



THEME:

**Challenges, Best Practices, and Strategies
for Artificial Intelligence Integration in
Higher Education in Uganda**



**THE 6th NCHE ANNUAL HIGHER EDUCATION
CONFERENCE PROCEEDINGS**

24th & 25th MARCH 2025



**National
Council for
Higher Education**

Ensuring Quality for Excellence

THEME: Challenges, Best Practices, and Strategies for Artificial Intelligence Integration in Higher Education in Uganda



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**THE 6th ANNUAL HIGHER EDUCATION
CONFERENCE, 24TH MARCH 2025,
AT HOTEL TRIANGLE, MBARARA**



**National
Council for
Higher Education**

Ensuring Quality for Excellence

CONFERENCE PROCEEDINGS

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EXECUTIVE SUMMARY

1.1 Introduction

The National Council for Higher Education (NCHE) held a two-day 6th Annual Higher Education Conference at hotel triangle Mbarara, western Uganda on March 24th and 25th, 2025. The conference is part of Higher Education Week and is the second conference to be held outside Kampala. The theme of the conference was *“Challenges, Best Practices, and Strategies for Artificial Intelligence Integration in Higher Education in Uganda.”* The conference’s main goal was to promote artificial intelligence integration in Uganda’s higher education. The aim of the conference was;

- i) To Identify and promote the infrastructure, tools, and skills required for effective AI integration in higher education institutions.
- ii) To explore innovative approaches for revolutionising curriculum design, teaching methods, and assessment practices through AI.
- iii) To assess and propose policy and regulatory environment improvements to support effective AI integration in higher education.
- iv) To discuss and share experiences on adopting and implementing AI technologies within higher education settings.
- v) To provide a platform for disseminating scientific and academic research papers and findings on AI to stakeholders.

1.2. Official Opening

1.2.1. Welcome Remarks

The welcome remarks were made by the ED of NCHE, Professor Mary J. N. Okwakol. The key major highlights of the ED’s remarks included:

- i) AI is increasingly imperative in HE as it is the cornerstone of the technological revolution in teaching and learning, provides personalized learning experiences, enhances research capabilities, and equips students with skills needed for the future workforce.
- ii) AI integration is costly and requires a lot of investment in infrastructure to ensure access to reliable internet connectivity, computing power, necessary software and hardware, capacity building, among others.
- iii) There is need for Government and other HE proprietors to provide more funding to enable integration of AI.
- iv) Policies and guidelines for the integration of AI in education are essential to regulate broad AI principles, data privacy, ethical considerations, penalize malicious AI behavior and promote cybersecurity.
- v) There is need for HEIs to review the teaching curricula to integrate AI concepts and equip students with skills to understand and utilize AI.
- vi) There is need to be mindful of possible negative impacts of AI on HE.

1.2.2. Opening Remarks

The opening remarks were made by the Chairperson of the Council of NCHE, Professor Joy C. Kwesiga. The following were some of the key major highlights of her remarks:

- i) Highlighted the theme of the Conference and noted that AI has the potential to revolutionize the education sector through enhancing efficiency, automating tasks, improving decision-making, and driving innovation.
- ii) Some challenges to integration of AI include: unethical use of AI, overreliance on AI, inaccurate or biased AI generated information content, plagiarism, lack of clear guidelines and policies, cost of AI infrastructure, inequities in internet access, and skills gap.
- iii) There is a need for Government to support HEIs by putting in place a fund to support infrastructure development, improving on the nationwide internet connectivity, subsidized cost of ICT equipment, training of educators in AI.
- iv) Highlighted some of the challenges faced by the NCHE including delayed amendment of the UOTIA, Cap 262 of the Laws of Uganda, overlapping mandates with other agencies in the MoES, limited power to enforce the law. Prayed that, the process of amending the UOTIA be expedited.

1.2.3. Guest of Honour

The official opening was preceded by remarks from Dr. Kedrace Turyagyenda, the Permanent Secretary MoES and Hon. James Kubeketerya, the Chairperson for Parliamentary Services Committee of Education.

Dr. Kedrace Turyagyenda noted the following:

- i) Transformation of any country is as a result of the quality of its education.
- ii) The MoES is committed to ensuring that all children access quality education.
- iii) The education sector faces inadequate funding.
- iv) Through AI, the country can have quality and affordable education.
- v) There is a need to come up with a roadmap for effective AI integration.

Hon. James Kubeketerya noted the need for more resources for NCHE to be effective. He further noted that AI should be used to enhance HEIs capacity to produce relevant graduates.

The official opening of the Conference was by the First Lady and Minister of MoES, Hon. Janet Kataaha Museveni. The key highlights of her remarks included:

- i) Thanked NCHE for taking the lead for convening the events regularly, an opportunity to increase the visibility of the profile HE in the country.
- ii) Hoped that the engagement would contribute to the improvement of HE in the country.
- iii) Uganda's National Vision of societal transformation from peasantry to a modern and prosperous nation requires graduates with appropriate competencies, values and attitudes such as patriotism.
- iv) Challenged NCHE to always set tangible and realistic goals of what is to be achieved and to have a system of monitoring and evaluating the goals of such gatherings to stay on course and not drift away from the original mission and purpose of NCHE due to the dynamic environment of innovations and information advancement.
- v) Pursuit of technology should be a means to the desired end but not a end in itself.
- vi) Noted that the HE sub-sector is under pressure to keep up with the pace of change in the information and technological space. She advised HE to approach these changes cautiously and systematically while understanding the rules governing the race of AI.
- vii) Technological advancements in information and communication technology (ICT) and computer systems which have popularized what is today known as AI are neither new or a recent invention but not well understood within the context of HEIs.
- viii) AI poses a form of moral dilemma and limits virtues such as positive work ethics, originality, authenticity, honesty and interpersonal skills. She called upon HEIs not to compromise the basics of the processes of learning how to learn. In addition, HEIs can benchmark with other education systems in the developed countries on the responsible integration of AI.

- ix) Noted that the challenge facing the HE sub-sector in the country is how to cope with a rapidly evolving technology in a social, cultural and economic context that is significantly different from that of societies where the application of AI innovation was advanced.
- x) Called upon the HE sub-sector not only to be consumers of AI but to ensure that learners understand AI and aspire to become a meaningful contributor to advance technology from the context of the country.
- xi) HE should be intentional in its curricula to develop learning strategies that provide graduates with virtues to help them navigate difficult moments and opportunities so as to remain relevant to their communities while avoiding the “ivory tower syndrome” of being detached from the communities.
- xii) Re-echoed the need for HE to realign their curricula with the competency based and learner centered methodologies already in use at both O’ level and A’ level.
- xiii) Emphasized the need for investment in re-tooling of academic staff.
- xiv) In her conclusion, First Lady and Minister of MoES, noted that AI brings both opportunities and challenges which the entire education system needs to study and manage for optimum benefits.

1.3. Keynote speakers presenters

1.3.1. Keynote speakers

- i) **Prof Azra Naseem** a senior instructor and associate Director at Aga Khan University Network of Blended and Digital Learning and Dr. Lawrence Muganga, Vice chancellor Victoria University were two keynote speakers on 24th March 2025.
- ii) **Dr. Ernest Mwebaze**, ED, Sunbird AI was the keynote speaker on 25th March 2025.

1.3.2 Presenters

The presenters considered for the conference were researchers and experts in AI. The table below provides a summary of presenters together with the topics.

| No | Presenter | Organization | Topic |
|----|-----------------------------|---|--|
| 1 | Mr. Micheal Bamwesigye | Uganda Communications Commission. | Policy and Regulatory Environment Improvements to Support Effective AI Integration in Higher Education |
| 2 | Mr. Ivan Mukibi | ISBAT | Innovative Approaches for Revolutionizing Curriculum Design, Teaching Methods, and Assessment Practices through AI. |
| 3 | Mr. Solomon Nsumba | Makerere University | Experiences on adopting and implementing AI technologies within higher education settings. |
| 5 | Mr. Imran Sekalara | Sunbird AI | Infrastructure, tools, and Skills Required for Effective AI Integration in Higher Education Institutions |
| 6 | Dr. Joyce Nabende Nakatumba | Makerere University | Leveraging AI in support of teaching & learning and research in higher education. |
| 7 | Mr. Julius Peter Torach, | Commissioner, Ministry of ICT and National Guidance | Ethical Considerations in AI Integration in Higher Education |
| 8 | Dr. Eria Muwanguzi | Bugema University | Enhancing Personalized Learning through Artificial Intelligence at Bugema University: Experience, Opportunities and Challenges |

| | | | |
|----|----------------------------|---------------------------------|---|
| 9 | Prof. Arthur Ahimbisibwe | Victoria University | Adaptation of artificial intelligence in Ugandan universities: insights from a highly digitalized university |
| 10 | Dr. Solimo Rajab | IUIU | Artificial Intelligence Adaptation in Higher Education: Supervisors Ease or Difficulty in Detecting AI-Generated Research in Postgraduate Research |
| 11 | Dr. Deborah Rebecca Kyazze | Avance International University | Exploring Faculty Readiness and Resistance to AI integration in Private institutions of Higher Education: A study of Perceptions, Challenges and Training needs |
| 12 | Mr. Wilson Okaka | Kyambogo University | Public communication campaign to revolutionize National curriculum design for transformative teaching and learning assessment through artificial intelligence in higher education in Uganda |
| 13 | Michael Adelani Adewusi | KIU | AI in Universities: The Good, the Bot, and the Ugly Truths! |

1.4 Official closure by the Minister

The Minister ICT and National Guidance, Hon. Dr. Chris Baryomunsi, who was represented by the state minister for National Guidance, Hon. Godfrey Baluku Kabbyanga, thanked NCHE for inviting him to close the Conference. The Minister highlighted the following:

- i) AI is one of the new technological advancements in the world resulting from the exceptional revolutionary transformation with significant developments, such as the Internet, smart gadgets, virtual reality, cloud computing, the 4th Industrial Revolution (4IR).
- ii) The Ministry of ICT and National Guidance launched the Digital Transformation Roadmap in September 2023, outlining Uganda's journey to incorporate digital solutions in areas of education. The roadmap is aligned to the NDP IV with the aim of strengthening the implementation of enabling policies and laws to accelerate Uganda's Digital Revolution.
- iii) The Ministry was developing a national strategy and establishing an institutional framework to guide the adoption and usage of AI.
- iv) There was no legal framework specifically on AI to provide a regulatory oversight.
- v) The conference was in line with his Ministry's strategy of implementing a national program to educate citizens on AI, promoting responsible engagement and ethical practices.
- vi) The Ministry was partnering with the private sector such as Sunbird AI to enhance ICT services. In collaboration with the International Telecommunications Union, the Ministry was undertaking a project to establish a foundation for Uganda's data-driven future.
- vii) The Ministry was establishing a National Research and Innovative Fund on AI to tap into and harvest the dividends that come with AI.
- viii) The Ministry of ICT and National Guidance is working with the MoES on the implementation of the Education Digital Agenda Strategy, which provides an Action Plan of integrating ICT in teaching, learning, and assessment.
- ix) His Ministry through UCC under the Uganda Communications Universal Service and Access Fund was a key player in supporting educational institutions with ICT infrastructure.
- x) Reminded HEIs that the country needs a workforce that can adapt to rapidly evolving technological advancements including AI.

The Minister declared the 6th Annual Higher Education Conference officially closed, at 5:04pm.

1.5 Emerging Issues

The key emerging issues from the Conference included:

- i) AI had varied benefits to students, educators and researcher, such as increased accessibility, personalized learning, instant feedback on assessments, saves time to perform tedious tasks, generation of class activities, designing the research proposal, data collection and analysis, and writing/presenting and disseminating research results.
- ii) The challenges/limitations of AI include: the AI tools are not 100 percent accurate; academic integrity; data quality; ethical concerns regarding data privacy; equitable access to technologies; inadequate infrastructure; impact on learning process; such as creativity and teacher-student relationship; and inadequate knowledge on AI.
- iii) Educators should be innovative in assessment amidst use of AI by students. The assessment strategies that promote critical thinking among students.
- iv) Students in HEIs were using various AI tools. Educators should, therefore, trained on the use of different AI tools. The students in HEIs should also be trained on responsible use of AI.
- v) There was need to develop policies at Institutional, Regulatory, and National level on use of AI. Further, NCHE needs to develop a Regulation on use of AI in HEIs.
- vi) There is need for collaborations and partnerships at national, regional and international levels for effective integration of AI in various education and other activities.

1.6 Conference strategies for the follow-up

- i) Disseminate conference proceedings to all the stakeholders.
- ii) Publish the conference proceedings on the NCHE website and online.
- iii) Develop the action plan for implementing strategies for AI integration in Higher Education in Uganda.
- iv) Follow up on feedback on the implementation of the action plan.

Action Plan for the 6th Annual Higher Education Conference 2025 emerging issues.

Table 1: Summary of the conference focus areas, emerging issues, and actionable points by responsible Ministries and other bodies in a certain time frame.

| No | Issues | Action point | Responsibility | Time frame (Years) |
|----|--|---|-------------------|--------------------|
| 1 | The challenges/ limitations of AI include: the AI tools are not 100 percent accurate; academic integrity; data quality; ethical concerns regarding data privacy; equitable access to technologies; inadequate infrastructure; impact on learning process; such as creativity and teacher-student relationship; and inadequate knowledge on AI. | Development of policies at Institutional, Regulatory, and National level on use of AI. | HEIs, NCHE & MoES | 1 - 5 |
| | | There is need for collaborations and partnerships at national, regional and international levels for effective integration of AI in various education and other activities. | HEIs & NCHE | |
| | | Development of a Regulation on use of AI in HEIs. | NCHE | 1 |

| | | | | |
|---|--|--|------|-----|
| 2 | HEIs should be innovative in assessment amidst use of AI by students. The assessment strategies that promote critical thinking among students. | Retooling and training staff and students on AI usage | HEIs | 1-5 |
| 3 | AI integration is costly and requires a lot of investment in infrastructure to ensure access to reliable internet connectivity, computing power, necessary software and hardware, capacity building, among others. | There is need for Government and other HE proprietors to provide more funding to enable integration of AI. | MoES | 1-5 |

CONFERENCE OPENING

WELCOME REMARKS

Our Chief Guest the First Lady and Hon. Minister of Education and Sports
The Chairperson and Hon Members of the Parliamentary Committee on Education and Sports
Permanent Secretary, Ministry of Education and Sports
Chairperson and Members of Council present
Members of Management of NCHE
Vice Chancellors and Principals
Political leaders of Mbarara City present
Staff of the Ministry of Education and Sports
Staff of the National Council for Higher Education
Distinguished Participants
Ladies and Gentlemen

On behalf of the National Council for Higher Education, I welcome you all to the 6th Annual Higher Education Conference.

I would like, in a special way, to welcome the First Lady and Minister of Education and Sports, Maama Janet Kataaha Museveni. We very much appreciate your having accepted our invitation and coming to grace this occasion amidst your busy schedule.

Hon Minister, the Annual Higher Education week is a premier feature on the NCHE calendar. It is aimed at raising awareness about quality higher education, with focus on a selected topical issue. During the week, we also reflect upon and celebrate the vital role higher education plays in national development. The week consists of two main events: the Annual Higher Education Conference and the Annual Higher Education Exhibition.

The selection of the theme: *“Challenges, best practices and strategies of Artificial Intelligence(AI) integration in Higher education in Uganda”* was intended to address AI as an emerging technology in the higher education space.

This Higher Education week is intended to create a platform for the providers of higher education to interact with other stakeholders in order to provide them with information on matters pertaining higher education. This conference will, therefore, provide a platform for the dissemination of research outputs, mostly in artificial intelligence. I am pleased to note that this event has attracted several submissions comprising of research papers and project presentations.

This is the first AI related Conference held by NCHE. We consider it important to synthesise multiple ideas for AI integration in higher education that can initiate the development and adoption of a common strategy by all higher education stakeholders. Specifically, AI adoption for HE offers strategies that can significantly provide solutions to address long standing challenges in HE for regulation, education and research management and delivery.

Hon Minister, distinguished participants, AI is part of the technological strategic tools that NCHE has deployed and will strengthen in the 2025/2026-2029/2030 strategic planning cycle. We have initiated use of AI to strengthen data management for decision support and policy formulation, and adopted AI research assistance and analysis tools. AI is also expected to improve data collection surveys for the Annual State of Higher Education and Trace studies to inform policy and enhance regulation.

Today, AI is increasingly imperative in higher education as it is the cornerstone of the technological revolution in teaching and learning. It provides personalized learning experiences, enhances research capabilities and equips students with skills needed for the future workforce. AI is shaping our world and the future of humanity. We have seen huge developments in the technology realm with AI advancements and it is here to mold the future as we stand on the threshold of a new era.

There is need for Government and other higher education proprietors to provide more funding to enable integration of AI in higher education. AI integration is costly and requires a lot of investment in infrastructure to ensure access to reliable internet connectivity, computing power, necessary software and hardware, capacity building etc.

Policies and guidelines for the integration of AI in education are essential. These policies will help to regulate broad AI principles, data privacy, ethical considerations, penalize malicious AI behavior and promote cybersecurity. In order to promote AI literacy, there is need for higher education institutions to review the teaching curricula to integrate AI concepts in teaching students to enable them critically evaluate AI and its outputs. There should also be specific courses and workshops that equip students with skills to understand and utilize AI.

I believe that our engagement at this Conference will provide opportunities to reflect on the strategies being undertaken or intend to undertake in preparing our learners with the skills, competencies and knowledge required on the job market today.

While we embrace AI, we are mindful of its possible negative impacts on the learners. We have also noted your repeated calls to parents to safeguard them against such effects, The National Council for Higher Education (NCHE), as the higher education regulator, guides compliance to a sustainable, healthy academic environment through the optimal use of ICT resources, promoting positive utilization of digital materials and discouraging negative use. At the NCHE 20th Anniversary in August 2023, we were directed by you, Hon Minister, to put in place guidelines to acceptable and responsible use of internet resources, I am pleased to report that the guidelines were developed and approved by Council. They have since been disseminated to all higher education institutions. In addition, they have been availed online via the NCHE Website.

Permit me to take this opportunity to make mention of one other emerging issue – the need to align higher education curricula with the competence based curricular being implemented at basic levels, I am pleased to report that NCHE is in the process of developing guidelines for higher education institutions to follow while reviewing their curricula Vice Chancellors, Principals and Heads of professional bodies will soon be engaged for their input.

As we start observing the Higher Education week, I thank our keynote speakers, session chairpersons, paper presenters and panel discussants for accepting to play those roles.

I would like to appreciate all the scholars who have taken time to prepare submissions for this Conference. We are honored that you chose this conference as the platform to disseminate your valuable research outcomes.

On behalf of NCHE I would like to take this opportunity to appreciate the financial provision by Government without which NCHE would not have been able to execute its mandate.

Permit me, in a special way to sincerely thank you, Hon Minister, for the various forms of guidance and support you give to NCHE. The Ministry as a whole has been supportive, for which we are grateful.

The Parliamentary Committee on Education has always been supportive, for which we are very appreciative.

Appreciation is due to Council for the oversight and guidance always accorded to Management

The achievements in the regulation of higher education have been the result of commitment of Management and staff – the NCHE family. I thank you all.

Last, but not least, I commend the organising committee of this conference, led by the Director, Dr Mulira, for the hard work and dedication to the success of the conference

I now take this opportunity to invite the Chairperson of NCHE Council to come and make her remarks.

THANK YOU FOR YOUR ATTENTION

Professor Mary J.N. Okwakol
EXECUTIVE DIRECTOR

OPENING REMARKS

The First Lady and Minister of Education and Sports

The Chairperson and Hon Members of the Parliamentary Committee on Education and Sports

Permanent Secretary, Ministry of Education and Sports

Chairperson and Members of Council present

Executive Director and Staff of the National Council for Higher Education

Heads of Government Departments and Agencies present

Vice Chancellors and Principals

Political leaders of Mbarara City present

Staff of the Ministry of Education and Sports

Staff of the National Council for Higher Education

Distinguished Participants

Ladies and Gentlemen

I take this opportunity to welcome you all to Mbarara City for the **6th Annual Higher Education Conference 2025**, organized by the National Council for Higher Education. This is the second conference to be held outside Kampala.

In a special way, allow me to welcome you, First Lady and Hon. Minister of Education and Sports, for accepting to officiate at this occasion. As Council, we are very grateful to you Maama, for always accepting to officiate at such functions. We recall, with appreciation that even during the time of COVID-19 pandemic, you would attend online. We feel greatly honoured.

Our Chief Guest, the Council as established by the *Universities and Other Tertiary Institutions Act, CAP 262*, is, under Section 4 mandated to, among other functions, to promote and develop the processing and dissemination of information on higher education for the benefit of the people. To achieve this, the Council annually organises stakeholder engagements like this and the exhibition where information is disseminated to the public. Every year, the Council identifies a theme from among the emerging issues in education to provide a framework for messaging throughout the higher education week. After a thorough research, the findings are disseminated to the public.

