EdTech Hub

Clear evidence, better decisions, more learning.

Developing a national EdTech strategy

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About this document

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1. Purpose and scope of this resource

This resource aims to provide practical information on developing a **national EdTech strategy** to support education decision-makers

This resource is designed for education policy- and decision-makers, including officials within ministries of education and major development agencies who work with them. It is also relevant for other government stakeholders, such as ICT, infrastructure, and communications ministries, who are often involved in strategy development and implementation. It is based on the following **hypothesis**.

If...	we provide practical, actionable, timely information to support decision-makers who seek to **develop national EdTech strategies** or to **integrate EdTech into education sector plans** to support educational resilience and work towards digital transformation...
then...	education stakeholders will be **better equipped to incorporate effective uses of EdTech** into their planning and implementation...
so that...	they develop strategies or plans that are **evidence-based, ambitious but feasible, clear** and **practical** for their contexts, with a greater likelihood of **successful implementation** and **impact to improve learning outcomes** and **support system development**

What does — and doesn't — this resource cover?

Scope

This resource aims to provide the following:

- Information for governments and other stakeholders who are designing or refining EdTech strategies that cover general education (e.g., Grades 1–12) OR who are integrating EdTech into broader education sector plans
- A starting point for education specialists wanting to learn more about EdTech strategies
- Links to additional tools and guidance where readers can find more information on strategy building

Limitations

The document offers a practical starting point for developing EdTech strategies but does not:

- Provide a comprehensive review of all known national EdTech strategies
- Analyse how EdTech features in education sector plans
- Explicitly address EdTech strategies at regional, global, or lower levels (e.g., school-level strategies)
- Cover early childhood, technical and vocational, or higher education
- Take a comprehensive look at strategy implementation

This resource is shaped by the range of plans that EdTech Hub has reviewed or supported (see more details on the next slide); some of these are not publicly available.

Why is this resource needed?

A number of factors inform the need for additional guidance on EdTech strategy planning

- **There is renewed interest in national EdTech strategies.** As the Covid-19 pandemic wanes, countries are taking stock of recently implemented distance learning strategies and interventions and looking toward digital transformation and greater resilience. This has implications for technology-enhanced remote learning, blended and hybrid learning, and technology integration into traditional classroom learning.
- **Things can change**: The EdTech landscape is constantly evolving, with new technologies being introduced. Unexpected system shocks (e.g., Covid-19) can change the role that EdTech plays.
- **Countries are requesting support to develop approaches to integrating EdTech into education systems.** EdTech Hub has seen an increase in support requests from governments and development partners as they undergo processes designed to help them effectively harness the power of EdTech (see examples on the following slide).
- **There is scope to increase existing capacity and knowledge.** EdTech Hub has noticed that requests for support are due, in part, to the fact that traditional education specialists may not have adequate knowledge of advances in EdTech innovations to incorporate them into education sector plans. Likewise, tech experts may lack knowledge of effective educational approaches to strategise for national education planning.
- **Without effective planning, resources may be wasted.** Without a strategic, technically sound plan in place, there is considerable risk that resources will be wasted on impractical solutions that may not support students in achieving better learning outcomes.
- **Responding to support gaps:** There is a need for up-to-date, practical guidance on how to design, implement, and evaluate EdTech strategies.

EdTech Hub work related to national EdTech strategies

Country / partner	Description of work
Tanzania	Technical assistance to develop the country's ICT in Education Strategy
Pakistan	Support to the Pakistan Federal Government to develop a National Distance Learning Strategy
Pakistan / UNICEF	Support to develop a strategy for UNICEF's engagement in the technology-facilitated learning arena in Pakistan
Ghana	Feedback on a draft national EdTech Strategy
Kenya	Mapping exercise for the MOE on the national EdTech landscape including government and other players.
Sierra Leone	Mapping of (a) all major education data sources in the country and (b) 'who needs what data' for decision-making
Bangladesh	Support to Aspire to Innovate (a2i), Ministry of Education (MoE), Ministry of Primary and Mass Education (MOPME), and other education stakeholders to design and roll out a Blended Learning Master Plan (↑a2i, 2022)
Thailand / UNICEF	Workshop with Ministry of Education colleagues on EdTech strategy development and Thailand's Digital Transformation Action Plan
Laos / UNICEF	Support on strategy development, including examples of other plans, policies, or strategies, sections typically covered in a plan, and more
Sao Tome & Principe / UNICEF	Support to develop a national digital education strategic plan for a 5-year period
Guinea / UNICEF	Support for the development of a national digital learning pilot and plan aligned to the Ministry of Education's digitalisation roadmap

2. What, why, how and who of EdTech strategies

What is an EdTech strategy?
Why develop one?
How does it relate to an education sector plan?
Who typically develops the strategy?

What is an EdTech strategy?

Fundamentally, a national EdTech strategy includes the following characteristics / elements:

It is often national in scope: Generally, a plan, strategy, or policy covers an entire country (e.g., Bhutan's ICT in Education Master Plan 2019–2023 or Ecuador's Agenda Educativa Digital 2021–2025).[1] However, in some cases, especially under federal systems, they can be sub-national (e.g., State of North Carolina's Digital Learning Plan 2015)[2] or even narrower (e.g., at the city, district, or even school level). Conversely, EdTech strategies can also be regional, such as the EU's Digital Education Action Plan. Strategies are owned and endorsed by the relevant government entities. As noted previously, this resource primarily addresses *national* strategies.

It is focused on EdTech: EdTech Hub defines 'Educational Technology' or 'EdTech' for short, as "technologies — including hardware, software, and digital content — that are designed or adapted for educational purposes" (↑Hennessy et al., 2021). We take a broad definition that includes both digital and non-digital technologies (e.g., radio, television) and which encompasses a wide range of uses of information and communication technology (ICT) in an education system. As described in the next slide, other terms may be used similarly or synonymously to 'EdTech'.

It sets forth a strategy: We typically think of a strategy as a document that lays out an overarching approach and / or plan for designing and implementing EdTech solutions in a country. This approach or plan covers a defined period of time (e.g., 5 or 10 years). In some cases, it may be part of a larger education (or ICT) sector strategy or plan.

What else might EdTech strategies be called?

EdTech strategies may have other names, like 'ICT in Education Master plan' or 'Digital Learning Roadmap.' Though there may be some differences in meaning, these terms generally refer to a codified, government-led approach to designing and implementing EdTech in a country. For more on alternative titles and how these may reflect different areas of focus, see (↑Miao et al., 2022, p. 15)

EdTech	Strategy	Other names for 'national EdTech strategy'
■ Education(al) Technology ■ ICT in Education (or IT / ICTE) ■ Digital Learning* ■ Digital Education* ■ Technology-supported learning / education	■ Policy ■ Plan ■ Master plan ■ Roadmap** ■ Action plan**	■ ICT in Education Master plan ■ Digital Learning Plan ■ Digital Learning Roadmap ■ EdTech / Digital Learning Action Plan

* Depending on how it is defined, 'digital learning' or 'digital education' may exclude non-digital forms of technology such as radio and television.

** 'Roadmaps' or 'action plans' may use a shorter time horizon than a strategy, policy, or master plan

It is important to understand the variety of these different terms / titles when looking for examples from other contexts.

Why develop a strategy? Increasingly, EdTech and digital learning are core to education

Experience in recent years suggests that countries with established ICT in Education master plans were better equipped to respond to the Covid-19 pandemic and its effects due to their advanced preparation and readiness for large-scale remote learning (↑Azevedo et al., 2021). Emerging out of the wake of the pandemic, many countries are now prioritising digital transformation of the education sector and are considering how to integrate EdTech across their education systems. Strategies can help codify this thinking and make it actionable.

The 2022 Transforming Education Summit[4] recognised that **EdTech and digital learning are core to education**, demanding "the same rigor, care and attention that are paid to the physical infrastructure of learning" (↑United Nations Transforming Education Summit, 2022). The Call to Action emerging from the Summit identifies three keys to digital learning — the **3 Cs:**

CONTENT

High-quality, curriculum-relevant digital teaching and learning content must be made available and accessible to all learners, teachers, and caregivers through digital learning platforms

CAPACITY

Capacity to use digital technology to improve learning must be strengthened to ensure teachers, learners, and other education stakeholders have the skills and knowledge needed to leverage digital tools for learning using evidence-based approaches

CONNECTIVITY

Digital connectivity ensures that all schools and individuals can benefit from the educational advantages that come with good-quality internet connections

3 Cs in EdTech strategies and education sector plans

Comprehensive EdTech strategies or education sector plans incorporating EdTech address the 3 Cs and more (see next slide).

	The goal	Links to EdTech strategies framework	How to get there
CONTENT 	High-quality, curriculum-relevant digital teaching and learning content available through digital learning platforms	5. Learning resources	Provide quality assurance, curriculum alignment, and clear standards for content. Balance platform interactivity with offline functionality
CAPACITY 	Capacity (knowledge and skills) of teachers, administrators, children, and caregivers to use digital technology for learning	3. Educator and teacher professional development; 4. Skills and competencies	Provide support, guidance and training for teachers on digital, pedagogical, and assessment skills. Put in place digital skills frameworks, integrate digital skills into curricula, and involve parents and caregivers.
CONNECTIVITY 	Ubiquitous, good quality, affordable connectivity across schools and homes	2. ICT infrastructure	An ideal area for public-private partnership and whole-of-government collaboration. Financing to expand connectivity should ***not*** come from government education budgets.

Source: Adapted from (↑United Nations Transforming Education Summit, 2022; ↑UNICEF, 2022)

How do EdTech strategies relate to education sector plans (ESPs)?

The education sector is increasingly prioritising digital transformation. In light of this, it may make sense for most countries to **systematically integrate EdTech into their broader education sector (ESP) planning processes instead of creating standalone EdTech strategies or ICT in education plans.**

However, historically, many countries have had separate ICT in education master plans, and some countries may still find value in standalone EdTech strategies or plans.

Whether a country should integrate EdTech into an ESP or create a separate EdTech strategy may depend on the process and timeline for developing the ESP, political will for education goals, and the stakeholder buy-in needed for implementation. **Regardless of which approach a country chooses, it is crucial for any considerations or plans for EdTech to be aligned with and work in service of the country's educational goals.**

This resource builds on examples of ICT in education master plans and EdTech strategies to provide insights that can be used ***either*** to develop a standalone EdTech strategy ***or*** that can be applied to integrate EdTech into the process of creating a broader ESP.

Principles for preparation of EdTech Strategies need to align with guidance for Education Sector Plans (ESPs)

ICT in Education policies should align with and work in service of the goals of wider national education sector plans and strategies. As such, principles for EdTech strategy preparation need to align with those for Education Sector Plans.

Both ICT in Education and broader education sector plans should be:

- **Vision driven:** guided by an overall, long-term vision
- **Strategic:** providing practicable and evidence-based strategies to reach that goal
- **Holistic:** centering learners / students as the principal beneficiaries of the education system and recognise different forms and sub-sectors of education
- **Evidence-based:** using recent, robust, and reliable data to inform the basis of strategies and approaches — including education sector analyses, but supplemented with data on ICT infrastructure
- **Achievable:** providing a framework for budget and management decisions and recognising stakeholder ownership largely determines feasibility
- **Sensitive to country context:** based on a sound situational analysis of contextually specific vulnerabilities and addressing resilience (preparedness, prevention, risk mitigation)
- **Attentive to disparities:** identifying and attending to issues of equity (gender, religion, socio-economic status, disability) across the plan, including where disparities intersect, and addressing specific needs of different groups

Source: Global Partnership for Education's Education Sector Plan Guidelines (↑GPE & IIEP-UNESCO, 2015)

Who typically develops EdTech strategies?

The process of developing a strategy is often led by one of the groups listed below. Even if a government is not leading the drafting, its ownership is critical to the success of a strategy.

	Dedicated team or department within a Ministry of Education or Ministry of ICT	National consultant (or team of consultants) **Go here for: Terms of Reference (TOR) Template for national consultants**	Through development partner technical assistance (TA) or an international consultant
+	Strong government ownership, historical and contextual knowledge, technical expertise	Dedicated time, contextual knowledge and technical expertise, lower coordination burden for government	Dedicated time, technical expertise. Knowledge of evidence and examples from other contexts
−	Higher coordination cost, risk of inadequate time to dedicate to process	Risk of weaker government ownership	Usually not lead authors, otherwise risk of weaker government ownership, less contextual and historical knowledge

A combo of these

Using a combination of MoE, national consultant, and international consultant and development partner TA to develop a strategy can maximise the technical and contextual expertise of each party.

