EdTech Hub

Clear evidence, better decisions, more learning.

WORKING PAPER

The Sandbox Handbook v1.0

A guide to testing and growing EdTech ideas

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Notes

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About EdTech Hub sandboxes

A sandbox fast-tracks promising EdTech interventions by providing funding, tools, and access to evidence. It provides a space for partners to test and grow ideas in conditions of uncertainty. We break sandboxes up into short sprints, learning and iterating as we go. Each sprint informs changes and new ideas for the next. For more information, please visit https://edtechhub.org/innovation/.

Hello

If you're reading this, odds are you are interested in testing and growing EdTech ideas. You might be a funder or policymaker interested in how to select and shape EdTech interventions that maximise value for money. Or you might be a technologist, an NGO, or a grassroots organisation seeking to grow an EdTech idea to bring about large-scale change. Or you might be a researcher wanting to expand your toolkit for gathering data that informs decision making. If any of those sound familiar, this handbook is for you.

This guide is based on EdTech Hub's sandbox offer. An EdTech Hub sandbox fast-tracks promising EdTech interventions by providing funding, tools, and access to evidence. It provides a space for partners to test and grow ideas in conditions of uncertainty. In 2020–21, we worked with partners in five countries to test EdTech in response to Covid. Read about what we did, and what we learnt (↕Rahman et al., 2021). The handbook explains the processes involved in our sandboxes, to provide a model for your own journey implementing EdTech.

Rather than detailing specific applications, the handbook outlines the key processes and principles of a sandbox so that anyone can apply the method and ways of working to their work. Treat it as handrails rather than a manual, and mix, match, add to, and amend to bring your own magic to the work. It is structured chronologically, from light-bulb moment to implementation. You can use the handbook as an end-to-end manual, or dip into whichever parts meet you where you are.

Table 1. *What you'll find in the handbook and why it's useful.*

Section	What you'll find	How it's relevant to you
Section 1: Mobilising around the problem	Who we start the sandbox with Selecting a sandbox Understanding our problem and context Bringing all the most relevant people	As a **funder** or **policymaker**, understand how to identify the best EdTech and set it up for success. As a **technologist**, **NGO**, or **grassroots organisation**, bring together the best people to solve the right problem.

	together Articulate a vision for impact	
Section 2: Setting out a plan to solve the problem	Sandbox onboarding Moving from idea to hypothesis Auditing the hypothesis in the education system, using the 6 P's Mapping risks using the pre-mortem Going from hypothesis to action plan Understanding the people behind the data	As a **funder** or **policymaker**, make sure implementation maximises its chances of achieving impact As a **technologist**, **NGO**, or **grassroots organisation**, come up with a robust and thought-through plan for how to deploy EdTech, or sense-check the plans you already have. As a **technologist**, **NGO**, or **grassroots organisation**, make sure any tech interventions consider everything holistically. As a **researcher**, systematically plan all factors in an EdTech implementation before you measure it.
Section 3: Iterative implementation	Reflecting on our work Iterating our work Producing evidence outputs from what we've learnt Additional tools to scale impact Harnessing collective intelligence	As a **funder** or **policymaker**, make sure an EdTech intervention is proceeding mindfully and adapting to maximise effectiveness and impact. As a **technologist**, **NGO**, or **grassroots organisation**, make sure you're adapting the EdTech implementation based on constant feedback loops. As a **researcher**, package up evidence as it emerges from an EdTech implementation, to make sure it influences decision making.

As you read, you'll see links to all of our artefacts (📝) and tools (🛠️), and **grey boxes** that talk about the mindsets and mechanisms that unlock progress in a sandbox. With that said, remember: our process is adaptable to the unique superpowers of your team, and context of the sandbox.

You should have everything to get started, but of course, we are here for anything else you might need. Please get in touch with asad@edtechhub.org if

you have any questions, or wish to discuss how to apply the handbook to your work.

Finally, I'd like to remind you that our ambition is for EdTech Hub to work in iterative, agile ways just like our sandboxes. Please feel free to leave suggestions or reflections as comments in this document.

See you out there,

The EdTech Hub Sandbox Team

P.S. If you wish to dive further into the theory behind our approach, here is some helpful reading:

- The Promise of Lean Experimentation (↑Murray, Peter & Ma, Steve, 2015)
- Lean Impact (↑Chang & Ries, 2018)
- Pretotype It (↑Savoia, Alberto, 2011)
- The Lean Data Initiative (↑Acumen, 2019)
- What is Agile Methodology? (↑Edell, 2019)

1. Mobilising around the problem

This phase is dedicated to understanding the challenges and opportunities available as you seek to make an impact through an EdTech intervention. It allows for brainstorming and landscaping of available resources and relevant evidence, and helps our partners to articulate their vision for impact, including a theory of change (TOC).

1.1. Who we start the work with

One of our principles for a sandbox is to give a range of actors a seat at the table. A large part of the sandbox is identifying and working with different organisations; however, at the start of a sandbox, we typically begin in one of two places. For your work, think of these as possible minimum viable starting points for moving forward:

Government as the 'problem owner'

The EdTech sector remains more focused on products than the problems they are trying to address. Across the Hub's technical assistance work, we notice partners talking about technologies rather than the problems these might be used to address.

That's why we recommend starting with the government as the 'problem owner'. People within governments are often time-pressed, uninformed customers of EdTech, navigating a fragmented market. We can support them to work effectively with the private sector and local businesses who can address their challenges, ensuring that we'll always be focused on scaling impact, not scaling a product.

Growing a promising EdTech intervention

There are many EdTech organisations and products that are not scaling. As we explore in our draft Position Paper (↑Simpson et al., 2021), reasons for this include: a tendency to focus on the product rather than the problem, a reliance on donor funding to reach the most marginalised, and a lack of accessible evidence on 'what works'.

That's why we recommend starting with organisations or ideas that have evidence of impact and the potential to scale, to help them grow. Even when we begin with the EdTech product, we still ensure the government is involved, and we are focused on scaling impact, not scaling a product.