The theme for this year's conference is ***“Challenges, Best Practices and Strategies of Artificial Intelligence(AI) Integration in Higher Education in Uganda”***

AI has become increasingly important in today's world as it has the potential to revolutionize the education sector. It has become critical in the modern world because it enhances efficiency, automates tasks, improves decision-making, and drives innovation across various sectors, leading to a better quality of life and solving complex problems.

In the Higher Education Sub-sector, AI is becoming inevitable in the training of the human workforce. Therefore, there is urgent need for institutions of higher learning to integrate it in their training. This is because the education field is poised to become a lot more competitive, and those that will not deploy AI to improve on their innovations will be at a disadvantage.

NCHE is therefore encouraging institutions of higher learning to embrace AI. I am also aware that the Uganda Vice Chancellors' Forum has initiated discussions about how best to embrace AI. However, several challenges continue to pose a threat to institutions in the implementation and integration of AI in higher education. I wish to highlight a few key challenges here:

1. Of immediate concern is the fact that students have already embraced AI Tools that can enable them to generate research proposals and thesis in a short time; generate essays, solve mathematical problems, and answer questions. Other tools help students bypass plagiarism detection. AI detector- can also be used to detect the percentage of AI generated content. This requires that the teachers must move faster than the students, and this is not the case, as of now. Unethical use of AI is academic dishonesty and erosion of critical think-

ing skills. Overreliance on AI leads to reduced problem-solving and analytical abilities. There is a risk of misinformation because AI-generated content may include errors or biased information. Plagiarism is likely to go undetected and there is therefore, the difficulty of differentiating between genuine students' efforts and AI output – thus undermining the quality of education. It also means that it is imperative to check this trend, otherwise, our students will actually not learn.

2. There are no clear guidelines and policies developed yet for the ethical integration of AI in our training. This also includes defining punishments for misuse.
3. The cost of implementing and maintaining AI systems is very high and a number of institutions may not afford it. Coupled with this is inadequate infrastructure and limited internet access, especially for institutions located in rural areas. These technological failures or limitations disrupt the learning process, highlighting the need for robust systems and backup plans.
4. There is also the challenge of skills gap especially the shortage of AI skilled educators and IT professionals with the necessary skills required in the implementation and management of AI in higher education. It is pleasing to learn that some institutions have formed AI Clubs, but this is still an ad hoc process.
5. As is always the case within our education system, the question of equity is still an issue that arises in every discussion about AI. Integration of AI should be accessible and equitable for all learners regardless of their background, location or gender. We all know that these resources are not adequately distributed.

As we embrace AI in our institutions, there is need for Government to support institutions of higher learning by putting in place a fund to support infrastructure development, arrangements for improving on the nationwide internet connectivity, a policy to subsidise the cost of for ICT equipment, to enable institutions and afford the systems and the funds for training of educators in AI. Students should be able to afford the cost of the necessary equipment. If we do not attend to these emerging issues, we shall, as a country, not progress with the rest of the world.

Moving away from today's theme, allow me, Hon. Minister, to point out that as a Council, we are also challenged with the delays in amending the *Universities and Other Tertiary Institutions Act, CAP 262*. The delays in amending the Act have resulted into overlapping mandates with agencies that have been established under the Ministry of Education and Sports. Higher Education Institutions are finding challenges regarding which agency to pay allegiance to. An example is the TVET Act where some areas conflict with those of the NCHE provisions.

Another challenge is the fact that NCHE has regulatory powers but not those to enable Council to enforce the law. This impinges on quality service delivery. **Our prayer, Hon. Minister, is that the process of amending this Act be expedited.**

Last, but not least, let me take the opportunity to express my deepest appreciation, through you, to His Excellency, President Yoweri Kaguta Museveni, for putting trust in me by appointing me Chairperson of the National Council for Higher Education. In the same vein, I thank you for your support and guidance, not only in the work of this Council, but also in respect to my other public duties. I thank the leadership of the Ministry – Ministers of State, the Permanent Secretary and other leaders. I pledge to do my best to meet your expectations.

I was gratified by colleagues at the NCHE and the Vice Chancellors' Forum for putting confidence in me. I equally cherish the support I am getting from the NCHE Secretariat, under the leadership of Prof. Mary J Okwakol.

I now take this opportunity to invite the State Minister for Higher Education Hon. Dr. J. C. Muyingo, who after his remarks will invite the Chief Guest to address us and officially open the 6th Annual Higher Education Conference 2025.

I wish everyone fruitful deliberations.

Professor. Joy C. Kwesiga
CHAIRPERSON, NCHE

OFFICIAL OPENING

Statement by Hon. Janet K. Museveni First Lady and Minister of Education and Sports

Cabinet Ministers,
Members of Parliament,
Vice Chancellors,
The Chairperson and Executive Director of the National Council for Higher Education
Distinguished guests,
Ladies and gentlemen.
Good afternoon!

I must say, it is a real pleasure for me to be here today - to join you at this annual Higher Education Conference. I trust that you understand when sometimes my work schedule withholds me from being with you.

I thank the National Council for Higher Education for taking the lead in convening these events regularly which are also an opportunity to increase the visibility of the profile of higher education in the country.

Nonetheless, I trust that the deliberations you engage in such gathering do contribute to the improvement of the quality of higher education. First and foremost, in the eyes of the learners for whom you exist. Second, the society where your individual higher education institutions are located.

This is in addition to Uganda whose national vision of societal transformation from peasantry to a modern and prosperous nation requires graduates with appropriate competences, values, and attitudes such as patriotism.

I take note that this is the 6th Annual Higher Education Conference and the 15th Higher Education Exhibition. I often challenge organizers of such recurrent gatherings that it is very important to set tangible and realistic goals of what you would like to see achieved within the period between now and the next gathering; and a system of monitoring and evaluating your goals to ensure that you stay on course.

This sends a strong signal to all who care about such a gathering that it is never business as usual, and they realize the loss of their missing out on such events.

Tangibility of goals in such gathering is a key motivator of participation but also increases level of engagement with the various stakeholders. Therefore, it is important that as the Higher Education fraternity, you always set aside time to also evaluate such events and their outcomes. You need to check whether you are still pursuing the objectives that the founders or organizers had in mind to contribute to educational and national development.

This reminds me of the Apostle Paul in the Bible when he challenged the body of believers in Jesus Christ who were in the Church at Philippi. In his letter to them as written in the Epistle to the Philippians Chapter Three Verse Twelve, the Apostle Paul said, "Not that I have already obtained all this, or have already arrived at my goal, but I press on to take hold of that for which Christ Jesus took hold of me".

Just as it were for the Apostle Paul who had a clear goal set before him and never assumed that he had already attained it, we too ought to do the same in terms of clarity of goals and pressing on to achieve what we set out to do in the first place.

Of course, for the Higher Education sub-sector, what you want to test yourselves in is whether you are still on course of your original objective for the Sub-Sector. Then, you also must regularly check-up on whether the goals of events like this one of today align with the original mission and purpose of why you exist as a Higher Education institution in the first place. It is possible to drift away in the current dynamic environment that has such a high turnover of innovations and information.

Therefore, as the Higher Education sub-sector and the institutions, it is imperative for you to be cognizant all the time that it is possible to drift away from your original mission and purpose.

In contemporary times, one of the pressures that cause mission drift is the rate of technological and information advancement, especially when the pursuit of such becomes an end as opposed to being a means to the desired end.

There is so much change happening at such a very fast rate in the information and technology space. I am told that sometimes this change happens within weeks, especially in field of computer science because a lot of research is generating new knowledge. Unfortunately, organizations and institutions including the Higher Education sub-sector find themselves under pressure to keep up with the pace of change to be seen as not being left behind.

However, with every innovation including technological advancements it is wiser to neither jump into the deep end of the swimming pool nor to feel the waters with both feet but rather to move forward cautiously and systematically.

I am told that the recent technological advancements in Information and Communications Technology (ICT) computer systems that have popularized what we know today as Artificial Intelligence are neither new nor a recent invention.

Artificial intelligence– the science of creating computer systems that mimic human intelligence abilities such as learning, reasoning, decision-making, and ultimately problem-solving abilities is still a phenomenon that is not well understood by most of the people within the contexts of your Higher Education institutions.

However, what popularizes the Artificial Intelligence phenomenon is the fact that computers have become a common feature of our lives. We have computers in the form of watches people wear, mobile phones and digital tablets in people's hands, office appliances like printers, desktops and laptops

In some homes there are appliances such as refrigerators, television sets, and digital kitchen appliances like cookers and microwave machines, the vehicles people drive in, and so forth. So, some form of Artificial Intelligence is already with us in things that surround people in their day-to-day lives.

Over the years, higher education has made a big contribution in generation of transformative innovations that have led to the development of the modern Artificial intelligence that we know today. However, as most of you know, the desire and efforts to have machines do things that human beings can do dates to 1000s of years ago – and not just a few years back only.

Therefore, the challenge that our young Higher Education sub-sector in this country faces is about how to cope with a rapidly evolving technology in a social, cultural, and economic context that is significantly different from that of societies where the application of Artificial Intelligence innovation is advanced.

I am sure this is the basis for the theme of this 6th Annual Higher Education Conference which is, "Challenges, Best Practices, and Strategies for Artificial Intelligence Integration in Higher Education in Uganda."

As the late Mwalimu Julius Nyerere used to say of Africa, where others are walking, Africa must run to catch up. Our higher education sub-sector finds itself in such a situation of having to run to catch up with this race of technological advancement called Artificial Intelligence.

The sub-sector must not only participate in the race as a consumer of Artificial Intelligence. First, the Higher Education sub-sector should strive to ensure that our children understand the workings of

Artificial Intelligence. Then, aspire to become a meaningful contributor to further advancement of this technology from our own perspective.

As the sub-sector sets itself the challenge of participating in this race of Artificial Intelligence, higher education – and indeed all interested in being part of it, must take time to appreciate the rules governing this race. The Apostle Paul wrote to his spiritual son Timothy in the Second letter to Timothy Chapter Two Verse Five in the Bible saying, “And also if anyone competes in athletics, he is not crowned unless he competes according to the rules.”

Rules are very important guardrails in our lives without which, we do not get the best and most out of the opportunities that surround us. Understanding the rules within the best practices of Artificial intelligence is necessary. This is an area that higher education needs to pay attention to and invest in for two reasons:

One, the rate of change in new knowledge about the field of Artificial Intelligence is so high. Second, the sub-sector is a place for nurturing young minds into becoming productive citizenry. These two factors necessitate vigilance in ensuring that the rules of engagement with Artificial Intelligence in higher education protect both the learners and other consumers of the products and services of this sub-sector as well as in our society at large.

Artificial intelligence puts to the test the limits of virtues such as positive work ethic, originality, authenticity, honesty, and inter-personal skills such as collaboration. Such virtues are desirable not only in academia but also in the world of work as well as in life generally speaking. Some may ask, “If the computer can do the reasoning for me, identify where the problem is, and even tell me the best solution, what is the point of me exerting my brain? Why not simply trust the computer to do everything?”

In a way, Artificial Intelligence poses a form of moral dilemma. For example, in the way we have been learning to learn. Artificial Intelligence confronts the learner with having to choose between working it out alone on his or her computer vis-a-vis collaborating with other peers. “If I can describe to the computer this problem that I have been tasked to solve, and within minutes the computer answers with extensive information as to the possible solutions, why do I need to collaborate with my peers who will take days solving the same problem?” The learner – and even the lecturer may ask.

Perhaps, Artificial Intelligence is now shining the torch back on those things that are virtuous in life and transcend seasons, times, and trends because that is what human beings ought to be like in the first place.

These virtues are the values that have helped mankind navigate difficult moments and opportunities in our history of existence. Virtues like honesty, authenticity, collaboration, a positive work ethic, compassion, inter-personal skills, and the like.

Therefore, in the advent of Artificial Intelligence, higher education training must be intentional with its curricula and programs. There should be intentionality to develop learning strategies that still provide for learners to graduate from these institutions when they are still behaving like human beings ought to behave.

Young people – especially in our society, should be guided in developing healthy interpersonal skills that make them live with others in society as opposed to becoming impersonal beings because of addiction to digital gadgets and the technology therein such as Artificial Intelligence. Perhaps, higher education should interest itself in finding out whether Artificial Intelligence influences the extent of addiction to digital gadgets.

Please remember, that the communities where these young people come from have the majority people commonly referred to as “BBC” – which means, “Born Before the Computer” age. Therefore, these young people do not have adults in their lives back home who can provide informed guidance to them regarding responsible interaction with digital gadgets. Young people ought to know that they are duty-bound to ensure that they must not lose values humankind hold dear.

Furthermore, higher education institutions are at the apex of the education system – a smaller proportion of the Education system, yet generating a high volume of knowledge, information, innovations, and inventions as solutions to society’s most pressing challenges.

With this in view, Artificial Intelligence application in higher education should not be divorced from the context of the society or environment where these institutions of learning are located.

You must remain relevant, by first and foremost becoming a source of tangible and pragmatic solutions to the communities where your institutions are located.

An ordinary person who is struggling to increase productivity on her one acre of land does not need to be taught how to apply artificial intelligence to solve her problem. After all, such a person may be one of those “BBC;” implying that they are most likely computer illiterate.

However, you who have had the benefit of understanding how artificial intelligence is valuable, simply engage with this peasant, listen to her story, and work with her to produce a solution that solves her productivity challenge – that is what relevance of higher education feels like to the ordinary person.

Therefore, in your aspirations to receive acclaim as being compliant with trends in Artificial Intelligence, remember to keep your feet on the ground because that is where your relevance as higher education is experienced.

It is therefore important that the application of Artificial Intelligence in higher education in our context does not take us back to the Ivory Tower Syndrome whereby, these institutions become detached and out of touch with the communities and society where they are located. In other words, you must live within our world to be relevant.

Artificial intelligence should make it easier for higher education to come up with remedies that are relevant and can be associated with the day-to-day realities of the communities around these institutions. That way, community engagement with the higher education is enhanced – as opposed to this wonderful innovative technology becoming a source of institutional disconnect with the community and society in general.

Earlier this month I presided over the release of the 2024 Uganda Advanced Certificate of Education (UACE) Examinations Results. While giving my remarks, I re-echoed the need for higher education institutions to realign themselves with the competency-based and learner-centred learning methodologies already in use in the Curricula at both O-Level and A-level.

This will require that universities re-tool all their academic staff to be able to acquire new skills to teach using learner-centred methodologies. Now, I must say that it goes without saying that with Artificial intelligence integration in higher education, re-tooling of your human resource is of necessity if you are to harness the capabilities of this phenomenon.

Therefore, investment in retooling in higher education institutions is of necessity not only because of Artificial Intelligence but also the reforms generally already happening in the basic and secondary education system especially in the area of the curricula.

Now, you all very well know that there is no concrete evidence that has come up to support the notion that the use of educational digital gadgets has necessarily contributed to the improvement in attainment of learning outcomes – and not just in basic and secondary levels of education alone.

On the contrary, there is evidence that educational digital gadgets have interfered with the learners’ ability to learn how to learn. We learn how to learn through basic routines like observation, reading, writing, collaboration, interaction with a learning facilitator, inter-personal feedback, and the like.

It is well known that educational digital gadgets do interfere with the above processes of learning how to learn because the people factor gets compromised, and the young people become engrossed in their digital gadgets. In the workplaces, products of higher education struggle to interact with colleagues at work to collaboratively solve clients’ problems.

Therefore, in the pursuit of integration of Artificial Intelligence in the work you do as higher education institutions, the basics of the process of learning how to learn must be jealously guarded and not compromised in the pursuit of the use of this technological innovation.

You may want to interest yourselves in studying more about why places like Finland, Sweden, England, Italy, France, Russia, China, the Netherlands, Hungary, Spain and others have placed either total bans or significant restrictions on handheld mobile gadgets in the classroom.

Find out from these education systems whether there are insights to be gained in responsible integration of Artificial Intelligence enabled gadgets in the classroom in higher education in Uganda.

In conclusion, Artificial Intelligence as a phenomenon brings both opportunities and challenges that not only the higher education institutions but the entire education system in our country needs to study and learn how to manage for optimum benefits.

The challenges and opportunities notwithstanding, Artificial Intelligence should not become an end to be pursued by higher education, but an enabler to facilitate achievement of mission objectives for the sub-sector. When all is said and done, higher education relevance will be measured through the lenses of relevance to society in solving pressing challenges the communities face.

The relevance of higher education cannot be separated from the ability of its learners to learn how to learn, engage in critical thinking, inter-personal skills, problem-solving, emotional intelligence, and executive skills among other critical workplace desirable competences. These are the virtues that higher education should jealously guard not to be compromised by emerging technology advancements such as Artificial Intelligence.

Thank you, and I now declare this 6th Annual Higher Education Conference officially opened.
God bless you all!

KEYNOTE SPEAKER

AZRA NASEEM

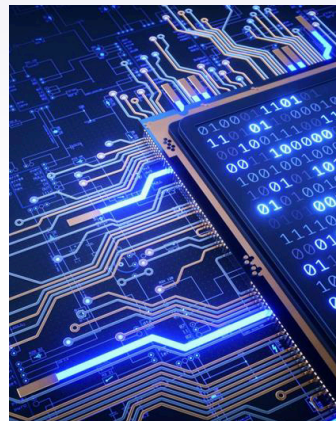
**Director, Blended And Digital Learning
Aga Khan University**

Presentation:

Artificial Intelligence in Higher Education: Policies, Regulations, and Adoption Strategies for Sustainable Transformation

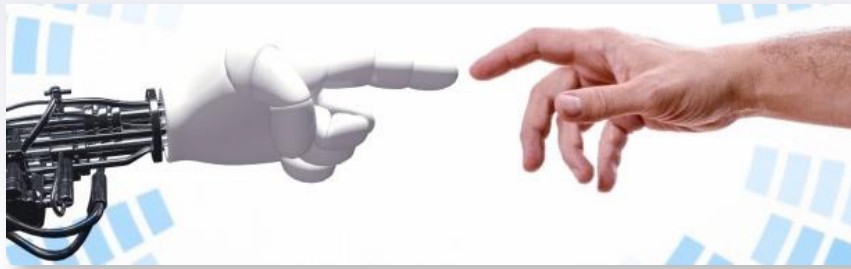
Roadmap

- **AI's Growing Influence on Higher Education**
- **Policy & Regulatory Frameworks**
- **Adoption Strategies for Sustainable Transformation**



AI's Growing Influence on Higher Education





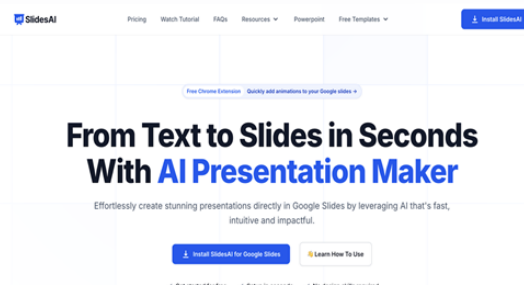
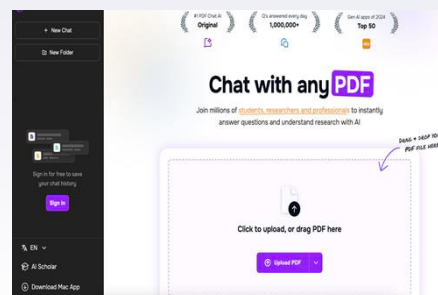
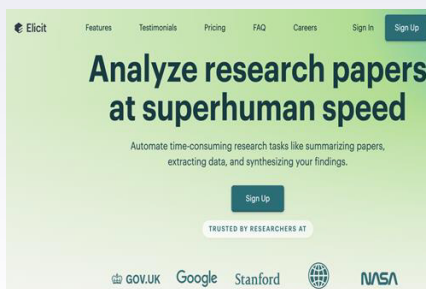
Artificial Intelligence (AI)

“... science and engineering of making intelligent machines, especially intelligent computer programs.” (McCarthy, 1955)

<https://www.publicdomainpictures.net/pictures/390000/nahled/artificial-intelligence-1612992481fj2.jpg>



Generative AI Examples



Engagement Tracking through AI



<https://www.wsj.com/articles/chinas-efforts-to-lead-the-way-in-ai-start-in-its-classrooms-11571958181>



Teacherless AI Class



UK's first 'teacherless' AI classroom set to open in London

A private school in London is opening the UK's first classroom taught by artificial intelligence instead of human teachers. They say the technology allows for precise, bespoke learning while critics argue AI teaching will lead to a "soulless, bleak future".

