

# How AI can help with System Strengthening in Education

## Introduction

Recent advances in artificial intelligence (AI) have captured the attention of the world, including education policy makers and administrators. At AI-for- Education.org, we aim to provide support to decision-makers on the sensible use of AI: we've already documented [Use Cases](#) to support student- and teacher-focused areas, have given grants to test ideas (find out about all the projects on our [Learning by Doing page](#)) and are curating evidence and developing [benchmarks](#) to ensure tools are high quality.

But AI for Education isn't just about shiny apps, but about how we can use the new technology to upgrade what we do – help people with their tasks, improve processes, and strengthen decision-making. This means it has broad applicability across the education system - so we have worked to understand how AI tools can support those running the system - from Ministers to executive assistants, civil servants to district officials - whose jobs are to deliver education to a nation.

## Systems strengthening

Improving access to schools and learning is complex – it involves children, parents, teachers, communities, school inspectors, district education officers, curriculum specialists, textbook providers, training providers, planners, financial experts, and more. All of these are intertwined into a system. This means that adopting a *systems approach* to address issues in low- and middle-income countries (LMICs) is central to enhancing education outcomes.

Governments and civil service play a significant role in system strengthening and are critical to education delivery and achieving national outcomes and international SDG4 targets. Nonetheless, [Ministries of Education in LMICs often lack the required financing, labour force resources, and technical expertise to realise education objectives](#), which increases the dependency on aid and external support.

AI tools can potentially offer a range of benefits to support actors at the system-level to enhance the effectiveness (quality and depth) and efficiency (time- and cost-saving) of the tasks that contribute to the design and delivery of national education.

In addition to completing tasks better, quicker, and cheaper, there is potential to simultaneously build government officials' and overarching state capacity through tailored training and ongoing support, at a time when "[the need for sophisticated decision-making and implementation capacity in national education systems has never been greater.](#)" Moreover, the further that tools can be designed in connection with different levels (student- and teacher-facing, for example) and structured towards reducing inequalities for marginalised groups, the greater the opportunity for AI to support system-wide strengthening *for all*.

## What AI is (and isn't)

AI is defined as "[the ability of a computer... to perform tasks that are commonly associated with the intellectual processes characteristic of humans...](#)" A simple way to think about what this means is to think about the basic computer. Technological advancements throughout the 20th century meant by the 1990s, families worldwide now had access to a computer at home and could use programmes such as Microsoft Word.

Word used the new technology (of computers) to provide users with a service (creating documents). In a similar way, applications (such as ChatGPT and Google's Gemini) use the AI technology advancements to provide a service (like drafting and revising written content) to users.

*So what does this mean?* - this means that the apps you may have seen or heard of – such as those to support teachers plan lessons, provide Whatsapp Chatbot support, or to grade students' work - use AI technology (rather than *being* AI themselves).

***Why's that important?* - this means that AI is *much more* than just an app or tool, it's a broader technology that - with the right training, data, learning and refinement - can enable computers to do tasks humans usually do *on their own and much quicker*.** Going further, it means there's this enormous new realm of possibilities to support system actors to address the wicked problems in education that create barriers to delivering learning for all.

Given the sheer number of tasks that can be upgraded – automated (like marking), or made more productive (like teaching), or even become possible (like adaptive learning for a class of 100) - some people see it as a revolution, which is why it's important it's harnessed safely and reliably across the system.<sup>1</sup>

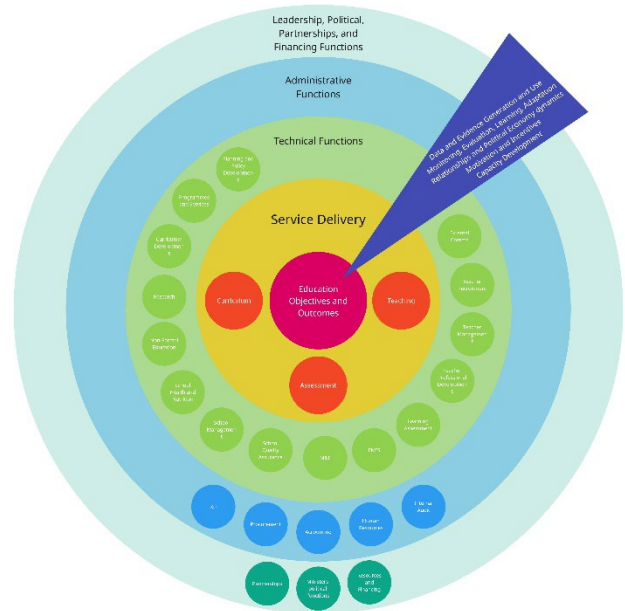
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<sup>1</sup> For more information and training on what AI is and isn't, we have tons of resources on our [Guidance page](#)

## What we did

To understand how AI tools can practically support education decision-making and delivery, we started by mapping out what tasks and activities happen on a regular basis within the education system. We did this by speaking to officials, reviewing national planning documents, and using global evidence on system structures. This enabled us to sketch out the work undertaken in a typical ministry that you can find in the diagram.

We then proceeded to detail general day-to-day tasks for officials at different levels of the system and draw up a list of the most important and difficult issues and tasks for each thematic area, reaching 105 (!) in the first round. We then drew on our knowledge of what AI can do to develop ideas for AI solutions that could support upgrading these.