Key artefact📝: EdTech and Covid: Insights from our Sandbox Portfolio (↑Rahman et al., 2021) distils 12 key insights (against the 6 Ps framework) from our Covid Sandbox portfolio. It details factors we believe are crucial in growing and scaling EdTech interventions.

1.2. Selecting a sandbox

Criteria for selecting sandboxes

Sandbox criteria have varied depending on EdTech Hub strategy and what we've learnt about what makes a good sandbox. This section gives an overview of criteria used in the past, and our current best thinking on criteria today.

In 2020–21, EdTech Hub selected five sandboxes in response to Covid. Criteria (with more weight for the three in **bold**) for these sandboxes were:

- **Complements the portfolio's learning objectives**
- **Value add of a sandbox to the overall initiative**
- **Offers clear evidence of impact, particularly in pedagogical approach and content**
- Strong buy-in from a 'place', with a dedicated focal point
- Access to 'real-life' users (i.e. schools, students, teachers, communities)
- Strengthens education systems in the long-term (i.e. not just during Covid)
- Clear path to rapid scale

Our second portfolio of sandboxes has three 'must have' selection criteria (building on the previous criteria):

1. **Likelihood of national scale:** a sandbox builds towards something that can be fast-tracked to national scale-up, if validated across the 6 Ps. As a result of this criterion, we're more likely to work with government, iNGOs, and scale-ready EdTech organisations.
2. **Quality and relevance of 'evidence in' and 'evidence out':** a sandbox builds on existing evidence that points to impact (e.g. it aligns with a 'Smart Buy' (↑World Bank, 2020) and / or fills a gap where the evidence is missing or incomplete (e.g. it explores situations in which positive messaging is helpful, given this is a validated intervention in broad terms).
3. **Strong link to EdTech Hub strategy and focus countries:** a sandbox should align with the six EdTech Hub focus countries (Kenya, Tanzania, Bangladesh, Pakistan, Sierra Leone, Ghana) and our five thematic priorities. This means it's much more likely a sandbox will take place in conjunction with other EdTech Hub work, and complement it. When building a portfolio of EdTech interventions, we recommend also aligning around country and / or strategy, to maximise the value of what's learnt, ensure focus, and avoid shiny object syndrome.

1.3. Understanding our problem and context

Sandboxes might work on education challenges in communities that they are not members of, with partners whose understanding of the context is crucial to the success of any EdTech intervention. At the beginning of a sandbox, it's important that (as far as possible) we get on the same page about contextual challenges, active or past work and resources, and existing evidence which addresses our problem.

A number of methods can be used in this process.

Rapid evidence review and learning sessions

As a sandbox approaches a specific problem, it is important to build on pre-existing knowledge. This includes being aware of the existing evidence base, consulting with experts in the relevant place or theme, , and becoming familiar with frameworks or resources that are relevant to the context at hand.

Some of the activities which can be completed to ensure you are well aware of existing knowledge include:

- **Rapid literature review:** search and ask partners, relevant colleagues, and other stakeholders for important resources; read, review, and synthesise takeaways, and share them with your sandbox partners.
- **Learning sessions:** invite relevant experts to a workshop where they share some of their insights on a topic or approach, allowing you and partners to ask questions, and summarise key learnings.

Insights from this process should not be simply recorded and left to rot in a google doc somewhere! Rather, they should inform design decisions and experimentation, and serve to triangulate critical beliefs and assumptions throughout the sandbox. One way to make sure these learnings are not forgotten is to turn them into design principles — key guidelines which should be referenced throughout the sandbox. Similar guidelines and standards exist in the EdTech space (↑EdTech Tulna, 2020), and can be similarly incorporated into the rapid evidence review process.

Key tool 🛠️: as you begin a rapid literature review, there's no better place to start than our very own EdTech Hub Evidence Library, where our colleagues have aggregated relevant research in an easy-to-browse database.

Key artefact 📝: Our Sierra Leone Learning Session Insights (↑Plaut, 2020) provides a summary of important takeaways from three teacher continuous professional development (TCPD) experts relevant to implementing tech-enabled TCPD in Sierra Leone. These ultimately served as **design principles** for our conceptualisation of the TCPD model that would be tested through a sandbox.

Ecosystem scan

Understanding the existing efforts to solve the problem at hand, key stakeholders, political environment, and other contextual factors is crucial to making sure that efforts in running a sandbox are not happening in a vacuum, but are directly informed by the ecosystem where the intervention will take place.

The aim is to be able to understand things like:

- What is the current state of our 'problem' (how does it manifest in society)?
- Are there existing efforts to challenge or reverse this challenge? Who is tackling it and how?
- Who are the key players in this environment working to either resolve this problem or (in some cases) contributing to it?
- What can we learn from previous or current efforts to tackle this challenge? Can we partner with others doing this work? Should we?
- What are the politics around this issue? Are there different perspectives that need to be taken into account? Who currently has power in this situation?

In order to answer these questions, there's no better way than speaking with relevant stakeholders directly. Whether in person or virtually, key informant interviews (KIIs), focus group discussions (FGDs), workshops, and brainstorming sessions can be conducted to ensure that sandbox leads and partners have a good understanding of the ecosystem and are able to operate within it.

Having a presence in the relevant context can be a game changer when it comes to better understanding the ecosystem. If working in an EdTech Hub priority country, collaborating closely with the EdTech Hub country lead is an important pre-step to undertaking an ecosystem scan.

Key artefact 📝**:** The SL Scoping Phase brief (↑McBurnie & Plaut, 2021) offers a good example of how insights from the landscaping process (developed through evidence review and KIIs) can be summarised and shared with sandbox partners, ensuring everyone is on the same page about where they are starting from and who they might want to partner with.

1.4. Bringing all the most relevant people together

It's clear that an idea on its own won't fix a problem or improve learning outcomes. We need to find all the most relevant people to unlock impact, which often means bringing people together from across the sector, including government, implementers, subject experts, and those most impacted by the

work (children and teachers). As a sandbox facilitator, part of our role is creating an inclusive environment with the psychological safety to allow for all partners to make meaningful contributions.

