**Response from IT for Change (**[**www.ITforChange.net**](http://www.itforchange.net/)**) to the call for contributions:**

**Artificial intelligence in education and its human rights-based use at the service of the advancement of the right to education**

**6.** Please provide examples of existing **professional development programmes for teachers** to use AI technologies. What training and support are provided to educators to effectively utilize AI tools in their daily work?

**Response from IT for Change**

The state of [Kerala](https://en.wikipedia.org/wiki/Kerala), India, has embarked on a first-of-a-kind hands-on training programme on ‘AI for teachers’ in state schools. Organized by Kerala Infrastructure and Technology for Education ([KITE](https://kite.kerala.gov.in/)) under the Department of General Education, Government of Kerala, the aim of the programme is to empower teachers to identify potential risks associated with AI while fostering a culture of responsible use. (The Hindu, 2024).

Some of the topics covered in the programme are:

1. Image generation techniques to create subject-specific visuals
2. ‘Prompt engineering’ to formulate appropriate questions to generative AI tools
3. Generation of question banks in various formats for classroom assessments
4. Understanding deep-fakes by generating their own avatars
5. Algorithmic biases and privacy concerns

The training program is a fully in-house program, all resource persons are teachers from government schools, there are no experts from technology companies. KITE has trained the “Master Trainers” (MTs) through this programme. The MTs in turn support the teacher training programme and provide post-programme support to teachers on an on-going basis. The inclusion of topics on the dangers of AI such as deep-fakes, algorithmic biases are highlights of the programme since similar AI-enablement programmes elsewhere in the country (and globally) tend to restrict themselves to the positive uses of AI.

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The Human Resource Development Centre (HRDC) at the [University of Calicut](https://ugcmmttc.uoc.ac.in/), Kerala conducts regular Faculty Induction Programmes which includes a course on the uses, limitations and dangers of Generative AI tools. The course is conducted in collaboration with [IT for Change](https://itforchange.net/), an NGO based in Bangalore, India. The course covers the following aspects:

1. How generative AI works
2. How biases in data translates into biases in generated content
3. Examples of mistakes Generative AI can make
4. Introspecting on the meaning and value of education and teaching-learning in the post ChatGPT world (a group discussion)
5. Positive uses of Generative AI relevant to the faculties’ classrooms

**8.** Please provide examples of state-supported **collaboration or partnership** between public educational institutions and corporations producing AI tools for education. Does the education system enforce contracts with specific software providers or is there a choice, at which level and is it informed by feedback from teachers, parents and students, as appropriate? How are data sovereignty and localization being addressed in the context of using international or foreign-developed AI tools in education?

**Response from IT for Change**

**It is important that the word 'corporation' in the question not be restricted to ‘for-profit software technology firms’ that produce proprietary AI Edtech tools.**

We would strongly urge that we expand the understanding of digital technology production to include the Free and Open Source Software (FOSS) model of software production that prioritizes community-driven innovation and the common good over proprietary interests. **FOSS is produced by software developer communities collaborating globally, as well as by ‘not for profit’ entities and by ‘for profit corporations’.**

Hundreds of globally popular EdTech platforms/tools are in fact community-developed FOSS software. The spirit of openness, collaboration and equitable access that drive FOSS platforms are perhaps more relevant to the deployment and use of AI tools in Education than anywhere else.

**We are reasonably sure that the all the technology needs of education can be met fully by considering FOSS options. More importantly, the dangers from using proprietary technologies (data theft/harvesting, apart from vendor lock-in, perpetual royalties, and loss of system’s autonomy) are far greater than any technological or pedagogical benefit that use of proprietary software platforms or applications could potentially offer.**

**In fact, we offer a rare example of a successful and sustained deployment of EdTech in an entire education system (comprising 14,000 schools across an entire state) - where the use of FOSS, exclusively, has been an essential cause of the success of the Kerala EdTech program.**

i) **Collaboration**:

We describe an example of a collaboration between a Government of Kerala entity ([Kerala Infrastructure and Technology for Education](https://kite.kerala.gov.in/KITE/index.php/welcome/about_us) - KITE) and [IT for Change](https://itforchange.net/), a non-profit organization, to deploy an open, equitable, decentralized AI-based EdTech application in the Kerala government school system that can also act as an exemplar for future models of open and public collaborations in EdTech.

Both the Government of Kerala and IT for Change are strong advocates of the use of Free and Open Source model in EdTech, and this collaboration is a unique example of a **Public-Public Partnership** in AI/EdTech. In this project, the AI-driven software is designed to aid English language teachers in strengthening English language instruction by processing student oral assessments, providing them actionable recommendations, and monitoring learners’ progress over time. The AI-driven application will work on top of the “E Language Lab” FOSS application that KITE has implemented in all government and government aided schools across the state.

The design of the application has been carefully done using our deep understanding of education and the challenges in Indian education. Foundational literacy is acknowledged as a challenge that cripples learning, and the AI application addresses foundational language learning of all students in primary education.

The software is developed by making use of existing free and open source components and will be released as free and open source software as a public good. The software is presently deployed as a Proof-of-Concept (PoC) project in six government-run schools in Kerala. The results from the PoC, in terms of supporting teachers to improve English teaching, have been encouraging. We plan to deploy the application on a larger scale in all 14 districts of the state of Kerala in the 2024-25 academic year.