By Mickey Carroll, science and technology reporter



AI Twins and GenAI



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News & events, Teaching tips / 3 December, 2023

How Sydney educators are building 'AI doubles' of themselves to help their students

by Danny Liu



AKU Journal Club Chatbot

- To support students' reading of journal articles:
- <https://sites.google.com/view/chatbotprojectfordental/home>



AI can be a powerful
tool for transforming
education

What are the
characteristics of
transformative
educational
experiences
powered by AI?



Higher Education Trends (2024-25)

Finding Appropriate Uses for AI-Enabled Technology

Supporting AI Fluency

Supporting Equitable and Inclusive Learning

Protecting Data Privacy and Security

Navigating Misinformation

Supporting Mental Health

Linking education to career paths

Making sense of the AI explosion

Prioritizing mental health on campus

Getting creative to support equity

Questioning the ROI of a four-year degree

Paving the path to success for adult learners

Putting staff and faculty burnout on the front burner

Making a case for liberal arts

Focusing on more meaningful metrics

The outcomes era: Articulating a
compelling value proposition

Higher education's accelerating
leadership crisis

The changing landscape of college
athletics

The future of AI in higher education:
Embracing disruptive innovation

The rising influence and risks of
public-private partnerships

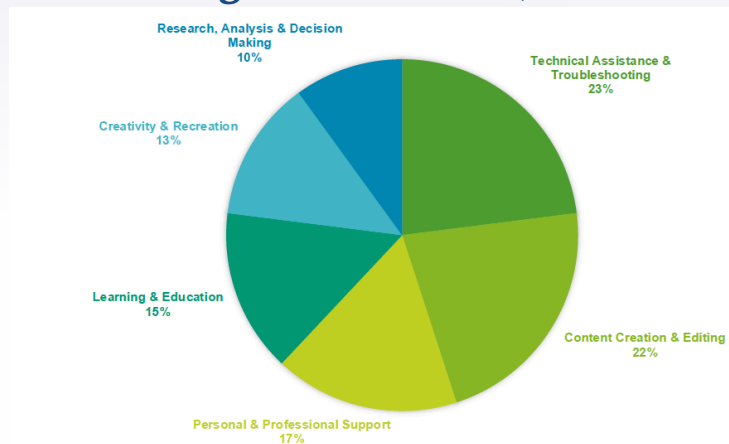
2024 EDUCAUSE Horizon Report
<https://library.educause.edu/-/media/files/library/2024/5/2024hrteachinglearning.pdf>

<https://www2.deloitte.com/us/en/insights/industry/public-sector/latest-trends-in-higher-education.html>

<https://www.insidetrack.org/blog/10-higher-ed-trends-to-watch-in-2024>



Six top-level themes of what generative AI is being used for (HBR, 2024)



<https://hbr.org/2024/03/how-people-are-really-using-genai>



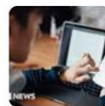
Education transformation...?

*** BBC

Are Scottish students using AI to cheat their way to a degree?

More than 600 Scottish students have been accused of misusing AI during part of their studies, according to a BBC FOI.

1 week ago



The Guardian

UK universities warned to 'stress-test' assessments as 92% of students use AI

Survey of 1000 students shows 'explosive increase' in use of generative AI in particular over past 12 months.

2 weeks ago



Retraction Watch

As Springer Nature journal clears AI papers, one university's retractions rise drastically

Neurosurgical Review has begun retracting scores of commentaries and letters to the editor after getting inundated by AI-generated...

1 month ago



• Assessment of/for learning?



Essay Writing Task Instructions

In this assessment task, you will research a problem or issue relating to gender in a specific educational context, and provide suggestions as to how the context could become more ethical and/or inclusive. You will justify your decisions with reference to your emerging pedagogical and philosophical position.

Use these guiding questions to help develop your understanding about what this task requires of you:

Pedagogical philosophy

- What is your pedagogical/philosophical position towards gender and education, and why?
- How does this relate to your chosen topic relating to gender and education?
- How does this relate to your desired ethical and inclusive education context?

Educational context and problem

- In your chosen educational context, what are some issues or problems you can identify in relation to gender and education?
- What policies exist in relation to this, if any?
- Does your pedagogical philosophy in relation to gender and education affect what you perceive as a problem? How does the position of others affect how this problem/issue is perceived, if at all?

Ethical and inclusive context

- In your chosen educational context, how can you address the issues or problems you have identified in relation to gender and education?
- What policies exist in relation to this, if any? (If they do not exist in your context, think about how this has been approached elsewhere)
- Does your pedagogical philosophy in relation to gender and education affect what you perceive to be more ethical/inclusive? How does the position of others affect how this problem/issue is addressed, if at all?

Academic writing and conventions

- Have you proofread and edited your work? Not only for spelling, but also clarity and cohesion?
- Have you checked that your referencing complies with APA7?



ChatGPT's response

• Pedagogical Philosophy

My pedagogical position is grounded in feminist pedagogy, which emphasizes the need for gender equity in educational settings and seeks to challenge traditional power structures that perpetuate inequality. This approach promotes a classroom environment where all students, regardless of gender identity, have equal opportunities to engage, learn, and succeed. I align with this philosophy because I believe that education should act as a transformative space where historical injustices, including gender inequalities, are actively addressed and dismantled. My experiences as a student and educator, coupled with research on the gendered nature of education, have shaped my belief in the importance of fostering an inclusive classroom.

The specific issue I will focus on is the underrepresentation of girls in STEM (Science, Technology, Engineering, and Mathematics) education in secondary schools. Data consistently shows that despite girls performing equally well as boys in early education, their participation and interest in STEM subjects drop significantly during secondary school. My feminist pedagogical stance directly relates to this issue as I view the underrepresentation of girls in STEM as a result of gendered socialization, unconscious bias, and the historical exclusion of women from these fields. This exclusion contradicts the principles of equity and fairness that my pedagogy values.

An ethical and inclusive educational environment in my view would be one where all genders feel equally encouraged to pursue any academic field, including those historically dominated by men. This would require curriculum changes, teacher training on gender bias, and creating an environment where girls feel empowered to pursue STEM. By adopting feminist pedagogy, I would ensure that my classroom activities, materials, and assessments are free from gender biases and that all students are given the tools they need to thrive in any field they choose.



ChatGPT's response

• Educational Context and Problem

In the context of secondary education, one of the key issues I have identified is the persistent gender gap in STEM subjects. Despite efforts to promote STEM education for all students, societal expectations, and stereotypes often discourage girls from pursuing these subjects. Furthermore, the lack of female role models in STEM, as well as gender-biased teaching methods (e.g., calling on boys more frequently in math and science classes), exacerbates this issue. Research indicates that girls often feel they don't belong in these fields, leading to lower enrollment and participation rates in STEM subjects during their secondary education years.

Some schools have implemented gender-equity policies aimed at promoting equal access to all subjects, but these policies often lack specificity when addressing gendered participation in STEM subjects. For instance, there may be programs like STEM clubs or mentoring schemes for girls, but without addressing underlying classroom practices or gender biases in teaching, these initiatives often fall short of significantly closing the gap. Additionally, policies such as Title IX in the U.S. aim to prevent gender discrimination in education, yet gender disparities in STEM remain widespread, indicating a gap between policy and practice.

My feminist pedagogical stance leads me to view the gender gap in STEM as a systemic problem rooted in cultural and institutional biases, rather than individual choices. Someone who adopts a more traditional, meritocratic pedagogical stance might argue that girls simply aren't as interested in STEM, and therefore, the issue is not one of inequality but preference. These differing perceptions shape not only how the problem is viewed but also how potential solutions are approached. For me, addressing the structural barriers that limit girls' participation in STEM is a priority, whereas others may focus on "neutral" strategies that don't actively challenge the status quo.



ChatGPT's response

- **Ethical and Inclusive Context**

To address the issue of underrepresentation of girls in STEM in secondary education, I propose several strategies:

1. Teacher training on unconscious bias to ensure that educators are aware of the ways they might inadvertently discourage girls from participating in STEM subjects.
2. Implementing a curriculum that showcases the contributions of women in STEM, thereby providing girls with relatable role models.
3. Establishing STEM mentorship programs where female students can be paired with women working in STEM fields, providing them with guidance and inspiration.
4. Gender-inclusive classroom practices, such as equal participation opportunities for all students and collaborative learning environments where diverse contributions are valued.

These strategies would create a more inclusive environment where all students, particularly girls, feel supported in their STEM education.

Some countries and educational systems have successfully implemented gender-inclusive STEM policies. For example, the UK's Women in STEM program offers mentorship, scholarships, and networking opportunities for girls interested in STEM subjects. Similarly, Australia's STEM Equity Monitor tracks gender participation in STEM, helping schools and policymakers create targeted interventions. Drawing on these examples, my context could benefit from more robust, evidence-based programs that promote gender inclusion in STEM.

My pedagogical philosophy, rooted in feminist principles, shapes my view of what constitutes an ethical and inclusive STEM education. For me, an ethical approach must include active intervention to correct gender disparities, rather than relying on a supposedly neutral framework. However, I recognize that others may see such interventions as unnecessary or even unfair, arguing that students should "naturally" gravitate towards the subjects that interest them. This difference in perspective can affect how policies are implemented and received in schools. Therefore, fostering collaborative dialogue between educators, policymakers, and students is crucial in ensuring that inclusive practices are adopted and sustained.



Infographic Task Instructions

1. In this assessment task, you will create an infographic to explore a particular technology's role in education. Using Canva to create your infographic is recommended, but you may choose any tool. Your poster and reflection should be no longer than two canva infographic template pages and one A4 page for reflection; references may go on to another page if needed. The submitted work should consist of the following:
 - infographic reference list
2. an infographic
 - infographic reference list
3. a 300-word reflection
 - reflection reference list
4. Where appropriate, you should use in-text and end-text referencing (style: APA 7th Edition) for the text and images in your infographic and the text in your reflection.

Part A: Create an Infographic

5. Choose a web-based tool, app, software or physical edtech tool that could be useful in an educational setting and create an infographic that reviews its features and relates them to the Australian curriculum's information communication technology general capabilities.



ChatGPT and D-ALLE responses

Reflection on AI's Role in Education

Artificial Intelligence (AI) has revolutionized education, offering both significant benefits and challenges. Through the creation of the infographic, I explored three major areas where AI impacts education: **personalized learning**, **administrative efficiency**, and **ethical considerations**.

AI's ability to **personalize learning** is transformative. By using adaptive algorithms and intelligent tutoring systems, educators can cater to individual students' needs, allowing for a more tailored and effective learning experience. Research shows that these tools help students progress at their own pace, fostering better engagement and outcomes (Holmes et al., 2019). In this context, AI acts as a powerful aid to teachers, offering real-time feedback and assessments based on individual progress.

Administratively, AI streamlines processes such as **grading**, **scheduling**, and **data analysis**. These efficiencies free up teachers to focus more on pedagogy rather than routine tasks. AI's integration into administrative tasks is projected to save substantial time, thus increasing productivity (Luckin et al., 2016).

However, as depicted in the infographic, ethical concerns, including **data**



AI Detection

Design and Human-Computer Interaction, Language Processing, Machine Learning

AI-Detectors Biased Against Non-Native English Writers

Don't put faith in detectors that are "unreliable and easily gamed," says scholar.

Machine Learning

AI Detection Tools Falsely Accuse International Students of Cheating



Policy & Regulatory Frameworks



Considerations

Ethical

- Academic Ethical integrity, deep fakes

Data privacy

- Who owns student data?

Data quality

- Bias, Hallucination

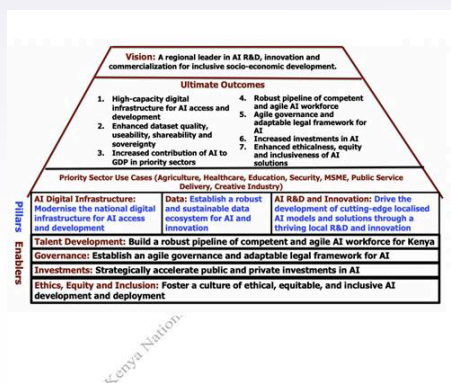
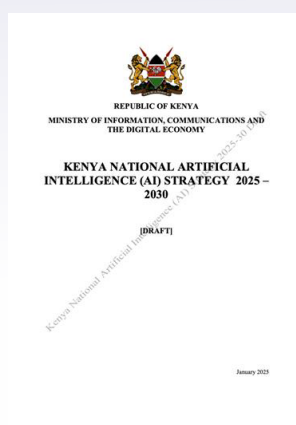
Equitable access

- Cost, Availability, AI Literacy

Impact on the learning process

- Creativity, teacher-student relationship

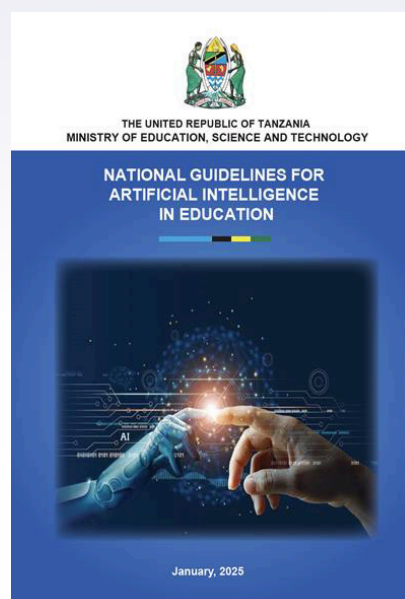




1.3 Guiding Principles

These Guidelines are built on the following guiding principles:

- Ethical Use:** Ensuring AI is used transparently, fairly, accountably, and responsibly.
- Equity and Inclusivity:** Promoting equal access to AI for all users.
- Data Privacy and Security:** Protecting personal data and maintaining security.
- Sustainability:** Ensuring long-term viability and scalability of AI initiatives.



Aga Khan University | AI Guidelines

THE USE OF GENERATIVE AI IN HIGHER EDUCATION AT AKU

(Draft Guidelines)

Provisionally approved at the Kenya Senate / Academic Council meetings of August 24th 2023 for uploading on internal Websites

To be updated by the Working Group in the first year every quarter

| | |
|---------------------------------|--|
| <p><i>Contacting Office</i></p> | <p>Provost / DVC or designate office - Graduate Program (Administration)</p> |
| <p><i>Related Policies</i></p> | <p><i>This document should be read in conjunction with the University policies Academic Integrity, Intellectual Property Rights, Authorship Policy, Publications Policy and Research Misconduct Policy</i></p> |



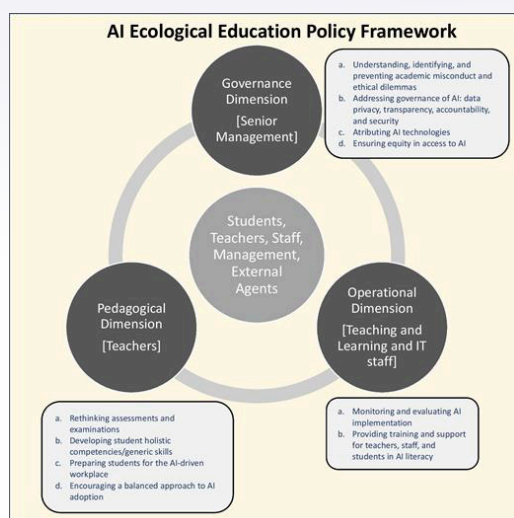
<https://www.aku.edu/admissions/Documents/policy-use-of-generative-ai.pdf>



Adoption Strategies for Sustainable Transformation



AI Ecological Education Policy Framework



Chan, C.K.Y. A comprehensive AI policy education framework for university teaching and learning. *Int J Educ Technol High Educ* 20, 38 (2023). <https://doi.org/10.1186/s41239-023-00408-3>

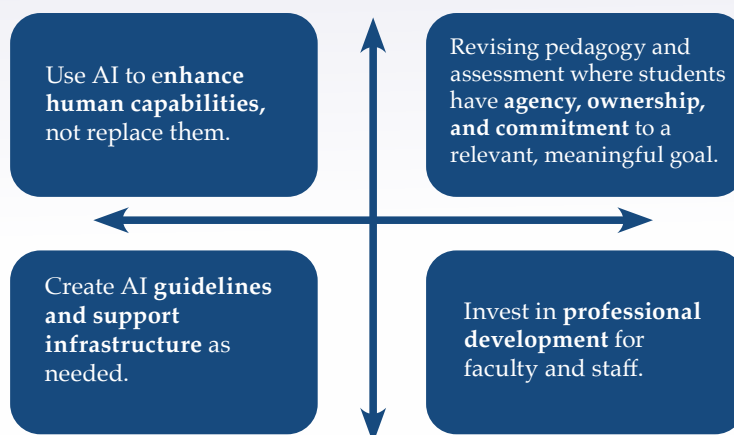


UNESCO AI Competency Framework for Teachers

| Aspects | Progression | | |
|------------------------------------|--|---------------------------------------|---|
| | Acquire | Deepen | Create |
| 1. Human-centred mindset | Human agency | Human accountability | Social responsibility |
| 2. Ethics of AI | Ethical principles | Safe and responsible use | Co-creating ethical rules |
| 3. AI foundations and applications | Basic AI techniques and applications | Application skills | Creating with AI |
| 4. AI pedagogy | AI-assisted teaching | AI-pedagogy integration | AI-enhanced pedagogical transformation |
| 5. AI for professional development | AI enabling lifelong professional learning | AI to enhance organizational learning | AI to support professional transformation |



Aga Khan University's Approach



Aga Khan University | AI PD Initiatives

The Network of Quality, Teaching and Learning
AI IN EDUCATION PLAYGROUND

USING AI TO SEARCH LITERATURE

In this session:
We will explore how AI is changing the literature search process by playing with AI tools to create literature maps and find research studies. We will also share guidelines from top publishers like Nature, Sage, and Taylor & Francis.

You will also have an opportunity to ask questions, exchange ideas, and share examples with your peers.

12 March 2025
Wednesday

Online via Zoom

11:00 am - 1:00 pm PKT **9:00 - 11:00 am EAT** **6:00 - 8:00 am GMT**

To participate register now by clicking [here](#).

For more information reach out to aku.alep@aku.edu.

The Network of Quality, Teaching and Learning
AI IN EDUCATION PLAYGROUND

EXPLORING AKU GUIDELINES FOR GENAI USE

In this session:
We will explore AKU's AI Guidelines and how you can apply them to your teaching in the upcoming semester.

You will also have an opportunity to ask questions, exchange ideas, and share examples with your peers.

15th January 2025
Wednesday

Online via Zoom

11:00 am - 12:30 pm PKT **9:00 - 10:30 am EAT**

To participate register now by clicking [here](#).

For more information reach out to aku.alep@aku.edu.

The Network of Quality, Teaching and Learning
AI IN EDUCATION PLAYGROUND

ASSESSMENTS IN THE TIME OF GENAI

Join the workshop to:

- Use GenAI tools to complete assessment tasks.
- Critically discuss the implications of GenAI use on pedagogy and assessments in higher education.

18th September 2024
Wednesday

Room 524, Fifth Floor, University Centre Building, Nairobi, Kenya [Hybrid; both in-person and online via Zoom]

7:30 - 8:30 am EAT

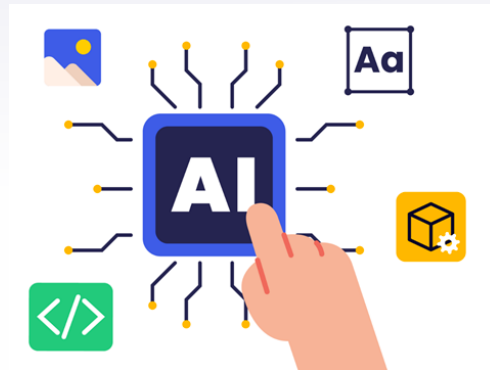
To participate register now by clicking [here](#).

For more information reach out to bdinet@aku.edu.



Student AI Literacy Enhancement

- Longitudinal theme on “AI in Medical Practise” for Undergraduate Medical Education students
- Introduction to AI, a part of general student orientation



Discipline specific AI use: Conversation between AKU Medical education faculty from Kenya and Pakistan



How can you influence change ...?