However, risks include a higher coordination burden and unclear roles and responsibilities. Clear TORs can help address this risk.

3. Key considerations for EdTech strategy development

The potential and limitations of EdTech

1. EdTech is not a silver bullet

An EdTech strategy should work in service of *educational goal* rather than using "tech for tech's sake."

It is essential to adopt a learning-first rather than tech-first approach when planning, first considering the educational goal, and then determining whether and how EdTech can play a role in meeting that goal.

2. EdTech involves more than hardware

Evidence points towards the ineffectiveness of approaches that focus on hardware alone.

Beyond hardware, strategies and plans should consider the capabilities, training, connectivity, software, content, and other components crucial to the successful deployment of EdTech. Starting with hardware rather than learning may lead to wasted resources. A good strategy or plan will consider ongoing and recurring costs related to EdTech.

3. Inequalities must be considered and accounted for

EdTech can reduce or exacerbate inequalities and pre-existing digital divides.

As seen during the Covid-19 pandemic, EdTech tends to amplify inequalities. As such, strategies and plans should carefully consider reaching marginalised learners and using low-tech approaches, such as television, radio, SMS messaging, and more.

4. EdTech can be used to foster system improvement

EdTech has the potential to make improvements to underlying system components — not just to teaching and learning.

EdTech Hub's work demonstrates that EdTech can be used at the systems level for data for decision-making,[7] to improve teacher allocation,[8] and more.

5. Leverage existing evidence

There is a growing body[5] of practical research on what works, when, and in what contexts, as well as on cost-effectiveness.[6]

There is an opportunity to integrate evidence into EdTech strategies and education plans through situational analyses and the choice of priorities in a strategy or plan.

Source: (↑Hennessy et al., 2021)

Before developing a strategy, be aware that ...

1

There is **no one "right" way** to create a strategy, but **many ways it can go awry**. Identifying potential challenge areas based on context and experience early in the process is important.

2

The process, emphasis, and role of a **strategy will look different depending on the nature of a nation's education system** (e.g., centralised vs decentralised). It is important to account for these systemic characteristics to create a realistic and actionable strategy.

3

"Precursor" steps to EdTech strategies tend to mirror ESP development processes, including landscape analysis or mapping and stakeholder engagement. The particularities of **EdTech merit special attention in planning and strategising**.

4

It is important to strike a **balance between plan comprehensiveness and feasibility** — offering enough depth to make a strategy applicable and relevant while also ensuring it is actionable for decision-makers, education practitioners, and leaders.

5

Strategies may live in **draft form in perpetuity** and may come in a **variety of formats**. Getting a strategy officially endorsed can take a lot of effort, and the process may be opaque. Some strategies are lengthy documents, while others are short Powerpoint decks or web pages.

Lessons learnt from the Covid-19 experience

🎓 Learners at the centre

EdTech strategies must consider teacher, learner, and caregiver needs and capacities and should also strive to involve users in design processes.

♻️ Reduce, reuse, recycle

It's often more efficient and cost-effective to build EdTech interventions and tools leveraging what already exists — from hardware and curricula to underlying principles of existing pedagogies.

👩‍🏫 Enhance teacher professional development

Technology can be used to support teachers, particularly by enabling teacher professional development and facilitating access to Open Educational Resources. This will help teachers to orient to EdTech more effectively and enhance their teaching practice and ultimately their work with students.

Source: EdTech and Covid-19: 10 Things to Know[9]

Lessons learnt from the Covid-19 experience

🏡 Caregivers need to be engaged

Parents and caregivers play a huge role in how students can access and use of technology. It's important that families and communities are engaged in EdTech initiatives to ensure students are learning beyond classroom walls in the best way.

📍 Context matters

One of the best uses of EdTech is tackling the unique needs of teachers and learners and the broader education system. Context matters and EdTech should be deployed where it is equitable and appropriate.

✨ Opportunity to test new approaches

The Covid-19 recovery period can and should be leveraged to test new approaches and close learning gaps. For example, as students return to school, decision-makers can prioritise diagnosing learning gaps and leveraging "smart buys"[10] like grouping children according to education level rather than age.

Source: EdTech and Covid-19: 10 Things to Know[11]

Lessons learnt from the Covid-19 experience

🌱 Support connection, well-being and safety

Effective use of EdTech requires a supportive ‘enabling environment’, backed by political vision, leadership, and commitment with plans in place in order to be cost-effective, affordable, and financially sustainable.

🤝 Consider longer-term plans and partnerships

In the long term, an EdTech policy that sits within a broader education sector plan will help new technologies fit the education system. To support the process, it is essential to collect good data which can be used to help decision-makers understand the needs of different groups, monitor improvements, and increase accountability for progress.

📚 Invest in reaching the most learners

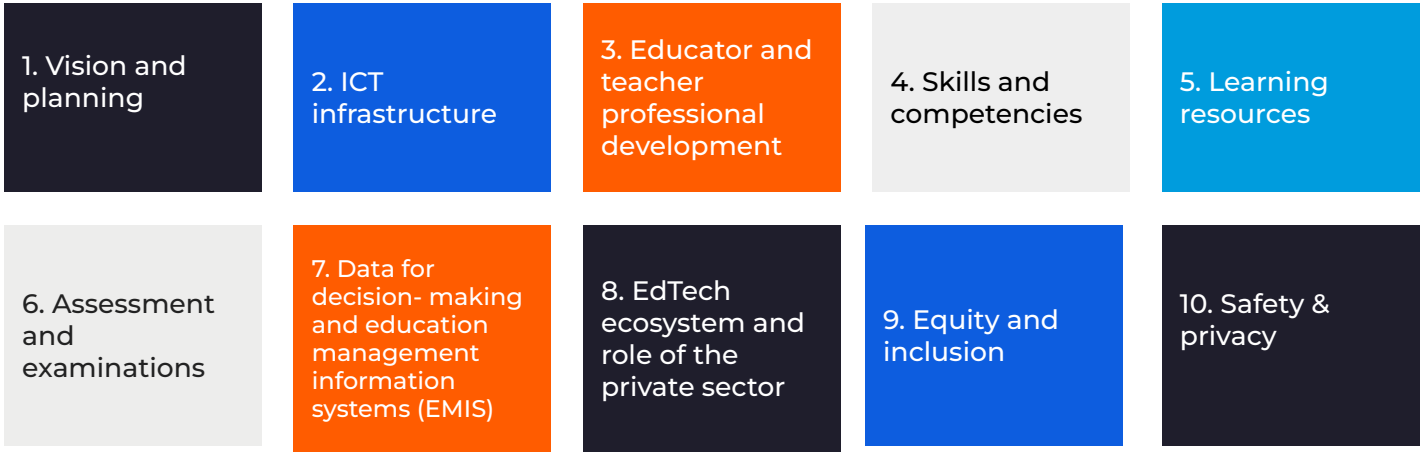
With inevitable education funding gaps and budget constraints projected in the next decade, EdTech must be used where it can most effectively reach the most learners. This includes supporting low-tech options, enhancing the reach of quality teacher professional development, and strengthening education data systems.

Source: EdTech and Covid-19: 10 Things to Know

4. EdTech strategy components

Comprehensive EdTech strategies and policies often cover the following components:

While there is some variance among EdTech or ICT in education strategies, those that are the most robust and poised for practical use generally include the following elements:



These components are informed by the eight themes identified in the '**SABER-ICT framework paper for policy analysis**' (↑Trucano, 2016), with some modifications and additions. Importantly, the degree to which each of these components is addressed in a strategy is context specific. Stakeholders should strive to consider each of these elements — but in order to make a strategy practical and usable, they do not all need to be covered exhaustively or in depth.

Key components in EdTech strategies

Component	Sub-components	Description	Key Resources / Evidence
1. Vision and planning	· Vision and planning · Policy linkages · Funding · Implementation authority	Countries need to articulate and disseminate a clear **vision** for the use of technology to support education. EdTech strategies should also align with the goals of education sector plans in addition to broader, cross-sectoral digital transformation or ICT strategies or plans in a country. EdTech strategies should address how EdTech will be **funded**, including costs beyond infrastructure or devices. EdTech strategies should also identify and create **accountability mechanisms** for those responsible for **implementation**. (↑Trucano, 2016).	· SABER-ICT Framework Paper for Policy Analysis, ↑Trucano, 2016 · National EdTech strategies: what, why, and who, EdTech Hub, 2022[12] · Building back better: Education systems for resilience, equity and Quality in the age of COVID-19, the World Bank: ↑Vu & Savonitto, 2020 · How much does universal digital learning cost? UNICEF policy brief: ↑Yao et al., 2021
2. ICT infrastructure	· Power · Infrastructure (e.g., electricity, internet connectivity, data) · Devices / hardware	Depending on a country's level of development, issues around reliability and affordability of **power** may affect the feasibility of using different forms of EdTech. Access to internet connectivity and affordability of data, and existing inequities in this access affect whether and how EdTech can be used to support education(al) goals, and by whom. Whether and how technology devices can be used for educational purposes is dependent on the specifications of those devices themselves (e.g. offline functionality) as well as available ICT infrastructure.	· Building and sustaining national ICT/education agencies: Lessons from international experiences, World Bank: ↑Trucano & Dykes, 2016 · School Infrastructure Survey, EdTech Hub, 2022 · ICT for Learning Process and Tools - Volume II for sub-national and national governments, ↑UNICEF & Aga Khan Foundation and Innovation Unit, 2020 · Ensuring resilient connectivity, UNESCO, EdTech Hub: ↑Unwin et al., 2020 · Internet access and education: key considerations for policy makers, Internet Society, 2017 · Knowledge Pack: Devices for Education, ↑World Bank (2022) · Knowledge Pack: Procurement, ↑World Bank (2022)

*This component is referred to as "teachers" in the original SABER ICT policy framework.

Key components in EdTech strategies

Component	Sub-components	Description	Key Resources / Evidence
3. Educator and teacher professional development*	· Training · Standards · Support · Administrators · Tech for TCPD	Strategies should address how teachers will be provided with **technical and pedagogical professional development support** to use EdTech, in both **pre-service** and **in-service environments**. Importantly this should also include supporting teachers' ability to **integrate technology into their pedagogical practices** and their capacity to **use tech in the classroom more generally**. Strategies may also address **competency standards** for teachers, which may evolve over time as EdTech is integrated into teaching and learning activities. Strategies may also cover training and support for **school administrators, coaches,** or other staff who play a role in enabling and supporting changes in practices to use EdTech at the school level. Finally, they may cover how technology will be used not just in teaching and learning activities, but also to **facilitate teacher continuous professional development** itself.	· Teachers' Skills and Skills Frameworks for Remote and Blended Learning Knowledge Pack (English), the World Bank: ↑Freeman & Raigosa Montoya, (2022) · Teacher Continuous Professional Development (TCPD), EdTech Hub[12] · Curated Tools for Teacher Continuous Professional Development, EdTech Hub[13] · Technology use for teacher professional development in low- and middle-income countries: A systematic review: ↑Hennessy et al., 2022 · EU Digital Competence Framework for Educators: ↑Punie & Redecker, 2017
4. Skills and competencies	· Digital competency · Lifelong learning · Foundational literacy and numeracy	Many EdTech strategies or plans address the identification and development of digital literacy skills, competencies, or standards. This is also a common motivator for investment in using EdTech. **Basic digital literacy skills** include digital navigation, technological safety, and tech-based communication, while skills related to more **complex digital literacies** include content creation, contributing to the tech workforce, and problem-solving / filling technological gaps. Some strategies also identify **opportunities for learners to use EdTech both inside and outside of formal classroom** education. EdTech approaches also have potential to **support foundational literacy and numeracy skills** for students at diverse stages of learning, including lifelong learning initiatives (↑Hanemann & Scarpino, 2016).	· Digital literacy for children: exploring definitions and frameworks (UNICEF: ↑Nascimbeni & Vosloo (2019) · 21 Ways to 21st Century Skills: Why Students Need Them and Ideas for Practical Implementation, K. Kaufman, 2013 · Innovation Education – What are innovation skills? How can we provide innovation learning through the education system?, R. Murphy, 2016 · Harnessing the Potential of ICTs: Literacy and Numeracy Programmes Using Radio, TV, Mobile Phones, Tablets and Computers, UNESCO: ↑Hanemann & Scarpino (2016)