As the sandbox develops, we recommend bringing together all parts of the education system. Product (through technology and implementation partners), people, and places (users we might want to test interventions with); pedagogical expertise (through the Hub's expert pool); provision (through connections to funders); and policy (through government and policymaker engagement). We conceptualise this system as the 6 Ps, and you can read more about it below.

Our theoretical framework for understanding the EdTech system: the 6 Ps

When technology is introduced into education systems, it does not exist in isolation. We see 'EdTech' as only one part of a solution, existing within a broader system of factors that need to work together to make impact at scale. We recommend considering the full breadth of the education system, and what it would take to really improve learning outcomes for the most marginalised.

In order to consider how an EdTech programme might perform within an education system, we have developed a framework that considers six key aspects of the education ecosystem (6 Ps) with which any EdTech tool must engage and integrate to be successful: people, product, pedagogy, policy, place, and provision. The 6 Ps are visualised below:

Figure 1. *The 6 Ps framework for understanding the education system.*

Understanding the needs of our partners

As early on as possible we surface our partners' needs so that we know what role we need to play and which other partners and experts we might need to bring in.

We want to know things like:

- What is their appetite for iterative ways of working?
- What capabilities does the team have and what are the gaps?
- How do they like to work and communicate?
- Who is the problem owner?
- What aspects of our sandbox are of most value?
- What are the priorities? What do they want to test through a sandbox?

Finding an implementing partner(s)

The role of partners will vary depending on the work. They might take the lead or fill a specific role in the sandbox. These partners might be NGOs, charities, or the private sector. A diverse team of individuals and organisations will give the sandbox more latitude to try different things, and more perspectives on the problem and potential solutions.

Things to consider:

- Choose the most appropriate way to bring them in — this might be an open call, or a closed call / marketplace of ideas if you have a few known potential partners.
- Develop the criteria for selecting them based on existing evidence of that topic and EdTech standards (see Section 1.3).
- Look for some proven track record — this might be the impact of the product / service itself, or expertise in supporting implementation.
- Look for strong experience and knowledge of the given context and players.

Bringing together a circle of funders

If needed, we also recommend convening a circle of potential funders to be part of a funding circle.

We bring together donors, private investors, and other funders at the start of a sandbox to give advice, offering de-risked deal flow to invest in a booming EdTech market. Our circle of funders have 'first in line' access to the pipeline of sandboxes.

In return, they give entrepreneurs and implementers money-can't-buy strategic advice about what it would take for them to invest, and enable them to create a sustainable plan from the beginning of the sandbox.

This give-get helps ensure funders are engaged early and maximises the likelihood of financial sustainability for EdTech interventions.

1.5. Articulate a vision for impact

Some partners enter into sandboxes with a good understanding of the problem they want to address, but with little idea of how to do it. EdTech Hub can help to catalyse the decision-making process about the desired intervention and ultimate impact. There are many ways of doing this but one of the most comprehensive and participatory is facilitating the development of a theory of change (TOC).

A **TOC** is a tool used to define a programme model, outlining the activities that will be implemented and their respective outcomes. It is also a framework for understanding the potential impact of that programme, which helps to define how future pilot activities, assessment, and iteration will occur.

- TOCs usually begin by articulating the ultimate impact partners intend to bring about, and then working backward to determine what implementation model will get us there.
- They do not have to be overly complex, and if done right can begin the process of outlining the critical beliefs which will be discussed further during the mobilisation phase and ultimately tested in implementation.
- A TOC can also be useful in engaging with potential partners, funders, and other relevant stakeholders, who can review it and provide feedback on the model. Sharing a draft TOC and asking for their advice is a good way to get buy-in and validate your assumptions.
- Lastly, a TOC can be helpful throughout the sandbox: updating the TOC as implementation leads to iterations in the model can help make sure that the desired outcomes are still front-and-centre.

Some key tips for facilitating a TOC workshop:

1. **Start with the outcomes you're aiming for:** begin by facilitating a brainstorm in which partners list all desired outcomes of their intervention. Throw everything at the wall, sort, prioritise. Some outcomes may be short-term effects, others long-term aspirations. All are welcome. A prioritised list of outcomes can guide future monitoring and evaluation efforts.

2. **Working backwards, define the work which will lead to these outcomes:** outcomes will not happen just because we wish them to. They must be connected to the intervention being implemented. List out programme components, how they tie together, and how they link to desired outcomes.

3. **Add in contextual barriers and facilitators:** what factors might hinder your ability to implement the intervention outlined? What factors might catalyse your impact? Everything from potential partnerships, to politics, to infrastructure needs can play a role in whether your intervention will actually lead to impact. List as many of these as needed, and prioritise them along with your partners. If you can't name any, it may be important to go back to your ecosystem scan.

4. **Identify your assumptions and areas of uncertainty:** is it safe to assume that if our intervention is implemented perfectly, we are guaranteed to have the desired impact? (Probably not...) What assumptions about our implementation might need validation? Where are the biggest areas of uncertainty? See our mapping of critical beliefs for further support in completing this exercise.

Key artefact 📝: the Sierra Leone draft CPD TOC (↑Plaut, 2021) was created alongside the Teacher Service Commission and the World Bank early on in the sandbox on continuous teacher professional development in Sierra Leone. This deck (which is the summary of a TOC workshop) provides a breakdown of the core TOC components as well as a draft which was later shared with potential partners and key stakeholders.

2. Setting out a plan to solve the problem

2.1. Sandbox onboarding

Guidance on ways of working

Before starting the 'get to work' sessions, there are some valuable 'onboarding' activities and conversations to have with sandbox teams. These can be done in meetings or by email, based on what's best for the sandbox. We recommend having these conversations early to align the team, which may be cross-organisation or cross-geography.

It's good to agree:

- A weekly check-in time (this can become less regular as the sandbox progresses).
- An agreed upon platform for messaging (e.g. WhatsApp, Slack, Microsoft Teams).
- An agreed set of tools you want to use to collaborate together. Sandbox teams have told us that they can be overwhelmed by the number of new tools, so agreeing which tools (Google Suite, Miro, etc) up front is important.

Working in sprints

We break sandboxes up into short sprints, learning and iterating as we go. Each sprint informs changes and new ideas for the next. As such, sprints are the building blocks of implementation within a sandbox.

