How might we?" questions in pairs or small groups, ideally by asking people from different roles to collaborate. This approach encourages ideas that draw on multiple perspectives.
- Ask each pair or small group to record their ideas on a chart paper. Then, invite each to share ideas with the full group and hang all the chart papers together to make the full set of questions visible.
- Facilitate a group discussion to select and refine 2–3 of the "How might we?" questions to use in the next step. Consider asking the following:

    Which statements best reflect the root causes we identified?

    Which ones feel the most actionable and relevant?

    Which will help us stay grounded in the needs of teachers and students while sparking creative thinking?

Brainstorm possible solutions (45 minutes):

- Consider shuffling the mixed-expertise small groups to continue to encourage ideas that draw on multiple perspectives. Try to ensure each group includes people with pedagogical, content, and contextual insight.
- Encourage the groups to generate as many ideas as possible in response to the "How might we?" questions and to capture them on sticky notes. Remind participants:
    - There are no bad ideas at this stage. Think expansively. Take risks.
    - Build on others' ideas and think from different user perspectives (e.g., teacher, student).
    - Consider research insights and lived experience.
    - Use the completed **Driver Diagram** to inspire ideas for addressing specific areas of influence.
- Have participants add their groups' sticky notes to the relevant "How might we?" question on the chart paper.
- When there are 15 minutes left, have each group present the sticky notes it contributed. The facilitator can begin loosely grouping similar ideas together.

Cluster and prioritize ideas (30 minutes):

- Invite participants to help sort the sticky notes into thematic categories (e.g., solutions related to teacher training, infrastructure, student engagement, digital tools). Group similar ideas together on a board or a chart paper around the corresponding "How might we?" question.
- Provide each participant with 3–5 dot stickers or markers to vote on ideas they find most promising. Consider the following criteria:
    - Relevant to the root causes and "How might we?" questions
    - Aligns with the **Driver Diagram**
    - Feasible in your context
    - Potential to improve teacher or student experience
    - Level of resources required to implement is reasonable given the potential impact
- Once voting is complete, facilitate a short group discussion:

    What ideas generated the most interest and excitement?

    Are there ideas that could be combined?

    Which ideas feel most promising for prototyping?

Develop prototypes from selected ideas (60 minutes):

- Based on voting and discussion, choose 2–5 ideas to prototype, depending on the scale of the initiative you are designing. Divide into mixed-expertise groups and assign each group one idea to work on.
- Explain that a prototype is a rough low-stakes way to realize an idea so that others can react to it. Prototyping helps make ideas concrete and testable.
- Encourage teams to start with the student or teacher learning experience they want to create, including what students and teachers will do, think, and feel before deciding how technology or other tools might support that learning.
- A prototype can take many forms depending on the idea, such as:
    - A sketch of an online hub that supports ongoing teacher learning by connecting resources to practice and peer collaboration

- A draft of a lesson or unit plan or curriculum guide
- A flowchart showing the steps of a teacher coaching model
- An agenda for a teacher training workshop illustrating how learning will unfold for teachers

- Provide materials such as chart paper, markers, sticky notes, or digital tools.
- When 20 or 30 minutes are left, invite each group to briefly share their prototype. (You may need more time for this step if groups developed more than three prototypes.)
- Encourage others to respond with feedback, considering the following questions:

  How clearly does this prototype address the drivers to support meaningful learning or teaching practice?

  What feels promising or exciting about this prototype?

  What questions or concerns arise?

  How might this prototype be improved to strengthen the learning experience?

Share out, reflection, next steps (15 minutes):

- Preview that the next workshop will focus on testing the prototypes and gathering feedback to guide refinement.
- Use this final time to help the group reflect on the work done and identify what is needed to prepare for testing in the next phase.
- Facilitate a short discussion focused on next steps for finalizing the prototypes:

  What additional work is needed to complete these prototypes so they are ready for testing?

  Who can take responsibility for advancing each prototype between now and the next workshop?
- Capture action steps and assign roles to ensure that the prototypes are ready to test when the group reconvenes.
- Share the next workshop date and location.

STORY FROM THE FIELD:

Technology integration in extra-curricular activities in Rwanda

TEACH Rwanda supports schools in strengthening teaching and learning by introducing culturally relevant, research-based practices in early childhood and primary education, along with ongoing teacher mentoring. As part of this work, TEACH Rwanda introduced the Bright School robotics program, which gives students practical opportunities to explore science, technology, engineering, arts, and mathematics (STEAM) through hands-on activities.

The prototype development process began with an understanding of local conditions, including limited access to robotics kits, tight school schedules, limited attention to robotics in the curriculum, and varying levels of familiarity with educational technology. For example, robotics kits are expensive, difficult to replace, and often take a long time to ship to Rwanda. These factors limit the number of students that can participate. In addition, many educators had little experience with robotics. Some viewed the activities as simply playing with LEGO pieces, without recognizing the deeper learning involved in coding, engineering design, teamwork, communication, and problem-solving.

To respond to these realities, TEACH Rwanda runs the program outside the regular curriculum and school day. This provides students with enough time to explore in depth and to make effective use of limited robotics materials, which cannot be shared by all students during normal class hours. Further, the extracurricular robotics programs are led by teacher-coaches selected for their competencies and motivation. This approach elevates teacher expertise while also helping students make the most of limited materials while benefiting from sufficient time to engage deeply in design, experimentation, and problem-solving with technology.

Looking Ahead: Phase 5

With your prototypes developed, your team now has concrete tools to test and improve. In the next phase, you will move from design to action by putting these prototypes into real-world contexts to learn how they perform. **Phase 5: Test, Reflect, and Refine Prototypes** will guide you to plan and conduct small low-stakes tests with users, analyze what works and what doesn't, and use those insights to strengthen and adapt your designs before considering larger-scale implementation.

Phase 5:

Test, Reflect, and Refine Prototypes

Phase 5 AT A GLANCE

Step 1: Plan prototype testing. Decide what you want to learn, choose test and documentation approaches, and prepare a clear plan for how and when testing will occur.

- **Types of Prototype Tests**
- **Ways to Document Learning**
- **Prototype Testing Plan Template**
- **Facilitator's Guide for Workshop 4: Prepare for Prototype Testing**

Step 2: Conduct tests. For each prototype, conduct the testing, and document results following your testing plan.

Step 3: Analyze testing data and identify improvements. Discuss the test results and insights gained that can inform how to improve your prototypes. Make a plan to complete the improvements.

Step 4: Refine Prototypes. Make improvements based on test results. Decide whether the revised prototypes warrant further testing.

- **Facilitator's Guide for Workshop 5: Analyze Results and Refine Prototypes**

Now that your team has a set of completed prototypes, you will **plan for and conduct tests, discuss results, and refine solutions** to be more effective, usable, and grounded in contextual realities.

Phase 5:

Test, Reflect, and Refine Prototypes

Prototypes are not final products; they are tools for learning. Putting rough ideas into practice with real users helps to uncover insights that would not likely emerge through discussion alone. Both successes and failures at the prototype testing stage provide valuable lessons that strengthen the design. Initial testing should be small and quick to provide the fastest learning. More extensive pilots may follow later, but not until lower-stakes testing has helped to refine ideas. Initial tests will likely focus on single components of a possible program; eventually, you will also want to test program components together to gain insights into how they function as a whole.

As you plan your tests, be sure to **engage real users.**

Teachers and students can provide meaningful classroom-level insights about usability. Leaders can provide perspectives on system feasibility and alignment.

Phase 5:

Test, Reflect, and Refine Prototypes

GUIDING PRINCIPLES FOR TESTING AND REFINEMENT

- Testing is about learning, not proving. Be open to new insights that might challenge your assumptions.
- Prototypes are works in progress. Don't waste time polishing early on.
- Test small, learn fast. Start with simple quick tests rather than a large-scale pilot.
- Match the test to your question and context. Choose a testing approach that fits both what you want to learn and the realities of your setting.
- Involve real users when possible. Engage end users such as teachers and students for classroom-level insights, as well as leaders who can provide perspectives on system feasibility and alignment.
- Document what you learn. Capture observations systematically to ensure learning informs the whole team.

Phase 5:

Test, Reflect, and Refine Prototypes

Phase 5 has two workshops:

- Workshop 4 guides participants through the planning steps to prepare to test your prototypes (corresponding to Step 1).
- After you test the prototypes (Step 2), Workshop 5 (corresponding to Steps 3 and 4) guides participants to collaboratively reflect on what they learned from the tests, refine the prototypes, and revisit the **Driver Diagram** to ensure new insights are integrated into the overall design.

After completing both workshops, the team should consider whether further tests are warranted and, if so, return to Step 1 of this phase to develop plans for the next round of tests.

Phase 5:

Test, Reflect, and Refine Prototypes

BIG-PICTURE CONSIDERATIONS FOR TESTING AND REFINING PROTOTYPES

Over the course of Phase 5, teams will consider the following:

- How many testing and refinement cycles will you run? One quick cycle may be enough for some prototypes, while others may benefit from multiple rounds of iteration.
- When will the full group come together for reflection and synthesis of learning? Will you meet after each round of testing or after several small cycles?
- Whom will you involve in testing? What types of users have knowledge and perspectives to provide the most meaningful feedback?
- Will you conduct any larger-scale pilots that include multiple prototypes to test how different components interact in practice? Larger tests can surface challenges and synergies that only appear when prototypes are used side by side.

Step 1: Plan Prototype Testing

In this step, we first describe different approaches for testing prototypes and ways you might document what you learn so that you can select testing and documentation strategies best suited to your needs and context. After you choose how to test and document results, you will develop a testing plan and prepare to conduct your tests.

There are many ways to test a prototype. The approach depends on what you hope to learn from the test, how much information you need initially, and how quickly you need results. Consider your needs as you review the **Types of Prototype Tests** shown on page 68. This list is not exhaustive, however. You may choose to design a test not on this list that better meets your needs.