Key components in EdTech strategies

Component	Sub-components	Description	Key Resources / Evidence
5. Learning resources	· Digital learning resources and content · Open Educational Resources (OER) · Digital learning platforms	EdTech strategies should address how a country will support the **development, curation, curriculum alignment, dissemination, and utilisation** of **digital learning resources and content.** While strategies usually cover provision of devices, digital content is often an afterthought. Digital learning resources may include **Open Educational Resources**, which can take the form of any medium (text, image, audio, etc.) (↑Koomar & Jull, 2020) and are legally, technologically, and socially free (↑Haßler & Mays, 2014). In response to Covid-19, countries have put in place **national digital learning platforms** or adapted existing platforms to provide educational continuity during school closures (↑Adam et al., 2020). It is important these resources are maintained and adapted and that strategies continue to **consider how digital learning content is disseminated across education systems**.	· OER may be free, but you still need to invest to use them: Part I, the World Bank: ↑Mogos et al. (2021) · Mapping Open Educational Resources Around The World, the World Bank: ↑Trucano (2012) · Regional Learning Hub for Eastern and Southern Africa– Part 3: Skills taxonomy; Part 4: Content curation, EdTech Hub, 2022 · Rolling Out a National Virtual Learning Environment, EdTech Hub, 2020
6. Assessment and examinations	· Monitoring Edtech use · Evaluating teaching and learning impacts · EdTech-supported assessment and testing	As part of monitoring and evaluating EdTech, it is critical that strategies consider how **assessment and examination processes can utilise technology-based approaches** (like computer-based testing or online exams), and relatedly how these appraisals can be used to understand the efficacy of EdTech. EdTech-enabled assessments can also help inform more effective teaching approaches by supporting assessment-informed instruction and **personalised learning**. Contextual constraints, limitations, and resource gaps must be carefully considered to determine if these forms of assessment are applicable for the intended purposes.	· Assessment for improved learning outcomes, ↑UNESCO (no date) ·Resource Pack to Support Remote Learning : Formative Assessment (English), the World Bank: ↑Mohn et al. (2021) · The effectiveness of technology-supported personalised learning, L. Major, G. Francis, M. Tsapali, 2021 · Online examinations in emergency contexts, UNICEF & EdTech Hub, 2022

Key components in EdTech strategies

Component	Sub-components	Description	Key Resources / Evidence
7. Data for decision-making and EMIS	· Monitoring and evaluation, · Research and development · Innovation	EdTech strategies typically also address uses of EdTech to support education systems, not just teaching and learning activities. This can include the use of data for decision-making, specifically through **Education Management Information Systems (EMIS)**. Initial policies may focus on the establishment of EMIS and / or collection of data on key indicators such as enrollment, retention, and learning. Over time, this focus can evolve to include collection, processing, analysis, dissemination, and usage of education-related data.	· EdTech Hub guidance on Data for Decisions[14] · A Monitoring and Evaluation Framework for Blended Learning, EdTech Hub · Monitoring Distance Education, EdTech Hub · Knowledge Pack: EMIS 2.0, ↑World Bank, 2022 · Learning from Experience: A post-Covid-19 data architecture for a resilient education data ecosystem in Sierra Leone, FabInc, 2021
8. EdTech ecosystem and role of the private sector	· Partnership · Innovation · Collaboration · Sustainable forms of support	National EdTech strategies should be informed by an understanding of the broader EdTech ecosystem, which includes **the private sector**. A robust understanding of the EdTech ecosystem allows for strategic planning for both the development and deployment of EdTech. Engagement with private sector actors can ensure that national strategies make **best use of relevant innovation and help maximise the use of scarce financial resources.** Collaborating with the private sector can also offer potential for more **sustainable and diverse streams of funding** for plans.	· Knowledge Pack: EdTech Innovation Ecosystems, World Bank: ↑EdTech Core Team & Applebaum, 2020 · Guidance Note 14 Partnerships with the private sector and civil society, ↑Unwin et al., 2020 · Planning for the Total Cost of Edtech Initiatives, ↑edWeb (2019) · Vetting E-Learning Companies,[15] · EdTech Tulna valuation Centre Catalogue[16]

Summary of EdTech strategy components

Component	Sub-components	Description	Key Resources / Evidence
9. Equity and inclusion	Equity and Inclusion	While many EdTech strategies reference 'digital divides', to truly address inequalities, they must **prioritise pro-equity approaches and principles**. As part of making strategies contextually relevant and applicable, the specific **needs of historically minoritised or underserved communities must be addressed** along with efforts to serve broader user groups. With respect to the specificities of EdTech, these groups typically include (but are not limited to) girls and gender minorities, rural or remote communities, individuals surviving poverty or financial hardship, transient or refugee students, or students with disabilities, and linguistic or ethnic minority communities.	• Gender-responsive education sector planning: A pathway to gender equality in education, UNGEI[17] • Assistive Technologies Knowledge Pack, ↑World Bank (2022) • Accessible Digital Learning Portal, ↑UNICEF (no date) • Digital Learning for Every Child, ↑Brossard et al. (2021) • Girls' Education & Technology, EdTech Hub[18] • Accessibility Toolkit for Open Educational Resources (OER): Accessibility Principles, CUNY[19] • Accessibility Principles, Web Accessibility Initiative[20] • EdTech That Reaches Marginalised Learners: Relevant Examples for the Indonesian Context, EdTech Hub
10. Safety and privacy	Digital ethics and safety	It is also critical that strategies **prioritise ethical approaches** and practices related to EdTech including **data safety and security, privacy provisions, and digital ethics**. Although this is relevant for all EdTech users (i.e., educators, administrators, caregivers, etc.) it is of particular importance when planning for educational tools and materials that aim to serve children and young people (students) who face unique challenges related to safety in digital spaces.	• Minding the data: protecting learners' privacy and security, ↑UNESCO (2022) • AI ethics and learning: EdTech companies' challenges and solutions, ↑Kousa & Niemi (2022) • Data Privacy, Ethics and Protection: Guidance note on gig data for achievement of the 2030 agenda, UNDG[21] • Child online protection guidelines, ITU COP[22] • Encryption, Privacy and Children's Right to Protection from Harm, UNICEF: ↑Kardefelt-Winther et al. (2020) • Child Safety Online, ↑UNICEF (2011) • "How dare they peep into my private life?", Human Rights Watch, ↑Han (2022) • Data access and protection laws in Pakistan, EdTech Hub, 2022

Situating EdTech components in the outline of a strategy

Below is a sample outline of one EdTech strategy (**a full sample strategy outline is available here**). A country's substantive goals for the EdTech components identified above are most often reflected in **a strategy overview** and carried into **and action plan—as defined in the outline below.**

Beyond the technical components of a strategy, clear ownership and accountability for progress and resourcing are crucial to move from paper to action

Ownership and accountability

- The **buy-in, support and effort of many stakeholders is needed to deliver an EdTech strategy**. Involving stakeholders in the strategy development process can help mobilise resources, build on, and align with their efforts and contributions. See the slide on positioning the strategy for more information.
- EdTech strategies that span multiple years often include **an annual 'action plan'** that help to operationalise priority areas and goals into specific time-bound next steps. Action plans should **assign clear owners** (e.g., government department, development partner, etc.) **who are held accountable for completion of specific steps**

Resources, financing, and costing

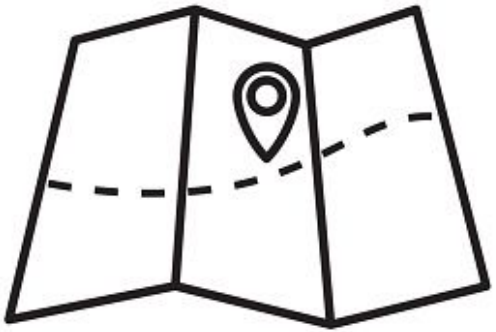
- The **availability of budget and financial resources** is a significant enabler -- or at times, limitation -- on whether and how an EdTech strategy can be implemented. The amount and source of resources available, and mobilisation of additional financing, should be taken into account as a strategy develops, particularly in the prioritisation stage.
- Sources of financing to implement EdTech strategies may include recurring government budgets (including MoE and Ministry of ICT / Communications / Infrastructure), overseas development assistance (ODA), private contributions, and more.
- UNESCO's guidelines for ICT in education policies and master plans provide a comprehensive Total Cost of Ownership (TCO) model for technology-enabled open learning systems (↑Miao et al., 2022, p. 77).

5. Process for developing an EdTech strategy

Numerous paths to the same destination

There is no single path to developing a robust national EdTech strategy.

Given the context-specific complexities associated with plan development, the steps and questions to consider on the next slide seek to offer guidance — rather than a prescriptive plan — on a generalised path for successful development of an EdTech strategy.



Process: developing a national EdTech strategy

***Who** needs to be involved? How does the strategy relate to existing laws, policies, etc?*

***What** has already been done? How did it go? What challenges remain?*

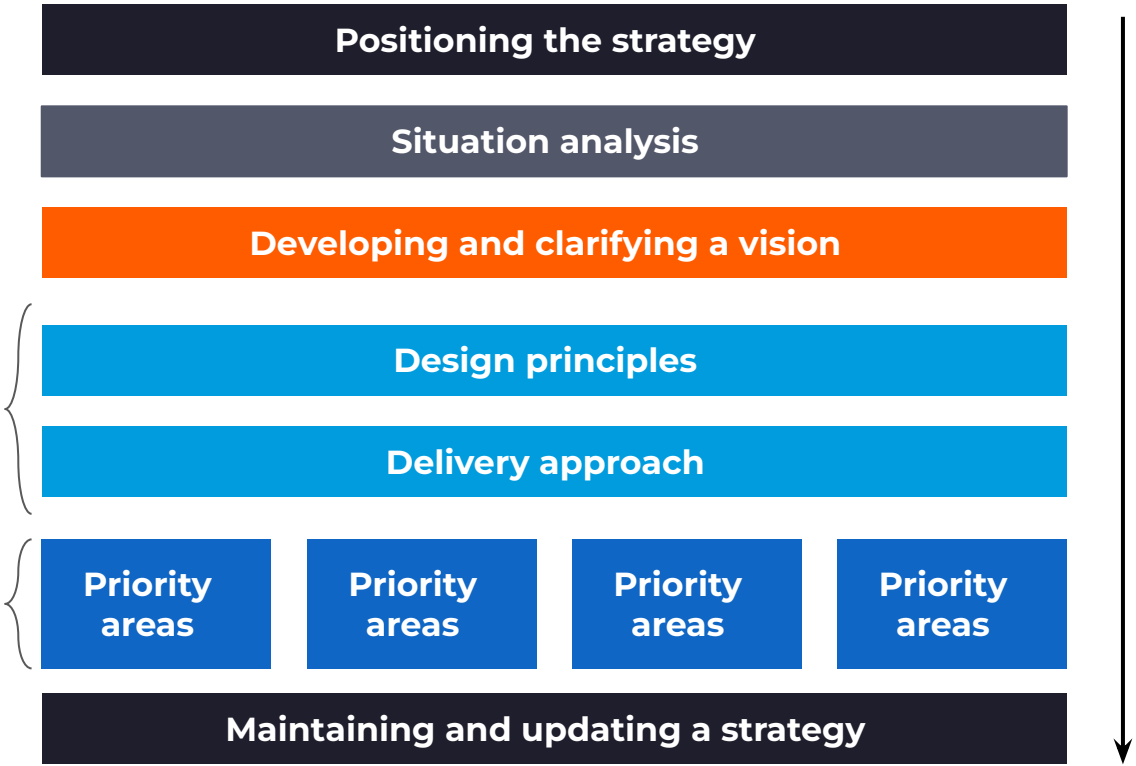
***Why** are we looking to use EdTech? What do we want to achieve with it?*

***How** will EdTech support and integrate with wider initiatives?*

***Principles:** equity, minimising / mitigating digital divide, agile, principles for digital development*
***Approach:** agile (discovery, alpha, beta, trial, scale), problem-driven iterative adaptation (PDIA), etc.*

***What education outcomes** do we want to achieve with EdTech?*

*What is the **lifecycle** of the strategy? Who is accountable for implementation? How will progress be tracked? How will the strategy be updated?*



Developed on the basis of ↑Miao et al. (2022)

5a. Positioning the strategy

Positioning the strategy

Fitting into a broader policy landscape

In the first phases of developing an EdTech strategy it is important to generate an understanding of how it will fit into and ultimately work as a part of a larger policy landscape. To do this, the following points should be clarified:

What does the existing education and ICT policy landscape look like at various relevant levels (sub-national, national, regional, and global)?

What EdTech or ICT in education policies, plans, or strategies already exist?

How does or will the anticipated strategy relate to, work in service of, or contradict existing laws and policies?