- Go to Menti.com
- Code: 8491 2892



Thank you

Email: azra.naseem@aku.edu



SESSION ONE

Policy and Regulatory Environment for Effective Artificial Intelligence Integration in Higher Education

**CHAIRPERSON: Dr. Nora Mulira, Director ICT, Research and
Innovation, NCHE**

Presentations:

Julius Peter Torach

**Commissioner IT, Office of DPP
(AI Security, Data Scientist and Digital Transformation
Expert)**

Ethical Considerations in AI Integration in Higher Education

Presentation Outline

- Background
- UNESCO's ethical AI Principles
- AI ethical challenges in higher education
- Principles of AI in Education
- Potential benefits and risks of using AI in education
- Suggested ethical AI principles for higher education
- Recommendations towards ethical AI integration
- Conclusion



Background

- AU AI Strategic Objective - Accelerate the integration of AI in the core sectors with high social and economic value, including agriculture, education, health, climate change and natural resource management, and regional peace and security.
- IUCEA held its 14th Annual Conference and Meeting in 2023 on the theme: "The Future of Higher Education in the Age of Data Science and Artificial Intelligence."
- AI offers transformative potential in higher education but comes with ethical challenges.
 - Enhances teaching, research, and administration.
 - AI in learning design
 - AI in automation



UNESCO's Ethical AI Principles

- Proportionality and do no harm;
- Safety and security
- Fairness and non-discrimination
- Sustainability
- Right to privacy and data protection
- Human oversight and determination
- Transparency and explainability
- Responsibility and accountability
- Awareness and literacy
- Multi-stakeholder and adaptive governance



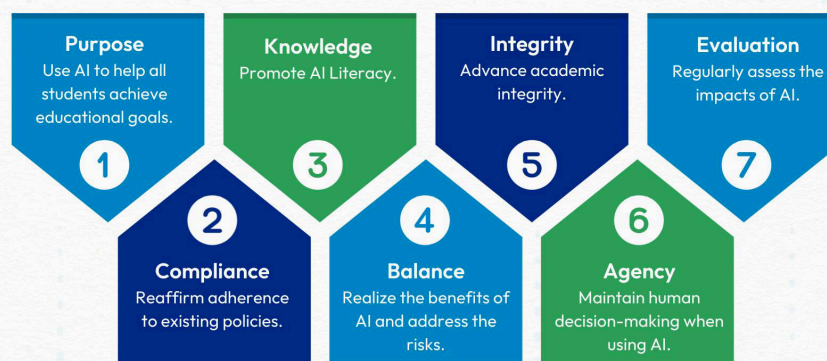
AI Ethical Challenges in Higher Education

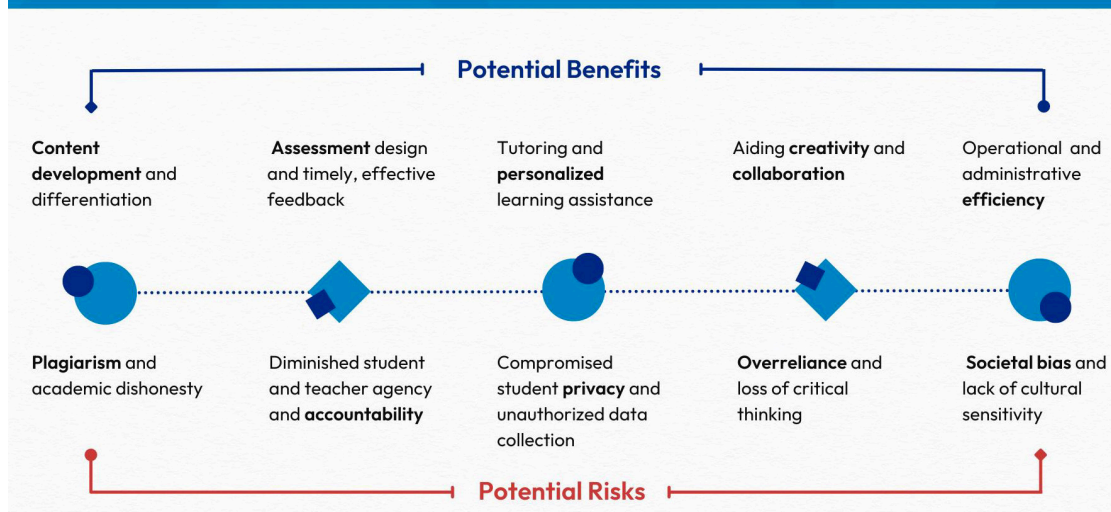
- Bias and Fairness in AI Systems
 - Risk of discrimination in student assessments, admissions, and faculty evaluations.
 - Example: Bias in automated grading systems.
- Data Privacy and Security
 - Privacy concerns regarding data collection, storage, and use.
 - Strategies: Strong encryption, transparency in AI processes, and cybersecurity measures.
- Academic Integrity and AI-Assisted Learning
 - AI tools (e.g., ChatGPT, essay generators) challenge academic integrity.
 - Need for clear university policies on AI usage in coursework.
 - Example: AI-generated essays and detection tools.



Teach AI

Seven Principles for AI in Education





Suggested Ethical AI Principles for Higher Education

Exploration and Evaluation

- Explore AI's capabilities and limitations
- Develop skills to use prompts for AI interaction

Transparency and Accountability

- Communication on AI use in courses, research or administrative processes
- Conduct regular AI audits to assess impact and effectiveness

Human-Centred Approach

- Design AI implementations that enhance human capabilities and creativity
- Prioritise the well-being and agency of students and faculty in AI adoption

Suggested Ethical AI Principles for Higher Education

Integrity and Academic Honesty

- Educate the campus community on citation, attribution, and ethical use of AI generated content;
- Develop best practices for integrating AI tools into curriculum and pedagogy

Continuous Learning and Innovation

- Engage in regular AI literacy training and professional development;
- Establish partnerships for sharing best practices and lessons learnt

Accessibility and Inclusivity

- AI tools should be accessible to users with diverse needs and abilities;
- Diverse perspectives and representation in AI development, implementation and policy making

Suggested Ethical AI Principles for Higher Education

Ethical and Legal Compliance

- Data privacy and security regulations
- Copyright and IP laws related to AI generated content
- Ethical guidelines in AI applications, research, teaching, administration
- Policies on ownership and use of AI generated IP developed within the institution
- Establishment of AI Review Board to oversee high impact AI projects



Recommendations Towards Ethical AI Integration

1. Ethical Impact Assessment;
2. Ethical Governance and Stewardship;
 - adopt national and institutional ethical AI frameworks and
 - policies for higher education
3. Regional cooperation in AI integration in partnership with IUCEA
4. Awareness and literacy;
5. Invest in baseline studies on AI and ethics in higher education;
6. Ethical AI integration ensures educational integrity and fairness:
 - Addressing bias, privacy, academic integrity, faculty roles, etc.



Thank You for your kind attention

- Tel: +256772709520; +256700908205
- Email: Julius.torach@gmail.com



Hon. George William Nyombi Thembo

**Executive Director
Uganda Communications Commission**

Presentation:

Policies and Regulations for Artificial Intelligence Adoption in Higher Education

Presentation Outline

- About Me
- Background
- Understanding Artificial Intelligence (AI)
- The impact of AI on selected major industries
- Focus on ICT Directorate of Parliament
- Benefits of adapting AI
- Challenges / Limitations of AI adoption
- How to adapt (skills and Competencies needed for the AI era)



About Me

- Distinguished Professional and Public Servant
 - Current ED- UCC
 - Director UCUSAF/ RCDF
 - Cabinet Minister of ICT
 - Honorable Member of Parliament
- I am passionate participant in the creative industry and founding member of Ndere Troupe Limited but also I am distinguished playwright, songwriter, and producer.
- Education
 - Currently pursuing a PhD in ICT for Development
 - Holds an Masters in Development Economics
 - Hold various professional certifications in ICT and other areas of practices including ICT regulation



Background of digitization



Since the late 1960s, the digital revolution has transformed the economy and society. First came the development of a connected economy, characterized by TCP/IP protocols.



This was followed by the development of a digital economy via the increasing use of digital platforms as business models for the supply of goods and services in the 90's. The emergence of the web



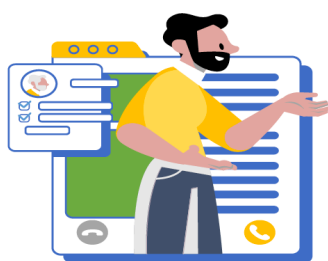
Now the movement is towards a digitalized economy whose production and consumption models are based on the incorporation of digital technologies in all economic, social and environmental dimensions, in the 2000's. Emergence of smartphones and broadband connectivity



Integration of Advanced Digital Technology

- Digital Technologies have advanced and influenced the current Digital economy.
- The adoption and Integration of advanced digital technologies is a reflection of a paradigm shift to a digitalized economy, globally networked and knowledge based society

Digital and AI technologies over time



5G Mobile networks, Internet of Things



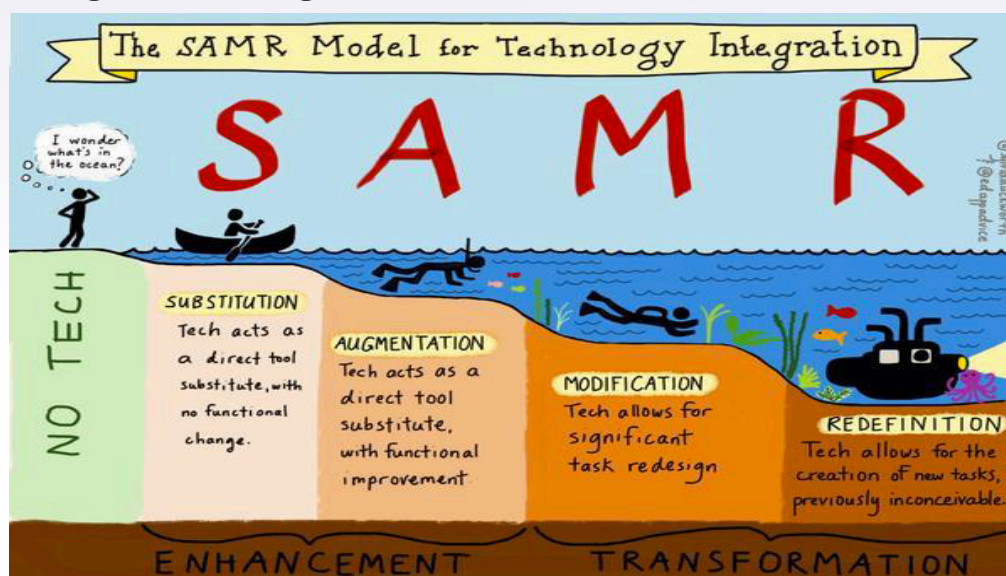
Cloud Computing, Artificial Intelligence

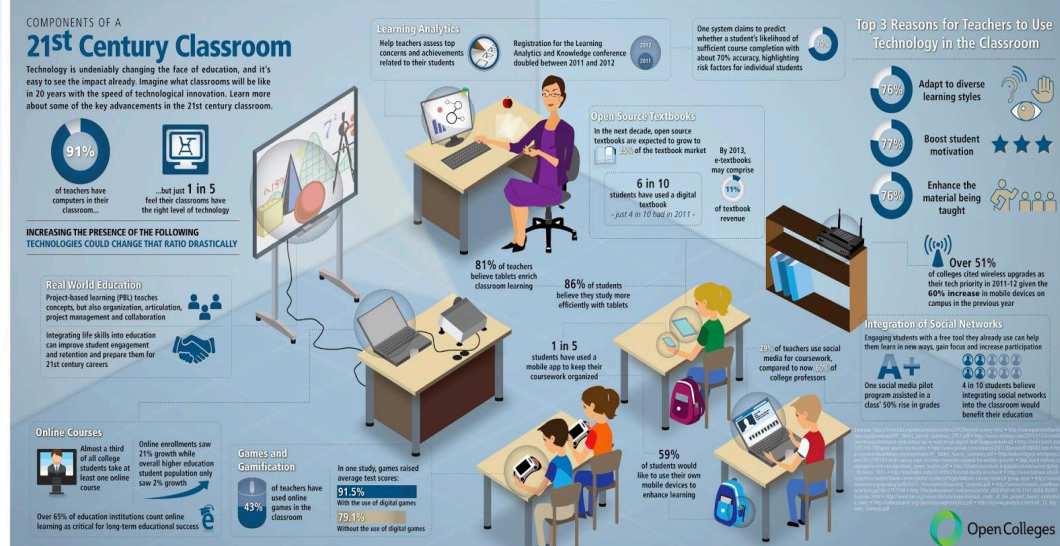


Big Data Analytics, Robotics etc



Integration of Digital Services in Education – Case of SAMR





Changing Era in Higher Education with AI



- AI is transforming higher education by improving teaching, learning, and administration.
- AI has been applied in automating routine academic function, delivered personalised education and assessment
- AI in education sector is posed to grow by 10% from 2023 to 2032

Motivation for AI in Education

- Technology is advancing very rapidly in all sector including education
- Many priorities for education are unmet today
- Educators are advocating daily for innovations that could improve educational service provision
- Educators are actively exploring AI tools as they are released to the public
- AI is not very new but has just become



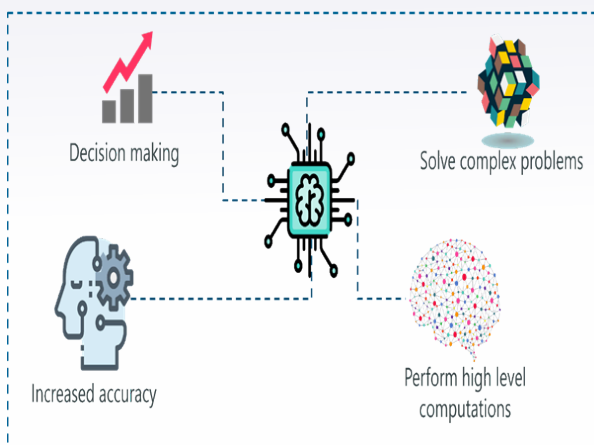
Things to ponder about:

- How to use AI capabilities to support inclusivity amongst students and teachers
- How AI can enable writing or improving lessons as well as their process of finding, choosing and adapting material for lessons
- New demands for change in education as more advancement is seen in AI
- Useful, powerful functionality of AI leading to new data privacy and security risks

What is Artificial Intelligence



Understanding Artificial Intelligence



Artificial Intelligence (AI) is the ability of a digital computer to perform tasks that are typically associated with intelligent beings (human beings)

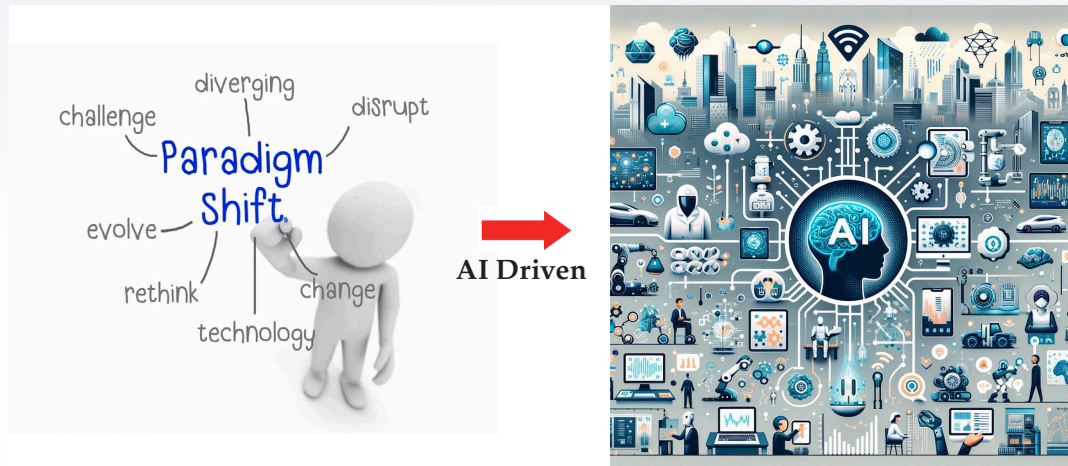
- Can be traced many year back: Spanish philosopher Ramon Llull (1232–1315) developed several logical machines devoted to the production of knowledge by logical means
- Birth of Modern AI was first proposed in the (1941-1956) by John McCarthy and it has made huge leaps since then.
- AI proposes the ability of a machine to learn on its own, adapt to various scenarios and even correct itself.

Some of most popular AI tools

| Free Useful AI Tools | | | |
|----------------------|---------------|-----------|--------------------|
| Chatbot I | ChatGPT | Bard | Bing |
| Chatbot II | Forefront | Poe | Perplexity |
| Design | Adobe Firefly | Bing | Microsoft Designer |
| Video | Capcut | Descript | Visla.us |
| Content | Opus Clip | Cohesive | Copy.ai |
| Presentation | Tome | Decktopus | Gamma |
| Productivity | Saga.so | Taskade | Kickresume |
| Code | Codeium | AskCodi | CodeWhisperer |
| Meetings | Loopin | Krisp | Tldv |

| | | | |
|----------------------------------|---|---|--|
| 1. Writing Tools | GravityWrite <small>Best for Blogs</small> | copy.ai <small>Best for Copies</small> | Writesonic <small>Best for Articles</small> |
| 2. Image Generation Tools | Leonardo.ai <small>Best for Realistic Images</small> | ideogram <small>Best for Logos</small> | playground <small>Best for Portraits</small> |
| 3. Video Creation Tools | lumen5 <small>Best for Brand Videos</small> | invideo <small>Best for Social Videos</small> | PICTORY <small>Best for Repurposing Videos</small> |
| 4. Video Editing Tools | Wisecut <small>Best for Short Videos</small> | CapCut <small>Best for Effects</small> | VEED.IO <small>Best for Professional Videos</small> |
| 5. Voice Generation Tools | play.ht <small>Best for Voice Cloning</small> | ElevenLabs <small>Best for Sound Effects</small> | Artlist <small>Best for Composites</small> |
| 6. Sound Effect Generation Tools | Audiotbox <small>Best for Audio</small> | LOVO <small>Best for Natural Sounds</small> | Soundify <small>Best for Creative Sounds</small> |
| 7. AI Dubbing Tools | Dubverse <small>Best in Multi-lingual</small> | voxxube <small>Best in Versatility</small> | HeyGen <small>Best for Natural Brand Voice</small> |
| 8. AI Chat Tools | ChatGPT <small>Best for Text Generation</small> | perplexity <small>Best for Research</small> | Claude <small>Best for Natural Output</small> |
| 9. Coding Tools | codeium <small>Best for Brainstorming</small> | EnfiliteX <small>Best for Code Translation</small> | cody <small>Best for Code Explanation</small> |
| 10. AI Song Creation Tools | Suno <small>Best in Multi-lingual songs</small> | GOUNDRW <small>Best in Versatility</small> | udio <small>Best for Realistic Music</small> |

Paradigm Shifts within the 21st Century Education



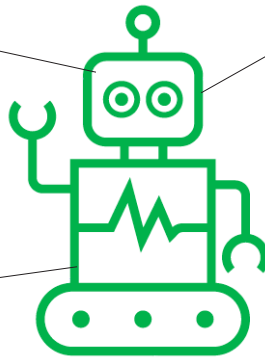
AI and the changing Nature of Work in HI of Learning

Up to date Skills

In the Workforce, workers will need to develop new skills in order to keep up. How can higher institutions of learning help employees and students develop these skills?

AI and Workforce Diversity:

AI has the potential to reduce bias and increase diversity in the workplace. How can higher institutions of learning leverage AI to improve workforce diversity



Collaboration between Businesses,

Humans and AI AI and automation are transforming how businesses communicate with their consumers, and execute their internal processes, reinventing themselves in the way they operate.

Better quality of work and time

AI and automation will allow humans to focus on activities that generate more value for their roles and the business.

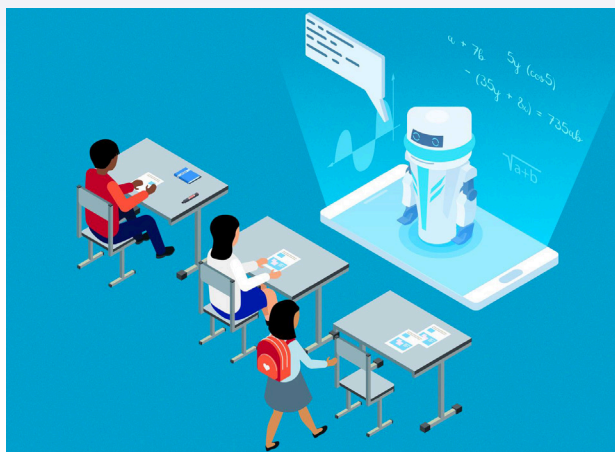


AI and the changing Nature of Educational Work

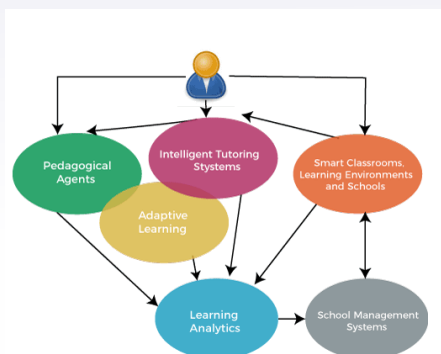


AI and the changing Nature of Educational Work

Khanmigo - uses the technology behind ChatGPT, coupled with data from Khan Academy's platform, to help students with assignments



The impact of AI on Education



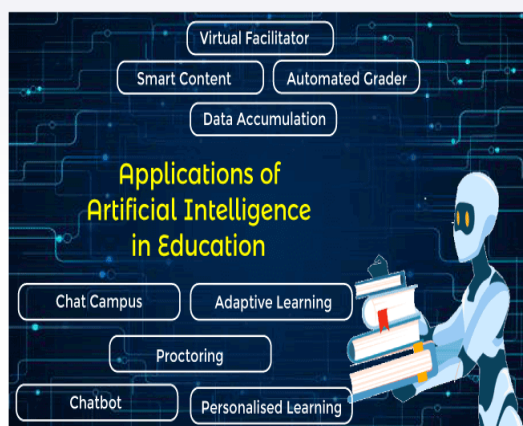
- **Adaptive Learning**– AI has allowed for customized online learning experiences for students. this includes data mining and optimising course offerings to customize students' learning experience.
- **Universal Access to education** – AI tools such as NLP can allow for students who speak different languages access the same courses simultaneously in their native tongues
- **Classroom Application** – AI tools can help with day-to-day tasks such as monitoring students' attention spans, plagiarism checks etc.