As you review types of tests, think ahead about who could be involved in each test and the range of perspectives you will need to generate reliable results. For example, if students will test the prototype, include students with different abilities and levels of proficiency. If teachers will be involved, include teachers with a range of pedagogical experience and comfort with technology.

For any type of test you conduct, you will need a structured way to document what you learn. Here, too, there are many options. Whatever method you choose, try to have people in different roles documenting results from the same test to glean richer observations. Well-structured documentation makes it easier for each observer to document similar kinds of information. These methods also make it easier to share results with the full team and reflect on how to improve the prototypes based on what you learned. Several simple methods to document prototype testing are shared in **Ways to Document Learning** (page 70) and your team can develop others.

Now, you are ready to complete a **Prototype Testing Plan** (see the template on page 72), including:

- What you hope to learn
- What type of test you plan to conduct
- How you will document your observations during the test
- Any anticipated risks or challenges
- Next steps

The **Prototype Testing Plan** helps ensure that team members agree on and are informed about the test purpose, what role they will play in the test (if any), how to document results, and upcoming tasks and expectations.

Moving Through Step 1

The following workshop will guide your team through the steps for selecting testing and documentation approaches for your prototypes.

WORKSHOP 4:

Prepare for Prototype Testing

Facilitator's Guide

Workshop Objective:

- Explore different types of prototype testing approaches and how to choose the right one
- Review methods for documenting learning from tests and select methods for your tests
- Develop concrete plans for prototype testing and documentation

Participants: The core design team and additional stakeholders who were involved in developing prototypes. Also consider including other stakeholders from your **Stakeholder Mapping Table** (see Phase 2) whose feedback may be helpful during the testing phase.

Pre-Work:

- Each small group from Workshop 3 completes a draft prototype so it is ready to test.

Agenda (1.5 hours)

TIME	ACTIVITY	MATERIALS NEEDED
5 min.	Welcome and overview	Slides with workshop objectives Agenda Key principles for testing
15 min.	Types of tests and how to document what you learn	**Types of Prototype Tests and When to Use Them** **Ways to Document Learning**
40 min.	Draft testing plans	**Testing Plan Template** for each small group **Driver Diagram** (from Phase 3, Workshop 2)
20 min.	Share out and provide feedback	Chart paper and markers **Stakeholder Engagement Plan** (from Phase 1)
10 min.	Reflection and next steps	Slide with information

Guidance for Facilitators

Welcome and overview (5 minutes):

- Begin by reminding the group of what they accomplished in the last workshop and how today's work builds on that foundation. Consider showing a slide that visually maps the steps of the design process completed so far. The team has accomplished the following:
  - Conducted the needs assessment
  - Selected a problem

- Articulated a problem statement
- Identified root causes
- Defined a measurable goal
- Identified key drivers
- Creatively brainstormed questions and solution ideas
- Developed prototypes of selected ideas

- Explain that this phase has two workshops. This workshop (Workshop 4) is about planning for testing (corresponding to Steps 1 and 2 of this phase). Workshop 5 follows testing (Step 3 of this phase). It guides participants to reflect on test results and refine prototypes based on what they learned.
- Review workshop objectives and agenda.
- Review the key principles that should guide the testing phase (see page 61)

Types of tests and how to document what you learn (15 minutes):

- Review the handout **Types of Prototype Tests.** Explain that tests can vary from low-stakes and quick to higher-stakes and more time intensive. On the handout, simpler tests are closer to the top, while more complex ones are closer to the bottom.
- Facilitate a discussion of some examples of how you might select an appropriate test type based on what you want to learn and any time or resource constraints that need to be considered.
- Emphasize that the list of test types is not exhaustive. Participants may think of other options that fit your needs.
- Discuss the importance of documenting results from each test. Teams will use records created during testing to decide what changes to make to their prototypes. Share the **Ways to Document Learning** handout, and ask the group to reflect on which approach might work best for the types of tests the group is considering. Participants will select test and documentation approaches in the next section.

Draft testing plans (40 minutes):

- Walk through the **Testing Plan Template**, explaining each part. Highlight the section "drivers intended to be addressed" to note the connection with the previously completed **Driver Diagram.** Remind participants that prototype tests should help clarify whether the prototype successfully addresses the drivers that it was designed to address.
- The same small groups that collaborated on prototype development now work together to complete the **Testing Plan Template** for their prototype.

Share out and provide feedback (20 minutes):

- Have each small group present their testing plan. Ask the other participants to provide feedback using the following prompts:

  Is the test type selected realistic for this context?

  Will the test help to answer our questions and generate useful learning?

  Is the documentation method appropriate?

- After all groups have presented, ask the group to reflect on the following questions:

  Do our testing plans collectively engage the right stakeholders? Are there important perspectives we are missing? If yes, how and when might we engage them?

  Are our testing plans aligned to our **Driver Diagram**? Will they help us gain insight about our theory of action?

Reflection and next steps (10 minutes):

- Explain that teams will conduct their tests and document their learning before Workshop 5. Participants should bring their documentation of results to the workshop and be prepared to share the results, identify what changes need to be made based on feedback, and determine next steps for additional testing.
- Check in with participants to make sure they feel prepared to conduct their tests and address any remaining questions or concerns.
- Share information about the next workshop time and location.

Types of Prototype Tests

Here are different types of tests teams can use to gather feedback on prototypes. Tests range from low-stakes and quick, which could be best suited to testing individual components, to higher-stakes and authentic, which will be useful to test how a set of components will function as an integrated program. Choose the type or types that best match your learning goal and context.

TEST NAME	DESCRIPTION	WHAT RESULTS PROVIDE	EXAMPLE
Simulation / Role-Play	Team members or colleagues role-play teachers, students, or leaders to act out how the prototype would be used (e.g., lesson plan, training activity).	Quick feedback on clarity, instructions, or flow before trying it in a real setting.	Colleagues role-play a lesson plan in a classroom to act out how a new activity might go.
User Review and Feedback	Ask an end-user (teacher, student, parent) to review the prototype and give feedback on clarity, feasibility, and usability.	Direct input from the people who will use the prototype without running the full activity.	A teacher reviews a draft lesson plan and highlights where instructions are unclear.
Think Aloud with End-User	Sit with a teacher, student, or leader as they walk through the prototype, speaking aloud about what they are thinking and how they would use it.	Feedback that may raise mistaken assumptions, usability challenges, or misunderstandings, including from students with different abilities or levels of proficiency.	A student explores an app prototype and describes where they get confused.
Tech Check / Usability Test	Try out a digital tool, app, or equipment in a school to check connectivity, compatibility, and ease of use.	Verify whether the technical side of the prototype will work in local contexts.	Teachers test loading Scratch on school laptops to confirm functionality.
Learning Reflection	Ask students to reflect on what they understood from the experience.	Reveal what kinds of learning or shifts in thinking the prototype is likely to support, including for students with different levels of proficiency.	After using a new activity, students share what they think the learning goals were, and what they understood.
Micro Pilot (Single Activity)	Test one activity or piece of a prototype in a real classroom or school with a small group.	See if an idea works in practice without committing to a full implementation.	A teacher tries a new science experiment activity with one class.
Context for Use	Explore how teachers interpret, adapt, and integrate the design to meet their students' needs, and how it might fit into existing routines and practices.	See how teacher decision-making and context might matter for and align with use.	Invite teachers to describe how they would use the prototype in their classroom, explaining the choices they would make and why.

TEST NAME	DESCRIPTION	WHAT RESULTS PROVIDE	EXAMPLE
Mini Pilot (Full Prototype)	Deliver a full lesson, training session, or parent meeting using the prototype as designed. Collect feedback during and after, and observe how learners interact and support each other's learning.	Understand feasibility, timing, collaborative learning dynamics, and engagement in authentic conditions.	A county runs a full teacher workshop using the draft training agenda and materials.
Real-World Trial (Multiple Components Together)	Test several components of a prototype together (lesson plan, materials, teacher instructions) to see how they interact.	When you want to check how different elements fit together and whether the combined experience works to enhance learning.	A school tests a new unit that combines lessons, teacher training, and student activities.
Leader/ System Review	Share the prototype with curriculum officers, regional leaders, or ministry officials to get input on alignment with policy, curriculum, or system priorities.	When you need to test fit with the broader system and secure buy-in for longer-term adoption.	Regional leaders analyze how a teacher training prototype promotes conceptual learning and consider what adaptations or supports would help it work across different schools and policy contexts.

Ways to Document Learning

Use quick simple tools to capture what you learn from testing and use what you learn to improve your prototype. Choose one or two approaches that best fit your context, and adapt the approach to fit the needs of your test. The goal is to learn fast and then share that learning with your team so your next iteration is better than your previous one.

1. Observation Log

Purpose: Record what you see and hear during a test before drawing conclusions.

TIME/MOMENT	OBSERVATION	POSSIBLE DESIGN IMPLICATIONS

2. Feedback Capture Grid

Purpose: Organize user reactions and insights from interviews or discussions.

I LIKED...	I WISHED...	I WONDERED...	I LEARNED...

To edit this handout as a .doc file, click here. We suggest downloading the file to your desktop, as opening it in Google Docs may lead to formatting changes or layout issues.

3. Stop, Start, Continue

Purpose: Capture the key takeaways from a test, and decide what to do next.

STOP	START	CONTINUE

4. Prototype Tracker

Purpose: Track how each prototype evolves and what's been learned over multiple tests.

PROTOTYPE	VERSION	WHAT WAS TESTED	KEY INSIGHTS	CHANGES MADE	NEXT TEST

Prototype Testing Plan Template

Use this template to plan and document each prototype test. It helps your team clarify what you want to learn, select an appropriate test type, and capture insights to inform refinements.

Basic Information

Prototype Name:

Version # (if multiple iterations):

Date(s) of Test:

Location:

Team Members Involved in Test:

Learning Focus

Primary Learning Question(s): (What do you want to learn from this test?)

Drivers or Hypotheses Being Tested: (List the specific drivers from your driver diagram that this prototype aims to influence.)