Positioning the strategy

Stakeholder groups typically involved in developing EdTech strategies

The leadership groups, professional communities, and individual stakeholders listed below are examples of the actors who should be involved in designing a national EdTech strategy. They should be involved from the first stages of strategy development and continue throughout the process. Contributions from these stakeholders will ensure that the strategy reflects inputs from across the EdTech ecosystem and supports broader stakeholder buy-in. Support across these groups of stakeholders is necessary for strategy implementation and accountability for progress.

Ministry of Education (and specific departments)

Government ministries working on ICT / technology

Ministry of Finance

Private sector representatives

Academics and researchers

Community and local leaders

Professional education groups, such as teachers' unions

NGOs and civil society organisations

Multilateral and bilateral **development partners**

Educators (school administrators, teachers)

End users (parents, caregivers, students)

Positioning the strategy

How do we involve stakeholder groups throughout the strategy development process?

Involving a range of stakeholders is paramount for the successful development and implementation of an EdTech strategy. It is important that they are continually engaged and consulted throughout the strategy building / iteration process. In addition, involving a wide group of stakeholders early and consistently can improve the odds of buy-in and success during implementation.

Group	Who is it made up of?	How should you consult it?	Why should you consult it?	Possible role in implementation
Government ministries (and organisations with authority to establish regulations)	Organisations responsible for regulations, quality assurance, qualification frameworks for institutional staff, intersectoral public funds, regulating pricing of hardware and digital services	- Focus groups - Regular meetings of the governing board	Review the feasibility of regulations, quality assurance mechanisms, qualification schemes, universal service funds, zero rating, and legal procedures for tendering.	Endorse regulations and provide capacity development
End users	Representatives of learners, teaching staff, ICT support staff, leaders of educational institutions, and parents who are asked to facilitate home-based learning	- Focus group discussions - Interviews with selected groups - Continuous knowledge sharing	- Elicit feedback on the feasibility of the desired change - Gain insights into teaching and learning practices Build awareness and capacities	- Integrate ICT into daily teaching and learning practices in the classroom - Create and share innovations

Source: (↑Miao et al., 2022)

Positioning the strategy

How do we involve stakeholder groups throughout the strategy development process?

Group	Who is it made up of?	How should you consult it?	Why should you consult it?	Possible role in implementation
Private sector representatives	Representatives of private companies that supply hardware, digital services, and content	- Focus group discussions - Interviews with selected groups	- Elicit feedback on the regulations specifically concerning the private sector - Mobilise inputs on components of the master plan relating to technology - Advocate the humanistic principles	- Mobilise funding and resources from the private sector - Adopt regulations and promote digital innovations as public goods for education
Research and evaluation communities	International and local experts and representatives from national educational institutions, universities, and the research community	- Focus group discussions - Interviews with selected groups - Continuous knowledge sharing	- Elicit feedback and input on the vision, objectives, indicators, and actions of the master plan - Mobilise inputs on the methodologies planned for monitoring and evaluation and research	- Implement capacity-building programmes - Execute or facilitate evaluation and research

Source: (↑Miao et al., 2022)

Positioning the strategy

How do we involve stakeholder groups throughout the strategy development process?

Group	Who is it made up of?	How should you consult it?	Why should you consult it?	Possible role in implementation
Community and local leaders	Representatives of the local public community, especially from libraries, community service centres, chambers of commerce, and charitable foundations	- Public surveys - Focus group discussions - Continuous knowledge sharing	- Raise awareness and reach consensus - Elicit general feedback	- Help minimize any public resistance - Mobilize external funding and resources
Multilateral and bilateral development partners	Representatives of international organisations including the UN, NGOs, and foreign aid agencies	- Focus group discussions - Interviews with selected groups - Continuous knowledge sharing	- Elicit feedback - Explore synergies with ongoing or planned programmes and with international community funding	- Plan and execute collaborative programmes - Share funds and resources - Facilitate the exchange of ideas and collective learning

Source: (↑Miao et al., 2022)

5b. Situation analysis

Situation analysis

How does the strategy relate to existing ICT conditions, laws, policies, etc.?

Education sector planning (ESP) processes often begin with a comprehensive education sector analysis (ESA). While ESAs are foundational for ESPs, they do not traditionally cover EdTech.

Before developing a National EdTech strategy, it is important to ask four questions:

1. What has already been done?

This may include:

- existing ICT policies, as explored in the “positioning” phase
- EdTech pilots or initiatives
- Devices that have been procured for other EdTech initiatives
-What has been promised by leaders?

2. How did it go?

Questions that you could ask include:

- Has an EdEtech strategy already been implemented?
- What is the status of each initiative?
- What are the lessons learnt from this work?
- What data or evidence is available that documents results and learning?

3. What challenges remain?

Common challenges may include:

- Limited digital literacy of learners, teachers, or government staff
- Lack of access to devices and internet
- Gaps in digital learning materials
- Human resources: is there sufficient human capacity to execute the strategy?

4. What opportunities exist?

Opportunities may include:

- Windows of political will
- Existing ICT infrastructure that can be leveraged
- Partnerships
- Building on what has been done, if it has worked well

Situation analysis

How does the strategy relate to existing ICT conditions, laws, policies, etc.?

The following types of information can complement insights from an existing ESA or serve as the basis for a distinct EdTech situation analysis.

What to cover	Description	Potential data sources
Educational challenges	Should highlight educational challenges as well as reforms being implemented to address them. An analysis should be able to identify where / how EdTech can support those reforms by increasing efficiency and effectiveness.	Previous ESAs, national learning assessments, UNESCO UIS data,[23] World Bank EdStats,[24] UNICEF MICS[25]
Overview of ICT / technology infrastructure, ownership, and usage	Should include information on access to electricity and internet, ownership of devices such as mobile phones, TV, and radio, and any available data on inequities (gendered, urban vs rural) in access, usage, etc.	ITU Profiles of Least Developed Countries[26] GSMA Mobile Connectivity Index[27] A4AI resources on meaningful connectivity[28]

Situation analysis

How does the strategy relate to existing ICT conditions, laws, policies, etc.?

What to cover	Description	Potential data sources
ICT / EdTech policy environment and national (or provincial) priorities	Strategies need to be developed with an eye towards alignment with pre-existing policies and priorities that relate to EdTech (which can include those that are more distinctly education- or ICT- / tech-related). These tools can cover different levels of administrative organisation (e.g., national, sub-national, municipal)	Historic or iteratively developed education and ICT policies, global or international guidance on EdTech legislation, international examples of effective EdTech strategising, especially from national contexts that are relevant to domestic challenges and opportunities
Current state of EdTech ecosystem, including private sector engagement	EdTech strategies must be informed by assessments of EdTech ecosystems, which include innovation actors and initiatives and opportunities in the private sector — thus enabling governments to inform, evaluate, and improve EdTech reforms and increase the accountability and capacity of EdTech vendors.	Market research on innovation and areas of private sector growth

An example of an EdTech situational analysis from Laos is available here

5c. Developing and clarifying a vision

Developing a vision

A vision should express a clearly articulated concept of what should change as a result of a strategy or plan being successfully implemented.

The guiding vision and instructional goals of an EdTech strategy should be determined by government leaders and based on stakeholder consultation and engagement as well as an understanding of existing access, opportunity, and equity gaps in the context (ideally highlighted in a situation analysis). This will help ensure that the defined vision will support relevant policy goals.

A strong guiding vision should clarify why EdTech is being used and the intended purpose of its use. Robust visions are also:

- Concise and specific
- Informed by the situation analysis
- Aligned with broad national development priority areas

Source: (↑Morris & Tan, 2021)

Developing a vision

Below are some key questions and action points intended to guide the development of a holistic and equitable central vision for a national EdTech strategy. These points are adapted from the USAID guidance for developing distance learning policies.

Some guiding Questions	Action Points
1. What is the **vision** for EdTech and what are the instructional goals* to achieve that vision?	Codify a vision statement and corresponding instructional goals to achieve the vision.
2. Which marginalised or **underserved communities are a priority** in this context and in this strategy?	Consult a wide set of individuals, groups, and communities including traditionally marginalised ones.
3. How does the clarified vision for EdTech **align with existing policies** or strategies?	Crosswalk the emerging vision with the objectives of existing policies and strategies.
4. What **contextual factors** need to be considered to achieve the vision?	Drawing on knowledge of a wide set of stakeholders, identify contextual factors that facilitate or hamper and influence equitable implementation of EdTech approaches

* Determining how EdTech will be utilised in education practice and to what degree it will be integrated into formalised learning approaches. This entails not only the extent of EdTech use (e.g., as a primary, complementary, supplementary, or additional form of instruction) but its modality (e.g., interactive online programming, radio or audio class recordings, TV educational programming, phone-based tutoring, online learning material repositories, etc.)

Source: ↑Morris & Tan (2021)

Clarifying a vision

An example from Singapore's EdTech Plan

Below is the vision that guided Singapore's national EdTech Plan. It contains actionable subcomponents that will enable the success of the larger strategy's ambitions, aspirations, and intentions.

"Over the next 5 to 10 years, educational technology will help make education more:

Self-Directed: By developing pedagogy, tools and structures to help students develop intrinsic motivation and take ownership of their learning.

Personalised: By creating learning experiences that customise the pace and path that cater to each child's needs.

Connected: By developing collaborative learning experiences and connecting students' learning to the community and the world.

Human-centred: By leveraging a data-driven understanding of how students' interests, attitudes and motivations can optimise learning."

Strengths of this vision include:

- A broad overall 10-year vision
- Aligns to overall goals of education system
- Concise and specific: it provides orientation for the subsequent steps
- Specifics included in the vision help set priorities and strategies in the details of the plan
- Focuses on building agility in recognition of the emergent and rapid changes in technology

For more information on developing a strong vision, see the visualisation and resources here.

Source: (↑Ministry of Education Singapore, 2020)

5d. Design principles

Design principles

There are a number of sets of principles that can be leveraged to help ensure consideration of essential strategy elements like equity and inclusivity, agility and adaptability, and sustainability. Some of this guidance comes in the form of technology-focused education and policy frameworks, [29] which include:

Development Framework

Aims to help policymakers analyse the context in their country, develop suitable goals, and coordinate policies and programmes which lead to systemic change.

PISA* ICT Framework

Gives a complete picture of student and teacher access and use of technology. It allows policymakers to understand the influence of system-level factors on students and schools' use of ICT. It also helps nations and individual educational institutions benchmark their used of EdTech.

ICT for Education

A conceptual framework that contributes aims to support the sustainable change in pedagogical practices in schools. It focuses on the integration of technology into teaching and learning.

Scaling Access and Impact

An ecosystem model that caters to government stakeholders such as ministries of education, education innovations, and private philanthropic capital providers. It helps these stakeholders understand their role in supporting access to and use of EdTech.

Source: (↑Bapna et al., 2021)

Programme for International Student Assessment

Design principles

Principles for Digital Development

The Principles for Digital Development are of particular relevance for developing national EdTech strategies. These principles were produced by a wide set of stakeholders including the Gates Foundation, SIDA (Swedish International Development Cooperation Agency), UNICEF, World Bank and USAID. They are intended to provide a flexible and agile set of guidance to help practitioners who use digital technologies in development programmes. They are intended to be adapted and refined over time.

Source: (↑Principles for Digital Development, no date)

Design principles

Principles for Digital Development

Below is more detailed information about the components of each of the nine Principles for Digital Development. For more information on the individual principles go here.

1. Design With the User: Gather information about the user through observation and co-creation and use that information to effectively meet user needs.

2. Understand the Existing Ecosystem: Consider contextual structures, needs, and ecosystems to ensure technology tools are relevant and sustainable

3. Design for Scale: Designing for scale means thinking beyond the pilot and making choices that will enable widespread adoption later, as well as determining what will be affordable and usable by a whole country or region.

4. Build for Sustainability: Sustainability is essential to maximising long-term impact and embedding into policies and practices.

5. Be Data Driven: Decision-making needs to be informed by diverse, quality data collected through rigorous methods.

6. Use Open Standards, Open Data, Open Source, and Open Innovation: Initiatives can maximise resources — and ultimately impact — through the use of open standards, data, source technologies and innovation.

7. Reuse and Improve: Instead of starting from scratch, adapt, improve, or enhance existing products, resources, and approaches.

8. Address Privacy & Security: Carefully consider which data will be collected and how it will be acquired, used, stored and shared — being mindful to prioritise safety and security.

9. Be Collaborative: Share information, insights, strategies, and resources across projects, organisations, and sectors to increase efficiency and impact.

