



Exploring the Potential of AI for Teaching and Learning in East Africa - TESCEA Phase 2

An event to explore how artificial intelligence might be used to address challenges faced by academics in East Africa, and how AIs could serve as powerful tools for teaching and learning.

*Convened by INASP and the Inter-University Council for East Africa
26th July 2023*

Key messages

1. East African students are already using AI in their assignments. It is essential to guide lecturers and students in how to use AI effectively and critically.
2. It is important to explore AI carefully and critically, considering both its many promises and its potential, and serious, risks and biases.
3. AI could assist East African universities to provide more personalized learning experiences, give students tools to aid comprehension and enable lecturers to develop lesson plans and assignments and to give prompt feedback.
4. Intentional and guided use of AI in the classroom, coupled with assessment for learning can promote learning and creativity.
5. AI could be a powerful tool for enhancing learning in East Africa, and it is critical that ministries and regulatory agencies keep pace with developments and focus on the opportunities whilst also ensuring sufficient attention to the risks and biases.

Background

As part of the next phase of our Transforming Employability for Social Change in East Africa initiative, INASP and the Inter-University Council for East Africa co-hosted a short online event on 26 July to explore the potential of artificial intelligence (AI) to improve teaching and learning in East Africa. The event featured contributions from Jon Harle (INASP Director of Programmes), Professor Gaspard Banyankimbona (Executive Secretary of the Inter-University Council for East Africa), Dr Albert Luswata (Uganda Martyrs University), Dr Kendi Muchungi (INASP Associate and Aga Khan University) and Ranj Majumdar (senior advisor to INASP), with brief remarks from Rose Wanjiku Ndegwa, on behalf of Darius Mogaka Ogutu (Director for University Education, Ministry of Education, Kenya). While acknowledging the significant concerns around AI, including bias and exclusion, and the need for new regulation and effective guardrails, we chose to focus specifically on possible practical use cases in teaching and learning. We wanted to avoid an abstract discussion, and to use a practical exploration of specific uses to assist participants to build understanding and familiarity. The event included a discussion on broader issues facing lecturers and their students in East Africa, followed by a live demonstration of one tool - ChatGPT - to show how it could be used to address some of those challenges. The following report was compiled from the recording of the event, using AI tools to assist (see note at the end of this document for details).

Summary of discussion

The event was opened by **Jon Harle**, Director of Programmes at INASP, who welcomed participants and introduced the session.

“We need to explore AI carefully, that it's going to need some very careful regulation, from many agencies in many regions... many of the other promises of educational technologies and digital tools haven't really come to pass the many in the majority world. But we're also clear that it's arrived, and it's here to stay, and that we should ensure we are on the front foot. And we're anticipating what it might do, but also trying to shape what it could do.” Jon Harle, INASP

- INASP has been watching AI climb the agenda. It is gaining rapid attention and sparking debates in the mainstream media and in professional practice. There are positive forecasts about transformation across sectors, and there are strong concerns about AI's encoded bias, the exclusion and marginalisation of different voices, and the threat to jobs and livelihoods.
- Despite promises, many educational technologies have not fully delivered in the majority world. We need to learn from this history as we explore AI.
- The nature of AI also brings a much greater need for regulation, by many agencies in many regions.
- East African students are already beginning to use it, and lecturers are already encountering assignments produced with AI-assistance. We need to ensure that students use AI effectively and critically to improve learning, and we need to ensure that lecturers feel equipped to guide them.
- There is a huge demand for improving the quality and relevance of learning, but time, resources and support to do so are constrained.
- In contexts where lecturers and instructors are already overstretched and where access to professional advice, support and mentoring are limited, could AI be used as a professional development tool for lecturers and instructors?
- Our aim for the event is to begin to explore AI cautiously but with a sense of possibility. As a community of practitioners committed to transforming East African education, we should ensure we are not only anticipating what AI might do, but also trying to shape what it could do.



Introduction

Professor
Gaspard Banyankimbona



Prof. Gaspard Banyankimbona, Executive Secretary of the Inter-University Council for East Africa, welcomed participants.