Test Design

Test Type: (Choose one)

- ☐ Simulation or role play
- ☐ User review and feedback
- ☐ Think aloud
- ☐ Tech check
- ☐ Learning reflection
- ☐ Micro pilot
- ☐ Context for use
- ☐ Mini pilot
- ☐ Real-world trial
- ☐ Leader or system review
- ☐ Other:

Description of Test Approach: (Briefly describe what you will do and who will be involved.)

Target Participants and Users: (Teachers, students, school leaders, policymakers, parents, etc.)

Setting and Context Details: (Where will the test take place? What materials, equipment, or permissions are needed?)

Duration and Timing: (When will the test occur? How long will it last?)

Preparation

Resources and Materials Needed: (List any digital or physical materials, tools, or supplies required.)

Stakeholders to Inform or Involve: (Identify any relevant leaders, administrators, or parents.)

Data Collection and Documentation

What Data Will You Collect? (Select all that apply)

- [ ] Observation notes
- [ ] User feedback forms
- [ ] Interview notes
- [ ] Reflection notes from facilitator
- [ ] Photos and artifacts
- [ ] Other:

How Will You Document What You Learn? (Identify the documentation tool you will use, e.g., observation log, feedback capture grid, prototype tracker, survey, or summary notes, or develop your own template.)

Who Is Responsible for Documentation?

Anticipated Risks or Challenges

List any potential risks, such as limited time, user availability, or technical issues, and how you plan to mitigate them.

Reflection and Next Steps (Complete after the test)

Key Insights: (What did we learn from this test?)

User Reactions: (What surprised or confirmed our expectations?)

What Worked Well: (List elements to keep or build on.)

What Needs to Change: (List improvements for the next version.)

Next Steps: (Will you refine and retest? Combine with another prototype? Finalize for implementation?)

Team Members Responsible for Refinement:

Step 2: Conduct Tests

It is time to carry out your tests and document results following your **Prototype Testing Plan**. Remember that prototypes are designed to be improved. The goal of the test is not to get everything right, but to uncover aspects of the prototype that may need improvement. It is common for prototype testing to highlight things that may have been overlooked in the design phase.

COMMON PITFALLS IN EDTECH

Testing often reveals challenges that may not have been clear during design. Watch for:

- Fragile infrastructure: Technology breaks down, or it cannot run consistently in real classroom conditions.
- Overestimating teacher skills and confidence: Teachers may avoid using a tool because they feel unprepared or fear failure in front of students.
- Tech without a purpose: Activities focus on the tool itself rather than supporting learning goals.
- Hidden costs: Repairs, replacement parts, or subscriptions make solutions unsustainable.
- Unequal access: Some students (girls, rural learners, students with disabilities) are left out of technology use.

Step 3: Analyze Testing Data and Identify Improvements

The goal of this step is to use what you learned from the tests to determine how to improve your prototypes. As you review and discuss what you learned across the documented results, consider as a team what your results tell you about how to improve your prototype. You should also refer back to your **Driver Diagram** to see what role, if any, the conditions you identified earlier played in the testing, and whether you learned of new conditions you need to take into account. You can modify your **Driver Diagram** at this stage just as you can modify your prototypes.

Step 4: Refine Prototypes

After you determine from discussing testing results how to improve your prototypes, you will need to decide who will be responsible for improvements and by when improvements should be completed.

You will also decide whether to conduct further testing on the revised prototypes. If so, you can revisit the planning steps to choose the testing and documentation approaches best suited to your learning goals and time constraints.

Moving Through Steps 3 and 4

Workshop 5, which follows, will guide your team through Steps 3 and 4 following your prototype testing.

WORKSHOP 5:

Analyze Results and Refine Prototypes

Facilitator's Guide

Workshop Objective:

- Share the results of prototype testing and reflect on successes, challenges, and surprises
- Refine prototypes based on insights gained
- Revisit and update the driver diagram as needed based on the prototype testing results
- Determine priorities and next steps for further testing

Participants: The core design team and additional stakeholders who were involved in developing prototypes. Also consider including other stakeholders from your stakeholder mapping (Phase 1) who may offer helpful perspectives during the testing and feedback phase.

Pre-Work:

- Each prototype group completes testing as planned in Workshop 4.
- Each prototype group documents learning from testing.

Agenda (1.5 hours)

TIME	ACTIVITY	MATERIALS NEEDED
5 min.	Welcome and overview	Slides with workshop objectives and agenda **Driver Diagram** (Phase 3, Workshop 2)
25 min.	Prototype teams report out on learning from tests	Participants' documentation from testing Chart paper and markers
20 min.	Synthesis and implications	Chart paper and markers
25 min.	Refine prototypes	Prototype tracker from **Ways to Document Learning**
15 min.	Next steps	Slide or chart paper

Guidance for Facilitators

Welcome and overview (5 minutes):

- Briefly remind the group of where they are in the collaborative design process and the key principles for testing. Emphasize that both successes and failures are valuable during testing because they both inform learning that will improve your design. "Failing fast," or encountering challenges earlier rather than later leads to faster learning and improvement.
- Remind participants that, based on test results, they may want to modify not only their prototypes but also the **Driver Diagram**, since tests may have uncovered challenges not previously included in the design stages.

Prototype teams report out on learning from tests (25 minutes):

- Each prototype group shares the prototype they tested, their learning question, how the test was conducted, and what was learned. They should include evidence from their documentation, such as quotes, artifacts, and observations. They should also share their initial thinking about potential refinements.
- After each group shares, other participants can ask clarifying questions, but a full discussion will work best after all groups have shared.
- Capture the group's learning on chart paper.

Synthesis and implications (20 minutes)

- Lead a group discussion about what participants learned from prototype testing. Consider the following guiding questions:

  What patterns and themes are emerging across prototypes?

  What evidence of meaningful learning or engagement did we observe?

  What kinds of teaching did the prototype enable, and did it reflect how people learn best through active engagement, feedback, and collaboration?

  How did resource constraints influence testing results across different contexts? What challenges emerged with infrastructure?

  Did testing reveal new training needs for teachers (e.g., digital skills, classroom management with devices)? What did testing suggest about what supports are most important for teachers?

  How sustainable might this prototype be given the costs, maintenance, and replacement needs?

  Where do we see alignment or gaps with the **Driver Diagram**? Should the **Driver Diagram** be updated to reflect new insights?

  What are the implications of our testing insights for refining prototypes?

- Capture insights on chart paper.

Refine prototypes (25 minutes)

- Prototype groups work together to apply feedback and refine their prototypes.
- Update the **Prototype Tracker** (in the **Ways to Document Learning** handout) to reflect progress and changes made.
- If additional work is needed outside of workshop time, the group should determine how it will be completed and who is responsible.
- Determine whether additional testing is needed for the prototype, and if so, plan for the next test.

Next steps (15 minutes)

- Each prototype group should briefly share with the full group what changes they made to their prototype and whether they plan to conduct further testing. Provide time for participants to ask questions and make suggestions.
- Discuss whether there are additional prototypes that need to be developed and tested beyond the initial set. Assign responsibilities and timelines.
- If additional testing is planned, set a time to come together to review findings and refine prototypes again. This workshop can be repeated until the prototypes are ready for implementation.

By the end of Phase 5, your team will have tested and refined multiple prototypes, gaining valuable insights into what works, what needs adjustment, and under what conditions each idea succeeds. As you step back and look across your prototypes, consider how they fit together and how they collectively address your core challenge.

CONSIDER BEFORE PROCEEDING

Before moving from testing to implementation, teams should consider:

- Have prototypes been refined enough that they consistently work across contexts?
- Do they align with system priorities and policies?
- Is there evidence of feasibility (cost, infrastructure, time) and early signs of learning or impact?
- Is there buy-in from the stakeholders who will sustain and scale the work?

STORY FROM THE FIELD:

Testing and Refining to Improve KPLAY Communities of Practice in Kenya

Communities of practice (CoPs) emerged as a cornerstone for teacher capacity building in the Tech & Play program (KPLAY) in Kenya. However, CoPs were not initially designed in ways that teachers found rewarding. After investigating the challenges, KPLAY redesigned the CoPs to clarify community leadership, spark higher engagement, help teachers connect learning with practice, and foster relationship building with teachers at other schools.

KPLAY included CoPs as a program component with the goal of providing sustained teacher support and helping teachers master new student-centered classroom practices presented in formal training sessions. In the pilot phase, KPLAY required each participating school to establish a CoP, while allowing schools to choose how to structure them. But the CoPs did not get off to a strong start.

KPLAY's research partner, Education Design Unlimited (EDU), learned that most participating schools had not launched CoPs, and in schools that had launched them, engagement was low. CoP sessions focused mostly on reviewing notes from the training sessions with other teachers. Because teachers did not find these reviews helpful, they were not motivated to participate, especially given the other demands on their time.

To learn more about how to design effective CoPs, EDU organized a learning session during which other organizations shared how they implemented CoPs. KPLAY used the data from the learning session to redesign its COPs. In its new iteration, KPLAY developed centralized structures and activities, including engagement strategies to connect teachers with peers in other schools, while also maintaining autonomy for each school's CoP to develop organically. In addition, they added leadership roles. Each school selected a teacher to serve as Play Ambassador and coordinate the CoP. This role focused on supporting teachers to transition student-centered activities into their classrooms.

The revised CoPs included strategies such as:

- **Materials and Resource Development Days:** Teachers work together to use found or low-cost items to make learning resources.
- **Peer observations:** Teachers observe each other as they pilot new learning activities and instructional approaches.
- **Hybrid CoP model:** The face-to-face CoP at each school connects with other CoPs via WhatsApp and other platforms.
- **Weekly discussion prompts:** Prompts are shared with teachers via WhatsApp groups to address challenges, such as the effective use of limited tech resources or how to facilitate "hands-on, minds-on learning."

The team designed these strategies based on what it learned to improve CoP management and provide more rewarding experiences for participating teachers.