The future

- AI shall influence change in the education systems across the world starting with curricula and instruction. Students shall study at their individual pace according to their personality and abilities
- **BIG RISK:** potential decline in cognitive abilities in logic, numeracy and language development for learners....!!



Applications of AI in the Classroom



- **Personalized Education** – custom learning schedules can be adapted to the specific needs of students e.g., those with disabilities, learning styles
- **Administration** – tasks such as exam / test assessments can easily be executed in a matter of seconds e.g., essay scoring and without bias
- **Universal Access to education** – AI tools such as NLP can allow for students who speak different languages access the same courses
- **Predictive Education:** Using historical data, institutions can predict student success rates, identify at-risk students, and intervene with timely support.



Applications of AI in the Classroom - Cont'd

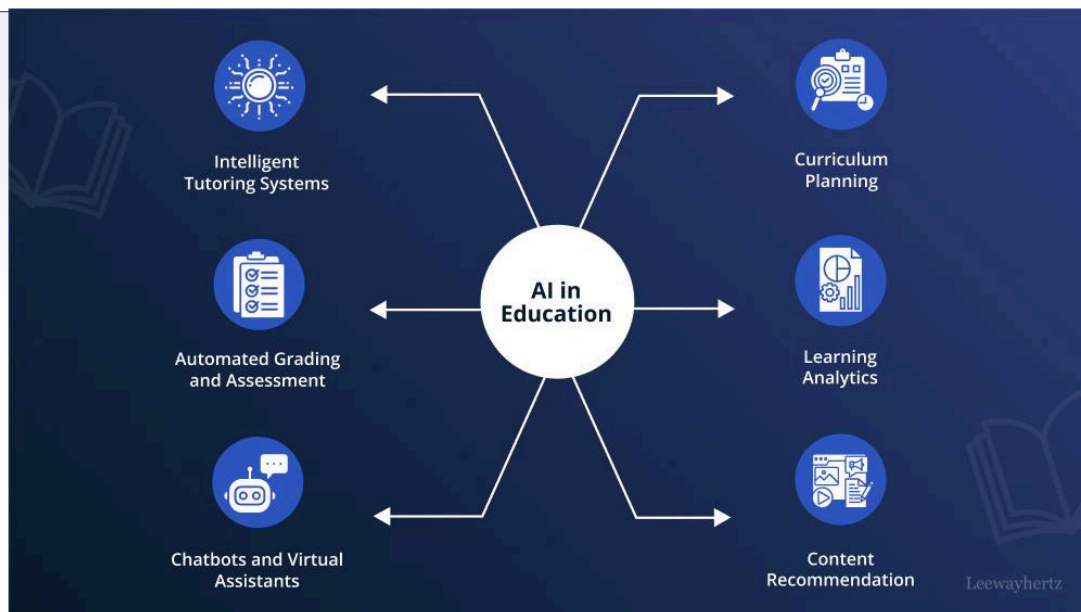
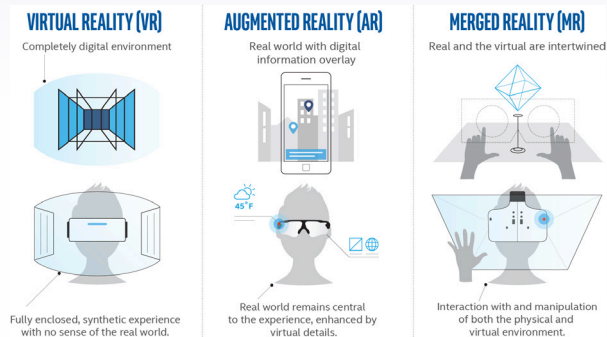
Virtual Classrooms: Enable students and teachers from different regions to interact and collaborate in real-time.

Professional Learning Communities: Platforms where educators can share best practices, resources, and support each other.

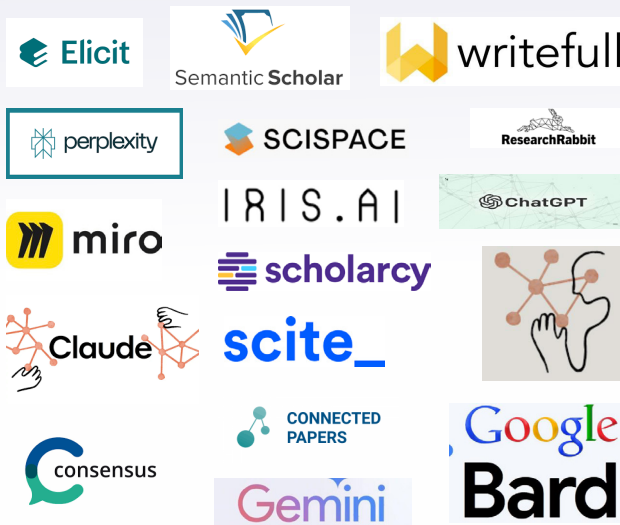
Mentorship Programs: Online mentorship programs connecting experienced educators with new teachers.

Collaboration - AI enabled tools like Virtual Reality, Augmented Reality and social networks help to foster collaboration between staff and students across different educational institutions.

Artificial Intelligence (AI)
can shape all these



AI Technologies transforming Education



Why the need for Policy and Regulations for Artificial Intelligence Adoption in Higher Education

Current State of AI Policy Development

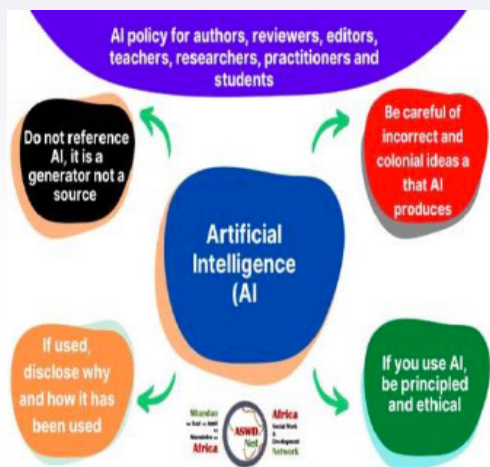


AI is transforming higher education by improving teaching, learning, research and administration.

Supportive Aspects of the current policy environment

- National Development Plans (Vision 2040) emphasize technology adoption.
- Uganda Communication Universal Communication Access policy (No.84. 2019)
- Uganda Communication Act, 2013
- Uganda's Fourth Industrial Revolution (4IR) strategy supports AI integration.
- National Development Plan IV (NDP IV): Prioritizes digital transformation and AI adoption.
- The Digital Transformation Road Map 2023-2027
- Education Digital Agenda (2023-2028): Supports AI and emerging technologies in education.
- National ICT Policy (2014): Lays the foundation for AI integration in the education sector.
- Data Protection and Privacy Act (2019): Regulates the handling of personal data, essential for AI.
- The National Big Data strategy
- The National Broadband Strategy
- UCC AI task force established to advise the commission on how AI should be implemented within Uganda
- Various ongoing ICT integration efforts in education provide a foundation for AI adoption.
- Among many other instruments

Challenges in the Current Policy Environment



- Lack of Comprehensive AI-Specific Legislation: No dedicated AI policies exist.
- Limited Technological Infrastructure: Many universities lack the digital capacity for AI integration.
- Data: Limited frameworks on how localised data can be used by the AI models to benefit the country
- Human Capacity: inadequate human capacity to handle and deal with AI technologies
- Ethical and Privacy Concerns: Insufficient legal frameworks for AI ethics, bias, and data privacy.

International Examples of AI Adoption in Education

United Kingdom -AI for Student Support:

- The University of Oxford uses AI chatbots to support student mental health and academic guidance.
- AI systems provide 24/7 tutoring support and personalized study plans.

Canada -AI-Driven Research and Innovation:

- The University of Toronto has an AI-based research initiative for automating literature reviews.
- AI is also used in virtual teaching assistants for online courses, improving student engagement.



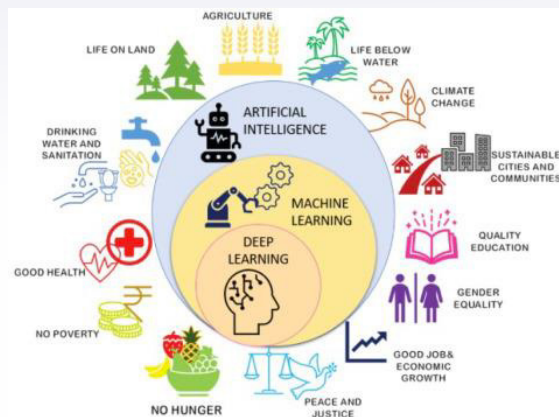
Regional Examples of AI Adoption in Education

Kenya -AI-Powered Personalized Learning Platforms:

- Kenyatta University has partnered with IBM to use AI-powered adaptive learning tools.
- AI is used to assess student progress and provide personalized content.

Rwanda -Smart Classroom Initiative:

- AI is integrated into Rwanda's Smart Classroom initiative, using AI-powered assessment tools.
- Collaboration with Microsoft's AI for Education program supports automated grading and personalized tutoring.



Uganda's AI Adoption Efforts in Higher Education

- Makerere University AI Lab: Conducts AI research for education, healthcare, and agriculture.
- Uganda's Digital Skilling Initiative: AI-focused training programs for educators and students.
- E-learning AI Implementation: AI-powered virtual learning environments tested in pilot programs.
- Collaboration with Tech Firms: Partnerships with Google AI and Microsoft AI for education solutions.



Lessons Learned from Global AI Adoption in Education

- AI adoption should focus on
 - enhancing, not replacing
 - educators
- Personalized AI tutoring significantly improves student learning outcomes.
- Ethical AI policies are necessary to prevent bias and protect student data privacy.
- Government support and public-private partnerships accelerate AI integration.



Uganda's Government Approach to AI in Education

- Policy Development: Uganda is working on an AI framework aligned with global best practices.
- Digital Skilling Initiatives: Programs introduced to equip educators and students with AI knowledge.
- Public-Private Partnerships: Collaborations with tech firms to enhance AI research and implementation.
- NCHE Guidelines: The National Council for Higher Education is formulating policies to regulate AI in academic institutions.
- Not a copy and paste from across the world



Benefits of adapting AI

📈 **Improve efficiency**

💰 **Save costs**

✅ **Avoid problems**

🔊 **Anticipate future scenarios**

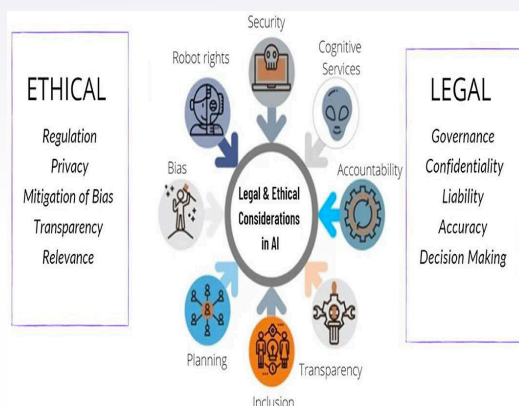
⚠️ **Reduce human error**

⚙️ **Automate processes**

- Emerging career opportunities. As AI reshapes the workforce, new roles are expected to emerge over the next decade.
- Increased competence: AI can quickly provide accurate and relevant information and insights thereby helping you to perform your tasks better as well as improve on your knowledge and skills.
- Increased efficiency: With benefits such as automation and generation, AI can help you to work much faster by lifting the heavy loads for you.
- Innovation: AI can generate ideas that can help organisations to succeed. These can be explored during brain storming sessions and interaction in virtual spaces e.g., the Metaverse.



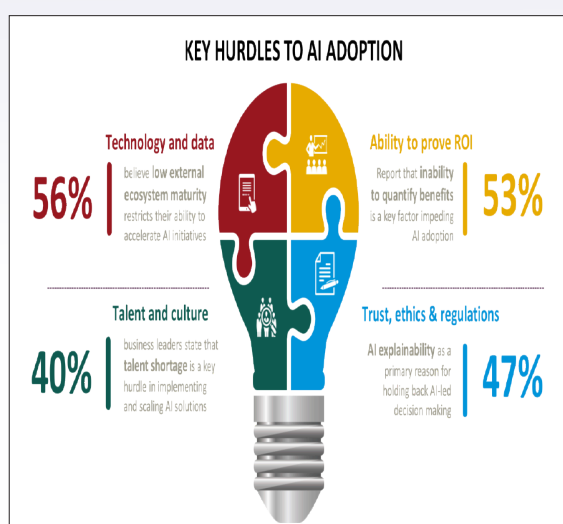
Challenges / Limitations of AI adoption



- Expensive. Training of Deep Learning algorithms requires lots of computing power e.g., 1 exaflop is required to train one typical ImageNet model according to Jangquing Jia, Director of Engineering, Facebook's AI platform.
- Lack of 'explainability'. Most Deep Learning models provide accurate predictions however however little is known about how they achieved the given outcomes e.g., how do you know if an AI loan application system is fair and transparent?
- Quality and Availability of data. AI algorithms use large diverse datasets to learn and make predictions. However, data can be scarce, incomplete, heterogeneous or inconsistent (different sources and formats). This makes it difficult to integrate and analyze the data



Challenges / Limitations of AI adoption



- Job shift & loss. As expected, adoption of AI-powered systems and robots means that some tasks will no longer require humans.
- Data and algorithmic biases. Because most AI systems are trained using data that's collected by humans, we can't rule out bias. For example socio economic data collected from one continent may not be best to train a model expected to be used on a global scale.
- Lack of Data Privacy and Ethical consideration. AI systems often collect personal data to customize user experiences and to train AI models. This data may not be considered secure e.g., the ChatGPT incidence in 2023 where some users reported to have been shown titles from other active user's chat history.



Recommendations for AI Policy Advancement

- Government: Develop AI-specific laws and strengthen ICT infrastructure across all sectors.
- NCHE: Establish AI regulatory frameworks and training programs.
- Universities: Incorporate AI in curricula and promote AI-based research.
- Private Sector & Donors: Support AI adoption through funding and technical expertise.



Conclusion

AI is a key driver of education transformation in Uganda

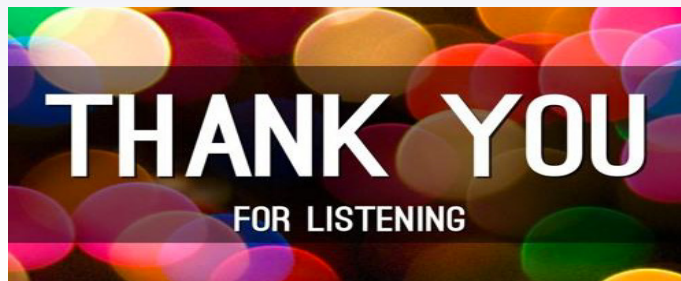
Addressing policy gaps and strengthening governance frameworks is very essential

Collaboration between policymakers, institutions, and the private sector is critical for success.

Building capacity (human and infrastructure) is very important if immediate results are to be realised



Communications for All



Dr. Vincent Ssembatya

Director, Quality Assurance and Accreditation, NCHE

Presentation:

The role of NCHE in the AI integration and adoption in Higher Education

Higher Education

- Higher education is any of various types of education given in postsecondary institutions of learning
- Usually leading to the award of a:
 - degree, diploma, or certificate of higher studies.
- The basic entrance requirement for most higher-educational institutions is the completion of secondary education;
- The usual entrance age is about 18 years;



The Role of Higher Education in Development

- Higher education institutions, both universities and tertiary institutions, public and private are at the helm of economic development through their
- Contribution to professional training
 - Engineers,
 - Medical Doctors,
 - Teachers,
 - Scientists,
 - Lawyers,
 - Accountants, etc.);



Roles of HE

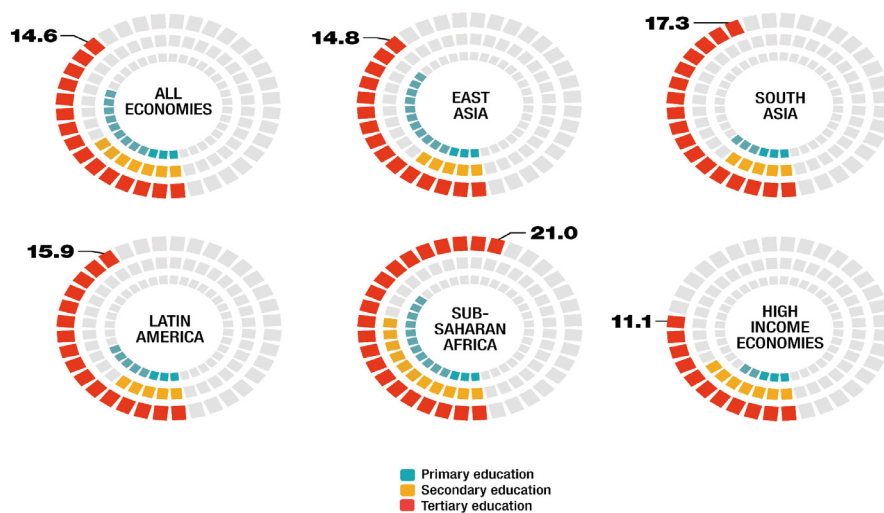
- Production of knowledge;
- Ideological apparatus
 - producers of values, identity and social legitimation; and
- Selection of the dominant elites.



Higher Education has both private and social benefits



Private returns to tertiary education highest in SSHA (WB, 2014)



Source: Montenegro & Patrinos 2014 Human development reports comparable estimates of returns to schooling around the world. Washington DC: The World Bank



Private/public returns to HE

1. Globally, and in Africa, there are considerable benefits to HE.
2. In Sub-Saharan Africa, private returns to HE are higher than returns to primary and secondary education.
3. The region with the highest private returns to HE is Sub-Saharan Africa.
4. **South Africa has the highest private returns to HE in the world:**
 - South Africa 40; Ghana 28; Uganda 23 (2005 data)
 - Argentina 12, Brazil 17, Mauritius 21, Mexico 20, Norway 10, Portugal 14, Turkey 14, Spain 11, US 14
5. Higher education also has numerous private benefits such as higher salaries, savings, professional mobility, life expectancy and quality of life. Public benefits include greater productivity, increased consumption, workforce flexibility, reduced crime rates, greater appreciation of diversity and improved ability to new technologies.
6. SA high returns to tertiary education and high levels of inequality (Gini coefficient 0.70) mean that free higher education will proportionally privilege the privileged (Patrinos 2015).