Source: (↑Principles for Digital Development, no date)

5e. Delivery approach

Iterative approaches to implementation help de-risk strategies and enable adaptation and responsiveness

While many governments rely on more traditional implementation approaches driven by work plans, set timelines, and Gantt charts, iterative approaches to the implementation of EdTech strategies allow for:

- Opportunities to design with the user and incorporate user feedback early and often
- Responsiveness to changing conditions
- Space to problem-solve at a smaller scale before implementing nationally
- A way to de-risk investments in EdTech

Cyclical and iterative approaches to implementation help ensure strategies are implemented and adapted to instigate meaningful and lasting change.

Two examples of iterative approaches are the Problem-Driven Iterative Adaptation (PDIA) and agile approach, which are explored in subsequent slides.

Agile approach for technology

The agile approach is an example of a dynamic way of working that is especially relevant for technology. It originates from the technology sector and involves a discovery phase where actors seek to understand a problem, and then alpha, beta, and trial phases where a product (or intervention or programme) is tested, adapted, and improved to ready it for scaling.

Testing multiple small prototypes / ideas

Testing the best idea and further refining it in a number of schools

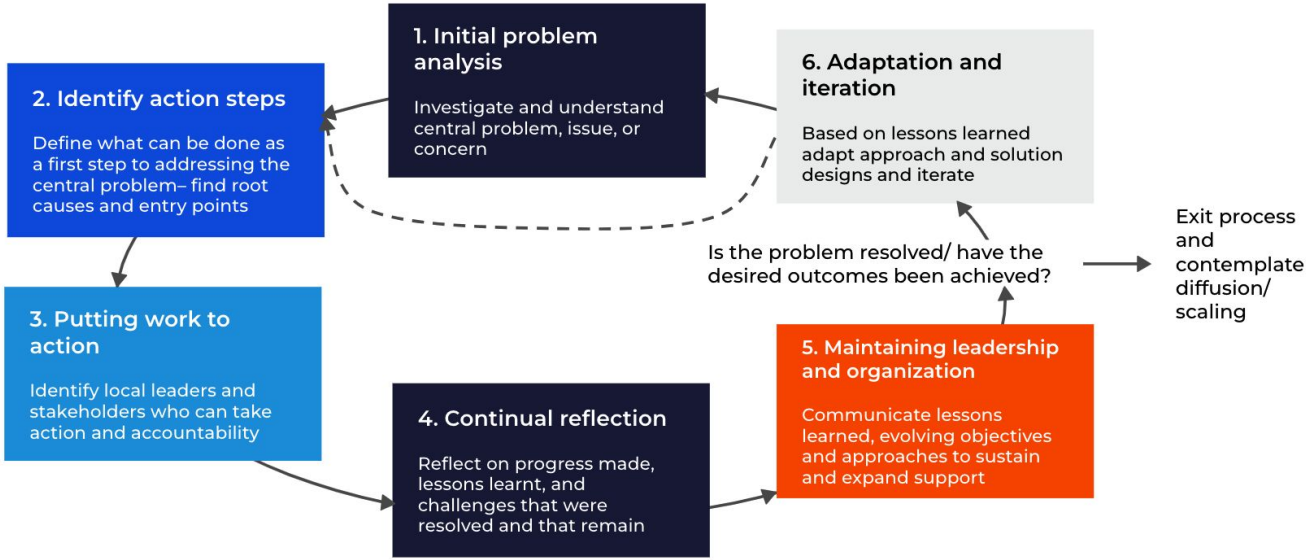
Examining impact and designing for national scale

Rolling out across the country, and continuing to iterate and improve

Source: (↑GOV.UK, no date)

Problem-driven iterative adaptation (PDIA)

PDIA is a process that encourages the use of quick feedback loops to develop contextually relevant solutions. This method was developed for actors and leaders in the international development space and is applicable to leaders interested in addressing specific issues through policy or legislative change. Below is a visual representation of the PDIA process. Although it often starts with problem analysis, it can begin anywhere. (↑Andrews et al., 2017)



Additional information on this approach can be found in the following resources:

- PDIA toolkit, A DIY Approach to Solving Complex Problems
- Building State Capability: Evidence, Analysis, Action
- PDIA Toolkit Videos[30]

Adapted from (↑Samji et al., 2018)

5f. Priority areas

Identifying priority areas is key to a strategy's feasibility

As mentioned above, choosing components to prioritise will depend on the local context, the specific challenges that a country is experiencing, the progress they have made, assets to build on, and the opportunities that are available. Comprehensive plans will touch on a holistic range of components, however, they will also offer more detailed considerations of a select number of these components as principle priority areas, and / or identify specific priorities within each component.

These priority areas should work in support of the overall vision and be informed by the situation analysis.

Answering the following questions can help identify and operationalise priority areas:

- Do the objectives and programmes address key challenges?
- Are the objectives and programmes coherent and compatible?
- Who will take responsibility for each objective or programme?
- Are the estimated costs compatible with financial resources available?

Priority areas: example actions

Much like the structure of building an EdTech strategy as a whole, priority areas should also be guided by a cascading structure. Larger guiding priority areas should be defined and then supported by specific actions that will make progress. Priority areas and actions should be contextualised and based on a solid understanding of relevant challenges and opportunities. Below are example actions for four of the strategy components that countries may identify as priority areas.

Educator professional development and training	ICT infrastructure	EMIS and data	Equity and inclusion
Streamline strategies for pre- and in-service teacher training and ongoing support	Build a database of and analyse the state of digital infrastructure available for schools	Facilitate government leadership and prioritisation of the use of data in decision-making	Prioritise inclusion, equity, and safety as a central component of an Edtech Strategy
Establish standards for teachers' ICT competencies	Ensure there is adequate technical support (e.g., helpdesk, troubleshooting software)	Build institutional frameworks to direct data collection, management, and use	Take a Universal Design for Learning[31] approach to digital content development and hardware procurement
Support the development of professional networks and communities of practice	Provide digital infrastructure (such as connectivity, electrification of schools, devices, etc.) to schools	Streamline data management, analysis, and dissemination to avoid duplicate or siloed streams of information	Consult leading guidance and evidence on digital and technological safety and security, especially related to student well-being
Leverage ICT to improve the quality of learning in core subject areas			

Source: (↑Miao et al., 2022)

Priority areas: data for decision-making example

Priority area	Objectives	How it responds to a key challenge	Available resources	Responsible party
Data for decision-making and EMIS	**1.** Conduct a review of current education data collection, analysis, and use. Develop action plan to improve coordination and systems	Different ministry departments collect data but do not have a way to share it easily	Development partner TA to conduct mapping of data collection	President's office, MoE Deputy Secretary for planning
	2. Conduct a review and develop action plan to upgrade and improve EMIS	There are currently multiple forms of EMIS in use by different government depts and partners	Government budget allocation and donor grant to support EMIS	MoE planning / data department
	3. Provide school 'report cards' to parents and caregivers on school-wide learning outcomes	Parents don't know that their children are not learning. Schools are not held accountable for improving learning	Donor funding to pilot in 30 schools	Provincial / state education administration

5g. Maintaining and updating a strategy

Maintaining and updating a strategy

Consistent with iterative approaches to implementation, periodically updating strategies helps to ensure their continued relevance. They should be viewed as living documents, particularly as technology and EdTech landscapes continue to evolve.

Fundamentals that can facilitate regular revision include:

- Clearly defining the review periods and processes in advance of the development of the strategy (e.g., annual review and update)
- Developing flexible frameworks for supporting the consistent use of EdTech tools as they are updated and advanced
- Allocating resources and developing long-term funding strategies to support future revisions
- Establishing sustainable monitoring and evaluation (M&E) and EMIS approaches that can provide robust data to decision-makers and educators and inform continuous increases in effectiveness, efficiency, and equity in strategies.

Source: (↑Miao et al., 2022)

Maintaining and updating a strategy

Examples from Singapore and Bhutan

Both Singapore and Bhutan have both taken an iterative approach to developing and updating their national EdTech planning.

Singapore 🇸🇬

Singapore has developed four ICT in Education Master plans since 1997, and is currently developing the latest iteration of their EdTech Plan. To do this, the Ministry of Education uses a robust monitoring and evaluation approach to review and iterate on existing plans.

Bhutan 🇧🇹

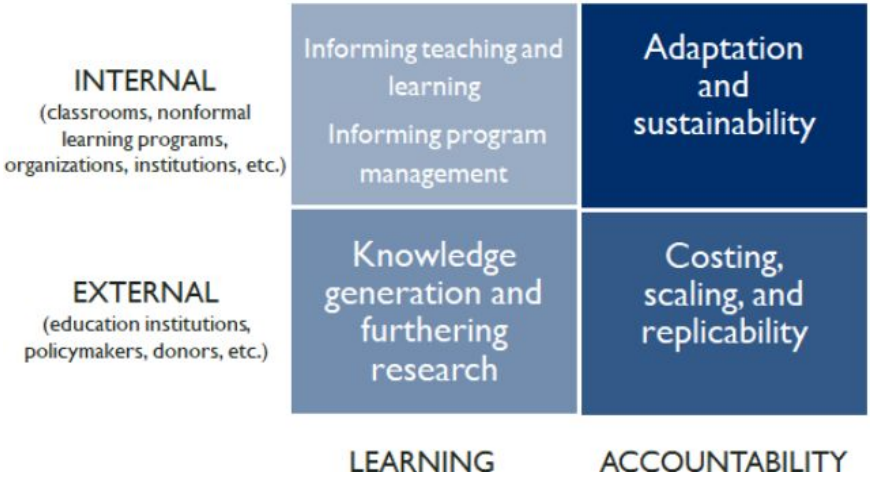
To develop the latest version of the current ICT in education strategy, iSherig-2 Education ICT Master Plan 2019–2023, the Ministry of Education in Bhutan used their first master plan as a jumping off point (↑Ministry of Education, 2019).

Maintaining and updating a strategy: monitoring and evaluation

Maintaining and updating the policy will require building in adaptive M&E structures, which will allow for stocktaking and iteration to the plan.

Monitoring is "a process that tells us what is going well or where we should pay more attention" (↑Kaye et al., 2020).

Evaluation "is a process that attempts to determine as systematically and objectively as possible the relevance, effectiveness, efficiency, and impact of activities in the light of specific objectives" (↑Khalayleh et al., 2021).



Source: (↑Miao et al., 2022) (↑Morris & Tan, 2021)

Maintaining and updating a strategy: establishing key performance indicators

M&E requires establishing key performance indicators (KPIs) to compare goals with what has actually been achieved. Each KPI should have a **baseline** and an **identified source** of data.

> "Quantitative KPIs can be defined to serve two types of objectives. The first is measuring shares or index values and informing the progress: for example, the rate of teachers with ICT skills before the intervention and each year after its implementation.
>
> The second one is indicating the status of progress towards a normative goal, which is sometimes disaggregated into segments on a spectrum. For example, if the goal is 'all primary schools provide their pupils with access to the internet at least once a week', the indicators can be grouped as e.g. less than 25 per cent of pupils, 25–50 per cent of pupils, 50–75 per cent of pupils, and nearly all pupils." (↑Miao et al., 2022, p. 84)

6. Example EdTech strategies

Factors to consider when drawing on example strategies

In looking for examples of EdTech strategies to inform new efforts, the following factors can help determine relevance to a specific country or context.

1

Level of economic development and maturity of an EdTech ecosystem

In considering example strategies and plans that could provide inspiration, the level of economic development and maturity of the EdTech ecosystem of the country from which the example is drawn matter and are especially relevant to decisions around prioritisation of components. For example, low-income countries should not prioritise 1:1 provision of devices if the ICT connectivity infrastructure to support device access and use is not in place.

2

Geography

Many governments and the partners supporting them in EdTech strategy development are interested in examples of strategies from the same geographic region as their country.

While countries within a region can differ greatly in size, population, level of development, and other factors, they may share cultural, linguistic, and other similarities that make regional examples particularly relevant.

3

Education system structure (centralised vs decentralised)

In a centralised system, a strategy may be developed top-down, involve less government stakeholder / consultation, and cover the whole country. In a decentralised or federal system, a national- or federal-level strategy may be less specific or relevant than a state- or provincial-level strategy. In some cases, a national strategy may serve as a framework / guidelines for state- or provincial-level strategy development. For a national or federal-level strategy to be meaningful, it may require buy-in from states or provinces.

Factors to consider when drawing on example strategies

4

Plan history and ownership

Plans that are the first of their kind are likely to be (but not always) meaningfully different and often less mature / robust than those that follow and build on a history of EdTech plans.