Looking Ahead: Phase 6

In the next phase, you will use this thinking to define the **core components** of your program model and plan how you will successfully **implement** and **monitor** your program. **Phase 6: Plan for Implementation** will guide you in translating your design into an actionable plan, ensuring that your initiative is both of a high quality and built to last.

Phase 6:

Plan for Implementation

Phase 6 AT A GLANCE

Step 1: Define your core model. Identify and describe the essential components of your initiative to determine which must be preserved for success and which can be adapted for different contexts.

Defining Core Components Table

Step 2: Develop an implementation plan. Develop a concrete plan to guide implementation, detailing who will do what and when and how implementation will be supported.

Implementation and Monitoring Tool

Step 3: Develop a monitoring plan. Create a simple system for tracking progress and using early evidence to guide reflection, learning, and improvement during implementation.

Facilitator's Guide for Workshop 6: Define Your Core Model and Plan for Implementation

In this phase, your team will translate promising tested prototypes into a **clear evidence-informed plan for implementation.** The goal is to ensure your model can be implemented with quality in real-world schools and classrooms.

Phase 6:

Plan for Implementation

The first task is to establish a shared concrete vision of what will be implemented. During design, teams often create several promising ideas. Phase 6 brings them together into a coherent program that everyone can understand, support, and deliver with quality. A clear shared picture of the model helps ensure that the essential elements of your design are preserved as the work expands to new contexts.

Planning for implementation goes beyond logistics. It is about creating alignment and ownership across all the people and partners involved so they share the same understanding of what success looks like and how to achieve it. When this clarity is in place, teams can implement with confidence, adapt when needed, and use early evidence to keep learning and improving.

By the end of Phase 6, your team will have **a practical road map for implementation** that connects your design vision to daily practice.

Step 1: Define Your Core Model

The purpose of this step is to anchor implementation in a clear, shared understanding of the core components of your program and what quality looks like across diverse contexts. Many initiatives lose focus or consistency as they go beyond the prototyping phase because teams have not defined exactly what needs to be implemented in the same way and what can be adapted for different contexts. This step prevents that issue by helping your team articulate the essential elements that make your model effective.

Using the **Defining Core Components Table** on page 84, synthesize what you have learned from prototyping to identify the core components of your model—the key practices, supports, or structures that drive results—and clarify where there is flexibility for local adaptation. Then, describe what strong implementation looks like in practice using "look-fors," which are specific and observable indicators that make quality visible. These cues help everyone involved, from teachers to coaches to leaders, recognize effective practice and provide a shared reference for training, coaching, and monitoring. By defining your core components and what quality looks like, you create the foundation for consistent high-quality implementation.

KEEP LEARNING AT THE CENTER WHEN ADAPTING TECHNOLOGY

In resource-constrained settings, technology tools and infrastructure often vary from school to school. What matters most is not whether the same device or platform is used everywhere, but whether every student experiences the kind of teaching and learning your model was designed to support.

It's important to stay focused on the learning approach and maintain the practices that help students think critically, collaborate, solve problems, and apply new ideas. These are the elements that define quality, and they should remain constant in every context.

The tools and technologies that support this approach can be flexible. If devices are limited, connectivity is unreliable, or maintenance costs are high, adapt the technology rather than the learning goals. Look for no-tech or low-tech alternatives that serve the same purpose. For example, consider replacing a digital simulation with a hands-on experiment, or using locally available materials when devices are unavailable.

By keeping learning goals at the center and treating technology as a tool rather than a requirement, you help ensure that every student benefits from the same powerful approach even when the resources look different.

Defining Core Components Table

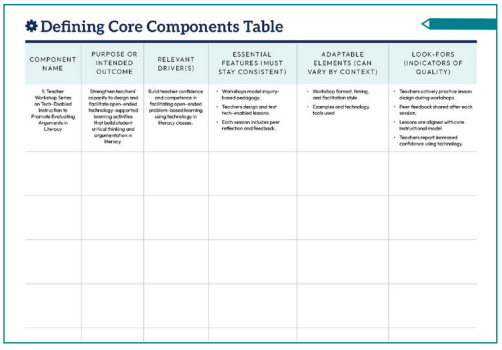
The **Defining Core Components Table** helps teams identify and describe the key elements of their initiative that are essential for achieving impact. Each component represents a major part of the design that addresses one or more drivers from the team's updated **Driver Diagram.**

Documenting the components in this way builds a shared understanding of how the initiative works—what must remain consistent, what can be adapted for use in different contexts, and what quality looks like in practice. Clearly defined components also serve as the foundation for implementation planning and monitoring later in the process.

Remember: Connecting each component to your **Driver Diagram** helps ensure that every part of your initiative is purposeful and aligned to the change you want to see. You can also refer to this table when you develop your **Implementation and Monitoring Plans**—keeping your design, execution, and learning processes tightly connected.

Tips for completing each column of the Defining Core Components Table follow. The first row is completed as an example.

- **Component Name:** Provide a short descriptive title for the component (e.g., Teacher Workshop Series on Tech-Enabled Instruction). Each should represent a major function or process that contributes directly to the initiative's goals rather than to a single activity.
- **Purpose or Intended Outcome:** Describe why this component exists, that is, the specific improvement or result it aims to achieve. Keep the purpose focused on outcomes for students, teachers, or schools.
- **Relevant Driver(s):** Identify which primary or secondary driver(s) from your **Driver Diagram** this component is designed to influence. This ensures that every component has a clear connection to the team's overall change strategy.
- **Essential Features (Must Stay Consistent):** Describe the nonnegotiable elements that define this component. These are the actions, materials, or processes that should look the same in every implementation site to ensure consistency and quality.
- **Adaptable Elements (Can Vary by Context):** Describe what can be customized to fit different contexts or resource levels, such as timing, delivery method, or examples. Adaptation allows flexibility without changing the component's core purpose.
- **Look-Fors (Indicators of Quality):** Identify observable behaviors, outputs, or outcomes that show the component is being implemented well. These can later inform coaching, observation tools, or fidelity monitoring.


Defining Core Components Table

COMPONENT NAME	PURPOSE OR INTENDED OUTCOME	RELEVANT DRIVER(S)	ESSENTIAL FEATURES (MUST STAY CONSISTENT)	ADAPTABLE ELEMENTS (CAN VARY BY CONTEXT)	LOOK-FORS (INDICATORS OF QUALITY)
1: Teacher Workshop Series on Tech-Enabled Instruction to Promote Evaluating Arguments in Literacy	Strengthen teachers' capacity to design and facilitate open-ended technology-supported learning activities that build students' critical thinking and argumentation in literacy	Build teacher confidence and competence in facilitating open-ended problem-based learning using technology in literacy classes.	• Workshops model inquiry-based pedagogy. • Teachers design and test tech-enabled lessons. • Each session includes peer reflection and feedback.	• Workshop format, timing, and facilitation style • Examples and technology tools used	• Teachers actively practice lesson design during workshops. • Peer feedback shared after each session. • Lessons are aligned with core instructional model • Teachers report increased confidence using technology.

Defining Core Components Table, on the following page

Defining Core Components Table

COMPONENT NAME	PURPOSE OR INTENDED OUTCOME	RELEVANT DRIVER(S)	ESSENTIAL FEATURES (MUST STAY CONSISTENT)	ADAPTABLE ELEMENTS (CAN VARY BY CONTEXT)	LOOK-FORS (INDICATORS OF QUALITY)
1: Teacher Workshop Series on Tech-Enabled Instruction to Promote Evaluating Arguments in Literacy	Strengthen teachers' capacity to design and facilitate open-ended technology-supported learning activities that build student critical thinking and argumentation in literacy.	Build teacher confidence and competence in facilitating open-ended problem-based learning using technology in literacy classes.	• Workshops model inquiry-based pedagogy. • Teachers design and test tech-enabled lessons. • Each session includes peer reflection and feedback.	• Workshop format, timing, and facilitation style. • Examples and technology tools used.	• Teachers actively practice lesson design during workshops. • Peer feedback shared after each session. • Lessons are aligned with core instructional model. • Teachers report increased confidence using technology.

Step 2: Develop an Implementation Plan

Once your team has defined a clear shared model, the next step is to plan how it will be implemented in practice. A strong implementation plan ensures that as the team turns its tested prototypes into coordinated action, all involved maintain a shared vision of the goals and key learning objectives. Implementation planning also helps you anticipate possible barriers and devise strategies to address them. Lastly, the plan helps everyone involved understand their roles and responsibilities, program timelines and milestones, and approaches for monitoring progress towards objectives.

Use the **Implementation Planning Table** in the **Implementation and Monitoring Tool** to plan and track implementation. For each major component of your model, outline the key actions and milestones, assign clear roles and responsibilities, and set realistic timelines for delivery. Include simple evidence of completion so progress can be easily verified. The workshop in this phase will guide your team to collaboratively complete this table.

⚙ Implementation and Monitoring Tool

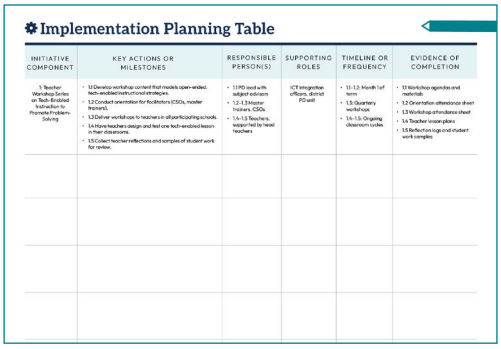
The **Implementation and Monitoring Tool** helps teams plan, coordinate, and track implementation progress across multiple components of an initiative. It provides a structured way to define key actions, responsibilities, and evidence of progress, ensuring that activities are carried out on time and with quality. The tool also supports reflection and learning by linking implementation activities to measurable indicators, thereby helping teams assess whether their actions are leading to the intended improvements.