“The learners that we are having at university level, are having a different view of the way they acquire knowledge and how they are going to use it... the younger generation is very smart in terms of picking [new ideas] quickly... We need to ask ourselves at which extent and how fast our universities are ready to shift?” Prof. Gaspard Banyankimbona, IUCEA

- IUCEA has recently concluded its annual general meeting focused on the theme of Data Science and Artificial Intelligence's impact on higher education institutions in the region.
- While there is concern and scepticism, Prof. Banyankimbona argued that it was no longer optional but instead essential to explore how AI might impact on and be used in East African higher education.
- AI poses some risks to higher education, but it should also be framed as an opportunity. Learners are already acquiring knowledge in new ways, and will be quick to integrate it into the way they study and learn.
- Universities in the region struggled to use ICT to improve learning and teaching and so we need to ensure they are able to adapt more quickly to these new developments. AI could be positively used to support the core functions of universities – teaching, research and innovation – and their administration.
- The IUCEA sees this as an opportunity to engage universities in open discussions, and together to develop a better understanding of how we can best use AI.

“We really pick it as an opportunity, first to sensitise and have that discussed openly with universities, which are our stakeholders, and then have a better understanding of how we can best use artificial intelligence in teaching and learning. On our side, we fully support that this discussion is timely.” Prof. Gaspard Banyankimbona, IUCEA



Dr Albert Luswata

Senior Lecturer and
Director of the Institute of Ethics
at Uganda Martyrs University.



Ranj Majumdar, senior advisor to INASP, then began a conversation with **Dr Albert Luswata** aiming to explore the problems that AI could potentially solve within Sub Saharan African public education systems. The focus was on understanding the challenges faced by lecturers and professors in universities when teaching undergraduate students. Ranj emphasized the need for advantages in African higher education to accelerate progress, making AI a promising opportunity to be explored further. Ranj invited Albert to reflect on some of the common challenges experienced by teachers and lecturers in East African universities.

“One of the things that has been driving this conversation is the sense that, that African public higher education needs every advantage that it needs to be able to accelerate progress over the next few years. And that anything that offers an opportunity, perhaps a cost-effective opportunity to do something big, is something we should explore in detail.” Ranj Majumdar

Albert noted a number of challenges:

- Class sizes: Universities often face large class sizes, sometimes up to 1000 students, making personalized learning and feedback difficult.
- Limited resources: Access to books, learning materials, internet, and technology is limited for students, affecting their learning experiences.
- Language barriers: Many students don't study in their native languages (e.g., English or French), leading to difficulties in assignments and feedback.
- Lack of a reading culture: Students often lack the habit of independent reading, relying on lectures for notes and slides, hindering transformative learning.
- Difficulty in structuring learning: Managing large classrooms poses difficulties in implementing student-centred learning approaches, leading to teacher-centred approaches.
- Relevance: Students seek practical skills and experiences that make them marketable after university, emphasizing a need for courses that connect them to the world of work.

“Many of our students don't study in their native languages and they have difficulty when it comes to a language like English or French and you find their work, when you give an assignment, takes a lot of energy to correct it, if you have to give feedback, and you have a lot of errors in it. I think we need mechanisms to improve this.”

Dr Albert Luswata, Uganda Martyrs University

Ranj and Albert noted a series of possible ways in which AIs could feasibly assist:

- Providing personalized learning experiences to students in large classrooms.
- Utilizing AI-powered language processing tools to aid students who don't study in their native languages, improving language comprehension and reducing errors in assignments.
- Promoting a reading culture among students through AI-driven recommendation systems that suggest relevant and interesting reading materials.
- Suggesting innovative teaching approaches to lecturers using AI analysis of student performance data and educational content.
- Automating feedback processes for assessments and assignments with AI-powered natural language processing and automated grading.

“It's very tricky to replicate a good learning experience for students when you have these huge numbers because you want every student to have a personalised experience of learning, giving them feedback... just imagine how do you give feedback to 1,000 students? How often can you do that? You find the option that people got to is to use the teacher centred approaches where the teachers, they're sage on the stage... and this curtails the student centred experience, of sufficiently transformative learning.” Dr Albert Luswata, Uganda Martyrs University

Dr Kendi Muchungi

Instructional Designer
in Blended and Digital Learning
with the Brain and Mind Institute
at the Aga Khan University
and INASP Associate



Following Ranj and Albert's conversation, Dr Kendi Muchungi responded, providing a live demo of ChatGPT to show some of the ways in which it might be used by lecturers, and how to improve its output using prompts.

