I'd like to start by thanking the Commonwealth of Learning for the very kind invitation for me to join you today.

In my talk, I'm going to offer a critical studies perspective on artificial intelligence and education.

Artificial Intelligence has had some spectacular successes.

From beating the world's best player of Go

To automatically identifying diabetes from retinal scans And, helping protect against fraud.

And of course, ChatGPT, Bard, StableDiffusion and other large language models... to name just a few.

But impressive as it is, AI is not as sophisticated as many argue, and there are many myths.

One myth is that AI is better than humans at image recognition.

When you look at this image, I'm sure that you can recognise a panda.

And the AI agrees. With 57.7% confidence.

But what happens when we mix this image with some visual noise?

We get this, and I'm sure that you still recognise it as a panda.

Now the AI is 99.3% confident... That it's a gibbon.

Another myth is that AI doesn't need people.

But that's not true.

A human sets the objectives.
A human chooses...and labels the data.

In companies like this in developing countries like Kenya, the workers spend all day... identifying the objects in streams of video.

Here's a person, here's a car, here's another person...these labellers are known as the 'ghost workers' of AI.

Also a human designs the network and writes the algorithms... and then trains the network.

A human then curates the outputs... and makes the value judgements.

And we were told that AI was going to bring huge benefits to tackle the COVID pandemic.

But the reality is that AI contributed very little.

"None of the thousands of AI models were of clinical use."

And this is just one metanalysis, I know of others that say a similar thing.

So, AI is impressive, but not as impressive as many people claim.

So, what about AI and education?

In fact, AI does bring some interesting possibilities to education...

But instead of being yet another cheerleader for AI in education, my focus is on the very many current challenges.

You might think I'm sometimes a bit...negative.

But I like to think I bring a critical but constructive perspective.

In fact, the connections between AI and education are more complex than many recognise, and there is a lot of hype and exaggeration.

That’s why we shouldn’t talk about AI and education as if it were one thing.

It’s not one thing, it’s multi-faceted and each connection needs to be considered separately.

I like to navigate that complexity in terms of...

…two buckets.

The application of AI in education.

And the teaching of AI in education.

Two distinct but complementary aspects of AI and education

In this talk, I’ll be focusing on the application of AI in education, which is sometimes known as AIED,
There are three types:

- Student-focused AIED
- Teacher-focused AIED
- And Institution-focused AIED.

Let’s first look at institution-focused AI.

Institution-focused AI is most similar to the AI used in many businesses...

...it's AI for the boring backend education administration tasks.

It involves AI for recruitment and financial planning.

...and some more education-focused tasks, such as admissions, timetabling, learning management, attendance recording, and e-proctoring.

Although important and growing, this has probably received the least focus by researchers or the commercial sector...

So, what about student-focused AI?

This is where all the money is, and where the focus has been for more than 40 years.

Which is why there are so many different types. I'll quickly summarise just a few.

To begin with, there's the so-called Intelligent-tutoring Systems, or adaptive tutoring systems.

The list on the right are just some of the multi-million-dollar-funded companies that are already offering this kind of tool.

In summary, the system provides the student with some information and an activity or quiz. And how the student responds determines the next piece of information, activity or quiz.

This adaptivity means that, in theory, every student follows their own pathway through the material to be learned.

There's also what I call learning network orchestrators, which use AI to connect people together.

Like Smart Learning Partner from Beijing Normal University.

What I particularly like about this tool is that it's the student who is in charge, not the AI.

Then there’s chatbots, which are increasingly being used in education to provide immediate support to students...

Mostly about practical things such as: "Where is my next class?"

There are many other student-focused applications of AI, and I could go on for a while, but what about...

...teacher-focused?
These are the possibilities, and until very recently there’s been relatively little AI that is genuinely designed to support teachers (and for me, a dashboard doesn’t count).

…although I’ve not been able to find out much about them.

First there’s using AI to curate educational resources.

…such as X5GON, Teacher Advisor, and Clever Owl

…although all of them still need a lot of work to be really useful.

Then there’s this tool, the AI Coach from Edthena, which is basically an adaptive learning tool for teachers.

Then there are tools designed to support human teachers as they mark assessments.

In other words, rather than pretending the AI can do the assessing, it’s the teacher who does it, not the AI.

So, that’s applications of AI in education.

But what are the claims, especially from the commercial sector?

First, many claim that their AI education tools are intelligent.

But they're not.

No AI education tool is anywhere near as intelligent as a human teacher.

Sometimes, they might APPEAR intelligent, but that’s a long way from actually BEING intelligent.

Another claim is that these AIED tools will save teacher time.

But that claim has been made about educational technologies for almost a hundred years, and it's never happened.

I know that most teachers, including me, would love a tool that takes care of their marking, but no AI system is capable of the depth of interpretation or accuracy of analysis that a teacher can give.

And what about personalisation? This is something we hear about all the time. It’s an ambition that's again been around for almost 100 years, which has re-emerged most recently from Silicon Valley.

If we can have personalised recommendations on video platforms, such as Netflix, why can't we do that in education? But this completely misses the point.

Some AIED tools might provide each student with their own individual pathway through the materials, but they still take them to the same fixed learning outcomes as everyone else.
This is a weak understanding of personalisation. It's more like the homogenisation of students. Ensuring they all fit in the... right box.

Real personalisation is not about personalised pathways but about helping each individual student to achieve their own potential, to self-actualise, to enhance their agency, which is something that no existing AI tool does.

Education is also about collaboration and the other social interaction aspects of teaching and learning.

Which is the antithesis of the so-called personalisation.

And then there are the ethical questions, starting with the ethics of data.

Issues such as informed consent, rarely are the students given a choice of whether they use the system...

Privacy...or is it surveillance?