⚙ Implementation Planning Table

Use this table to break each initiative component into specific actions or milestones and to assign clear responsibilities, timelines, and evidence for tracking progress. Teams should revisit and update this table regularly (e.g., at quarterly reflection meetings) and check which milestones are complete, what challenges arose, and what adjustments are needed before moving forward.

Tips for completing each column of the **Implementation Planning Table** follow. The first row is completed as an example.

- **Initiative Component:** Include all of the components identified in the **Defining Core Components Table**.
- **Key Actions or Milestones:** List the specific steps or activities that must happen to successfully complete this component.
  - Number milestones sequentially (e.g., 1.1, 1.2, 1.3; 2.1, 2.2, 2.3) to make tracking easier.
  - Each milestone should be an observable action or deliverable, that is, something you can verify has been completed (e.g., “Workshop materials developed,” “Units piloted,” “Feedback collected”).
- **Responsible Person(s):** Identify who will lead each milestone. This should be the person or role accountable for ensuring completion (e.g., professional development lead, master trainers, curriculum lead). Use role titles rather than individual names so the plan remains relevant over time.
- **Supporting Roles:** List other individuals or groups who will assist the lead in completing the milestone. These may include technical advisors, facilitators, local education officers, or partner organizations. Clarify how they will contribute (e.g., “provide data collection support,” “review draft materials”).
- **Timeline or Frequency:** Specify when each milestone will happen by date, term, or frequency (e.g., Term 1, quarterly, monthly). If the activity repeats, note how often and at what intervals.
- **Evidence of Completion:** Describe how you will know the milestone has been completed. Examples include attendance lists, training agendas, draft or final documents, observation notes, meeting reports, or photos. Keep evidence simple and easy to collect.


⚙ Implementation Planning Table

INITIATIVE COMPONENT	KEY ACTIONS OR MILESTONES	RESPONSIBLE PERSON(S)	SUPPORTING ROLES	TIMELINE OR FREQUENCY	EVIDENCE OF COMPLETION
1. Teacher Workshop Series on Tech-Enabled Instruction to Promote Problem-Solving	• 1.1 Develop workshop content that models open-ended, tech-enabled instructional strategies. • 1.2 Conduct orientation for facilitators (CSOs, master trainers). • 1.3 Deliver workshops to teachers in all participating schools. • 1.4 Have teachers design and test one tech-enabled lesson in their classrooms. • 1.5 Collect teacher reflections and samples of student work for review.	• 1.1 PD lead with subject advisors • 1.2–1.3 Master trainers, CSOs • 1.4–1.5 Teachers, supported by head teachers	ICT integration officers, district PD unit	• 1.1–1.2: Month 1 of term • 1.3: Quarterly workshop • 1.4–1.5: Ongoing classroom cycles	• 1.1 Workshop agendas and materials • 1.2 Orientation attendance sheet • 1.3 Workshop attendance sheet • 1.4 Teacher lesson plans • 1.5 Reflection logs and student work samples

Implementation Planning Table, on the following page

Implementation Planning Table

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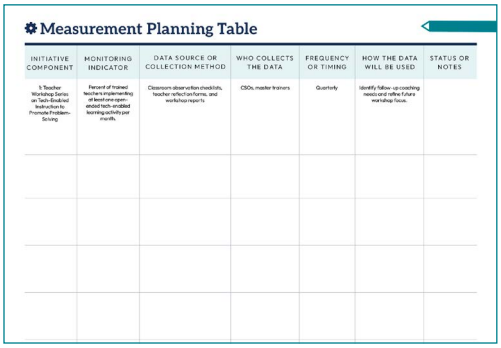
Measurement Planning Table

Use this table to describe how progress and quality will be measured for each initiative component. The goal is to ensure that implementation is not only happening as expected but also leading to improvement.

Tips for completing each column of the Measurement Planning Table follow. The first row is completed as an example.

- **Initiative Component:** Use the same component names as in the **Implementation Planning Table** for consistency.
- **Monitoring Indicator:** Describe what will be measured to track implementation progress or quality.
  - Indicators should be specific, measurable, and meaningful.
  - You may include both quantitative (percentages, counts) and qualitative (feedback summaries, reflections) indicators.
- **Data Source or Collection Method:** Explain how information will be gathered (e.g., "classroom observation checklist," "teacher reflection logs," "review of lesson plans," "attendance sheets," "surveys," "focus groups"). Choose methods that are realistic and a low burden for teams.
- **Who Collects the Data:** Identify the role or team responsible for collecting and compiling data. If data collection is shared, specify each person's contribution.
- **Frequency or Timing:** Note how often and when data will be collected (e.g., monthly, per term, after each training cycle). Regular intervals make it easier to identify trends and make timely adjustments.
- **How the Data Will Be Used:** Describe how the information will inform decisions or learning (e.g., "Adjust workshop content based on teacher feedback," "identify which schools need additional coaching support"). This column ensures data collection is purposeful and leads to action.
- **Status or Notes:** Use this column to document progress updates, challenges, or next steps during review meetings. This is a living section that evolves over time.


Measurement Planning Table

INITIATIVE COMPONENT	MONITORING INDICATOR	DATA SOURCE OR COLLECTION METHOD	WHO COLLECTS THE DATA	FREQUENCY OR TIMING	HOW THE DATA WILL BE USED	STATUS OR NOTES
½ Teacher Workshop Series on Tech-Enabled Instruction to Promote Problem-Solving	Percent of trained teachers implementing at least one open-ended tech-enabled learning activity per month.	Classroom observation checklists, teacher reflection forms, and workshop reports	CSOs, master trainers	Quarterly	Identify follow-up coaching needs and refine future workshop focus.	

Measurement Planning Table, on the following page

Measurement Planning Table

INITIATIVE COMPONENT	MONITORING INDICATOR	DATA SOURCE OR COLLECTION METHOD	WHO COLLECTS THE DATA	FREQUENCY OR TIMING	HOW THE DATA WILL BE USED	STATUS OR NOTES
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Step 3: Develop a Monitoring Plan

This step helps your team design a monitoring plan that connects implementation to improvement. The goal is not to collect more data, but to gather the right information to help you understand whether your model is being implemented as intended and whether it's supporting meaningful learning.

Monitoring and reflection are especially critical in dynamic resource-constrained contexts where plans must adapt to real conditions. A focused learning plan helps your team see early signs of progress, identify what supports teachers and schools need, and make timely adjustments before challenges grow.

Use the **Measurement Planning Table** in the **Implementation and Monitoring Tool** to identify indicators that show both progress and quality. For each component of your initiative, define what you will measure, how the information will be gathered, who will collect and review it, and how the results will be used.

Moving Through the Steps

The following workshop will guide your team through the steps in this phase.

WORKSHOP 6:

Define Your Core Model and Plan for Implementation

Facilitator's Guide

Workshop Objectives:

- Clearly define the core components of your program to establish a shared understanding of what will be implemented.
- Develop an initial implementation plan that outlines key actions, responsible roles, and timelines for each core component.
- Design a monitoring approach that identifies indicators and data sources to track progress and inform continuous learning.

Participants: The core design team and additional stakeholders with relevant expertise (pedagogical, technological, etc.) in the varied contexts where you hope to implement your model. Review the **Implementation and Monitoring Tool** in advance to be sure you include all stakeholders who will be responsible for aspects of implementation.

Pre-Work:

- Ask participants to bring finalized prototypes and notes summarizing what was learned from testing, including evidence of feasibility and insights about contextual variation.
- Update the **Driver Diagram** based on what was learned during prototype testing.

Agenda (3 hours)

TIME	ACTIVITY	MATERIALS NEEDED
10 min.	Welcome and overview	Slides with objectives and agenda
15 min.	Review recent learnings from refining prototypes	Slides Intervention handout (see pre-work) Revised **Driver Diagram**
50 min.	Define the core components of your program	**Defining Core Components Table** Chart paper and markers
45 min.	Create your Implementation Plan	**Implementation Planning Table** in the **Implementation and Monitoring Tool** Chart paper and markers
45 min.	Develop your Measurement Plan	**Implementation Planning Table** in the **Implementation and Monitoring Tool** Chart paper and markers
15 min.	Reflection and next steps	Completed table and tool

Guidance for Facilitators

Welcome and overview (10 minutes):

- Begin by reminding participants what they have already accomplished. Consider showing a slide to represent the steps of the design process completed so far, including developing, testing, and refining prototypes to build the proposed edtech program.
- Review workshop objectives and agenda.

Review recent learnings from refining prototypes (15 minutes):

- Briefly revisit how the team refined prototypes following the most recently conducted testing.
- Review how these changes will help the prototype move the levers in your revised **Driver Diagram.**

Define the core components of your program (50 minutes):

- Explain that the first step of effective implementation is to establish a clear shared understanding of what will be implemented. This activity will involve identifying the core components of the program you will be implementing, why they are important, and how they relate to the **Driver Diagram.** The next step is to distinguish between features of each component that are essential to implement as designed to those that can be adapted to different contexts.
- Show the **Defining Core Components Table** and briefly explain each column. Drawing on the previous conversation about what the team learned from testing prototypes, ask the group to list the core components of the program and record the components on the table.
- Review the **Keep Learning at the Center When Adapting Technology** box (page 82). Select one component and ask the group to reflect on it:

  Which elements of this component seem essential to implement as designed without adapting? Are all those elements pedagogical or are some technological?

  Which elements may need adapting based on variations in context?
- Divide participants into mixed-expertise groups. Have each group focus on a different core component and ask them to work together to complete the table for that component. Refer back to your **Driver Diagram** so groups can note the relevant drivers in each row. Remind each group to specify the "look-fors," that is the visible indicators of quality implementation.
- Have each group share how they completed the table for their component. Facilitate discussion to build consensus in the group. The completed table will be a living document that continues to evolve as the group learns more about what effective implementation looks like.