Moreover, knowing who 'owns' a plan can offer insight into priority setting and the likelihood of implementation of a particular plan.

5

Top-down vs bottom-up approach to strategy / plan development

Was the strategy developed in a top-down way by government? (e.g., strategy set by leadership, details fleshed out by technical experts, and then cascaded / communicated?) Or was it developed in a more bottom-up / participatory way?
While participatory, inclusive approaches are generally recommended, when learning from other plans, it is crucial to understand the extent to which inputs reflect diverse stakeholders.

6

Strategy or plan time period and recency

Examples in this guide focus on more recent / current examples of EdTech strategies and ICT in education master plans, given the rapidly changing nature of EdTech.

Newer plans may be most relevant in terms of content / current global challenges

7

Funding source

What is contained in a plan will be heavily influenced by sources of available financing.

For example, MoEs are much more likely to support teacher training programmes, whereas efforts to expand or improve connectivity are more likely to be funded through ministries of ICT or communications.

Other factors, such as the knowledge, skills, and capacity of Ministries of Education — both in terms of planning and EdTech content — may affect the relevance of example strategies.

EdTech strategy examples covered in this resource

Bhutan 🇧🇹

Region: South Asia

Plan Title: Education ICT Master plan 2019–2023 (iSherig 2)

Highlights: Second plan for a small country with a centralised education system, developed top-down

Ghana 🇬🇭

Region: West Africa

Plan Title: National ICT in Education Policy 2015

Highlights: Second plan for lower-middle-income country with centralised education system. Developed by MoE with implementation guidance for other parties

Singapore 🇸🇬

Region: East Asia

Plan Title: EdTech Plan 2020–2030

Highlights: High-income country with strong edtech ecosystem. Highly centralised education system, fourth plan since 1997

Other examples of EdTech strategies, plans and reports

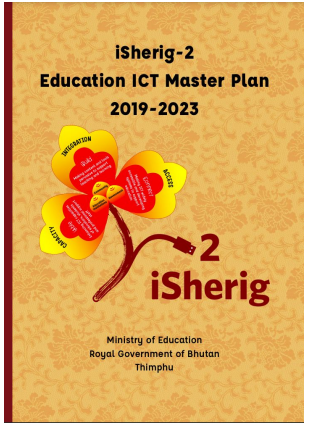
While they are not analysed in detail here, additional examples of EdTech strategies from other countries, regions, and levels of development are listed below.

Country	EdTech strategy, plan, or report
Austria 🇦🇹	· Digital Austria: Strategy (webpage) Now for tomorrow: Digitalisation and growth for future proofing (report — ENG)
Ecuador 🇪🇨	· Ecuador Agenda Educativa Digital 2021–2025 (strategy — Spanish)[32]
India 🇮🇳	· India Report Digital Education: Remote Learning Initiatives Across India (July 2021 report)[33] · National Digital Education Architecture (NDEAR): Digital infrastructure for the education system (webpage[34] and ecosystem policy[35])
OECD countries 🌎	Digital strategies in education across OECD countries: Exploring education policies on digital technologies (2020 report)[36]
United States of America 🇺🇸	· Reimagining the Role of Technology in Education: 2017 National Education Technology Plan Update (plan)[37] · North Carolina Digital Learning Plan September 2015[38] For more U.S. examples, see ISTE's EdTech policy map[39]

🇧🇹 Bhutan Education ICT Master plan 2019–2023 — iSherig 2

Strategy summary and context

1	**Level of economic development and maturity of EdTech ecosystem**	Bhutan is a lower-middle income country with a stable political environment and a nascent EdTech ecosystem.
2	**Geographic location / region**	Bhutan is a small, landlocked country located in South Asia. It shares borders with India and China.
3	**Centralised vs decentralised education system**	Centralised. MoE responsible for policy planning, curriculum development, and administration. District (dzhongkag) level is responsible for implementation and covers school construction and maintenance, teaching and learning materials, teacher deployment (↑UNESCO, 2021;↑UNESCO, 2011).
4	**EdTech strategy / plan history and ownership**	This is Bhutan's second Education ICT master plan. The first plan, iSherig-1, spanned 2014–2018 (↑Ministry of Education, 2014). Plans are led by the MoE.
5	**Top-down vs bottom-up approach to strategy / plan development**	Top-down. The MoE led the development of iSherig-2 with support from UNESCO Bangkok.
6	**Strategy or plan time period and recency**	iSherig-2 covers 2019–2023. It was developed, endorsed, and launched before the Covid-19 pandemic.



Components and priorities covered in iSherig-2 🇧🇹

Component	Priority
Skills and competencies	Aims to ensure availability and accessibility of digital resources
Learning resources	Defines clear competency standards for educators and learners and clearly allocates responsibilities
Data for decision-making & EMIS	Outlines a plan to upgrade the MoE's EMIS to improve user experience

Example: Skills and competencies 🇧🇹

iSherig-2 - Bhutan's EdTech plan

Thrust 1: iAble *Enhance ICT competency of educators, learners and support staff.*	
Programme 1.1 *ICT Capacity Development of Educators*	Project 1.1.1 *ICT competency standards for teachers* Project 1.1.2 *Digital pedagogy in colleges of education* Project 1.1.3 *Digital pedagogy for in-service teachers*
Programme 1.2 *ICT Capacity Development of Learners*	Project 1.2.1 *ICT competencies of students* Project 1.2.2 *Digital citizenship for students* Project 1.2.3 *TVET-based ICT competencies of students* Project 1.2.4 *Digital literacy for NFE and CLC learners*
Programme 1.3 *ICT Capacity Development for Learning Support*	Project 1.3.1 *ICT competencies of educational leaders* Project 1.3.2 *ICT competencies of library and laboratory assistants*

✅ Lays down clear competency standards for teachers, learners, and support staff

✅ Outlines learning and development outcomes to be measured at different stages of implementation

✅ Specifies which ministries and departments are responsible for different components and activities

➡️ Could benefit from including building ICT capacity for MoE staff and other government officials

Source: (↑Ministry of Education (Bhutan), 2019)

Example component: Learning and digital resources

iSherig-2 — Bhutan's EdTech plan

"Pervasive Use of Digital Educational Resources

- Digital interactive textbooks project
- Content adaptation for special needs
- Digital educational resources for schools
- Digital educational resources for non-formal education (NFE)"

✅ Aims to ensure availability and accessibility of digital resources

✅ Considers how to ensure inclusivity for learners with special educational needs and disabilities (SEND)

Source: (↑Ministry of Education (Bhutan), 2019)

Example component: EMIS and data

iSherig-2 — Bhutan's EdTech plan

Objective

Develop an integrated and comprehensive EMIS.

Responsible Bodies

Directorate of Services, MoE (Lead)
Policy and Planning Division, MoE
Department of School Education, MoE for collaboration and support
Bhutan Council for School Examinations and Assessment for collaboration and support

Implementation Plan and Costing

Activity	Timeline		Cost (Mil. Nu)
	Start	End	
1. Develop EMIS 1.1 Conduct requirement analysis (1.00m) 1.2 Develop EMIS (17.00m)	2019	2021	18.00
2. Implement EMIS 2.1 Develop capacity on EMIS usage (10.00m) 2.2 Carry out data cleaning (2.00m)	2021	2022	12.00
		Total	32.00

✅ Includes a plan to upgrade the MoE's EMIS which was developed in 2011, to enhance user experience. The upgrade will add usability features such as ease of data entry, use of data analytics to track student performance, etc.

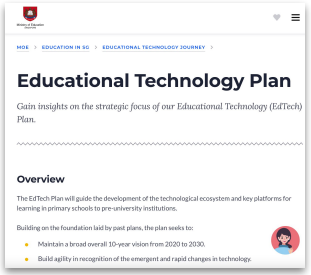
➡️ The stated objective could include greater levels of detail to define how the EMIS will be developed

Source: (↑Ministry of Education (Bhutan), 2019)

🇸🇬 Singapore Educational Technology Plan 2020–2030

Strategy summary and context

1	**Level of economic development and maturity of EdTech ecosystem**	Singapore is a high-income economy with a strong tech start-up ecosystem. As of 2018, Singapore was home to headquarters of 300 EdTech companies (Navitas Insights, 2018). [40]
2	**Geographic location / region**	Singapore is a small city-state and sovereign island country in Southeast Asia.
3	**Centralised vs decentralised education system**	Singapore's education system is highly centralised, with the Ministry of Education responsible for setting the overall framework and plans for the education system.
4	**EdTech strategy / plan history and ownership**	The 2020–2030 EdTech Plan is the country's fourth plan since 1997. Since 2019, plans have been called "Education Technology Plan" instead of "ICT in Education Master Plan." The plan is owned and developed by the MOE, which has EdTech as a key part of its organisational structure (↑Machmud et al., 2021).
5	**Top-down vs bottom-up approach to strategy / plan development**	Given the centralisation of the education system, plan development took a top-down approach.
6	**Strategy or plan time period and recency**	The plan spans ten years from 2020–2030, but is rolling and subject to regular reviews and updates.



Singapore's Educational Technology Plan 2020–2030

ICT infrastructure	Fosters responsive environments that support learning anytime, anywhere
Educators and teacher professional development	Offers specific considerations and action items for educators including a model of teaching and learning
Skills and competencies	Captures outcomes for learners across each key stage of the education system
Equity and inclusion	Incorporates approaches to inclusion, equity, and safety as an integral part of plan

Example component: Skills and competencies

Singapore's EdTech Plan

Primary

At the end of primary school, students should:

- Be able to distinguish right from wrong.
- Know their strengths and areas for growth.
- Be able to cooperate, share and care for others.
- Have a lively curiosity about their surroundings.
- Be able to think for and express themselves confidently.
- Take pride in their work.
- Have healthy habits and an awareness of the arts.
- Know and love Singapore.

Secondary

At the end of secondary school, students should:

- Have moral integrity.
- Believe in their abilities and be able to adapt to change.
- Be able to work in teams and show empathy for others.
- Be creative and have an inquiring mind.
- Be able to appreciate diverse views and communicate effectively.
- Take responsibility for their own learning.
- Enjoy physical activities and appreciate the arts.
- Believe in Singapore and understand what matters to our country.

Post-secondary

At the end of post-secondary education, students should:

- Have moral courage to stand up for what is right.
- Be resilient in the face of adversity.
- Be able to collaborate across cultures and be socially responsible.
- Be innovative and enterprising.
- Be able to think critically and communicate persuasively.
- Be purposeful in pursuit of excellence.
- Pursue a healthy lifestyle and have an appreciation for aesthetics.
- Be proud to be Singaporean and understand Singapore in relation to the world.

✅ Captures the desired outcomes for learners across each key stage of the education system: primary, secondary, and post-secondary education

Source: (↑Ministry of Education Singapore, 2020)

Example component: Educators and teacher training

Singapore's EdTech Plan

"**Designers of learning experiences who:**

- Design physical and virtual learning environments that empower students to learn.
- Customise learning to cater to each student's needs.
- Iterate the design of learning experiences for continual improvements to student learning.

Skilful practitioners who facilitate active learning in students by leveraging:

- Technology to mediate learning interactions between students and content, their teachers, their peers and the community.
- Learning data to provide better feedback and targeted interventions to students.