- Kendi introduced ChatGPT, explaining that it is a large language model used for understanding and generating human language. GPT (Generative Pre-trained Transformer) is a specific type of language model known for its advanced natural language processing capabilities. She used a series of prompts, some pre-prepared, some responding to Albert's remarks, to interact with ChatGPT, asking it a series of questions.
- She first asked ChatGPT to explain what AI is, what large language models are, and what GPT is, providing analogies for better understanding in each case. The analogy for AI compared it to a smart assistant like Siri or Alexa, while the analogy for GPT likened it to a language expert with extensive knowledge.
- She raised a concern about the applicability of the Siri/Alexa analogy in East Africa, where few people are likely to be using these tools. She asked it to provide another analogy that aligns better with her context, emphasizing the need for an analogy that would resonate with her audience and reflected the realities of the region. ChatGPT responded by providing a new analogy that better suited Kendi's context, stating that "AI is like having a reliable and experienced assistant in the classroom." It elaborated on the analogy, likening AI to an assistant that can support students and instructors in the learning process.

"The more we start using it within our context, the more it runs from us, and we're able to ensure that it's speaking to our context.... when you're using it, the more conversational you are with it, the better it learns, and the better responses you get over a period of time. And the more people in LMICs or in East Africa are using this, then it can get improved. It's understanding from our context, our cultures, and respond more appropriately that way."

Dr Kendi Muchungi, INASP Associate & Aga Khan University

- Kendi then posed questions about how lecturers with specific concerns could utilize ChatGPT and showed us the examples that it generated:
 - ChatGPT can act as a Virtual Teaching Assistant, providing immediate support to students even in large class settings, answering common questions, clarifying concepts, and providing feedback.

- ChatGPT can offer explanations and answers in simple English, aiding students in better understanding concepts and improving language skills. It can also offer language learning experiences and practice sessions.
- Students who struggle with English proficiency can use ChatGPT to break down complex language for better readability and comprehension.
- ChatGPT can engage in conversational interactions with students, allowing them to articulate their observations and descriptions and provide feedback to guide them in improving their responses.
- ChatGPT can be used on smartphones, enabling students to access learning support even with limited technology resources.