And ownership – who owns the data that the students create with their interactions, the students or the commercial developers?

A recent report in the UK, by the Digital Futures Commission, found that EdTech companies such as Google are collecting “unknown quantities and types of personal data from child users during their learning and use this for commercial purposes.”

But although thinking about the ethics of data is necessary, it isn’t sufficient.

There’s also the ethics of pedagogy, including pedagogical choice.

Almost every existing commercial learning with AI tool adopts an effectively behaviourist or instructionist pedagogy.

...an extremely primitive approach to teaching and learning, that involves spoon-feeding information, while avoiding failure, and which ignores more than sixty years of pedagogical developments.

Spoon feeding also prioritises remembering over thinking and knowing facts over critical engagement, thus undermining student agency and robust learning.

AIED systems can also disempower teachers, turning them all too often into mere technology facilitators.

Someone who switches on the equipment and maintains behaviour in class.

But good human teachers do far more than that.

And finally, what about the elephant in the room: ChatGPT?

What ChatGPT and the other similar generative AI tools can achieve is amazing. But their use in education and the challenges are still being worked out.
I’m sure most of you have played with it.

You enter a prompt, and ChatGPT automatically and quickly generates a human-like text response.

But ChatGPT is only one example, there are many other examples of generative AI, such as Bard, Stable Diffusion and many others.

But generative AI is not just about automatic text generation. Generative AI can also create artificial images like this…

…and artificial photographs like this. Both of which have won competitions.

But this isn’t a technology that is especially new.

I first showed this slide around five years ago. Not one of these is a real person. They’ve all been entirely generated by an AI tool.

What is new is that ChatGPT was made easily available, to anyone with an Internet connection.

At first glance, you might think that’s a generous gesture by the company that developed it…

But it was just to bump up their share price.

And it’s a bit like launching a new mode of transport, such as this SpaceX rocket, without first fully testing its safety.

For me, it’s amazing and worrying in almost equal measures.

So, sticking with text generation, how does it work?

It’s a bit like autocomplete like you find in Gmail and other programmes, but on steroids.

It takes your prompt and draws from its database of billions of words the word that is most likely to follow it. Then it chooses the next word, that again is most likely to follow the first word, and so on.

Naturally, it’s a bit more complicated than that, but that gives you the idea.

I’ve enjoyed using it a lot.

The first time I used it, it was inspiring. It helped me get past my writer’s block, to get started on my writing.

And it turns out that it’s great for things about which there are no disputes. Such as a list of typical research methods.

But, as I’ve found out, it’s not so good at anything controversial.

And, of course, there’s been worries around the world about the impact of ChatGPT on education…

particularly on formative and summative assessments…
And especially on cheating.

So, what are the key problems?

First, as I’ve mentioned, the text that ChatGPT outputs looks human like, it looks accurate, but it often isn’t.

If you use it to generate some text about something in which you are an expert, you will notice immediately its superficiality, what it misses, what it makes up.

But students and other novices are unlikely to notice all that. To them, it can look definitive. Which it is not.

So, for me, a key danger lives in that disconnect between appearance and reality.

Second, there’s the disconnect between the appearance of novelty and the reality.

As I’ve mentioned, and it’s more obvious with the image generation tools, generative AI works by scraping billions of images and texts from the internet and remixing them to create the appearance of novelty.

But the novelty is only in the mixing. To get there it needs the original images and text, which it has taken with no concern for intellectual property.

So, this has led Getty Images to sue Stable Diffusion, and

A class action against Microsoft, GitHub and OpenAI.

Another problem is that it by design it only reproduces the received wisdom, the majority opinion…

And so it ignores minority opinions and alternative perspectives.

It marginalises the voices of the already marginalised.

It perpetuates across the world a Silicon Valley perspective.

And it will potentially stifle innovation – which always starts off as a minority opinion.

A final problem is that, by definition, given that it scrapes all its data from the Internet, that data is full of dreadful materials and many biases.

Which is why OpenAI, the company that created ChatGPT, has employed thousands of workers, many in Global South commonwealth countries like Kenya, to identify and prevent objectionable materials appearing in ChatGPT’s output.

This is known as setting up guardrails, and the Kenyan ghost workers were paid $2 an hour to sift through all the nastiness.

The ethical issues here are plain to see.

—
So, what about the impact on open educational resources?

Well there are many suggestions as to how it might be used.

Ranging from using it to inspire the development of new content, to generating writing structures and multiple examples, to summarising or remixing existing OER, to generating questions for an open textbook.

Every day, new ideas appear.

And there are already products designed specifically to help teachers use generative AI to create lesson plans and lesson materials...

So, what’s my advice?

Should we be using ChatGPT when creating OERs?

Well, if you can get past the ethical issues, the IP theft and the exploitation of commonwealth citizens, it can be useful.

When I speak about it to my students, I say use it, for inspiration, but do not trust it. Always check what it says.

And for me?

Well, I now find myself spending too much time on my prompts, time that I should probably better spend focusing on my own writing. So now the novelty has worn off, I’m simply using it less and less.

It’s worth also looking at the alternatives…

Like hugging face, which has been built by an organisation dedicated to open-source.

So, in conclusion…

To be clear, I’m not saying that AI, AI in education, or generative AI are always bad. I still believe that there is some amazing potential.

But I am criticising current applications, current ethics, and the way things are currently developing. In my opinion, we need to change the trajectory.

So what I am saying is that:

- AI is amazing but not as amazing as many people claim.
- AI is already having a major impact in education, and it has the potential to transform education – for good, but, if we’re not careful, also for bad.
- Meanwhile, the newly accessible generative AI brings some amazing potential
- But it also brings some serious ethical concerns
• And while it can be inspirational and can generate many useful things, I recommend that you never… ever… trust it.

Thank you very much for listening.