A sprint is a fixed period of time within which we do low-cost, quick activities to learn about whether our idea will work. Typically, a sprint lasts between 6 and12 weeks, with around two weeks between sprints to ensure space to reflect and plan the next one. Below, you'll learn a lot more about how we plan, execute, and reflect on sprints.

Key tool🛠️: Welcome to the Sandbox — sprints (Slide 9) (↑Simpson et al., 2021b) provides a more detailed introduction to what a sprint is.

2.2. ‘Get to work’ sessions

After we have chosen to work with a sandbox, the ‘get to work’ sessions help move from idea to action plan. Note these sessions don’t all have to be done in person — some can be done as ‘homework’. Sessions can also be combined into one longer session.

There might also be introductory meetings before the ‘get to work’ session, for the sandbox team to get to know each other.

‘Get to work’ Session 1: From idea to hypothesis

Key artefact📝: Welcome to the Sandbox (↑Simpson et al., 2021) provides an introduction to how the sandbox works in practice. It outlines the sandbox journey and key concepts like the 6 Ps and sprints.

Key tool🛠️: Welcome to the Sandbox — the idea (Slide 3) (↑Simpson et al., 2021) is a good first exercise to help the team refine the idea into a sandbox hypothesis.

The hypothesis forms the boundary (or scope) for what we will test in the sandbox.

Description:
Encourage the group to think through the hypothesis using this structure: ***if*** *a particular EdTech intervention was implemented,* ***then*** *a particular outcome would happen,* ***so that*** *we achieve some positive impact.*

Write this down on the slide, and ensure the group is aligned around it. Note down wider thoughts around the hypothesis in the **NOTES,** and encourage the group to type into the slide too.

This tool is a good opportunity to involve a wider group, in particular funders or other people who can make the sandbox 'happen' and be sustainable. Inviting them to comment on the hypothesis unlocks new thinking and helps the team understand what it might take for key players to support us.

If a TOC has been developed during the scoping phase, it can serve as a useful reference throughout the mobilisation phase, but especially in developing a hypothesis and critical beliefs.

Mechanisms and mindsets

Bring ambition: Be ambitious on behalf of the sandbox. Particularly in the 'so that...' part of the hypothesis. We want to make a dent in the global learning crisis.

Test the comfort with pivoting: In order to achieve the 'so that...', we should be willing to pivot the EdTech intervention. This iteration is an important part of the sandbox philosophy, so establish how comfortable the team is with pivoting, and identify any 'non-negotiables' early.

Get used to Google Suite collaboration: Use the exercise as a way to encourage the team to write into the slide in the session. This is an important part of our ways of working. You may need to nudge them to ensure they join the session from a laptop.

Encourage empathy with and genuine curiosity in the end user of the intervention: As in the 'understanding the people behind the data' session, the fundamental idea is to remind the sandbox participants that 'they are not their user' — are they making assumptions about the users' needs, context, and behaviour based on their own experience, not the users?

'Get to work' Session 2: Auditing the hypothesis in the education system, using the 6 Ps

Key tool🛠️: Project Pack — Sandbox Plan (tab: '6Ps Audit') helps lay the groundwork for what the sandbox should focus on.

Description:
Using the 6Ps Audit Tool in the Project Pack, this session is about taking the time to both:

1. Identify **the areas of most uncertainty**. It directly feeds into the 3rd 'Get to Work' session.

2. **Fully understand all elements** of the EdTech

Mechanisms and mindsets

This is not an evaluation: Remind them that this session isn't about us evaluating them, or passing judgement. Instead it's a way for us to flesh out the detail — what they have already done, what they already know,

intervention, whether it is an idea or real-life thing. This understanding then helps the EdTech Hub team be of greater value.

Crucially, using the 6Ps framework ensures that the team focuses on all elements of the education system that are needed to make the intervention successful, and doesn't avoid the difficult parts.

Prior to the session, send the 6 Ps framework to the sandbox team to give them a chance to read it. Mention that it is for reading, and not to score (yet!)

3-step process:

1. Quickly go through each 'P', and ask all which level they believe the EdTech intervention is currently at.

2. Take time to discuss each P individually, recognising that there will be overlap between them. Ask the team to share what they've done so far and what the biggest uncertainty is, and encourage them to think beyond what's immediately possible. Begin with the Ps which had the greatest divergence of answers, or which scored lowest (i.e. 1 or 2).

   Good questions to ask:

   - *Where is the uncertainty around the P? What are you least sure about?*
   - *What did you **do** to get to level 2/3/4? (takes focus away from 'assumed knowledge' or other assumptions)*

3. Take notes of everything that is discussed in the notes tab, with the ultimate aim of agreeing a final level for the intervention. These notes will be invaluable to refer back to during the sprints phase of the sandbox.

and where there are areas still to explore.

Make it fun: Exercises like holding fingers up to the camera (in Step 1) or encouraging the team to tell stories about the 'Ps' help the cross-organisational team feel like one.

Give people time to warm up: By starting with some time to read and give a quick-fire ranking, you give people the time to get comfortable with the 6Ps and what they mean. You'll also be able to spot where there are big discrepancies in opinion, and you might want to start the discussion with those to uncover the reasons behind the difference of opinion.

Exact wording not always applicable: As the 6 Ps Audit Tool is applied across all sandboxes, sometimes the wording will not be relevant to a particular sandbox. In that case, focus *less on the boxes and more on the key questions.* And feel free to improvise on the levels if needs be!

Overlap between categories: Sometimes 'Ps' overlap. For example: place and product; or people and place; or pedagogy and people. Don't sweat — it's the conversation that's important.

‘Get to work’ Session 3: Mapping risks using the pre-mortem

Key tool🛠️: Welcome to the Sandbox — the pre-mortem (Slides 11–12) (↑Simpson et al., 2021) is an optional tool to support teams in arriving at critical beliefs. All members of a team imagine the future end of the sandbox and share what has gone really well (utopia) and what has gone really badly (dystopia).