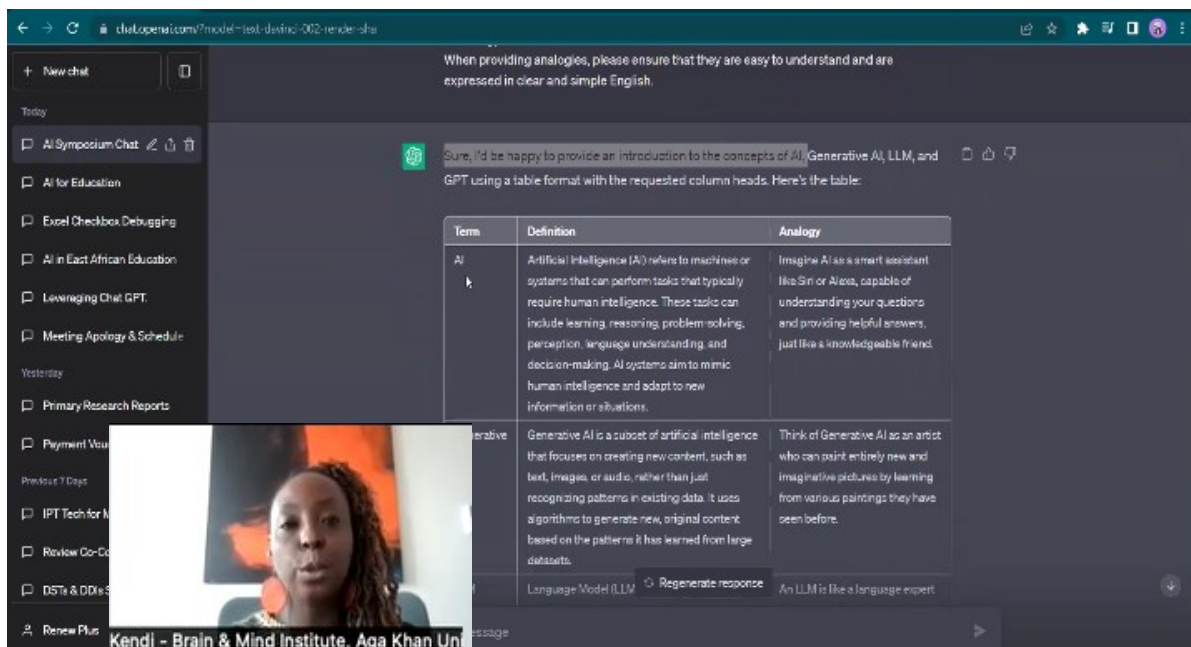


Figure 1: Demonstration of ChatGPT by Dr Kendi Muchungi

- Kendi noted that, while ChatGPT could be misused for plagiarism or shortcuts, intentional use by facilitators could promote student learning and creativity. This could encourage students to use AI as a tool for learning, not just exam preparation.

“If facilitators are intentional as to how they use ChatGPT, then it changes the narrative completely. And students are also now using it to learn as opposed to just using it so that they can pass an exam. Students can use [AI] if they're having problems with English..., you can encourage them to use something like ChatGPT to be able to ... break down complex language so that it's readable to them.”

Dr Kendi Muchungi

- She suggested practical examples, like students describing the step-by-step process of building a basic chatbot and receiving feedback from ChatGPT, to enhance students' coding skills and descriptive abilities.
- Kendi highlighted that intentional use of ChatGPT in the classroom can foster meaningful learning experiences,
- She showed how asking nuanced questions and providing preferred responses to ChatGPT to help it learn and respond better over time. She emphasized the need for continuous use of ChatGPT in East Africa to improve its contextual understanding and provide more relevant responses.
- Kendi explained how she personally uses ChatGPT to assist in research and reading tasks. By copying and pasting large documents, ChatGPT can help extract key points efficiently, leading to improved work efficiency.
- In response to questions from participants, Kendi emphasized the importance of clear prompts when using ChatGPT. She noted that prompts should be contextual and that contextual experts,

such as lecturers and instructors, are better equipped to ask the right questions to get nuanced responses. When students lack context, it becomes evident in their prompts and responses. She suggested that the process of learning how to ask the right questions and getting nuanced responses can help students develop valuable skills.

Questions and comments from participants

Following Kendi's demonstration we opened the discussion to questions and comments from participants.

Louise Shaxon, INASP Trustee, argued that we should see AI as a tool that frees our thinking and our creativity, rather than being scared of it and concluded that if we embrace the possibilities, we can help lecturers and professors really harness the power of AI, and to be much more responsive to their needs.

Damaris Kilango, Mastercard Foundation, asked about the difference between the free and subscription versions of ChatGPT, and whether the latter is better.

Kendi explained:

- The subscription version, ChatGPT 4, allows the use of plugins, which provides additional functionalities.
- At the Aga Khan University's Brain and Mind Institute, they are exploring the incorporation of other APIs or plugins, such as speech to text and text to speech, to enable conversations with ChatGPT using voice.
- The paid version offers more possibilities and flexibility, such as using AI components for medical training and diagnosis.
- However, Kendi points out that even with the free version, there are many possibilities, and users can use multiple free AI tools together to achieve the best outcomes.

Dr Tupo Isagah, Mzumbe University, raised concerns about the extent to which students can use the tool and the potential for students to rely too heavily on it, leading to plagiarism or lack of critical thinking skills. Tupo also expressed worries about the facilitator's role in an era where students have access to abundant information through the tool and the internet, which might challenge the facilitator's position in the classroom.