Perspectives

Africa

- Home to **1.46 B** People (18% of the world population);
 - India: 1.42B; China 1.42B;
- Tertiary Enrolment:
 - Sub-saharan Africa at 8% (WB);
 - Uganda 6%
 - with world average of 36%
 - India: 27%; China:60%; OECD: 72%; KOREA Rep 102%;
- Research Contribution at 2%;



Education Landscape

- The World has **8** Billion People;
- **1.7 (21%)** Billion People are students;
- **222 (3%)** Million Tertiary Education Students;
- **170 (10% of all students)** Million Students at universities;
- **76%** of all Tertiary Education students are in universities;



Education perspectives

- The average number of students per university is **6800** world wide;
- About **3** universities for every one million people;
- A large university of **20,000** students is adequate for one million of the population;
- Uganda with a population of **50** Million people needs **50** large universities;



- **0.6%** of Ugandans are TE Students;
- Compare with **3% (world)**;
- **Uganda needs to be with 1.25 Million in TE to level with the world;**
- **Equivalent of GRE of 35%;**
- **Uganda is under-enrolled in TE by about 1 Million people;**



- The current input cap of **100,000**;
- Can extend TE enrolments to a maximum of **400,000**;
- **About 14% GRE**



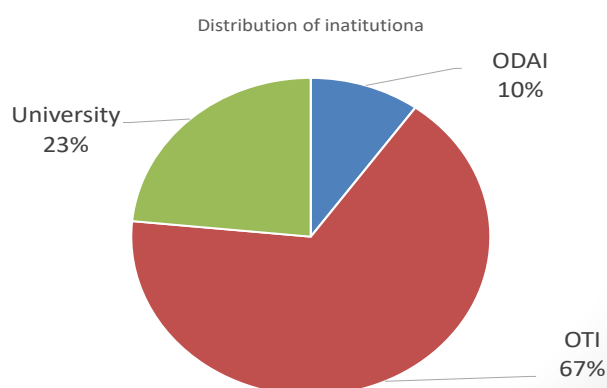
Current shape of TE in Uganda

- About **250** TE institutions;
- About **75** (Universities, Campuses or Degree Awarding)
- About **4000** Academic Programs;
- Capacity based on sitting space is about **300,000** students;

5/2/25



| Institution type by Funding | | | |
|-----------------------------|------------|-----------|------------|
| Institutions | Private | Public | Total |
| ODAI | 19 | 2 | 21 |
| OTI | 128 | 56 | 184 |
| University | 45 | 10 | 55 |
| Total | 192 | 68 | 260 |

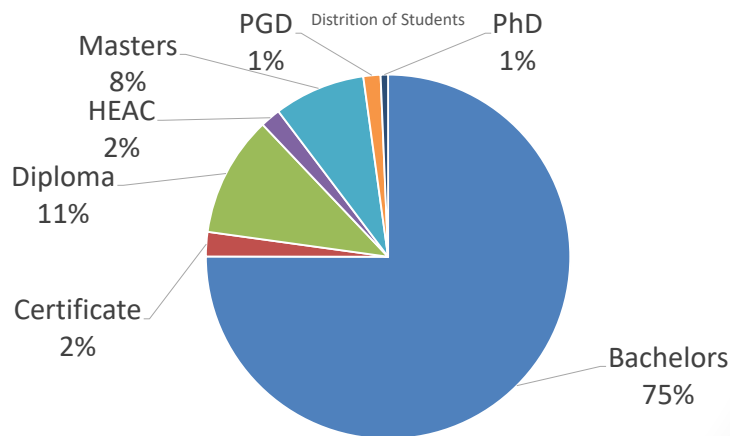


The shape of HE in Uganda

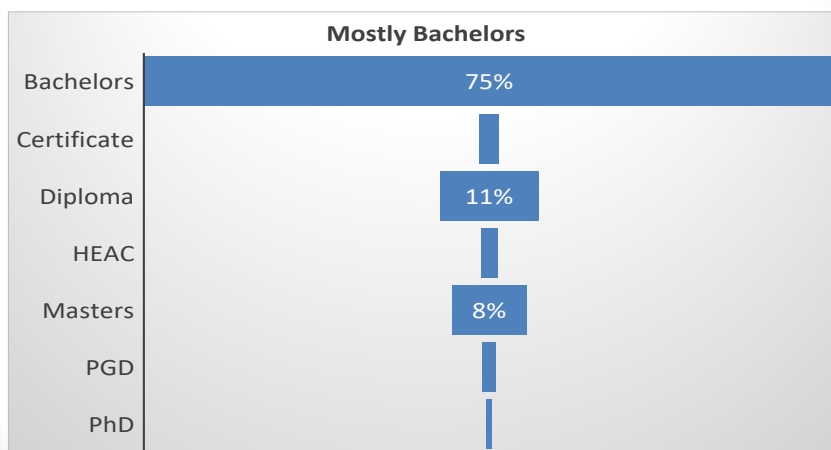
- About **250,000** students
- About **180,000** in universities (including degree awarding);
- About **70,000** in OTI;
- **70%** of enrolment is at universities;



Distribution of Enrolment in HEIs



The love for degrees



What is required in knowledge generation

- Talent (Human resource);
- Institutions;
- Governance;
- Articulation;
- Infrastructure;
- Facilities and Inputs;

Talent

- The majority of researchers are found in universities;
- The majority of publications are produced by people with PhDs.
- The country produces 16 publications for every one million people as of 2020 according to OWID
- about 704 articles as of 2020
- this is dubious according to Scopus Citation index.
- Should be 26 as per table below.
- A need to collect accurate primary data for submission into international databases to avoid misreporting;

Talent: Uganda Publications indexed by Scopus citation index

| Publication Year | Total |
|------------------|-------------|
| Year 2017 | 1015 |
| Year 2018 | 968 |
| Year 2019 | 1117 |
| Year 2020 | 1333 |
| Year 2021 | 1638 |
| Year 2022 | 1569 |
| Year 2023 | 945 |
| Total | 8585 |

Top Ten Ugandan Researchers 2017-2023

| | Author | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | Grand Total |
|----|------------------------------|------|------|------|------|------|------|------|-------------|
| 1 | Kamya, Moses Robert | 38 | 32 | 39 | 51 | 36 | 31 | 22 | 249 |
| 2 | Wanyenze, Rhoda Kitti | 22 | 18 | 16 | 21 | 26 | 24 | 15 | 142 |
| 3 | Sewankambo, Nelson Kaulukusi | 25 | 19 | 19 | 23 | 28 | 20 | 7 | 141 |
| 4 | Waiswa, Peter | 18 | 10 | 11 | 22 | 34 | 18 | 10 | 123 |
| 5 | Opoka, Robert Opika | 15 | 10 | 21 | 20 | 18 | 27 | 7 | 118 |
| 6 | Kirenga, Bruce James | 6 | 14 | 18 | 14 | 31 | 18 | 16 | 117 |
| 7 | Joloba, Moses L | 16 | 15 | 16 | 15 | 24 | 18 | 7 | 111 |
| 8 | Makumbi, Fredrick Edward | 22 | 11 | 19 | 16 | 18 | 17 | 8 | 111 |
| 9 | Tumwine, James Kashyugera | 10 | 17 | 11 | 29 | 15 | 11 | 4 | 97 |
| 10 | Nakasujja, Noeline | 7 | 5 | 17 | 15 | 22 | 13 | 13 | 92 |

Academic Staff in HEIs

- Researchers 14,484
 - Makes it 329 researchers per one million people;
 - This is not what is in the World Bank database;
 - What is required?
- PhDs in Higher Education Institutions: **2524 (17.4%),**
- Acceptable percentage 15% -50% by NCHE;
- Institutions are at different level

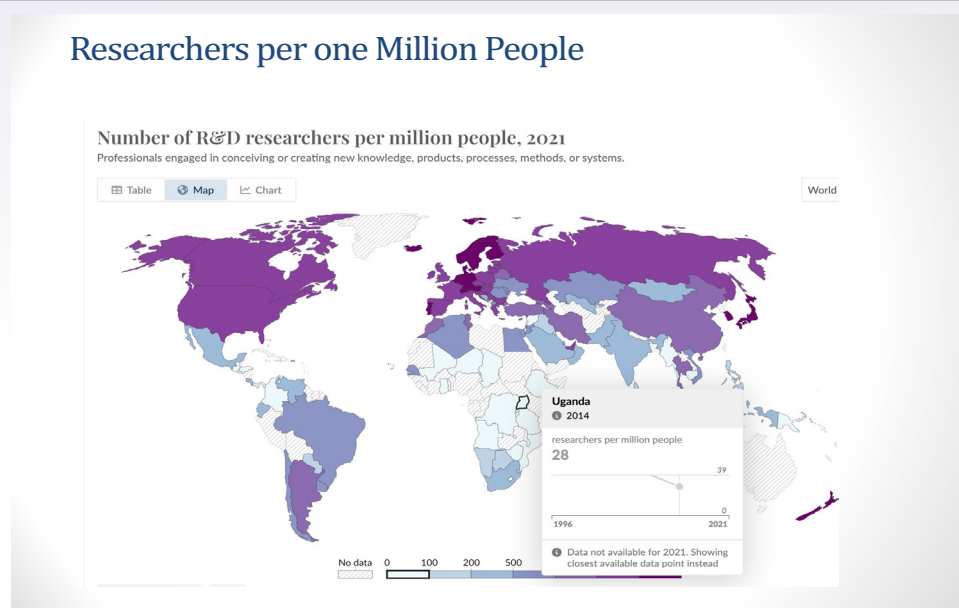


Top Ten Universities with PhDs

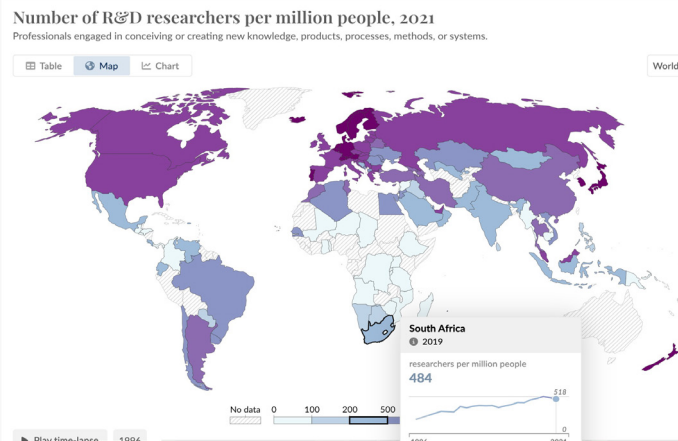
| Institution | Male | Female | Total |
|--|------|--------|-------|
| 1 Makerere University | 585 | 196 | 781 |
| 2 Kampala International University | 301 | 56 | 357 |
| 3 Kyambogo University | 79 | 39 | 118 |
| 4 Gulu University | 72 | 13 | 85 |
| 5 Mbarara University of Science and Technology | 59 | 22 | 81 |
| 6 Kampala University | 61 | 14 | 75 |
| 7 Kabale University | 63 | 11 | 74 |
| 8 Busitema University | 48 | 10 | 58 |
| 9 UNICAF | 31 | 23 | 54 |
| 10 Uganda Christian University | 30 | 22 | 52 |



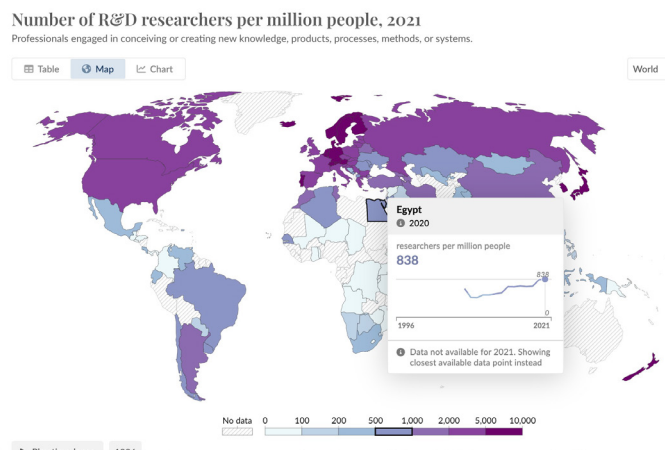
Researchers per one Million People



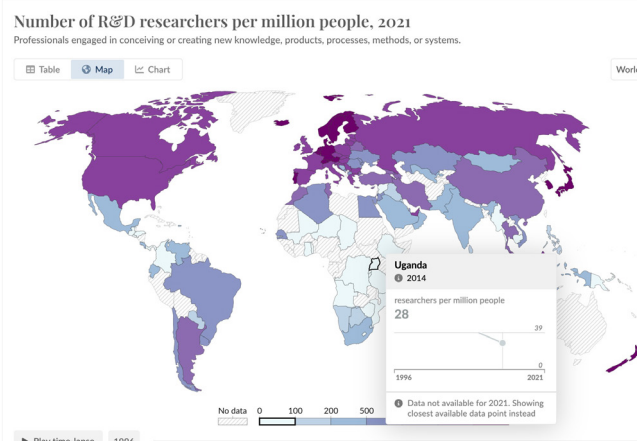
Researchers per one Million People



Researchers per one Million People



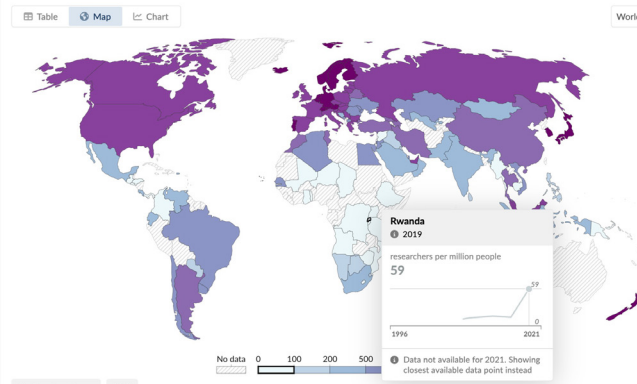
Researchers per one Million People



Researchers per one Million People

Number of R&D researchers per million people, 2021

Professionals engaged in conceiving or creating new knowledge, products, processes, methods, or systems.



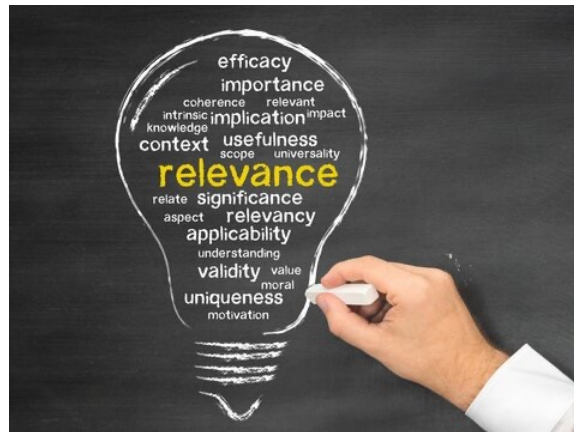
Research Output

- Research Outputs
 - Most of the research is in Health and Medicine
 - mostly foreign funded (whose priorities?)
- Relevant Agenda
- SDGs, Africa we Want, EAC, Vision 2040, NDP III, STI Value Chains
- Areas of Research – Discipline orientation;

Articulation

- Nested Development Agendas

Relevance



Sustainable Development Goals



Agenda 2063:



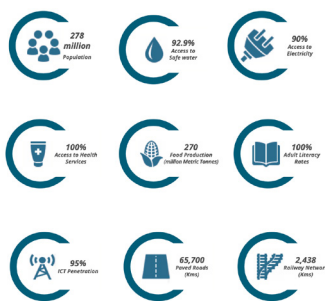
Agenda 2063

- By 2063, African countries will be amongst the best performers in global quality of life measures.
- This will be attained through strategies of:
 - Inclusive growth;
 - job creation;
 - **increasing agricultural production;**
 - **investments in science, technology, research and innovation;**
 - **gender equality;**
 - youth empowerment;
 - **provision of basic services including health, nutrition, education, shelter, water and sanitation.**



EAC Vision 2050

Vision 2050 Targets



EAC Vision 2050

- Access to Safe Water;
- Access to Electricity;
- Access to Health Services;
- Food Production;
- Adult Literacy;
- ICTs;
- Paved Roads;
- Railway Network.



Vision 2040



Vision 2040:

A transformed Ugandan society from a peasant to a modern and prosperous country within 30 years

■ Theme: “Accelerating Uganda’s Socioeconomic Transformation”.

- (a) Independence and sovereignty;
- (b) Democracy and the rule of law;
- (c) Stability and peace;
- (d) **Knowledgeable and skilled;**
- (e) **Able to exploit and use its resources gainfully and sustainably;**
- (f) In a strong federated East Africa with an effective African Common Market and a strong African Defence Mechanism.



Agricultural Production

- Mainly dominated by smallholder farmers engaged in food and industrial crops, forestry, horticulture, fishing and livestock farming;
- The country is one of the leading producers of coffee and bananas in the World.
- A major producer of tea, cotton, tobacco, cereals, livestock and fishing products;



A leading Coffee producer

| | Country | Metric Tonnes |
|----|-----------|---------------|
| 1 | Brazil | 2,592,000 |
| 2 | Vietnam | 1,650,000 |
| 3 | Colombia | 810,000 |
| 4 | Indonesia | 660,000 |
| 5 | Ethiopia | 384,000 |
| 6 | Honduras | 348,000 |
| 7 | India | 348,000 |
| 8 | Uganda | 288,000 |
| 9 | Mexico | 234,000 |
| 10 | Guatemala | 204,000 |



Production of Bananas

| Rank | Country | Tonnes | Production Value |
|------|-------------|------------|------------------|
| 1 | India | 29,666,973 | \$8,355,139,000 |
| 2 | Uganda | 12,000,000 | \$3,107,962,000 |
| 3 | China | 10,400,000 | \$2,928,962,000 |
| 4 | Philippines | 9,165,043 | \$2,323,044,000 |
| 5 | Ecuador | 7,427,776 | \$2,091,891,000 |
| 6 | Brazil | 7,329,471 | \$2,064,206,000 |
| 7 | | 6,132,695 | \$1,727,157,000 |



NDP III

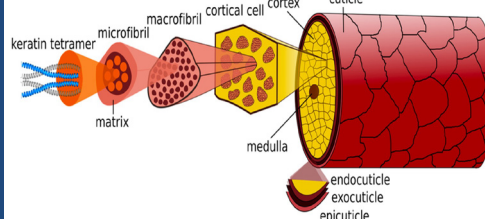
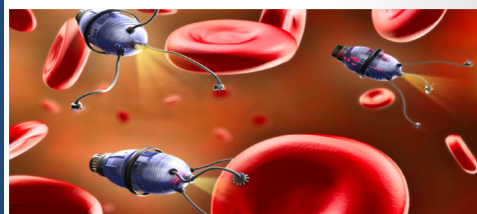
- The overall development strategy of the plan is hinged on the need for rapid industrialization based on increased productivity and production in agriculture, while nurturing the potential of the ICT, minerals, oil and gas sectors.

Nano-science and nanotechnology

Nano-science and nanotechnology are at the intersection of almost all disciplines, including biology, engineering, medicine, physics and chemistry.

Government will support special Nano science- nanotechnology programme and sponsoring at least 200 students every year in various fields.

These Ugandans will be sponsored in top American, German, India, China and UK universities and on return be deployed and bonded in appropriate fields.



Work in Progress

- How shall we get there?
- National Policies and Research Governance;
- Institutions
 - Curriculum
 - Academic Staff with appropriate qualifications
 - Enrolment
 - Research Agenda
 - Facilities
 - Equipment
- Funding
- Incentives;
- Monitoring and Evaluation

Thank You



SESSION TWO: CONFERENCE OPENING

Master of Ceremony:

Dr. Nora Mulira, Director IRI & Mr. Arthur Babu Muguzi, Director FPA, NCHE

KEYNOTE SPEAKER

Dr. Lawrence Muganga,

VC Victoria University

Presentation:

Exploring the transformative role of technology and artificial intelligence in higher education

Introduction

This context underscores the importance of adapting educational frameworks to integrate innovative technologies that enhance learning outcomes.



The role of AI in transforming higher education

AI is revolutionizing higher education by personalizing learning experiences, automating administrative tasks, and providing data-driven insights that enhance decision-making.

Examples include adaptive learning platforms that tailor content to individual student needs, improving engagement and success rates.



Urgency: Preparing for the AI-driven economy

As the global economy becomes increasingly driven by AI and technology, higher education institutions must prepare students with the skills required in this new landscape.

This urgency calls for curricula that emphasize digital literacy, critical thinking, and problem-solving skills to equip future professionals for success.



The role of NCHC in AI adoption

The National Council for Higher Education (NCHC) plays a pivotal role in facilitating the adoption of AI technologies in educational institutions.

By providing guidelines, resources, and support, the NCHC ensures that universities can effectively integrate AI into their programs and operations.



1

The Role of AI in Modern Education

Before diving into specific AI tools, it is crucial to understand why AI has become so significant in education:



Personalization

AI can tailor instruction to each student's level, pace, and learning style.



Efficiency

Automating repetitive tasks (like grading and quiz creation) frees up teachers to focus on deeper interactions with students.



Innovation

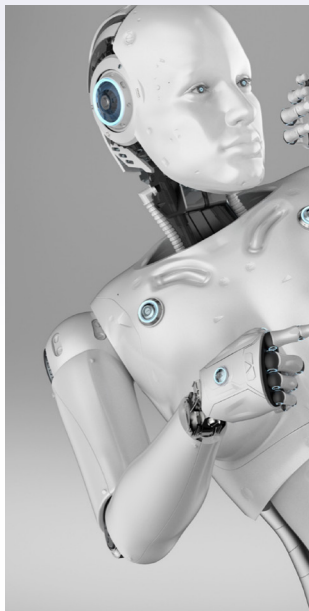
AI tools open creative possibilities, from interactive media to research insights we've never had at our fingertips before.



Data-driven decisions

AI offers analytics that help educators refine teaching strategies and track student progress in real time.