It is a validated, well-known exercise. (↑Atlassian, 2020) Statements from the pre-mortem can then be turned into critical beliefs.

Description:

1. **Introduce the exercise:** this exercise will help us visualise goals by imagining what success and failure look like, and what we believe needs to be true to achieve success and avoid failure
2. **Imagine utopia:** Ask the team to close their eyes and imagine the end of the sandbox. It’s been a roaring success. Why? Ask each person to speak about this. Write what they say in the ‘Utopia’ column of the tool.
3. **Imagine dystopia:** Ask the team to close their eyes and imagine the end of the sandbox. It’s been a terrible failure. Why? Again, ask each person to speak about this, and write what they say in the ‘Dystopia’ column of the tool. This might be quicker as many of the themes will have emerged from the ‘Utopia’ column already.
4. **Sense-check against the 6 Ps:** Check if any of the 6 Ps are notably absent from the utopia / dystopia scenarios. Challenge the team if so.
5. **Give an example of turning a pre-mortem statement into a critical belief:** Within each statement, unpick the belief that means we will achieve it (utopia) or avoid it (dystopia). For example, a dystopia statement might be: ‘children’s excitement tapered off after two weeks’. The critical belief might read: children

Mechanisms and mindsets

Exercise deep democracy: Different people pick up on different things, based on their vantage point. That’s why deep democracy — making sure every voice is heard — is particularly important in a pre-mortem.

One useful tactic is to begin with people who might be reluctant to speak up, and end with senior decision makers or stakeholders (who can summarise and distil what they have heard).

Visualise the future: Think as if the future has occurred. Research suggests that imagining that an event has already occurred increases the ability to correctly identify reasons for future outcomes by 30%.

One useful tactic is to pause deliberately and get participants to close their eyes, really imagining themselves to be in the future. Another is to use the past tense, as if you were doing a post-mortem. For example, ask ‘what went well’ rather than ‘what will go well’, and encourage people to say ‘teachers knew how to use the product’ rather than ‘teachers will know how to use the product’.

stay engaged after the initial two-week period throughout the curricula".

You can either turn each statement into a critical belief, or encourage the team to do so after the meeting.

'Get to work' Session 4: From hypothesis to action plan

Key tool🛠️: Project Pack — Sandbox Plan (tab: 'Sandbox Plan') (↑Rahman & Carter, 2020) is a core exercise to move from the hypothesis, to critical beliefs, to an action plan. It consists of six steps, which are core in identifying and structuring the experiments that are central to the sandbox methodology. Examples of the steps are in the project pack.

Key artefact📝: Experiment Types (coming soon...): Some inspiration for types of experiments, with pros, cons, and examples.

Description:
7-step method:

1. **Beliefs in hypothesis:** Ask the team to write things they believe need to be true for the hypothesis to work. Focus on the lowest-scoring areas in the 6 Ps Audit
2. **Critical beliefs:** Then, ask the team to mark (with an X) beliefs that are both most important to the hypothesis and that we know least about.
3. **Plan activities:** Think about activities you could do to get data on the beliefs, to understand whether they are true or not. The activities should generate robust evidence, but also be quick and low-cost. Write a narrative description of the activity in the plan.
4. **Sequence activities:** Mark which activities we will do first (in Sprint 1), next (in Sprint 2), or later. Focus on doing activities that get the most data on the most critical beliefs

Mechanisms and mindsets

Use stories and examples: Using stories can help unlock creative thinking in coming up with low-cost, quick activities that generate robust evidence (Step 3). You can read more of our favourite stories in the Experiment Types artefact.

Learn by doing: Focus on learning through doing, and encourage the team not to overthink in going through the seven steps. In parallel, keep your explanations of the tool short and jargon-free.

Bring collaboration: The sandbox team are both facilitators and collaborators. The team value your experience in experimentation in EdTech — bring ideas and strategies to the work.

Ensure the team thinks through the whole system: Often, people will jump straight to the beliefs around the technology. Nudge them to the 6 Ps and

first. Use this opportunity to agree the rough length of sprints (e.g. 3–6 weeks).

5. **Agree evidence output:** Think about how the evidence generated from doing the activity will be captured. For some activities, this will be in the Sprint Review document (see Section 2). Other activities might have other standalone outputs, such as video / audio feedback or survey data.
6. **Agree minimum proof:** For some activities, it might be relevant to identify a minimum proof(s) to help us 'know' whether a critical belief has been validated. Other activities will be more exploratory, and therefore a minimum proof might not be relevant.
7. **Decide if there is a storytelling output:** Where activities involve co-designing or doing qualitative research with the users of the intervention, plan how you'll not just share the data but represent the experiences and voices of people authentically and fully, e.g. in a film, audio, or multimedia output

explain that thinking holistically about the system will make sure implementation is sound and the intervention is able to grow and scale.

Focus on velocity, not speed: Sprints are a structure to organise activities and ensure clear points of reflection and course correction. It's not just about moving quickly (as the word *sprint* suggests), but moving deliberately and with purpose towards a scalable intervention (i.e. with velocity).

Exercise deep democracy: If possible and appropriate, exercise deep democracy. All people in the room have an equal voice. For example, everyone has an equal number of votes on critical beliefs.

Finalising the sprint plan

Timings of sprints: The rhythm of the 'sprint' phase is typically one-month sprints, with a gap of two weeks between sprints to review the sprint findings (Section 3.1) and iterate the next sprint (Section 3.2). However, this can be adapted based on the particular sprint. For example, if the bundle of activities agreed takes longer, then the sprint can be longer. However, we recommend a sprint is *no longer than three months* so that there can be a feedback loop and we retain time and / or funding to iterate. Even if an activity takes longer than three months, we can simply choose to continue it in the subsequent sprint as long as we still believe it is the most effective use of our resources.

Holding future plans loosely: The level of fidelity expected for the sprint activities decreases over time, for example, the first three months might be quite clearly defined and the later months might be more vague.

‘Get to work’ Session 5: Storytelling — understanding the people behind the data

Key artefact📝: Storytelling Handbook (↑Dixon & Patuck, 2021). A comprehensive introduction to storytelling on sandboxes.