In response Kendi noted:

- It's okay for students to know more than the facilitator – in fact we want students to excel and go beyond their teachers. The facilitator's role is that of a contextual expert, who brings many years of experience.
- If we think about grading for the learning process, not just the results, this changes the conversation around using ChatGPT. Encouraging students to critique their usage of ChatGPT and asking robust questions will enhance their learning experience.
- Facilitators can evaluate the thinking process and ask students to share their usage of ChatGPT to provide feedback and guidance. Comparing results from different students using ChatGPT can help students see the impact of nuanced prompts and contextual expertise.
- Kendi referred to the following guide from UNESCO that provides a useful flowchart, to help lecturers decide when to use ChatGPT: [ChatGPT and Artificial Intelligence in higher education: Quick start guide](#).

A contribution from **IUCEA** noted two inter-linked concerns. Firstly, that students might engage in plagiarism by using ChatGPT to generate content for assignments. Secondly, how to assess the cognitive abilities of learners who were using ChatGPT – specifically how to measure and predict the growth and conceptualization of a learner over time and to differentiate between students using ChatGPT and those who are not while ensuring fair assessment and evaluation.

In her reply:

- Kendi emphasized the importance of grading the process rather than just the final product. She suggested evaluating the types of questions and prompts students use in ChatGPT to understand their thinking process and knowledge acquisition.
- She drew a parallel with mathematics, where showing the process of arriving at an answer is valued even if the answer itself is incorrect, as it reflects the student's thinking and problem-solving abilities.
- She encouraged lecturers to create an open learning environment where students are transparent about their use of ChatGPT, allowing for constructive critique and evaluation of their prompts.
- Kendi argued that as technologies like ChatGPT becomes more widespread and integral to the workforce, it is essential for educators to incorporate and understand its usage in education to prepare students adequately.

Rose Wanjiku Ndegwa made brief remarks, representing Dr Darius Mogaka Ogutu the Director for University Education at the Ministry of Education, Department of Higher Education and Research in Kenya.

- Rose welcomed Aga Khan University's efforts to embrace online learning and digital life learning, and now to move towards the exploration and incorporation of AI. It is important that Kenya is not being left behind in the field of AI.
- She noted other examples where Kenyan universities were experimenting with AI, such as at Egerton University, which is exploring the use of AI in agriculture, to predict apple maturation and to optimize planting schedules.
- She conveyed the full support of the ministry in partnering with universities to adopt AI and ensure they keep pace with advancements in the field.

Jon Harle concluded the event, reflecting that theirs is significant expertise emerging in the region, and that the event had clearly shown that we need to continue these discussions. He thanked participants on behalf of INASP and IUCEA and invited further questions and comments by email.

A note on this report

This report was itself generated using AI – with some human guidance. We first uploaded the recording of the event (created by Zoom) into the Otter.ai application. This produced a full transcript of the event. It identified different speakers, and we then assigned names to each speaker. We then made a light edit of the transcript, correcting it where it had not correctly transcribed speakers' names, or where it had made other mistakes that made the meaning unclear.

We then used ChatGPT to help us produce a summary of the event. We explained to Chat GPT that we had a transcript of an event and requested it to provide a summary of the key points made. Firstly, I asked it to summarise my introduction in no more than ten points, and then I introduced Prof. Banyankimbona as a new speaker and asked it to do the same. We did this for each speaker in turn, giving it some context for each speaker – for example, explaining that one session was a conversation between Ranj and Albert, and asking it to summarise both the questions posed by Ranj, Albert's responses, and any suggestions given about how AI could assist. At the first attempt, ChatGPT provided its own suggestions of how AI could assist teachers and lecturers; we therefore asked it to only give examples that were explicitly mentioned by Albert. The full transcript of the interaction with ChatGPT is here: <https://chat.openai.com/share/07bf0ce3-e3ce-4c53-bcc2-7a7eaba4898c>.

Contacts and further information

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Results and impact of TESCEA phase 1: [How TESCEA made learning more relevant and built new partnerships for employability and social impact](#)

Transforming Higher Education for Social Change – a model from East Africa: www.transformHE.org

Plans for TESCEA phase 2: [Transforming higher education for social change in East Africa: improving employability and business creation through targeted, scalable interventions: A consultation on Phase Two of the TESCEA programme convened by INASP and the Inter-University Council for East Africa, 26th April 2023](#)

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