Digital learners who continually develop themselves professionally to:

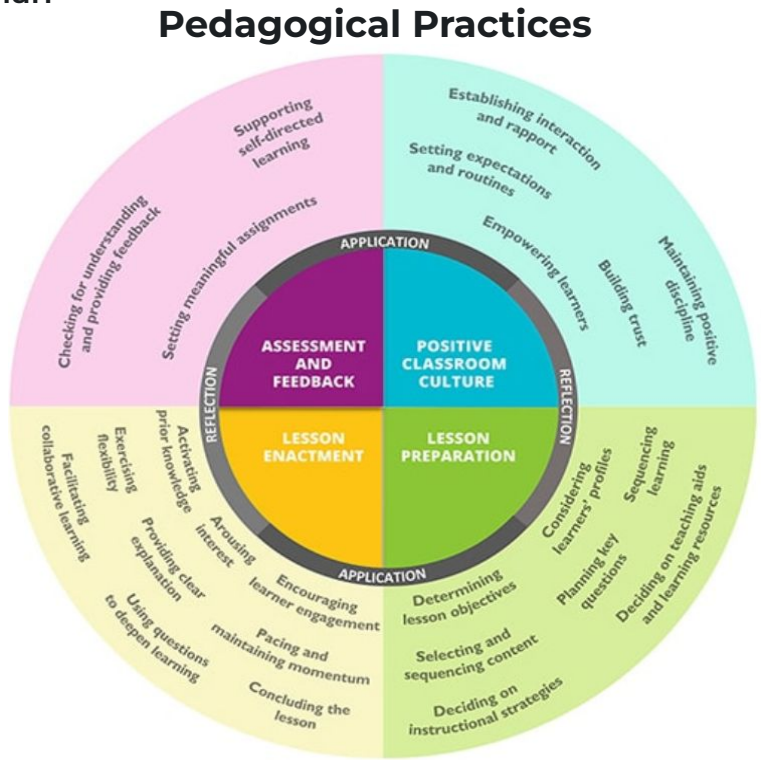
- Learn and share digitally.
- Keep up to date with technological developments for teaching and learning"

✅ Offers specific considerations and action items for educators

Source:(↑Ministry of Education Singapore, 2020)

Example component: Educators and teacher training

Singapore's EdTech Plan



✅ Offers a model of teaching and learning to guide and strengthen effective teaching

✅ Offers specific pedagogical practices, corresponding to teaching areas, that facilitate learning

Source: (↑Ministry of Education Singapore, 2020)

Example component: ICT infrastructure and devices

Singapore's EdTech Plan

"**Develop a school environment that supports seamless learning by:**

- Continually improving ICT infrastructure and systems to support teaching and learning in school and at home.
- Reimagining learning spaces to enrich learning interactions beyond the classroom."

✅ Aims to develop responsive environments that support learning anytime, anywhere

➡️ Should consider how to reach learners with limited access to internet / devices at home

Source: (↑Ministry of Education Singapore, 2020)

Example component: Equity, inclusion, and safety

Singapore's EdTech Plan

The Cyber Wellness curriculum is organised into 5 topics:

Topics	What your child will learn about
Cyber use	• Maintaining a healthy balance of online and offline activities
Cyber identity	• Developing a healthy online identity • Appropriate online expression
Cyber relationships	• Netiquette • Cyber bullying • Developing safe, respectful and meaningful online relationships
Cyber Citizenship	• Understanding the cyber world • Handling online content and behaviour • Having a positive presence in the cyber community
Cyber Ethics	• Creating and sharing of online content in a responsible manner • Respecting copyright

✅ Approaches inclusion, equity, and safety as an integral part of an ICT for education policy

✅ Outlines key messages for each stakeholder group (learners, parents, educators) to equip them about cybersecurity

Source: (↑Ministry of Education Singapore, 2020)

🇬🇭 Ghana ICT in Education Policy

Strategy summary and context

1	**Level of economic development and maturity of EdTech ecosystem**	Ghana is a lower-middle-income country with a flourishing EdTech ecosystem (↑EdTech Hub, 2021).
2	**Geographic location / region**	Ghana has a multi-party system of government and borders Togo, Côte d'Ivoire, and Burkina Faso (↑World Bank, no date).
3	**Centralised vs decentralised education system**	Centralised. The MoE is responsible for planning, formulating, and monitoring the policies that give overall direction to the education sector (↑EdTech Hub, 2021).
4	**EdTech strategy / plan history and ownership**	The National ICT in Education Policy for Ghana, originally drafted in 2003, was reviewed in 2006 and 2008. The MoE began implementation in 2009. The 2015 version of the document is the most recent (↑Ministry of Education, Ghana, 2015)
5	**Top-down vs bottom-up approach to strategy / plan development**	Top- down. This policy is developed by the MoE with guidance for implementation by other stakeholders.
6	**Strategy or plan time period and recency**	Provides long-term strategic direction for specific priorities and actions to be implemented during the initial medium-term

Components and priorities covered in Ghana's ICT in Education Policy

Component	Priority
Vision	Clearly illustrates how EdTech will be leveraged to ensure Ghanaians are active participants in the global knowledge economy
Education management	Presents targeted strategies with corresponding actions designed to meet the goal of efficient education management
Planning cycles	Outlines clear phases and steps for implementation

Example component: Vision

Ghana's ICT in Education Policy

"To enable all Ghanaians including teachers and learners either in the formal, informal and non-formal systems to use ICT tools and resources to develop requisite skills and knowledge needed to be active participants in the global knowledge economy at all times."

✅ Identifies target audience

✅ Defines scope

✅ Clearly illustrates what EdTech will be leveraged to achieve

➡️ Could benefit from including the time period covered by the policy

Example component: Education management

Ghana's ICT in Education Policy

Education management	
Ensure an education management system that recognises the relevance of ICTs in Education	Development of institutional capacity in the use of computer-based management tools to enhance administration and management objectives
■ Re-orient Educational leadership on the new paradigm and on change management ■ Develop and enforce workplace policies and norms for exploitation of ICT tools for management and administrative functions, support institutional level technology planning ■ Develop appropriate education management support structures and policies for ICT deployment ■ Create appropriate nationwide organisational structures for ICT development. ■ Establish special incentives scheme which will attract and retain ICT teachers	■ Evaluate various types of management information systems and applications that can be used in education administration ■ Acquire, develop, and implement suitable (preferably indigenous) information systems for use in the MoE, its agencies, and educational institutions ■ Provide appropriate training to staff and management of the MoE, its agencies, and all educational institutions on the use of the newly developed information systems

✅ Clear focus area

✅ Clear and targeted strategies

✅ Actions designed to meet the strategies

Example component: Planning cycles

Ghana's ICT in Education Policy

The policy identifies phases for implementation:

Phase 1: Enhance a systemwide and institutional readiness to use ICT for teaching, learning, and administration

Phase 2: Ensure systemwide integration of ICT into teaching and learning

Phase 3: ICT integrated at all levels of the education system — management, teaching, learning, and administration

- Build an education and training system to support ICT integration in teaching and learning
- Build teacher and manager confidence in the use of ICT
- Build a framework for competencies for teacher development in the integration of ICT into the curriculum
- Establish an ICT presence in schools

✅ Identifies clear phases of implementation

✅ Outlines what actions need to be taken to complete particular phases

What we have learnt about *ineffective* strategies

In our review of ICT in education strategies, we have also come across less effective plans and have therefore learnt about common missteps which can occur in strategy development. These might include:

Unclear vision

Sometimes plans rely on goals that are aspirational and vague. This means the foundational pillars of strategies are compromised and unification across strategy stakeholders and leaders will be more difficult.

Lack of ICT infrastructure

This commonly involves misalignment between goals / aspirations set by strategies and support / supplies allocated to educators, students, schools, or districts. This can be exacerbated by situational analyses that fail to capture the holistic realities of ICT infrastructure across a national context.

What we have learnt about *ineffective* strategies

Limited EMIS and data processes

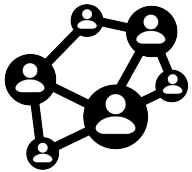
Without robust EMIS systems or data collection and analysis processes, countries may lack a clear understanding of evidence of effectiveness, costs, and impact on learning when it comes to EdTech. This can limit the relevance and feasibility of a strategy, if developed without adequate situational analysis.

Lack of support for educators

Strategies often focus on quantifying outputs related to teacher and educator support, such as the number of teachers who attend one-off training or professional development sessions. However, this approach results in inadequate attention being given to the practical, ongoing, school-based support that teachers need in order to develop confidence and feel comfortable about incorporating EdTech tools appropriately into their day-to-day teaching practices.

What we have learnt about *ineffective* strategies

Lack of accountability



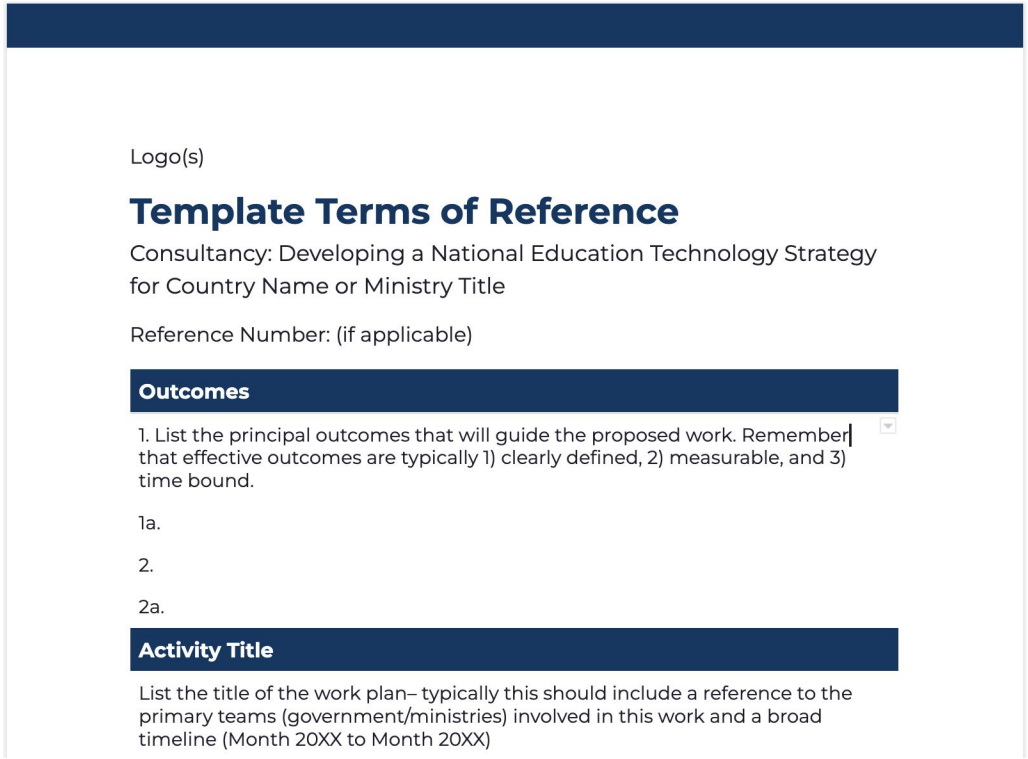
A lack of clear roles and responsibilities related to plan development, implementation, and maintenance often results in a lack of accountability for progress. Without clear ownership and responsibility, a strategy may not be fully developed, implemented, or assessed.

Lack of financial sustainability

This includes a lack of costing information and longer-term planning and strategising for resourcing. Often, policymakers or government leaders are inclined to make large pledges to deliver infrastructure, which is unaffordable within education sector budgets. These unrealistic goals jeopardise the sustainability and long-term financing of entire plans.

7. Templates and practical resources

Terms of Reference template for a national consultant to support EdTech strategy development



Logo(s)

Template Terms of Reference

Consultancy: Developing a National Education Technology Strategy for Country Name or Ministry Title

Reference Number: (if applicable)

Outcomes

1. List the principal outcomes that will guide the proposed work. Remember that effective outcomes are typically 1) clearly defined, 2) measurable, and 3) time bound.

1a.

2.

2a.

Activity Title

List the title of the work plan– typically this should include a reference to the primary teams (government/ministries) involved in this work and a broad timeline (Month 20XX to Month 20XX)

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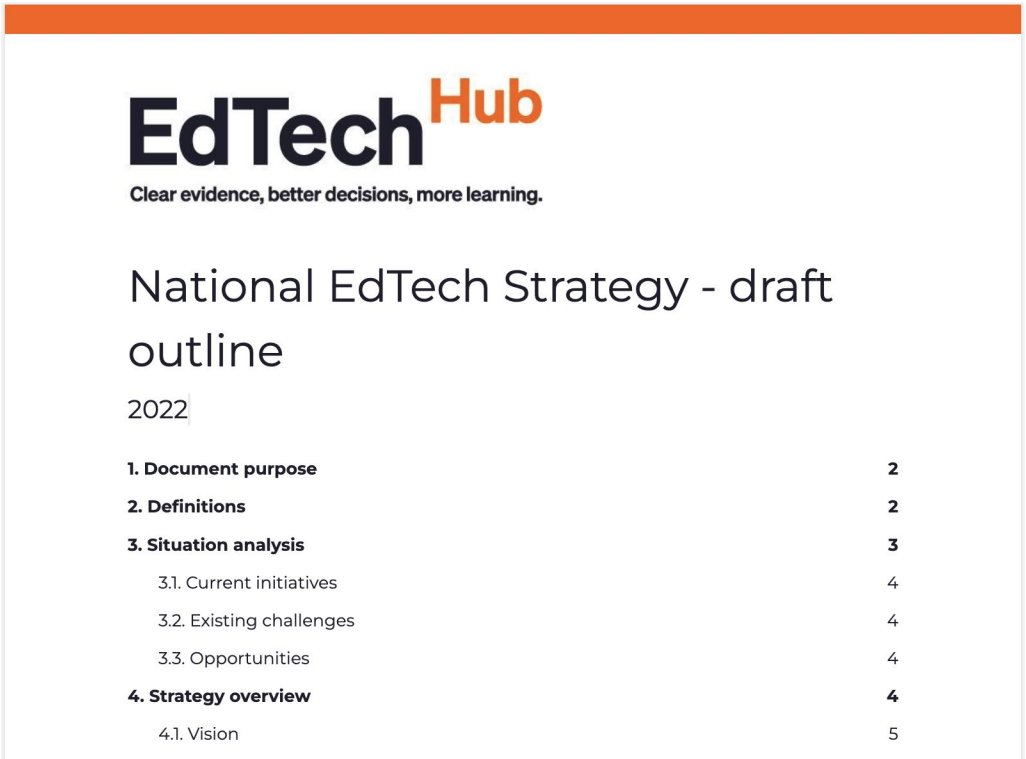
Sample outline for a national EdTech strategy



EdTech Hub

Clear evidence, better decisions, more learning.