There are two approaches to understanding the people behind the data, dependent on how the data is being collected for that sprint:

- **Approach #1:** Qualitative research is already woven into the sprint plan from the outset — get the team to think creatively about how they can share what they find as stories (elevating the voice of people most impacted by the work).
- **Approach #2:** In the case of there being a lack of qualitative data — host a dedicated session to identify a ‘storytelling’ strand to the work, which can help fill this gap.

Key tool🛠️: Storytelling Planning Template: On Jamboard | On a GoogleDoc | On a Google Slides Presentation (↑Dixon & Patuck, 2020). The template used is tailored to the particular partner’s context and preference.

Description:

A process for ensuring that sandboxes are taking the time to understand the context and lives of those they are designing for with curiosity and empathy, by putting their voices and lived experience front and centre. We call it storytelling to emphasise the creative and communicative outputs of this work.

1. **Plan the focus:** Decide the ‘who’. Who are the voices that are least heard or involved in this design process (hint: it tends to be the end user!). Write an exploration question that will help you to understand this user group more deeply in relation to the problem the sandbox is trying to solve using EdTech. Think through the potential risks and power dynamics involved in this interaction.
2. **Plan the engagement:** Using a range of examples and ideas, help the sandbox think through the most appropriate method for engaging and capturing the voices of this group.

Mechanisms and mindsets

Contextual understanding over testimonials or marketing: We know that videos or words from end users can be great for marketing but this isn’t the aim here, the aim is greater understanding of people.

Depth over breadth: Encourage your sandbox to narrow their focus and scope of participants to allow for deeper understanding. It only takes interviews with five people to start to see patterns.

Meet people where they are: Encourage methods and tools that are best for participants,

3. **Ensure safety and inclusion:** Walk through how story-gatherers will stay safe and gather consent ethically from those they are engaging with.
4. **Plan next steps:** Create the to-do list that will help the sandbox gain clarity on who else needs to be involved and what needs to happen next.

which may be less convenient for the story collector but ultimately more successful and inclusive.

2.3. Other tools you might consider

After the 'get to work' sessions, you might identify other areas the team could focus on. If the team is up for it, you can work through these areas using tools such as those listed below. Unlike the tools above, which are developed by EdTech Hub, these are open source and developed by other organisations.

- Navigating a complex stakeholder environment — try a people and connections map (↑NESTA UK, 2014).
- Thinking big about the potential impact if the hypothesis was proven true — try an aspirational press release (↑Google, 2020).
- Thinking through the ethics and participation of people in their work — try some exercises in this ethics toolkit. (↑Common Good et al., 2020)
- Understanding users and their needs — if you have stakeholders in the room who know the user, compile this knowledge into an empathy map. If they don't, you may need to do some user research before doing some persona building or journey mapping.

For more inspiration, we recommend IDEO.org's Design Kit (↑IDEO.org, 2015) (especially for tools in human-centred design), Atlassian's Playbook (↑Atlassian, 2020) (especially for tools in lean and agile), and NESTA's DIY Toolkit (**<URL_CHANGED_LINK>**↑NESTA UK, 2014**<URL_CHANGED_LINK>**) (especially for tools in social innovation).

3. Iterative implementation

3.1. Reflecting on the work

During sprints, the Sprint Review is the most important touchpoint in the sandbox journey. The Sprint Review has two objectives:

- To reflect on what has been learnt so far, and how it might affect what we do next
- To synthesise evidence in a Sprint Review document, a key evidence output from sandboxes for EdTech Hub

Key tool🛠️: Sprint Review (↑Rahman, 2020c) is our tool for reflecting on what has taken place in a sprint, capturing the evidence, and deciding what to do next.

Preparation for the Sprint Review

There are two viable approaches to preparing for a Sprint Review:

- **Approach #1:** Share the Sprint Review tool with those who collected data, or were on the 'front line' of implementation during the sandbox. Ask them to complete questions 1–3 (what was the plan? what did we do? what did we learn?) and share prior to the review. This gives everyone in the team a chance to get up to speed with what has happened and key data / evidence learnt during the sprint. Encourage the team to be concise in the Sprint Review (a total of two pages is a good rule of thumb!).
- **Approach #2:** Ask those who collected data, or were on the 'front line' of implementation during the sandbox to share any raw (or near raw) data with the whole team prior to the review. Questions 1–3 can be discussed and agreed during the meeting, given everyone has had a chance to look at the data or insights in advance.

Which approach to choose depends largely on:

- **The team's capacity and capabilities:** Some sandbox partners have the capacity and expertise to analyse data, and will do justice to the evidence in the Sprint Review template. In this case, approach #1 might be best. In

other cases, others on the team might need to get stuck into the analysis of the data, which can be a huge value add for the team.

- **The Sprint:** If a sprint has not had too much data generated, or the sandbox partner has already seen and reflected on the data, then approach #1 might be best. If the sprint has generated a great deal of juicy, controversial data, then approach #2 might be best.

The Sprint Review

Description:
The Sprint Review is best done as a 90-minute session with the sandbox team.

The session is led by the sandbox lead, with the Critical Friend acting as Scribe and co-facilitator.

It consists of two parts:

1. **Reviewing the sprint (60 mins):** If the Sprint Review has been completed prior to the session (approach #1 above):
    - Ask the sandbox team to present q.1–3 of the review. Ask powerful questions (see below for our favourites!).

If the team have only shared raw (or near-raw) data (approach #2 above):

- For each activity in the sprint, allow each person involved to speak for one minute uninterrupted, focusing on q. 1–3 in the Sprint Review, and especially the question 'What did we Learn?'
- After each person has spoken, pick up on themes and encourage further, deeper reflection as a group.

Powerful questions to unlock learning:

- *What did you learn that you didn't know before?*
- *What surprised you?*

Mechanisms and mindsets

Set the date well in advance: Setting a date in advance not only increases the chances of everyone attending this longer session but also emphasises its importance as a clear marker for reflection and iteration.

Real, not claimed evidence: When asking 'what did you learn?', focus on tangible behaviours (e.g. usage of a product) rather than claimed evidence (e.g. feedback from a survey).