During the 2024-25 implementation, one important aim will be to collect the feedback from teachers, head teachers and KITE officials on the system, its design, interface, processes and outputs. This feedback will be used to revise the application and the ‘production model’ post this revision, will be available for universal deployment across all 14,000 schools. There is also one component of the underlying platform (E Language Lab) that will be made available to parents and when this is done, one part of the AI based outputs will also be shared with parents for their feedback (RIESI, 2023. [Impact assessment of the E Language Lab](https://kite.kerala.gov.in/KITE/KITEELL.pdf)).

Thus, the program is intended to be participatory, involving teachers and parents, not merely as ‘users’ of software’ but as participants in the design and deployment.

ii) **Choice in software procurement**:

The Government of Kerala has been a strong proponent of the use of Free and Open Source Software in Education and in other sectors. The state's IT Policy encouraged the use of FOSS as early as 2001, and in 2008 [mandated](https://kite.kerala.gov.in/KITE/index.php/welcome/wedo/1) that all institutions under the General Education Department use FOSS for teaching and training. Since the AI software for English language assessment is free and open source software, the issue of enforcing “contracts with specific software providers” referred to in the question does not even arise. The AI software application developed in this program, will be maintained by the technical support team of KITE, just as all the other platforms and applications that are currently being used in the 14,000 Kerala government and government aided schools are. This team will take the responsibility of upgrading the software regularly, including by re-using FOSS upgrades that will be available in the public domain, and also implementing the necessary customizations for their use.

iii) **Data sovereignty and localization**

Being FOSS, the AI driven software can be installed freely on government school computers by KITE. The AI software is designed to run offline on desktop computers, and data does not leave the computer the software is installed on.

**This is a conscious design decision, to keep the data of children only in the school. This ensures that the data does not go beyond the school and the teachers, thereby ensuring data privacy and security.**

Hence, the typical problems of data sovereignty and localization, and data surveillance and other privacy concerns do not arise with this approach to AI EdTech deployment.

Even in the future, the aspect of keep data ‘local’ within the school will be a prime consideration. If some parts of the data are required to be shared with the KITE team, it will be suitably processed and anonymized and only required summary data will be shared.

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**9.** What are the main **challenges** encountered during the implementation of AI in education? Have there been any technical, ethical, financial or regulatory hurdles in deploying AI solutions in the educational context?

**Response from IT for Change**

The popular model of deployment of AI EdTech is one that involves the use of proprietary technology developed by for-profit corporations, and where the 'intelligence' in the software runs on the corporations' servers. The challenges with this approach are, chiefly:

1. The proprietary, for-profit nature of the software exposes the education system to risks such as vendor lock-in, and perennial royalties and cost increases,
2. At least some learner data must be shared with the vendor for the remote intelligence to work properly, and there is opacity around how the vendor and the software will use this data. Since the data pertains to children, it imposes a very high level of vulnerability (Kasinathan 2020. [Making AI work for Indian Education](http://library.fes.de/pdf-files/bueros/indien/15953.pdf))
3. The school / education system becomes more and more dependent on the software as its use increases, and this means more and more of the curricular and pedagogical decisions are being taken by black box algorithms owned by a private, for-profit entity. Curriculum and pedagogy definition is a core state function (as it has to be fully governed by public interest) and hence its privatization through this process, is dangerous and harmful to public education (Kasinathan 2022. [The EdTech Leviathan](https://itforchange.net/edtech-leviathan))
4. The need for reliable internet connectivity to use the software (West, Mark. 2023).

Within the broader issues with proprietary, for-profit AI EdTech, deeper problems exist with regard to the use of opaque algorithms, conscious and unconscious reinforcement of biases, as described by us in [this article](https://itforchange.net/sites/default/files/1664/Making-AI-Work-for-Indian-Education.pdf).

The challenges of this typical approach are particularly aggravated in government school systems in India because the approach cannot sustainably scale and is likely to exclude marginalized sections that are enrolled in the government school system.

The FOSS AI Ed Tech developed by KITE and IT for Change in the Public-Public collaboration model consciously (by design) avoids all of these issues:

1. The software is free to use, modify and share
2. It can be inspected by anyone, as the source code is publicly available
3. it can run on a modern desktop computer with a FOSS operating system, and,
4. the data required for the software does not have to leave the computers in the school
5. it does not require an internet connection to function

For these above reasons, the software is able to adhere to KITE’s core principles and government policy requirements, and alleviate their concerns around data privacy/security.

**10.** Are there any specific areas within education where you see significant potential for AI integration in the **future**?

**Response from IT for Change**

We would like to explore the notion of AI through an alternative expansion as ‘Augmented Intelligence’ (instead of ‘Artificial’). That would open up the possibility of seeing AI as a means of strengthening a human-led education system.

Such an AI system can be used by a teacher to better understand her students, their interests, strengths, weaknesses and proximate potential for development. By analyzing student outputs, the AI system can help teacher to identify the developmental needs and use these as one of the inputs to design curriculum for students. Since the data can be stored and accessed across academic years, the AI can provide a trajectory of development. Of course, it is essential that the teacher always be conscious of hidden biases in AI and not depend entirely on its recommendations.

In terms of functional areas, the area of lanuguage learning in schools holds great promise. Multilingualism is the reality in most Indian classrooms, yet, students fail to develop expertise in languages. Use of AI to support teacher development as well as integration in teaching can enable teachers and students to become proficient in multiple languages.

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