Why AI Matters for Higher Education in Uganda

AI Tools That Empower Teaching and Learning

EDUCATION COPILOT



What it does:

Acts as a comprehensive assistant, helping design lesson plans, manage syllabi, and track student progress.



Benefit:

Gives a holistic overview of classroom activities and student performance to streamline decision-making and intervention.

EDCAFE AI



What it does:

Fosters AI-driven forums or "café spaces" for topic discussions among teachers and students.



Benefit:

Encourages collaborative learning and real-time teacher-student feedback within a virtual community environment.

SCHOOLAI



What it does:

Facilitates school-wide AI analytics for attendance, grading, and resource management.



Benefit:

Provides administrators and teachers with data insights for more informed planning, helping entire institutions run more efficiently.



AI Tools That Empower Teaching and Learning

Part of 28 powerful AI tools that have the potential to revolutionize your teaching practice, deepen student learning, and streamline research.

B. RESOURCE ORGANIZATION, CONTENT CURATION, AND INTERACTIVE LEARNING

SYMBALOO

01

What it does:

Curates and organizes digital resources into visually appealing "webmixes" for easy sharing and classroom use.

Benefit:

Centralizes all relevant links, tools, and multimedia, ensuring teachers and students can find resources quickly and efficiently.

CURIPOD

02

What it does:

Transforms lessons into interactive presentations with embedded quizzes, polls, and activities.

Benefit:

Increases student engagement and allows teachers to gauge understanding in real time.

EDUAIDE.AI

03

What it does:

AI-driven platform that assists in creating instructional content, finding supplementary resources, and summarizing large bodies of information.

Benefit:

Speeds up the discovery of quality resources and helps condense vast information into concise, digestible formats.

MINDPAL

04

What it does:

Acts as a knowledge organization tool, allowing users to create mind maps, visualize connections, and store multimedia notes.

Benefit:

Encourages deeper learning and critical thinking by enabling students to link ideas and concepts visually.

AI Tools That Empower Teaching and Learning

of 28 powerful AI tools that have the potential to revolutionize your teaching practice, deepen student learning, and streamline research.



ATLAS.ORG

What it does:

Provides a comprehensive, AI-curated database of educational materials, research, and global references.

Benefit:

Offers instant access to a vast library of credible resources, making lesson planning and research more robust.

QUESTIONWELL

What it does:

Automatically generates thoughtful quiz or discussion questions from any text or topic.

Benefit:

Simplifies assessment creation and sparks classroom discussions that encourage critical thinking and curiosity.

DREAM MACHINE

What it does:

AI-based creative content generator that can produce hypothetical scenarios, stories, or interactive elements.

Benefit:

Ignites imagination and design thinking in students, making lessons more immersive and memorable.



AI Tools That Empower Teaching and Learning

of 28 powerful AI tools that have the potential to revolutionize your teaching practice, deepen student learning, and streamline research.



C. AI FOR RESEARCH, ACADEMIC WRITING, AND KNOWLEDGE DISCOVERY, AND CLASSROOM MANAGEMENT

SCISPACE

What it does:

Helps parse and interpret scientific papers, offering simplified summaries and direct insights from scholarly articles.

Benefit:

Makes research accessible and less time-consuming, allowing educators to focus on analysis and application.

ELICIT

What it does:

An AI research assistant that finds relevant papers, extracts key insights, and helps with literature reviews.

Benefit:

Speeds up academic research by curating resources and summarizing findings, vital for both teachers and students undertaking projects.

PERPLEXITY.AI

What it does:

Offers real-time Q&A responses by scanning and synthesizing from multiple sources online.

Benefit:

Provides immediate, concise answers, which is particularly useful for quick clarifications during lesson planning or research.



AI Tools That Empower Teaching and Learning

of 28 powerful AI tools that have the potential to revolutionize your teaching practice, deepen student learning, and streamline research.



SCITE

What it does:

Verifies citations, checks references, and shows how a scientific article has been supported or disputed by others.

Benefit:

Ensures academic integrity and promotes responsible research practices among faculty and students.

CONSENSUS

What it does:

Aggregates and compares multiple research findings to identify consensus or divergent viewpoints on a topic.

Benefit:

Allows educators to see the broader scholarly conversation at a glance, supporting evidence-based teaching and research.

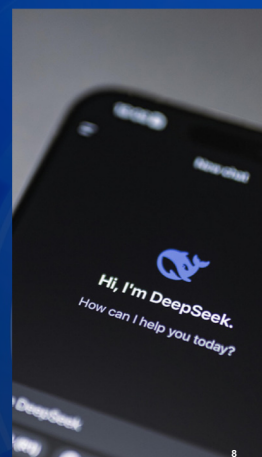
HAILIO AI

What it does:

Summarizes data sets, reports, or complex research quickly, providing key takeaways.

Benefit:

Streamlines data interpretation, enabling teachers and researchers to focus on insights rather than tedious manual analysis.



AI Tools That Empower Teaching and Learning

Selection of 28 powerful AI tools that have the potential to revolutionize your teaching practice, deepen student learning, and streamline research.



D. ASSESSMENT, FEEDBACK, AND STUDENT SUPPORT

MONSHA AI

01

What it does:

Verifies citations, checks references, and shows how a scientific article has been supported or disputed by others.

Benefit:

Ensures academic integrity and promotes responsible research practices among faculty and students.

TEACHMATE AI

01

What it does:

Facilitates collaboration among teachers for peer reviews, shared lesson resources, and communal assessments.

Benefit:

Builds a supportive professional community, allowing collective improvement of teaching methods.

ALAYNA AI

01

What it does:

Acts as an AI tutor that guides students through problem-solving and offers teachers insights into student progress.

Benefit:

Provides on-demand help for students outside of class hours and data-driven insights for teachers to adjust teaching strategies.



AI Tools That Empower Teaching and Learning

Selection of 28 powerful AI tools that have the potential to revolutionize your teaching practice, deepen student learning, and streamline research.



NOTTA AI

What it does:

Transcribes live lectures, meetings, or interviews into accurate text in real time.

Benefit:

Makes content accessible for students with hearing difficulties and allows for quick review of recorded sessions.

04



IDEOGRAM

What it does:

Generates visuals, diagrams, and concept maps from textual prompts or lesson outlines.

Benefit:

Offers a creative way to depict complex concepts, supporting students who thrive on visual learning.

05



Embedding AI in All Curricula

The Role of Why a Coordinated Approach Matters?



01

Uniform Standards and Quality

NCHE, as the regulatory authority, must ensure consistent AI integration across all public and private universities. This involves developing clear frameworks and guidelines on curriculum design, faculty training, and student assessment, which are vital for driving educational excellence.

02

Avoiding Fragmentation


A piecemeal approach to AI adoption, where each university develops its own methods independently, can lead to fragmentation within the education system. This lack of coordination results in uneven competencies among graduates and the potential for missed opportunities in collaborative projects.

03

Consequences of Uneven Competencies


When AI integration is inconsistent, students may graduate with varying levels of understanding and skill in AI-related fields. This discrepancy can hinder their competitiveness in the job market, affecting their career prospects.





Best Practices for AI Integration in Your Teaching

- 1 Start Small**
 Select one or two tools that align closely with your current challenges or goals—whether it's saving time in grading, enriching lesson content, or assisting with research.
- 2 Experiment and Reflect**
 Pilot these tools in small segments of your course. Collect feedback from students about their learning experience and adjust accordingly.
- 3 Collaborate and Learn**
 Engage with fellow educators. Share successes, troubleshoot challenges, and establish best practices for AI usage at your institution.
- 4 Maintain Ethical and Responsible Use**
 Clearly communicate how you use AI tools, respect data privacy, and ensure content generated by AI adheres to academic integrity standards.
- 5 Stay Updated**
 AI tools evolve rapidly. Keep abreast of new features, updates, and emerging tools to maintain a dynamic teaching and learning environment.



12



Industry and Tech Experts' Role

Invest in Education

Collaborate with universities to develop AI curricula, offer practical internships, and provide mentorship for student-led startups.






Talent Pipeline Development

Partner on research projects and create a direct hiring pathway for AI-savvy graduates.





1



Industry and Tech Experts' Role

Invest in Education

Collaborate with universities to develop AI curricula, offer practical internships, and provide mentorship for student-led startups.


Talent Pipeline Development

Partner on research projects and create a direct hiring pathway for AI-savvy graduates.



1

SESSION THREE:

Artificial Intelligence Adoption in Higher Education

CHAIRPERSON:

Mr. Sam Byagweri, Principal, Uganda Technical College, Bushenyi

Dr. Eria Muwanguzi

Bugema University

Presentation:

Enhancing Personalized Learning through Artificial Intelligence at Bugema University: Experience, Opportunities and Challenges

Presentation Layout

- Introduction
- Research questions
- Methodology
- Key findings
- Discussion of findings
- Conclusion
- Recommendations



Introduction

- The advent of Artificial Intelligence (AI) in education marks a significant milestone in the evolution of personalized learning, enabling a more tailored and efficient educational experience for students (Salla et al., 2024).
- Systematic reviews of Massaty et al., 2024; Luckin et al. (2016) suggest key trends of AI in education include; the use of AI-powered adaptive learning platforms, intelligent tutoring systems, AI-driven analytics for student progress tracking, and AI chatbots for academic support.
- Therefore, this paper examined the experiences, opportunities, and challenges of enhancing personalized learning through AI at Bugema University.



Research Questions

1. What are the experiences of Bugema University students and staff in AI-driven personalized learning?
2. What opportunities does AI present in enhancing personalized learning?
3. What challenges hinder AI adoption for personalized learning at Bugema University?



Methodology

- **Approach:** Qualitative, phenomenological research design.
- **Participants:** 30 purposively sampled (faculty, students, administrators, AI experts).
- **Data Collection:** Key Informant Interviews (KIIs) & Focus Group Discussions (FGDs).
- **Analysis:** Thematic analysis.



Key Findings

Experiences with AI

- **AI enhances communication efficiency and administrative tasks.**
- **Personalized support for students through AI analytics.**
- **Concerns about reduced faculty-student personal connections.**



Opportunities of AI in Personalized Learning

- Data-driven insights help track student progress.
- AI-driven adaptive learning platforms for tailored instruction.
- Enhanced teaching resources and interactive materials.



Challenges in AI Adoption

- Faculty resistance due to fear of job redundancy.
- Limited technical knowledge and training.
- Inadequate infrastructure and outdated AI tools.
- Ethical concerns: data privacy and algorithmic bias.



Discussion of Findings

- AI improves efficiency but raises concerns about meaningful engagement.
- Need for faculty training and hybrid teaching models.
- AI should complement rather than replace human educators.



Conclusion

- The integration of AI-driven personalized learning at Bugema University has improved communication efficiency but raised concerns about reduced personal connections.
- AI enhances personalized learning by providing data-driven insights, adaptive learning platforms, and improved teaching resources, creating a dynamic and responsive educational environment that improves both teaching effectiveness and student engagement.
- The adoption of AI at the university faces challenges such as faculty resistance, limited technical knowledge, inadequate infrastructure, and ethical concerns.



Recommendations

- Faculty training on AI tools and digital engagement strategies.
- Investment in robust AI infrastructure and modern tools.
- Hybrid teaching models to balance AI efficiency with personal interactions.
- Clear policies for ethical AI integration and data security.



Thank You!

Questions & Discussion

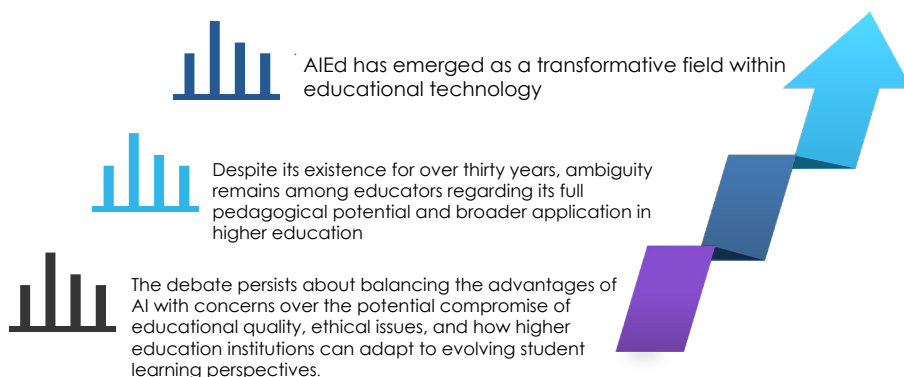


Prof. Arthur Ahimbisibwe
Augustine Ifelebuegu
Victoria Musasizi
Peace Kulume

Presentation:

Adaptation of Artificial intelligence in Ugandan Universities: Insights from a Highly Digitalized University

Introduction



Introduction Cont'd



Key Findings from the Global AI Student Survey (2024).



Sample Size: 3,839 students across 16 countries.



Most Used AI Tools: 66% of students use ChatGPT. 25% use Grammarly and Microsoft Copilot



58% feel inadequately equipped with AI skills.



48% feel unprepared as an AI-driven workforce



80% of students believe AI integration does not meet their expectations.



Need for a Strategic Approach: Improve AI literacy and integration in higher education.



Purpose of this research

- To examine the integration of Artificial Intelligence (AI) in higher education
- Focusing on AI tools, their benefits and challenges, and the factors influencing their successful adaptation in Ugandan universities

The study was guided by four main objectives:

1. To identify the various AI tools currently being used in Ugandan higher education institutions
2. To assess the perceived benefits of AI integration from the perspectives of students
3. To evaluate the challenges and risks associated with AI integration.
4. To investigate the factors that influence the successful integration of AI in Ugandan universities.

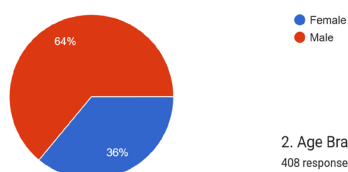


Methodology

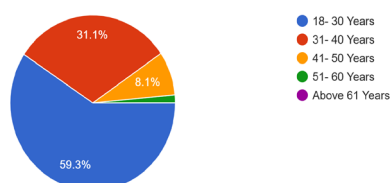
1. Design: Correlational research
2. Approach: Quantitative, with online survey
3. Sample: 408 respondents from a highly digitalized university in Uganda
4. The sample for the study included 2,000 students
5. A simple random sampling technique
6. 403 usable responses, representing a 34.2% response rate
7. pilot study from the Students Guild Council, yielded a 95% response rate
8. Addressed Common Method Bias, Non-Response Bias
9. Adopted measures, Tested Reliability and Validity
10. Analysis Tool: SPSS version 26.



1. Gender:
408 responses

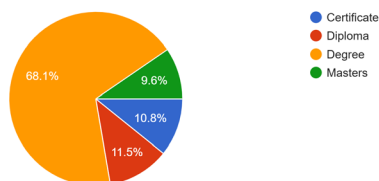


2. Age Bracket
408 responses



3. Level of Studies

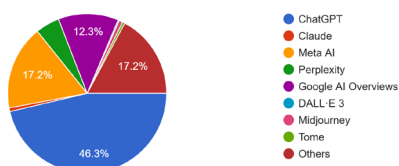
408 responses



| | | | |
|------------------|-------------|-----|-------|
| Level of Studies | Certificate | 43 | 10.7 |
| | Degree | 274 | 68.0 |
| | Diploma | 47 | 11.7 |
| | Masters | 39 | 9.7 |
| | Total | 403 | 100.0 |

1. Which of the following AI tools do you use IN YOUR STUDIES? (Select one TOOL you use MOST)

408 responses



| | | | |
|---------------|---------------------|-----|-------|
| AI tools used | ChatGPT | 186 | 46.2 |
| | Claude | 3 | .7 |
| | DALL·E 3 | 1 | .2 |
| | Google AI Overviews | 50 | 12.4 |
| | Meta AI | 69 | 17.1 |
| | Midjourney | 3 | .7 |
| | Others | 70 | 17.4 |
| | Perplexity | 19 | 4.7 |
| | Tome | 2 | .5 |
| | Total | 403 | 100.0 |

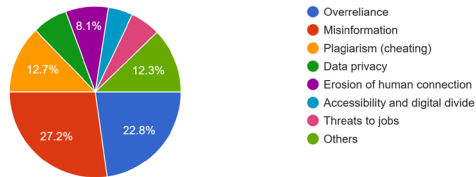
2. What do you USUALLY USE AI for? Select the most appropriate option

408 responses



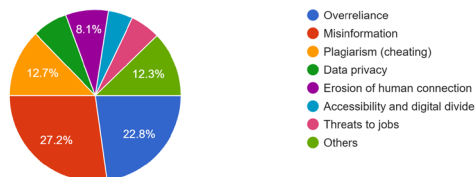
| | | | |
|-----------------|--|-----|-------|
| Major use of AI | Answering questions in course work and exams | 22 | 5.5 |
| | Check grammar | 21 | 5.2 |
| | Create a first draft | 15 | 3.7 |
| | Others | 15 | 3.7 |
| | Paraphrase documents | 7 | 1.7 |
| | Personalized learning | 69 | 17.1 |
| | Search for information | 229 | 56.8 |
| | Search Literature | 18 | 4.5 |
| | Summarize documents | 7 | 1.7 |
| | Total | 403 | 100.0 |

3. What is the major challenge of using AI in your studies?
408 responses



| | | | |
|-----------------------------|----------------------------------|-----|-------|
| Major challenge of using AI | Accessibility and digital divide | 18 | 4.5 |
| | Data privacy | 26 | 6.5 |
| | Erosion of human connection | 33 | 8.2 |
| | Misinformation | 109 | 27.0 |
| | Others | 50 | 12.4 |
| | Overreliance | 92 | 22.8 |
| | Plagiarism (cheating) | 52 | 12.9 |
| | Threats to jobs | 23 | 5.7 |
| | Total | 403 | 100.0 |

3. What is the major challenge of using AI in your studies?
408 responses



| | | | |
|-----------------------------|----------------------------------|-----|-------|
| Major challenge of using AI | Accessibility and digital divide | 18 | 4.5 |
| | Data privacy | 26 | 6.5 |
| | Erosion of human connection | 33 | 8.2 |
| | Misinformation | 109 | 27.0 |
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| | Total | 403 | 100.0 |

Correlations

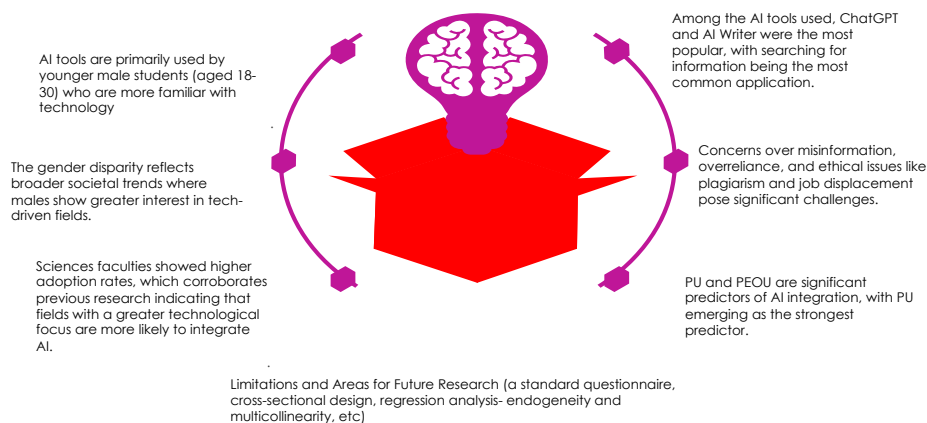
| | 1 | 2 | 3 | 4 |
|---------------------------|--------|--------|--------|------|
| Perceived ease of use (1) | 1.00 | | | |
| Perceived usefulness (2) | .526** | 1.00 | | |
| Attitude towards AI (3) | .513** | .607** | 1.00 | |
| Behavioural intention (4) | .477** | .506** | .629** | 1.00 |

Regression Model Summary of Coefficients

| Coefficients ^a | | | | | | | | |
|---|-----------------------|-----------------------------|------------|---------------------------|-----------|------|-------------------------|-------|
| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | Collinearity Statistics | |
| | | B | Std. Error | Beta | | | Tolerance | VIF |
| 1 | (Constant) | 6.883 | 1.056 | | 6.520 | .000 | | |
| | Perceived ease of use | .584 | .082 | .310 | 7.107 | .000 | .723 | 1.382 |
| | Perceived usefulness | .837 | .080 | .455 | 10.432 | .000 | .723 | 1.382 |
| R square | | .451 | | | | | | |
| Adjusted R Square | | .448 | | | sig. .000 | | | |
| a. Dependent Variable: AI Integration = (Attitude towards AI and Behavioural intention) | | | | | | | | |



Conclusions and Way forward



Thank You
So Much



Dr. Solimo Rajab

Presentation:

Artificial Intelligence Adaptation in Higher Education: Supervisors Ease or Difficulty in Detecting AI-Generated Research in Postgraduate Research

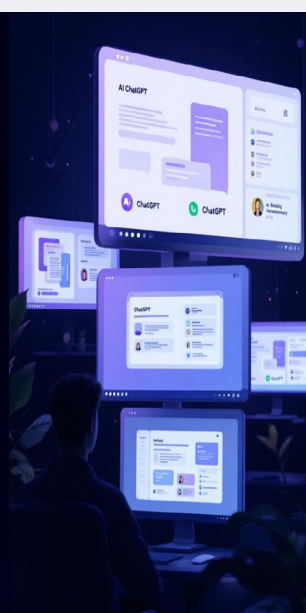
Presentation Outline

1. Introduction
2. Problem
3. Objectives
4. Methodology
5. Findings
6. Discussion
7. Conclusion
8. Future Research



Introduction: Overview of AI Integration in Academia

- Since the invention of Artificial Intelligence (AI) particularly generative models, AI has evolved into a transformative force in academic research, redefining traditional models of academic writing, research supervision, and assessment in HEIs (Rutgers, 2024).
- The increasing sophistication of AI-powered tools such as ChatGPT, GPT-4, Perplexity, Claude and now Deepseek has accelerated research processes by automating tasks like literature reviews, data analysis, topical ideas and academic writing (Cotton et al., 2024).
- However, these advancements pose significant challenges regarding authenticity, originality, and academic integrity. Universities and supervisors must navigate AI's impact on research while ensuring ethical usage, precise detection mechanisms, and robust institutional policies.