National EdTech Strategy - draft outline

2022

>> Make a copy of this **sample outline** to edit for your own strategy <<

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This list of references is available digitally in our evidence library at https://docs.edtechhub.org/lib/2437EGZU

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Appendix I: Situation analysis

Tools for conducting an EdTech situation analysis

The following resources can be helpful starting points for putting together an EdTech-specific situational analysis. Tools are coded with the EdTech strategy components that they address.

World Bank EdTech Readiness Index[41]

Developed as a part of the broader Global Education Policy Dashboard, this tool helps countries 1) identify best practices, 2) understand growth areas for EdTech policies, and 3) monitor progress after implementing policies.

- 2. ICT Infrastructure
- 3. Educator PD & training
- 5. Learning resources
- 7. Data for decision-making

UNDP Digital Maturity assessment[42]

This assessment aims to capture the digital landscape, readiness, and maturity of government entities and countries more holistically. The goal of these measurements is to highlight challenges, opportunities for growth, areas to improve inclusivity, and ultimately to inform well-rounded digital master plans.

- 2. ICT Infrastructure
- 4. Skills & competencies

USAID DAI Digital Ecosystem Country Assessment (DECA)[43]

This tool seeks to identify opportunities and risks in national digital ecosystems. It conceptualises national digital ecosystems around three pillars: 1)digital infrastructure and adoption, 2) digital society, rights, and governance, and 3) the digital economy. Based on these pillars, it aims to facilitate the development of strategies and inform key decision-makers about a country's digital ecosystem.

- 2. ICT Infrastructure
- 8. Digital ecosystem

Tools for conducting an EdTech situation analysis

The following resources can be helpful starting points for putting together an EdTech-specific situational analysis.

UNICEF Project Connect[44]

Developed out of a global effort to map the internet connectivity landscape of schools and their surrounding communities in 35 countries. This initiative offers an overview of the current state of connectivity as it relates to the feasibility of EdTech in various geographies.

2. ICT Infrastructure

The GSMA Mobile Connectivity Index[27]

Measures 170 countries against key enablers of mobile internet adoption like affordability, infrastructure, and connectivity. Countries are scored on a scale of 0 to 100 across these indicators. Users can explore data repositories and run national comparisons.

2. ICT Infrastructure

World Bank Global Indicators[45]

A repository of global data on various development dimensions including education, energy, and infrastructure. This data can be used to do multinational comparisons as well as give snapshots of indicator growth / change over time within specific countries.

2. ICT Infrastructure

3. Educators and TPD

9. Equity & inclusion

Tools for conducting an EdTech situation analysis

Below are resources that, while not explicitly focused on EdTech, offer guidance on successful approaches to mapping education systems that could be applied to developing an EdTech Strategy.

Education sector analysis methodological guidelines. Vol. 1: Sector-wide analysis, with emphasis on primary and secondary education (↑UNESCO-IIEP et al., 2014)

Guidelines that provide methods for developing comprehensive education sector analyses to support the preparation and monitoring of education sector plans. The guidelines are divided into two volumes. This volume covers early childhood development (ECD), higher education, literacy and non-formal education, and technical and vocational education (TVET).

Education sector analysis methodological guidelines. Vol. 2: Sub-sector specific analysis (↑UNESCO-IIEP et al., 2019)

This volume covers: context, access, costs and financing, quality, system capacity and management, external efficiency, and equity with an emphasis on the formal primary and secondary education sub-sectors.

Examples of EdTech situation analyses

EdTech Hub country scans[46]

Conducted in 2020, these country scans (Ghana, Jordan, Kenya, Liberia, Nigeria, Pakistan, Rwanda, Senegal, Sierra Leone, Tanzania, Zimbabwe) explore the factors that inform the use of technology in education including policy, institutional capacity, private sector partnerships, and digital infrastructure. The scans are intended to offer a snapshot of EdTech in each country and a starting point for more in-depth discussions about opportunities and barriers in EdTech in specific countries.

2. ICT Infrastructure | **8. Digital ecosystem**

EdTech Hub country-level research reviews

These 2021 country-level research reviews (Bangladesh, Ghana, Kenya, Pakistan, Tanzania) take stock of key stakeholders in the EdTech research landscape, summarise existing evidence on EdTech across topics including teacher professional development, girls' education, data for decision-making, personalised learning, and participation in education. They also provide a political economy analysis to identify drivers of EdTech decision-making.

3. Educators and TPD | **7. Data for decision-making**

8. EdTech ecosystem | **9. Equity & inclusion**

MIT Solve Southeast Asia White Paper[47]

This paper presents an overview of the status of EdTech across five South-East Asian countries: Indonesia, Malaysia, Philippines, Thailand, and Vietnam. It aims to inform funders, policymakers, and innovators about regional EdTech development and investment — including national education system and development needs, the potential of EdTech to improve education outcomes, and the viability of EdTech supply.

1. Vision & planning | **2. ICT Infrastructure**

3. Educators and TPD | **4. Skills & competencies**

8. EdTech ecosystem

Situation analysis example from Laos

How does the strategy relate to existing ICT conditions, laws, and policies?

In terms of digital adoption, and despite investments in digital infrastructure, Laos continues to lag behind the rest of East and South-East Asia.

There are several obstacles to digital adoption in Laos, including:

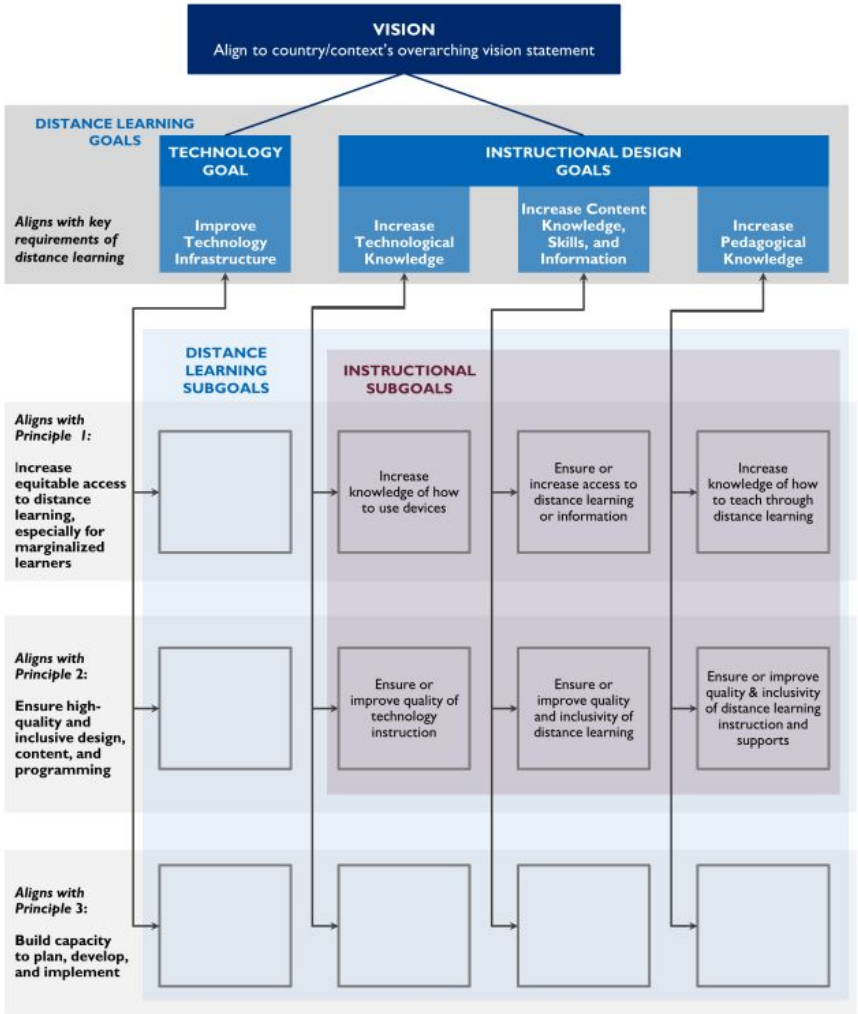
- Affordability — the average cost of internet per month for fixed broadband is USD 53.41
- Rural-urban divide — 0.3% of rural households have fixed broadband, 2% have computers, 49% have television, and 15% have radios.

	Access to the internet	Mobile phone subscriptions per 100 people
Laos	43%	61
The East Asia and Pacific Region	70%	126

Source: ↑Runde et al., 2022

Appendix II: Clarifying a vision

Appendix II: Clarifying a vision



The template on the left was created by USAID and includes example goals such as: improve technology infrastructure, increase technological knowledge, etc.

A larger version of this visualisation and additional guidance can be found here: USAID, 2021.

Source: USAID, 2021

Appendix III: Principles for Digital Development

Appendix III: Principles for Digital Development

Application / use of the nine principles

Design with the user

- By prioritising user-centered design and co-creation, tools can be built with rather than for users and therefore be more contextually relevant and useful
- Sustained and iterative partnerships
- Core tenants: 1) engage multiple stakeholders/users; 2) improve processes; 3) prioritise marginalised communities; 4) set and respect boundaries

Understand the existing ecosystem

- This principle encourages understanding the context unique structures and needs at individual country, regional, and community levels
- Core tenets: 1) understand an ecosystem before designing; 2) coordinate to avoid duplicate work; 3) ensure alignment with existing policies; 4) continually involve stakeholders; 5) audit and adapt as needed

Design for scale

- Encourages design that thinks beyond the pilot phase to enable widespread adoption
- Core tenets: 1) design for scale from the start; 2) prioritise adaptability through design; 3) consider scalability in technology decisions; 4) Prioritise financially sustainable models; 5) ensure evidence is collected and 6) ensure an initiative is contextually appropriate before scaling

Appendix III: Principles for Digital Development

Build for sustainability

- Maintain user and stakeholder support to maximise long-term impact
- Core tenets: 1) plan for sustainability from the start; 2) use local ICT service providers; 3) engage government and national strategies; 4) collaborate for impact; 5) build an adaptable programme

Be data driven

- Stakeholders should be provided with timely and quality data
- Core tenets: 1) measure continuously and incrementally; 2) use existing data; 3) use rigorous collection methods; 4) address knowledge gaps; 5) use data to inform decision-making; 6) present data in accessible formats; 7) prioritise capacity building; 8) holistically conduct data collection and analysis; 9) use international standards

Use open standards, data, source, and innovation

- Programmes should use open standards, data sources, technologies, and innovations
- Core tenets: 1) define 'open'; 2) use existing open standards; 3) share data to encourage innovation; 4) use open platforms for data sharing; 5) invest in software; 6) develop code to be open-source; 7) share and collaborate to encourage innovation

Reuse and improve

- Reuse: assess available resources and their alignment with programme goals
- Improve: modify existing tools to enhance their quality and impact
- Core tenets: 1) identify and evaluate existing tools and resources to see how they might be modified; 2) develop modular approaches to ensure adaptability; 3) collaborate with other practitioners

Appendix III: Principles for Digital Development

Privacy and security

- Core tenets: 1) before data is collected, define data ownership and access based on laws and regulations; 2) prioritise user safety; 3) understand risk and benefit; 4) understand risk of data leakage; 5) consider context; 6) track and strategise for sensitive data; 7) be transparent about data use and protection; 8) get informed consent; 9) rely on best practices for securing data

Be collaborative

- Share information, insights, and resources to increase efficiency and impact
- Core tenets: 1) understand relevant ecosystems; 2) continually engage with diverse experts; 3) prioritise collaboration; 4) share documentation and learning publicly; 5) contribute locally