Use the minimum proof as guidance, rather than hard fact: Minimum proofs are a great tool for understanding whether we have validated critical beliefs. It is ideal to come up with these proofs before a sprint, but it can also be a valuable exercise during a sprint. In the Sprint Review, link proofs to the beliefs to understand whether something you believed to be true is valid, or not. But reflect also on the minimum proof — was it correct, based on what we know now?

Keep up the energy: This can be a long session — so do what you know works to keep energy up. A break between reviewing the sprint and reviewing the critical beliefs is an option.

Reflection is as important as what's

- *How is this different from our minimum proof?*
- *How is it the same?*
- *What do we have to back up this learning? How do you know?*
- *What have we learnt about our user?*

Try to focus on *unexpected things* (this is why the minimum proof can be a powerful tool when planning activities) and back up claims with *evidence* from, e.g. actual behaviours of users.

2. **Reviewing the critical beliefs (30 mins):** Run through each of the most critical beliefs (marked with an X). Quickly decide whether that belief:
   - Has been validated or invalidated?
   - Remains critical or is now less critical?

The minimum proofs will give us a sharper understanding of whether a critical belief has been validated.

Use this as a basis to iterate the next sprint (see Section 3.2.).

next: Sometimes teams will be eager to jump straight to 'How does this affect what we do next?' (q. 4 in the Sprint Review). However, we want to nudge teams to reflect deeply on what's happened so that we can make sure what we do next is driven by the data. That's why the Sprint Review focuses on what's happened and the critical beliefs, and *then* we shift to focusing on iterating the next sprint.

Seeing is believing: Invite all key stakeholders to the Sprint Review or consider hosting a dedicated Showcase to share the findings. Being a part of the process will increase the likelihood that they are interested in and share or act on the insights as they emerge.

3.2. Iterating the work

Following '"Get to work" Session 3: from hypothesis to action plan', we should have a sequence of activities in sprints. This is a good foundation, but as we execute activities and gather evidence, we might take away or amend activities, or add new ones.

Iteration is a core element of the sandbox. Although we set out a plan, our tools and processes enable teams to easily change what we are doing based on new information.

Iterating the plan

Key tool🛠️: Project Pack — Sandbox Plan (tab: 'Sandbox Management') (↕Rahman & Carter, 2020) is our tool for capturing new or amended activities.

Description:
After '"Get to work" Session 3: from hypothesis to action plan', copy over the activities into this tab.

At the end of each sprint, reflect on the current plan for the next sprint with the team. Based on what we know that we didn't before:

1. Which activities should stay the same?
2. Which activities should we remove, or move to later sprints?
3. Which activities should we add?
4. Which activities should we amend (double down, change, dial back)

Depending on the situation, it might be relevant to run some ideation here. For example, teams could draw or write as many new ideas for new or amended activities as they can think about, and then vote or converge on the best. Remember: we are not wedded to anything we might have planned!

The Sprint Review document and the critical beliefs should form the basis for this.

Following this, work with the team to:

1. Amend the plan for the upcoming sprint in the Sandbox Management tab.
2. Discuss any budgetary implications this may have, and make sure these are reflected in the budget.

All of this can be done either in a dedicated session, or asynchronously over the Google Sheet — depending on your team's preferred working style.

Mechanisms and mindsets

Everything is up for grabs: One risk of planning all activities in advance is that a team becomes 'wedded' to the activities and the sequencing. Emphasise that all activities are 'up for grabs' and can be changed or removed, or that new ones can be added, if this is sensible.

Refer back to the 'why' behind our method: In projects that are doing something new (i.e. our sandboxes), we expect not to be right 100% of the time. That's why we have built in space to iterate activities and sprints.

Don't be disheartened if you didn't do everything: Sometimes an activity just won't get completed (or even started) in a sprint. This is perfectly fine — time and capacity is one of the assumptions being (in)validated across our work. Use this to reframe what amount of activity is realistic within a sprint, and whether that activity should be amended or even removed.

Make space for being wrong: Try to give space to discuss each activity and think through whether it is still worthwhile. Avoid a mindset of 'let's just do it because we said we would'.

Build on others' ideas, and reflect on how to make them more lean': Sandboxes try to maximise learning while minimising investment. They also welcome new, creative ideas which meet this goal. For ideas that the team comes up with, build (rather than replace or critique) and think about: 'How can we try to acquire the same amount of insight, but more quickly or cheaply?'

Timing and Rhythm

The Sprint Review and iteration should take place in the break between sprints.

3.3. Producing evidence outputs from what we've learnt

Types of evidence output

Our sandboxes produce a suite of evidence outputs. These outputs capture the data that has been generated during the sprints and publish it for the world. This ensures that what is learnt about different EdTech interventions is a global public good.

Depending on your priorities, you might want to publish insights from your work too. Evidence on what works and what doesn't, in real-time and directly from those implementing, is of tremendous value. Alternatively, you may wish to produce evidence outputs as internal to your organisation, to ensure knowledge from sandboxes is retained. Or, evidence outputs might not be relevant at all.

The key evidence output from the sandbox is the Sprint Review. This brief document should tell the story of what was done and learnt, and how it informs the future. As such, it should be descriptive about activities and provide insights into the data collected.

The sandbox might produce other evidence outputs depending on the work done in each sprint. We encourage as much of the learning from the sandboxes as possible to be made public, and will continue to explore ways to do this effectively.