Create your implementation plan (45 minutes):

- Explain that as you move from design to implementation, your team will develop a clear structured plan for how the components of your program will be implemented. A strong implementation plan ensures the team maintains its focus on shared vision and key learning objectives. Implementation planning also helps you anticipate possible barriers and devise strategies to address them. Lastly, the plan helps everyone involved understand their roles and responsibilities, program timelines and milestones, and approaches for monitoring progress towards objectives.
- Review the **Implementation Planning Table** in the **Implementation and Monitoring Tool**, noting the tips for completing each column.
- Guide the whole group in completing the **Implementation Planning Table** together for one program component. Encourage the group to consider questions such as:

  Is the focus on the drivers central? Are the learning goals clear?

  What challenges do they foresee? How can they adjust for them by revising the plan?

Do the responsible and support people have adequate time and aligned expertise to support implementation? Do they have relationships with other key stakeholders they will need to keep informed?

Does the timing seem realistic? What other events, such as school breaks or professional learning requirements, might the team need to plan around?

- Return to small groups to complete the **Implementation Planning Table** for the component the group had worked on in the Core Component activity.
- Share out as a whole group and discuss questions similar to those used to complete the first row as a group.

Develop your measurement plan (45 minutes):

- Review the **Measurement Planning Table.** Guide the whole group to complete the table together for one component. Encourage the group to consider:

  What are the most important outputs and outcomes to measure, given the change you hope to effect? How well do the data align with core components?

  What kinds of decisions might be made based on your monitoring data?

  When do leaders need data for decision-making?

  How often can the team feasibly gather data and convene to reflect on it?

  How can data be gathered simply, including by tracking the "look-for" quality indicators?

  Can any data collection be built into existing processes, such as periodic teacher surveys?

- Return to small groups to complete the **Measurement Planning Table** for the component the group had worked on in the defining core components activity.
- Share out as a whole group and discuss:

  Does the measurement plan align with key elements of the implementation plan?

  Can the plan be simplified? If so, how?

Reflection and next steps (15 minutes):

- Identify people to create versions of the **Implementation and Monitoring Plans** to be shared with all stakeholders. (If you missed any key stakeholders in this workshop, consider asking for their feedback on the draft plans following the workshop.)
- Preview that the next workshop—the last in the process—will focus on planning for sustainability and continuous improvement.
- Share the next workshop date and location.

By completing Phase 6, your team has created a road map for putting your model into practice. You've defined what quality implementation looks like, organized how it will happen, and established a way to learn and adapt over time.

STORY FROM THE FIELD:

Using Communities of Practice to Improve Teacher Use of an App-Based Professional Development Program in Rwanda

The VSO Let's Learn Through Play (or Twigire Mumikino Rwanda, TWR) program in Rwanda, which ran from March 2021 to October 2025, aimed to support early childhood education teachers in using play-based instructional strategies. The program distributed tablets that teachers could use to participate in an app-based continuing professional development (CPD) program.

Although many teachers were excited to participate in the CPD program, ongoing monitoring and teacher feedback revealed that other teachers encountered challenges. Some did not have the level of digital literacy skills needed to comfortably use the app, while other teachers noted a lack of time and motivation as additional challenges.

In response, the program team adapted its approach by integrating the content from the CPD program into existing teacher community of practice (CoP) meetings. This shift allowed teachers to explore the app content together with peer support and guidance, rather than relying solely on individual asynchronous participation. This pivot also grounded the implementation in structures already familiar to teachers, where peer support and collaboration were part of routine professional development.

By adjusting how the program implemented professional development based on monitoring and feedback—and by tying the digital learning model to these established systems in context—the TWR team reduced barriers to participation while strengthening collaboration and shared learning. This experience underscores the importance of monitoring implementation closely and remaining flexible to adapt to local conditions during implementation across contexts. Successful edtech programs must continuously assess how tools are used in context and modify delivery to fit teachers' realities. This approach helps ensure programs are relevant and aligned to local strengths and needs.

Looking Ahead: Phase 7

In the next phase, you will look beyond initial delivery to ensure your model can grow and last. **Phase 7: Plan for Scale and Sustainability** will guide your team to strengthen system capacity, build partnership and financing strategies, and establish a culture of continuous learning to drive improvement as your initiative scales.

Phase 7:

Plan for Scale and Sustainability

Phase 7 AT A GLANCE

Step 1: Identify and address capacity gaps for scale. Assess what capacities already exist, what is needed to implement at scale, and identify strategies to close gaps.

System Capacity for Scale Planning Tool

Facilitator Guide for Workshop 7: Identify System Capacity for Scale

Step 2: Plan for financial sustainability. Build on your capacity analysis to identify how critical program supports will be financed over time and plan how costs can be integrated into existing budgets and systems.

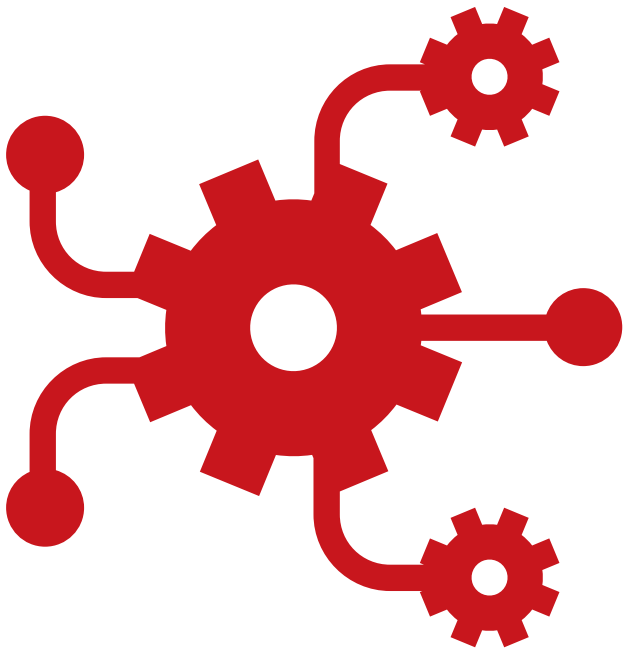
Financial Sustainability Planning Tool

Step 3: Establish routines for learning and improving. Create simple, consistent structures for reflection and data use that help teams and systems learn from implementation and strengthen quality as the model scales.

Learning Reflection Protocol for Continuous Improvement

Facilitator Guide for Workshop 8: Plan for Financial Sustainability and Continuous Improvement

With a defined model and implementation plan in place, this final phase focuses on what it takes to **sustain and expand your initiative over time.** Phase 7 is for teams interested in expanding a project that works in a few sites into a model that the system can support and sustain at scale.



Phase 7:

Plan for Scale and Sustainability

Many education initiatives achieve early success but struggle to endure once external support ends. Sustainability requires deliberate attention to capacity, leadership, financing, and learning routines. Phase 7 helps your team anticipate those needs early, identifying the people, structures, and resources that must be in place for your model to grow and be sustained in the future without losing quality.

For edtech initiatives, this planning is particularly important. The ongoing costs of connectivity, device replacement, and technical support, along with the need for teacher coaching and curriculum integration, are substantial. In this phase, you will map the **capacities** required at each level, clarify long-term **financing** and **partnership strategies**, and establish regular **reflection and learning routines** that drive improvement.

Phase 7:

Plan for Scale and Sustainability

By the end of this phase, your team will have **a realistic pathway for expanding at scale and sustainability** that builds on existing assets, embeds key supports into the education system, and fosters a culture of continuous learning so the initiative continues to evolve.

Step 1: Identify and Address Capacity Gaps for Scale

Scaling successfully depends on more than a strong model—it requires a system that has the people, structures, leadership, and resources to deliver that model with quality over time. This step helps your team identify what capacities already exist, what additional capacity will be needed for scale, and how to address the most critical gaps. Thinking about capacity early helps ensure that expansion builds on a solid foundation.

The **System Capacity for Scale Planning Tool** will guide your team to assess system readiness across four capacity areas: people and skills, systems and structures, leadership and guidance, and resources and infrastructure. For each core component of your model, the tool guides teams to describe the current level of capacity, define what will be needed for scale, identify the gaps between the two, and outline possible strategies or partnerships to address them.

Use this process as an opportunity for honest reflection and collective problem-solving. The goal is to build a shared understanding of what scaling will truly require. When completed collaboratively, the analysis helps teams clarify where to focus energy, how to build on existing strengths, and which gaps pose the most risk to sustainability. The following workshop will guide your team through this analysis. Review the results together to identify a small set of high-priority actions to guide your efforts to strengthen capacity.

Moving Through Step 1

The following workshop will guide your team to analyze system capacity for scale. We offer Workshop 7 and Workshop 8 separately so your team can prepare for the following steps by synthesizing what it learns in the capacity analysis. You may prefer to combine the two workshops into a single gathering and complete the synthesis as a group.

WORKSHOP 7:

Identify System Capacity for Scale

Facilitator's Guide

Workshop Objective:

- Analyze and document available and needed capacity to support scaling for each component of your program
- Review the component-level analysis and prepare to synthesize available and needed capacity at the program level

Participants: The core design team and additional stakeholders with knowledge of the capacities needed to support your program: people and skills, systems and structures, leadership and guidance, and resources and infrastructure

Pre-Work: Review the **Defining Core Components Table** completed during Workshop 6 (Phase 6). The team will begin this workshop's activity with the program components documented in that table.

Agenda (1.5 hours)

TIME	ACTIVITY	MATERIALS NEEDED
10 min.	Welcome and overview	Slides with objectives and agenda
40 min.	Determine system capacity for scale	Previously completed **Defining Core Components Table** and **System Capacity for Scale Planning Tool** Chart paper and markers
30 min.	Group share out and discussion	Completed tables by component from the **System Capacity for Scale Planning Tool**
10 min.	Next steps	Slide or chart paper

Guidance for Facilitators

Welcome and overview (10 minutes):

- Begin by reminding participants of the substantive work they have already accomplished. Consider showing a slide to represent the steps of the design process completed so far, including developing, testing, and refining prototypes to build the proposed edtech program, as well as planning for and beginning implementation.
- Review the workshop objective and agenda. Note that this workshop is brief, since the team will need to synthesize the work completed in this workshop before moving forward in the process.
- Preview that, after this workshop's activity, the team will convene one more time to analyze available and needed finances to sustain your program at scale over time. In a final activity, the team will establish learning and reflection routines to support continuous improvement.