Because no one wants to read over 100 items, we then synthesised the list of issues into thematic groups (e.g., data availability, alignment, internal communications) that have commonality across different areas. The previous AI solutions were also condensed to three examples, with the highest potential idea highlighted. We then translated both of these issues/AI solution sets into this

[MindMap](#)

We also looked at the possible outcomes from upgrading these tasks, including what would be needed to do this, what are the risks and potential next steps. The lists are not intended to be either a full itinerary of a whole education system, nor an exhaustive list of all potential applications of AI-solutions to support system strengthening, but a way of helping people navigate the potential.



## What we found

AI can help with education system strengthening in many ways – the list below shows the key activities and tasks which came up a lot and can support effective system strengthening:

1. AI can help with aggregating, reviewing, and analysing data/evidence to support decision-making, including summarising reports and spotting patterns in school data.
2. AI can help with creating, tailoring, and providing ongoing support for teacher professional development, including through school support officers, as well as capacity development for government officials and other key actors within the system.
3. AI can help with content creation, reviews, and revisions/updating for
  - a. policy, planning, programme design
  - b. curricula, teaching/learning materials, and assessment tools
  - c. media for public engagement
4. AI can help with supporting feedback mechanisms for stakeholders throughout the system, as well as facilitating communication reminding stakeholders on their responsibilities.
5. AI tools can help facilitating meetings for more effective and efficient discussions and to support (meeting) information dissemination and notes.
6. Supporting the development of content for organisational knowledge and institutional memory (e.g., for functional reviews, onboarding)

Within these, some shared benefits emerged, which are the following. Here we estimate the timescales based on the time for AI development, political/social/cultural factors, technology and connectivity proliferation, implementation and uptake, and other factors, to give people a sense of ‘when’ things may happen.

Potential benefits	Timescale prediction
Saving time and resources (e.g., through more effective meetings, more efficient task completion, etc.)	Short term
Developing the professional capacity of government officials and educators	Short/Medium term
Strengthening communication channels, information dissemination, and feedback mechanisms	Short/Medium term
Strengthening data/evidence analytics availability and possibilities for decision-making	Short/Medium term
Strengthening organisational knowledge	Medium term
Increasing availability of reliable data and evidence	Medium term
Generating deeper analytics (system understanding, analysis, diagnosis, modelling)	Medium/Longer term

Upgrading people and processes is hard, and AI won't bypass many of the existing challenges – so there are many assumptions for effective implementation of the above potential solutions and for an eventual impact on system strengthening. Examples of these are detailed in the next section.

## What needs to be in place to manage the introduction of AI tools?

1. **AI literacy:** as many interactions with AI won't be through tailored tools, officials need training on how best to use systems – including prompting and structuring requests.
2. **Content availability.** AI systems predict based on what they've seen. They are unlikely to have seen your curriculum or training guides. To fully unlock the potential, work is needed to have this content made available for use in the AI systems.
3. **Regulatory environment.** It is important that education systems wanting to adopt the use of AI tools formally and widespread can rapidly develop (and regularly review for necessary updates) regulatory tools to provide guidelines (e.g., oversight mechanisms) and considerations (e.g., ethical concerns) for application.
4. **Data availability and security.** Many of the AI solutions provided (particularly those focused on analytics) depend on child and school level data. In many LMIC contexts, the data is not currently collected consistently and/or available for secure, anonymous use.
5. **Technical capacity** for management and storage of data (both in terms of the training data that the programmes need, as well as the increased data collected as a result of application of potential AI solutions).
6. **Information security management.** The best models can only be run in the cloud – which often means sending information outside the country. Clear standards for what documents can be shared needs to be in place to facilitate safe use.

## Risks and things to consider

1. **Biases.** In addition to the relevance of the input data used to train AI programmes, there are also bias concerns (due to the type of data, the programming of the tools, etc.) that need to be addressed. Where your context isn't represented, Ministries need to think how to integrate their knowledge into systems and ensure providers are doing this.
2. **Safety and Security.** Ensuring the security of AI programmes/databases is critical. This involves the sharing/open access of sensitive information and ensuring systems have adequate security and that cloud based providers have this.
3. **Data Rights.** It will be vital to ensure that permission to use materials and data are agreed. This may be particularly relevant in scenarios where Governments do not own the copyright to their textbooks and materials due to legacy arrangements.
4. **Overreliance.** If overused / over-relied on, AI could create issues for staff (e.g., stifle creative freedom and other skill/knowledge development). There is also a risk that AI tools

fall victim to the phenomena in which addressing short-term needs (e.g., writing a report) interferes/distracts from medium/longer-term issues (e.g., enhancing data availability, capacity development).

## Conclusion

Education systems aren't just teachers and children – there are a wide range of tasks and activities happening every day across the country in support of these. So, alongside learner and teacher centric applications of AI, there are many potential ways to strengthen the system using this new wave of new technology.

Given its foundational nature, AI tools have the potential to support the non-teaching members of the education workforce to enhance the effectiveness (quality and depth) and efficiency (time- and cost-saving) of their work, by supporting them in the tasks that they do all day. This could be summarising and asking questions of policy documents; to AI prediction models for data driven decision making; and using AI for speeding up translation of materials and/or generating new ones. It all starts with looking what people do all day, and then asking how AI can help.

There is also (and arguably more importantly) significant potential for AI tools to support the upgrading of the staff's capacity, through on-going tailored training, such as tailored chatbots that draw on policies and procedures.

As with any innovation or approach, in order to realise the potential, there is a need to test and iterate openly, as well as ensuring that the enabling conditions (such as the ability to integrate local content and data security) are in place.