Table 2. *A guide to different evidence outputs from a sprint.*

Evidence output	Description	Example
Sprint Review	The document that comes out of the Sprint Review and iteration process (see Section 2.1 and Section 2.2) and captures the team's reflections on the activity that has taken place in the sprint, as well as how it affects what we do next. While it doesn't need to be a comprehensive report and include all	■ EdTech Interventions for Deaf Learners in Pakistan - Sprint One Review (↑Rahman & Siddiqui, 2020)

	data collected during a sprint, it should be a 'greatest hits' of the most compelling data points covered during a sprint (the data points most relevant to validating / pushing back on the hypothesis or theory of change) to demonstrate how sandbox partners arrived at new decisions and iterations of the model.	■ WhatsApp Assisted Learning for Refugees in Lebanon - Sprint One Review (↑Tutunji et al., 2021)
Other evidence outputs	These are agreed in '"Get to work' Session 3: from hypothesis to action plan' (see Section 2.3.), alongside each activity. Other evidence outputs might include: ■ Write-ups of interviews and user research (preferably on actual user behaviour rather than predicted or claimed future behaviour) ■ Results of quantitative data collection (preferably on usage and engagement rather than surveys) ■ Any multimedia gathered from those implementing the intervention (e.g. voice notes, videos)	■ Survey findings: barriers to learning with WhatsApp in refugee camps in Lebanon (↑Boujikian & Carter, 2021)
Storytelling outputs	This is the output of the work started in the 'people behind the data' session, but there are a few outcomes that these feed into: ■ The 'stories' themselves are standalone pieces that should be embedded with the final evidence output on the EdTech Hub website. ■ The learning / insights are fed into the ongoing sandbox work via a meeting or workshop with the team.	**Key tool:** Templates for creating storytelling outputs and applying them to sandbox work (↑Dixon & Patuck, 2020) **Key tool:** examples and inspiration of storytelling outputs (coming soon...)

What makes a good evidence output?

Sandboxes offer a unique opportunity to generate lots of tangible evidence. We

believe this evidence is valuable to implementers, educators, policy makers, funders, and others working with EdTech. To make sure the evidence gets taken up, try to:

1. **Make it concise.** Deliver only the most relevant information quickly. Use executive summaries and 'key points' to distil the core messages.
2. **Make it user-centred.** For each bit of evidence, as well as the output as a whole, think about the target user. Assume that someone is coming to the evidence output with no contextual understanding. How can we get them up to speed?
3. **Make it practical.** For each bit of evidence, think about what would enable a target user to put it into action straightaway.

The Sprint Review could also hyperlink out to other evidence outputs generated in that sprint. In this way, the Sprint Review becomes the scaffolding for the evidence, linking to other more detailed or specific outputs.

Limitations of sandbox evidence outputs

Sandboxes, by definition, gather data through rapid experiments and therefore produce evidence that is highly contextualised and intended to take the specific sandbox partner to their next step in iterating / scaling their model. As a result, there are limitations on the extent to which inferences from this data can be extrapolated to other initiatives or to the theme more broadly.

Evidence outputs should aim to make clear how data might be utilised by the reader and be sure to cite its limitations. Most likely, Sprint Reviews should be viewed as case studies, providing other practitioners an example of one intervention learnt from rapid experiments to improve their model. Data and insights should serve as inspiration, but not strict guidance, to those implementing similar initiatives in other contexts.

Key artefact📝: our Insights Report (↑Rahman et al., 2021) includes a section defining what we mean when we talk about rigour in a sandbox and explains well some of the limitations and benefits of our approach to data collection and analysis.

3.4. Additional tools to help scale impact

During, between, and after sprints, the team should do all they can to scale impact. Whether it is crafting a human-centred user journey for people using the EdTech intervention, or building strategic financial models, or looking at education content, or creating the most effective feedback surveys and questionnaires, or mobilising and connecting with partners or funders, there are many aspects to implementing EdTech that we seek to execute and develop intentionally and with good practice.

Just as we encourage sandboxes to, we want to develop, test, and iterate tools and approaches to help sandbox partners. We also want to capture the best tools others have developed.

Below is a list of tools we have seen or developed. To ensure we remain focused on the education system as a whole, we have listed them against our 6 Ps .

Please add comments with other tools you have built or used, and we will add them to our catalogue.

Catalogue of tools to help scale impact

Table 3. *A catalogue of tools to help understand and grow edtech interventions.*

6P	What it is	Key features
Provision	Lean Cost Model	**Key tool🛠️:** Lean Cost Model (↑Rahman, 2020a) ■ A way to understand how much an EdTech intervention costs per child per year by building up the different elements, including costs of technology and costs of implementation. ■ Includes inputs for certainty of different costs, whether costs are crucial or 'nice to have', and how much a cost may decrease at scale relative to in the sandbox.
People	Service Design Blueprint	**Key tool🛠️:** Service Design Blueprint (↑Carter, 2021) ■ A way to make sure that each point in the user's interaction with a product, from start to finish, is considered.

		■ Includes everything that happens 'frontstage' (things your user sees) and 'backstage' (things hidden from view form your user).

3.5. Harnessing collective intelligence

Sandboxes are working in emergent domains and on uncertain ideas. We've seen that in these domains, the knowledge, experience, and tools of other, different sandboxes are an incredible resource for each sandbox to tap into. Many sandboxes work on similar themes and overcome common barriers to scaling their impact. If you have a portfolio of EdTech interventions you are testing, we recommend embedding a process for sharing knowledge among the group. At EdTech Hub, we do this via the Sandbox monthly Meetup.

The Sandbox Meetup

The 75-minute Sandbox monthly Meetup is a gathering of all our sandbox partners, as well as select guests and our sandbox alumni. It's open to anyone who has been part of a sandbox and includes the following key features:

1. Each Meetup is based on a clear theme that the community is experiencing in their work. Having this theme means each sandbox comes to the session as an expert feeling like they can contribute, and that the Meetup is relevant and applicable to their work.
2. One or two organisations give a brief presentation (~10 mins) on the chosen theme that the community is experiencing, which provides the anchor for the Meetup. This puts the experience and expertise of each partner on a pedestal, clearly framing them as experts.
3. Sandboxes tell us the part they enjoy most is engaging with the speaker and with each other. That's why each Meetup begins with 'speed networking' and, after the presentation, has a series of breakout rooms to discuss what's been presented.

4. At the end of the Meetup, the insights are collated into a blog by EdTech Hub. Here's an example of the blog from our first Meetup, on engaging caregivers and communities with equity (↑Rahman, 2020d).

More specific details are in the Meetup tool below.

Key tool🛠️: Everything you need to know about the Sandbox Meetup (↑Rahman, 2020). A planning guide to hosting a Sandbox Meetup, with everything from the template agenda, invite copy, and space, to taking notes from the Meetup itself.

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