Determine system capacity for scale (40 minutes):

- Introduce this activity by reminding the group that program quality is not the only factor that drives program success. The program must fit into and be supported by the education system in several ways in order to endure over time and thrive in varied contexts at scale.
- Bring participants' attention to the **System Capacity for Scale Planning Tool**. Guide participants in reviewing key aspects of system capacity that are noted on the tool: people and skills (competency), systems and structures (organization), leadership and guidance, and resources and infrastructure.
- In this activity, the team will map existing and needed capacity for each component of your model across these four types of capacity. Ask participants to refer back to the **Defining Core Components Table** completed in Workshop 6 (Phase 6) for the list of components you will address in this activity.
- Assign one or two core design team members to synthesize the team's work from today following the workshop. After the team analyzes capacity for each component, these team members will synthesize the team's insights, combining the analysis for each component into a program-level view.
- Remind participants that they will analyze financing across the four capacity areas in the next workshop, so they do not need to complete that activity now.
- Have the group work as a whole to select one program component to start with. Complete the table in the **System Capacity for Scale Planning Tool** for that component. Use the discussion questions in the tool to refine the table for the selected component.
- Next, divide participants into mixed-expertise groups. Assign each group to focus on a different core component and ask them to work together to complete another table for that component.

Group share out and discussion (30 minutes):

- Have each group share how they completed the capacity table for their component.
- As each group shares, guide the group to consider the full set of completed tables. Note any points of overlap among the tables. For example, could a single partner help address two types of gaps?
- Have those assigned to synthesize the team's work take notes during this discussion to aid their synthesis. Invite them to raise questions and insights as they look across all the completed tables. They should leave this activity comfortable they are prepared to synthesize the tables.

Next steps (10 minutes):

- Remind the team you will reconvene soon to complete two more activities together. The group will (1) analyze and document needed and available financing and (2) establish routines to support continuous improvement.
- Share the date and location of the last workshop.

After the workshop:

- Synthesize the tables completed by component into a single table to gain a program-level view, for example, with available capacity for a given type of capacity shown in a single cell. The team will use the synthesized table when it reconvenes.

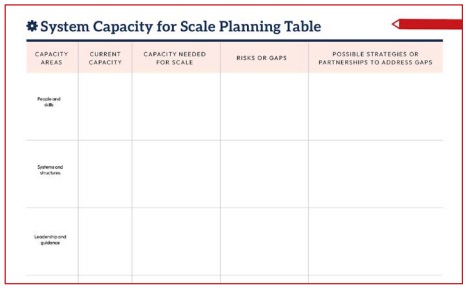
System Capacity for Scale Planning Tool

This tool helps your team assess what capacities already exist to implement and scale your model, identify what additional capacity is needed, and plan practical strategies to close any gaps. It supports evidence-informed decision-making about where to invest time and resources to strengthen delivery and sustainability.

For each core component of your model, your team will describe the current level of capacity in key areas, what would be needed to scale effectively, and where there are risks or gaps. You'll then identify possible strategies or partnerships to address those gaps. The resulting plan provides a clear picture of system readiness and priorities for strengthening implementation at scale.

Consider the following four areas of capacity:

1. **People and skills (Competency):** The training, coaching, peer learning structures, or other supports needed to ensure people have the knowledge and skills to implement the initiative as it scales.
2. **Systems and structures (Organization):** The processes, policies, and data systems that should support or monitor implementation. Consider how these supports can be aligned with or integrated into existing systems, such as national professional development frameworks, curriculum review processes, or school improvement structures.
3. **Leadership and guidance:** What leaders at different levels (school, county, ministry) can do to sustain alignment, address barriers, and reinforce priorities. Think about how leadership roles or responsibilities can be formalized within existing job descriptions, supervision systems, or policy guidelines to ensure continuity.
4. **Resources and infrastructure:** The financial, material, and infrastructure resources needed for scale. Consider not only what funding is required but also who will cover these costs (e.g., ministry budget, donor, school contributions) and how will these costs be integrated into existing budgets.


System Capacity for Scale Planning Table

CAPACITY AREAS	CURRENT CAPACITY	CAPACITY NEEDED FOR SCALE	RISKS OR GAPS	POSSIBLE STRATEGIES OR PARTNERSHIPS TO ADDRESS GAPS
People and skills				
Systems and structures				
Leadership and guidance				

System Capacity for Scale Planning Table, on the following page

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Discussion Questions

What strengths already exist in each capacity area that we can build on as we scale?

Which capacities are most critical for ensuring consistent learning experiences across contexts?

Which gaps are most critical to address first to ensure quality and sustainability?

What strategies could strengthen capacity in the short term? In the longer term?

How can we make the most of limited resources by aligning with existing structures or routines?

System Capacity for Scale Planning Table

CAPACITY AREAS	CURRENT CAPACITY	CAPACITY NEEDED FOR SCALE	RISKS OR GAPS	POSSIBLE STRATEGIES OR PARTNERSHIPS TO ADDRESS GAPS
People and skills				
Systems and structures				
Leadership and guidance				
Resources and infrastructure				

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Step 2: Plan for Financial Sustainability

This step helps your team identify how the capacities and activities needed for scale will be funded and how financial responsibilities can transition to sustainable sources over time. Planning early for financial sustainability allows teams to anticipate funding gaps, explore new partnerships, and design solutions that can be maintained within existing systems and budgets. Use the **Financial Sustainability Planning Tool** to build on the analysis completed in Step 1. For each of the four capacity areas, identify current funding sources, consider what will be needed as the initiative scales, and discuss where funding mechanisms are unclear or unsustainable. The tool then guides teams to explore strategies and partnerships that can make these costs more stable over time, such as integrating activities into government budgets, leveraging existing professional development programs, or aligning with ongoing reforms.

Use this step to explore how your model can align with existing financial systems, rather than operating as a separate project. The goal is not to produce exact budgets, but to surface where resources are uncertain and where creative solutions or partnerships could make them more stable.

PLANNING FOR THE HIDDEN COSTS OF EDTECH

Scaling and sustaining edtech initiatives require looking beyond the initial purchase of devices or software. The most successful programs plan early for the ongoing costs and supports required to keep technology working and useful over time, from infrastructure and maintenance to teacher development and system ownership.

When developing your sustainability plan, consider the true cost of scaling, including:

- Training and ongoing support for teachers, coaches, and school leaders
- Maintenance, updates, and replacement of hardware and software
- Connectivity and electricity costs, particularly in remote areas
- Technical and pedagogical support at the school or district level to keep technology functional and meaningful
- Data protection and privacy requirements that may require new policies or systems

These costs are often distributed across multiple budgets or departments, so collaboration and alignment are essential. Identify which expenses can be absorbed into existing systems and which will require new funding or partnerships.

Financial Sustainability Planning Tool

This tool helps teams identify current and future funding sources and strategies to sustain the capacity areas analyzed in the previous activity: People and Skills, Systems and Structures, Leadership and Guidance, and Resources and Infrastructure. Before completing this tool, review your analysis from the **System Capacity for Scale Planning Tool.** Use this worksheet to plan how costs will be covered over time, how financial responsibilities will transition to sustainable sources, and how these supports can be embedded in existing budgets or institutional systems.

Teams do not need to have full cost estimates or confirmed funding sources to begin this discussion. The purpose of this activity is to surface what is known, identify gaps or uncertainties, and flag potential funding challenges early so that solutions can be explored before scale-up. This discussion may also reveal components of the initiative that are difficult or costly to sustain. In such cases, teams may consider alternative lower-cost designs or delivery approaches that achieve similar results while improving long-term feasibility.

Financial Sustainability Table, on the following page

Discussion Questions

Which supports or activities could be absorbed into existing systems, policies, or budgets to ensure they continue after project funding ends?

Which elements of the initiative are likely to be difficult or costly to sustain, and how effective are these elements in supporting key outcomes? Should alternative lower-cost designs or delivery approaches be considered?

Where are funding sources or mechanisms unclear or uncertain? What information or partnerships would help close these gaps?

What mechanisms or partnerships could make these costs more sustainable?

Financial Sustainability Table

CAPACITY AREAS	CURRENT FUNDING OR SUPPORT SOURCES	FUTURE OR SUSTAINABLE FUNDING SOURCES OR MECHANISMS	ESTIMATED COST OR RESOURCE LEVEL (IF KNOWN)	RISKS OR GAPS (INCLUDING COST OR SUSTAINABILITY CONCERNS)	STRATEGIES OR PARTNERSHIPS TO ADDRESS GAPS
People and skills (Competency)					
Systems and structures (Organization)					
Leadership and guidance					
Resources and infrastructure					

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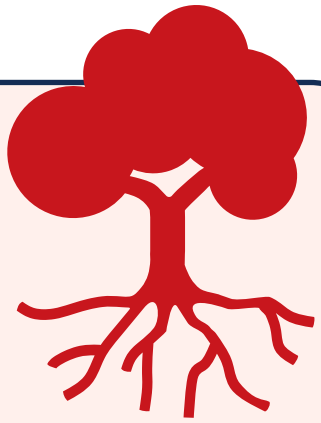
Step 3: Establish Routines for Learning and Improving

The purpose of this step is to help your team build the habits and structures that keep learning and adaptation at the center of implementation. Even the best-designed models will need refinement once they are implemented at scale. Without clear routines for learning and improving, programs often fall into a cycle of collecting data for compliance rather than for insight, thereby missing opportunities to learn from what's working and strengthen quality over time.

Using the **Learning Reflection Protocol for Continuous Improvement**, your team will establish a regular routine for reviewing data from the **Implementation and Monitoring Tool**, analyzing progress, and deciding what to adjust in the next implementation cycle. These sessions encourage an honest evidence-based discussion focused not just on whether targets were met, but on what the data reveal about how change is happening and what support is needed next.

Establishing these reflection routines is the foundation of a culture of continuous improvement. When teams regularly make time to analyze evidence, discuss what they are learning, and act on those insights, data become a tool for curiosity rather than compliance. This ongoing cycle of reflection and adjustment allows the initiative to stay responsive to real conditions, strengthen quality over time, and build the system's capacity to keep improving after the initial implementation phase ends.

BUILDING A CULTURE OF CONTINUOUS IMPROVEMENT



A culture of continuous improvement is built when reflection and learning become part of how teams work every day, rather than something done only during formal review meetings.

1. **Embed learning into existing routines.** Integrate short moments of reflection into regular activities such as meetings, workshops, or field visits so that learning becomes a habit.
2. **Make learning visible and cumulative.** Document lessons learned over time and revisit them at the start of each cycle to build on past insights.
3. **Strengthen feedback loops across levels** Encourage a two-way flow of information between classrooms and leadership. Strong feedback loops build alignment and shared ownership.
4. **Use data for learning, not just reporting.** Focus discussions on what the data reveal about progress and challenges rather than only whether targets were met.
5. **Model learning through leadership.** Leaders set the tone by asking reflective questions and sharing lessons from both success and challenge.
6. **Connect learning to system strengthening.** Reflection should inform decisions about capacity, scale, and sustainability. Use what is learned through implementation to adjust plans, improve coordination, and influence policy or system improvement over time.

Learning Reflection Protocol for Continuous Improvement

This template guides teams in using data from the **Implementation and Monitoring Tool** to reflect on progress, identify lessons learned, and decide how to improve implementation quality and outcomes. Teams should use this protocol at regular intervals (e.g., monthly or quarterly) to build a habit of learning and adaptation.

Meeting Information

Date:

Participants:

1. Review and Interpret Data

Review data from the **Implementation and Monitoring Tool** and build a shared understanding of progress. Note insights with regard to the drivers you are seeking to influence.

- What actions or milestones were completed this period?
- What evidence shows progress toward each goal or indicator?
- What do the data tell us about implementation quality or participation?
- What patterns or surprises do we notice?
- Are there differences across schools, regions, or teams?

Notes and Key Points: (Summarize progress and patterns observed.)

2. Analyze and Reflect

Explore the factors that helped or hindered progress.

- What factors contributed to success or improvement?
- Where did we encounter challenges or slower progress, and why?
- What contextual factors (e.g., leadership, resources, training quality, etc.) influenced results?
- What assumptions about how this initiative works are being confirmed or questioned?

Notes and Key Points: (List main enablers, challenges, and insights.)

3. Identify Opportunities for Improvement

Use insights to identify improvement priorities and concrete actions.

- Based on what we've learned, what should we do differently next time?
- What new ideas or adaptations could improve results or efficiency?
- Which actions or supports should we prioritize for the next cycle?

Notes and Key Points: (Record potential improvement actions, changes to try, and learning questions.)

4. Assign Responsibilities and Plan for Follow-Up

Define ownership and ensure follow-through for next steps.

- Who will lead each improvement action?
- What support or collaboration is needed to complete it?
- When should each action be completed?
- How will we know whether the change has improved outcomes?

Action Planning Table

IMPROVEMENT ACTION	RESPONSIBLE PERSON(S)	SUPPORT NEEDED	TIMELINE	EVIDENCE TO TRACK CHANGE

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5. Document and Share Learning

Capture and share key insights and lessons to inform ongoing improvement.

- What are the most important lessons or insights from this cycle?
- Who else will benefit from learning about these findings?
- What is the best format for sharing?

Sharing Learning Planning Table

KEY INSIGHTS OR DECISIONS TO SHARE	WHO NEEDS TO KNOW?	HOW BEST TO SHARE INFO?	WHO IS RESPONSIBLE FOR SHARING?

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Moving Through Steps 2 and 3

The following workshop, the last in this toolkit, will guide the team to analyze available and needed financial resources for each type of capacity needed to support your program over time at scale. In the workshop, the team will also review the **Learning Reflection Protocol for Continuous Improvement** and establish routines for continuous improvement.

WORKSHOP 8:

Plan for Financial Sustainability and Continuous Improvement

Facilitator's Guide

Workshop Objective:

- Analyze and document available and needed financing for each major type of capacity needed to support your program
- Establish learning and reflection routines to support continuous improvement
- Confirm shared understanding of next steps for both scale and ongoing learning

Participants: The core design team and additional stakeholders with knowledge of financing across the main types of capacity needed to sustain your program: people and skills, systems and structures, leadership and guidance, and resources and infrastructure. Also include stakeholders who will lead and participate in continuous improvement routines.

Pre-Work: Synthesize the capacities tables completed by component (from the **System Capacity for Scale Planning Tool**) to gain a program-level view of available and needed capacities. Participants will use this synthesis during this workshop's first activity.

Agenda (2 hours)

TIME	ACTIVITY	MATERIALS NEEDED
5 min.	Welcome and overview	Slides with objectives and agenda
40 min.	Analyze financial sustainability	Capacity table synthesized at program level (see pre-work) **Financial Sustainability Planning Tool**
30 min.	Establish learning and reflection routines	Previously completed: **Implementation and Monitoring Plan** **Measurement Plan** **Learning Reflection Protocol for Continuous Improvement**
45 min.	Reflection and next steps	Slide or chart paper Completed tools and worksheets

Guidance for Facilitators

Welcome and overview (5 minutes):

- Celebrate all that the team has accomplished and remind participants that this is the last workshop! Consider showing a slide to show all the work completed so far, including developing, testing, and refining prototypes to build the proposed edtech program, as well as planning for and beginning implementation and analyzing system capacity for scale.
- Review workshop objectives and agenda.

Plan for financial sustainability (40 minutes):

- Now that the team has analyzed available and needed capacity for each component, and synthesized that thinking into a single table to gain a program-level view, participants are ready to consider available and needed financial resources. One way to do this systematically is to consider financial resources related to each of the four main types of capacity analyzed in the previous activity.
- Introduce the **Financial Sustainability Planning Tool.** Underscore for the team that they can complete this exercise even without full detailed knowledge of every financial resource. The goal is to surface potential gaps or questions at this stage and to be sure to seek any information the group flags as still needed.
- To set context for the activity, review the information on page 103, **Planning for the Hidden Costs of Edtech.**
- Refer to the program-level capacity table created in advance to complete this table as a whole group. Clarify that while the team initially mapped capacity for individual components, this activity asks the team to think at the program level and consider financial resources by type of capacity.
- As the group adds to the table, consider the discussion questions at the end of this worksheet.
- With 10 minutes remaining, ask the team to reflect on what they have learned from analyzing both capacity and financial resources for scale and sustainability. Given what they have learned, does the intervention still seem feasible as planned—including over time? Does the team need to consider scaling back on implementation plans or revisit any components of the overall design that are resource intensive or that do not contribute strongly to the program goals?

Establish routines for learning and improving (30 minutes):

- Guide the group to return its focus to the **Implementation and Monitoring Plan** and the **Measurement Plan** completed in Workshop 6 (Phase 6).
- The goal now is to make a plan to periodically review and learn from the data that the team will gather going forward, and to adjust as needed to continue to strengthen the intervention over time. This step puts a continuous improvement cycle in place to optimize your program's long-term success.
- Guide the group in reviewing the **Learning Reflection Protocol for Continuous Improvement.** The team will not complete this protocol during the workshop. Rather, they will complete a copy of the protocol each time they review and discuss implementation and monitoring data to ensure those insights are used toward improvement.
- Facilitate brainstorming for what the group needs to decide in order to effectively use the protocol. For example:

  Who is responsible, and who will be involved? What roles will they play?

  When will the group first meet? Consider your implementation timeline and the relative timing of local decision-making needs.

  At what intervals will the group meet? Is quarterly feasible given your implementation timeline?

  How can the discussion be integrated into existing routines over time?

  With whom will you share what you learn? For example, maybe a few teacher leaders participate directly and share their insights periodically in their communities of practice.

Reflection and next steps (45 minutes):

- Offer a final—and much deserved—congratulations! The team has completed the final workshop! By bringing together perspectives from stakeholders in different roles and engaging in this collaborative design process, the team has established a strong foundation for edtech program success. Importantly, the team is now also prepared to continue monitoring and improving the program over time.
- Talk through how to make any adjustments to implementation plans based on what the team has learned, including by when and who will be responsible. Schedule a follow-up conversation as needed.
- Ensure participants have a shared understanding of responsibilities and timing for next steps, such as exploring capacity or financing gaps identified and managing continuous improvement.
- Assign someone to make the completed tools available to the whole team in a format that will be easy to refer to in an ongoing manner.
- Share the **Learning Reflection Protocol for Continuous Improvement** template with those team members responsible for continuous improvement.

Looking Ahead

By completing this last phase in the toolkit, your team has created a realistic pathway for sustaining and expanding your initiative. You have identified the capacities and resources needed for scale, developed strategies to ensure financial sustainability, and established routines that will keep learning and improvement at the center of your work moving forward.

Conclusion

The collaborative design process you used to design your edtech intervention enabled you to integrate the wisdom of stakeholders in different roles. By working together to identify a high-leverage problem, and by jointly designing, prototyping, and testing solutions, you have not only acquired experience and expertise, but you have built trust and strong relationships that will support your program's long-term success.

As you continue to implement your initiative, your team can apply the same curiosity, openness, and systematic approach you developed during the design phase to drive continuous improvement. And knowing that even the best-designed interventions require adjustments over time, your team can use the toolkit's phases and tools to periodically revisit program components to respond to new evidence, shifts in context, or emerging needs. You are now also equipped to adapt to differences in context and changes in capacity and resources over time, ensuring that your program continues to benefit teachers and students for years to come.