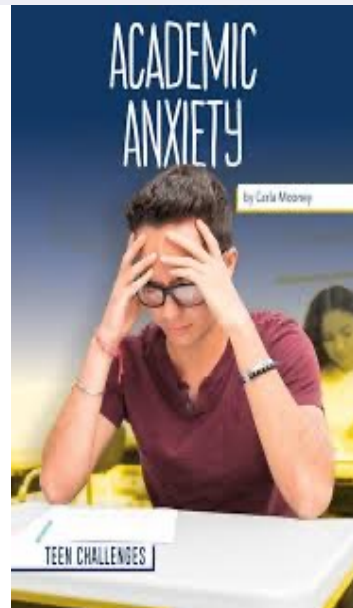


Problem and Gap

The rise of Gen-AI tools in postgraduate research, such as Deep Seek and ChatGPT, has complicated situations for supervisors. Although Gen-AI technologies enhance productivity, they erode academic integrity (Eke, 2023; Koop & Gröblinger, 2024).

- ❑ Supervisors have been left struggling to differentiate between AI-generated and human-authored content, leading to concerns about academic dishonesty.
- ❑ Traditional plagiarism detection tools such as Turnitin have been rendered with limitations in accurately identifying AI-generated research content.
- ❑ The evolving nature of AI tools outpaces institutional responses, with many universities lacking clear guidelines on AI usage.
- ❑ The psychological burden on supervisors increases as they rely on subjective indicators like writing style and critical depth to detect AI-generated work.

The vacuum in the current state of AI adoption in higher education necessitates an investigation to understand supervisors' knowledge of AI tools, their detection capabilities, the efficacy of institutional policies, and the consequences for academic rigor in a post-plagiarism age.



Research Objectives

The study focused on the following specific research objectives;

- i. Assess postgraduate supervisors' knowledge of AI tools.
- ii. Evaluate supervisors' ability to detect AI-generated research.
- iii. Examine the effectiveness of current institutional regulations.
- iv. Recommend strategies to educational institutions that can assist supervisors in enhancing research authenticity.



Methodology

Research Design: Quantitative descriptive approach. This approach enabled the collection of numerical data, facilitating statistical analyses to identify patterns, trends, and correlations.

Target Population: 45 participants

Sample: 34 participants (postgraduate supervisors at Islamic University in Uganda)

Data Collection: Online survey questionnaire.

Having 33 items

Shared: Email addresses and WhatsApp contacts.

To ensure validity and reliability: Expert review by academic professionals in AI research and education

Pilot test with a small group of 5 supervisors to check for clarity and question consistency.

The survey employed 2 scales: A 4-point Likert scale from 1 being "Strongly Disagree" through to 4 being "Strongly Agree" for opinion-based questions

frequency base scale of "Never" up to "Always".

Analysis: Descriptive and correlation analysis using SPSS 27



Key Findings

Supervisors' Knowledge of AI Tools

AI Awareness

64.7% of supervisors were aware of AI tools in academic research.

Familiarity was largely limited to ChatGPT (100%), with minimal knowledge of other tools like Jasper.ai (23.5%) and Perplexity AI (41.2%).

Training

Just 52.9% of respondents had attended workshops or training sessions on AI tools in education and research

Understanding of AI capabilities

Only 35.3% of supervisors reported strong comprehension of AI tool capabilities, while 41.2% admitted having no understanding at all of how these technologies function.

Identifying AI-Generated Content

Detection Methods

- 58.8% of supervisors reported ability to identify AI writing styles, their methods varied significantly.
- Turnitin was most commonly used (73.5%), followed by manual review (61.8%)
- Low adoption of other AI-Detection tools (e.g., GPTZero at 17.6%)

Key Challenges

- Inadequate training (52.9%)
- Lack of reliable detection tools (50.0%)
- Time constraints (50.0%)
- Unreliable internet (38.2%)
- Low-grade devices (32.4%)



Low Policy Awareness

Only 35.3% of supervisors were aware of institutional policies regarding AI tool usage in research, leaving the majority (64.7%) uninformed about official guidelines.

Satisfaction with existing policies

significant concerns about current frameworks were noted. 67.6% of respondents expressed dissatisfaction with existing policies

Clarity of existing policies

67.7% of supervisors believed existing policies lack clarity on the consequences of AI usage, complicating enforcement and consistent application of standards.

Overall

- A striking 91.2% of supervisors agreed that gaps exist in current AI policies,
- key concerns being insufficient training (58.8%)
- lack of adaptability (55.9%)
- inadequate detection mechanisms (50.0%)



Knowledge of AI tools showed a low correlation with detection ability ($r = .140$), meaning familiarity alone doesn't improve detection skills. policy effectiveness had a near-zero correlation with AI knowledge ($r = .026$) and a weak negative correlation with detection ability ($r = -.109$), indicating current frameworks inadequately address AI-generated content challenges.



Discussion of findings

- The study's findings critically examine the intersection between AI adaptation in higher education and the preparedness of postgraduate supervisors and students to maintain academic integrity.
- The limited exposure among supervisors as demonstrated by them recognizing majorly one tool (ChatGPT 100%), with little familiarity with other AI tools like Jasper.ai (23.5%) and Perplexity AI (41.2%) suggests a knowledge gap that may hinder supervisors' ability to detect content generated by other advanced generative AI tools.
- 58.8% of supervisors reported the reliance on Turnitin (73.5%) and manual review (61.8%) as primary tools to identify AI-generated content. The study however finds that these methods remain questionable and are inadequate to keep pace with rapidly evolving AI technologies.
- A concerning 64.7% of supervisors are unaware of any institutional policies regarding AI usage, and 67.6% express dissatisfaction with current regulations, citing unclear guidelines and poor enforcement.
- Statistical analysis ($r = .140$, $p = .446$) shows that AI Knowledge does not translate to better detection of AI-generated research, highlighting the need for specialized training and support.
- The absence of standardized guidelines complicates the regulation of AI use in postgraduate research, exposing institutions to ethical dilemmas and academic integrity concerns.



Conclusion

- In conclusion, Artificial Intelligence has finally transitioned from a speculative concept to a transformative force in postgraduate research supervision, demanding a redefinition of academic truthfulness to address its complexities.
- The study reveals significant gaps in AI awareness, detection capabilities, and institutional preparedness, with supervisors largely familiar only with ChatGPT and lacking exposure to many other advanced AI tools.
- The limited awareness, add to no formal training, leaves supervisors reliant on inadequate methods like manual reviews and Turnitin, which struggle to keep pace with evolving AI technologies.
- Furthermore, existing institutional policies on AI usage are often ambiguous and poorly enforced, further complicating efforts to maintain academic integrity amidst the rapid AI advancement.
- The future of postgraduate research depends on institutions' ability to responsibly adapt, regulate, and uphold academic integrity in this AI-driven era.
- **So, The question is no longer whether AI will shape academia, but rather how supervisors and institutions will harness it ethically and responsibly while ensuring the authenticity and credibility of academic research.**



Recommendations for Higher Education Institutions

1

Comprehensive Training Programs

Institutions should provide supervisors with training on AI functionality, applications in research, and critical review of AI-produced materials.

2

Advanced Detection Tools

Fund procurement and implementation of high-quality AI-detection tools that supervisors can use to differentiate between AI-assisted and human-created work.

3

Ethical Policy Frameworks

Formulate comprehensive policy frameworks governing ethics on AI usage in all research-related undertakings.

4

Inter-institutional Collaboration

Develop standardized policies for AI use in academic research through collaborative efforts among higher education institutions.



Future Research

- Investigate the feasibility of AI in assessing research outputs.
- Investigate how AI tools impacts on the quality, originality, and levels of critical thinking in postgraduate research.



Thank You for your Audience



Deborah Rebecca Kyazze (PhD)

Presentation:

Exploring Faculty Readiness and Resistance to AI integration in Private institutions of Higher Education: A study of Perceptions, Challenges and Training needs

BACKGROUND TO THE STUDY

- Artificial intelligence (AI) has become a game-changer in many industries including education. AI include robotics, natural language processing, machine learning, data analytics, and more to that mimic human cognitive functions to carry out complex tasks (Smith & Johnson, 2020).



CONT'D

- In Uganda the use of AI in higher education is still such a nascent field, particularly in private institutions, which form a significant part of the country education system. Private Universities in Uganda operate under unique handicaps, including lack of preparedness among faculty members for the rollout of new ICT (Twinomuhangi et al., 2021).



PROBLEM STATEMENT

- ❑ AI adoption is still low in scale and effect. For instance, Mugimu and Nabayego (2023) found that several faculty members around the world still doubt the relevance of AI to local contexts in higher education and that institutional support is often lacking for AI initiatives. Moreover, without well-defined policies and funding to facilitate the integration of AI into educational frameworks, many institutions have adopted a haphazard and inconsistent approach to its implementation.
- ❑ Lack of knowledge limits private universities from capitalizing on AI to improve teaching, learning, and administrative processes.



OBJECTIVES OF THE STUDY

1. Assess the current level of faculty readiness for AI integration in private higher education institutions in Uganda

2. Evaluate the factors contributing to faculty resistance to AI adoption in teaching, learning, and administrative processes.

3. Identify the knowledge, skills, and resource gaps among faculty members regarding AI technologies.

4. Explore the training needs of faculty members to facilitate effective AI integration.



RESEARCH QUESTIONS

1. What is the current level of faculty readiness for AI integration in private higher education institutions in Uganda?

2. What factors contribute to faculty resistance to AI adoption in teaching, learning, and administrative processes?

3. What are the knowledge, skills, and resource gaps among faculty members regarding AI technologies?

4. What training needs do faculty members have to facilitate effective AI integration?



Cont'd

HYPOTHESIS STATEMENT

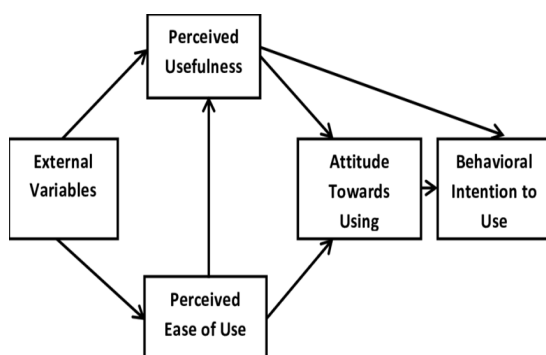
- ❑ There is a statistical relationship between faculty readiness, resistance, and AI integration in private higher education institutions in Uganda.

SIGNIFICANCE OF THE STUDY

- ❑ This study holds immense practical relevance for policymakers, educators, and institutional leaders.



Theoretical Review Technology Acceptance Model (TAM)



- ❑ which is a framework for assessing the readiness and acceptability of a new Technology (Davis, 1998)
- ❑ which guides us to explore the factors influencing faculty readiness towards AI integration in Ugandan private universities.



Literature Gaps Conclusion

- ❑ Review of empirical literature reveals important determinants of faculty acceptance and resistance to AI in integration in private higher education institutions. I
- ❑ In Uganda AI has shown transformative promise for earlier teaching, learning, and building administration processes, and faculty readiness is central to adoption success in a global economy. (Kasozi et al., 2022).
- ❑ These gaps in faculty capabilities alongside the absence of structured training programs represent significant barriers to the effective integration of AI technologies. This consideration is well aligned with the Technology Acceptance Model. (Zawacki-Richter et al., 2020); (Twinomuhangi et al., 2021).



Literature Gaps Conclusion

- ❑ Review of empirical literature reveals important determinants of faculty acceptance and resistance to AI in integration in private higher education institutions. I
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RESEARCH METHODOLOGY

| Research Design | cross-sectional |
|------------------------|---|
| Sampling | Random Sampling |
| Research method | Mixed methods (QUAN and QUAL) |
| Data collection | On-line surveys, semi-structured interviews |
| Sample size | 250 respondents(academic staff- Professors, lecturers |
| Data analysis | Descriptive and inferential statistics -using SPSS; Thematic analysis |
| Ethical considerations | Consents, |



RESULTS

| Category | Frequency | Percent |
|------------------------|-----------|---------|
| Gender | | |
| Male | 110 | 44.0% |
| Female | 140 | 56.0% |
| Age | | |
| 20 - 30 | 80 | 32.0% |
| 31 - 40 | 90 | 36.0% |
| 41 - 50 | 60 | 24.0% |
| 51 and above | 20 | 8.0% |
| Experience | | |
| 1 - 5 years | 70 | 28.0% |
| 6 - 10 years | 85 | 34.0% |
| Above 10 years | 95 | 38.0% |
| Education Level | | |
| Bachelor's Degree | 80 | 60.0% |
| Master's Degree | 150 | 32.0% |
| PhD | 20 | 8.0% |

Source: Primary data, 2024



Objective 1 : Faculty Readiness and AI Integration

| Statement | N | Minimum | Maximum | Mean |
|---|-----|---------|---------|------|
| I feel prepared to use AI tools in my teaching. | 250 | 1 | 5 | 3.12 |
| AI tools are relevant to my teaching practices. | 250 | 1 | 5 | 2.98 |
| I have received training on how to use AI tools. | 250 | 1 | 5 | 2.10 |
| I am confident in my ability to use AI tools. | 250 | 1 | 5 | 2.50 |
| My institution provides adequate support for AI adoption. | 250 | 1 | 5 | 2.45 |
| I have access to the necessary resources to use AI tools. | 250 | 1 | 5 | 2.30 |



Objective 2: Faculty resistance to AI adoption

| Statement | N | Minimum | Maximum | Mean |
|--|-----|---------|---------|------|
| I am concerned about the ethical implications of AI. | 250 | 1 | 5 | 4.10 |
| I fear that AI will replace my role as a teacher. | 250 | 1 | 5 | 3.95 |
| I believe AI tools are too complex to use. | 250 | 1 | 5 | 3.80 |
| I feel that AI tools are not culturally relevant to our context. | 250 | 1 | 5 | 3.75 |
| I doubt the benefits of AI in education. | 250 | 1 | 5 | 3.60 |
| I feel excluded from decisions about AI adoption. | 250 | 1 | 5 | 3.70 |
| I lack access to reliable training on AI tools. | 250 | 1 | 5 | 3.85 |

Source: Primary data ,2024



Objective 3 :Knowledge, Skills, and Resource Gaps

| Statement | N | Minimum | Maximum | Mean |
|---|-----|---------|---------|------|
| I have received training on AI tools. | 250 | 1 | 5 | 2.10 |
| I have access to AI software and hardware. | 250 | 1 | 5 | 2.30 |
| I am confident in my ability to use AI tools. | 250 | 1 | 5 | 2.50 |
| My institution provides adequate resources for AI. | 250 | 1 | 5 | 2.20 |
| I understand the potential applications of AI in my discipline. | 250 | 1 | 5 | 2.80 |
| I have opportunities to experiment with AI tools. | 250 | 1 | 5 | 2.15 |
| I receive regular updates on AI developments. | 250 | 1 | 5 | 1.90 |

Source: Primary data,2024



Objective 4 : Faculty Training Needs

| Statement | N | Minimum | Maximum | Mean |
|--|-----|---------|---------|------|
| I need training on how to use AI tools effectively. | 250 | 1 | 5 | 4.25 |
| Training should focus on integrating AI into teaching. | 250 | 1 | 5 | 4.30 |
| Training should address ethical concerns about AI. | 250 | 1 | 5 | 4.15 |
| Training should include hands-on practice with AI tools. | 250 | 1 | 5 | 4.20 |
| Training should be tailored to my discipline. | 250 | 1 | 5 | 4.10 |
| Training should provide ongoing support and resources. | 250 | 1 | 5 | 4.25 |

Source: Primary data, 2024



Hypothesis Test

| Variable | Pearson Correlation | Sig. (2-tailed) |
|----------------------------------|---------------------|-----------------|
| Faculty Readiness and resistance | 0.520** | 0.000 |

A Pearson correlation analysis was performed to determine the relationship between faculty readiness, resistance, and AI integration in Ugandan HEIs. The findings showed that a statistically significant positive correlation existed, with 0.520 ($p = 0.000$) Pearson correlation, establishing a moderate to strong relationship between these variables.

This implies that in Ugandan higher education institutions, distributions of AI in teaching and learning systems, are still significantly determined by faculty readiness and resistance. Meaningful statistical relationship: The significance level (p value < 0.05) indicates the null hypothesis can be rejected; thus, denotes the statistical meaningful relationship between faculty readiness, resistance, and AI integration.



Conclusion

- ❑ Overcoming these barriers necessitates an integrated strategy that incorporates tailored training, resource support, ethical framework, and comprehensive stakeholder involvement.
- ❑ Enabling a conducive environment for AI integration in higher education can ultimately lead to enhanced educational quality and responsiveness to industry needs in Ugandan universities by preparing faculties and reducing the impact of resistance in some academic institutions.



Recommendations

- Reduce faculty apprehensions by promoting a culture of ethical AI deployment
- Engage faculty to participate in the design and implementation in order to have sense of ownership
- Taking a proactive role in encouraging AI adoption through strategic initiatives, funding and innovation culture



SOME REFERENCES

Venkatesh, V., Thong, J. Y. L., & Xu, X. (2020). Unified theory of acceptance and use of technology: A synthesis and the road ahead. *Journal of the Association for Information Systems*, 17(5), 328–376.

Williamson, B. (2023). *Big data in education: The digital future of learning, policy, and practice*. SAGE Publications.

Zawacki-Richter, O., Marín, V. I., Bond, M., & Gouverneur, F. (2020). Systematic review of research on artificial intelligence applications in higher education. *International Journal of Educational Technology in Higher Education*, 17(1), 1–27.



KEYNOTE SPEAKER

KEYNOTE SPEAKER

Ernest Mwebaze

PhD | Sunbird AI, DSAU

Presentation:

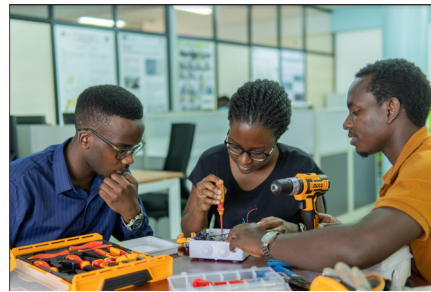
Empowering Higher Education: AI-Driven Infrastructure, Skills, and Curriculum for the Future

Sunbird AI

- Not-for-profit organization in Uganda.
- Mission: Leadership in AI for social good in the African context.

Using AI to generate evidence for policy.

Contributing to AI policy.



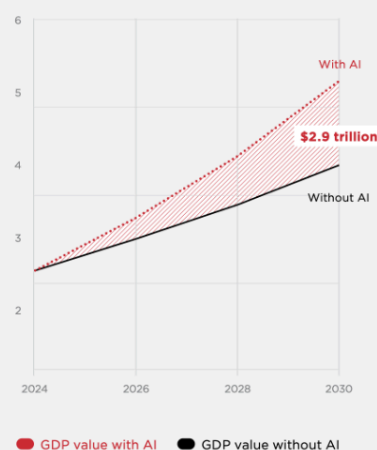
Estimated annual value of the AI market in Africa relative to the global market
(\$ trillion, 2023)

\$16.5 trillion
Global AI value

\$0.4 trillion
African AI value
Approx 2.5% of the global AI market

Source: AI4D Africa

Potential value added by AI to the African economy
(\$ trillion, 2024-2030)

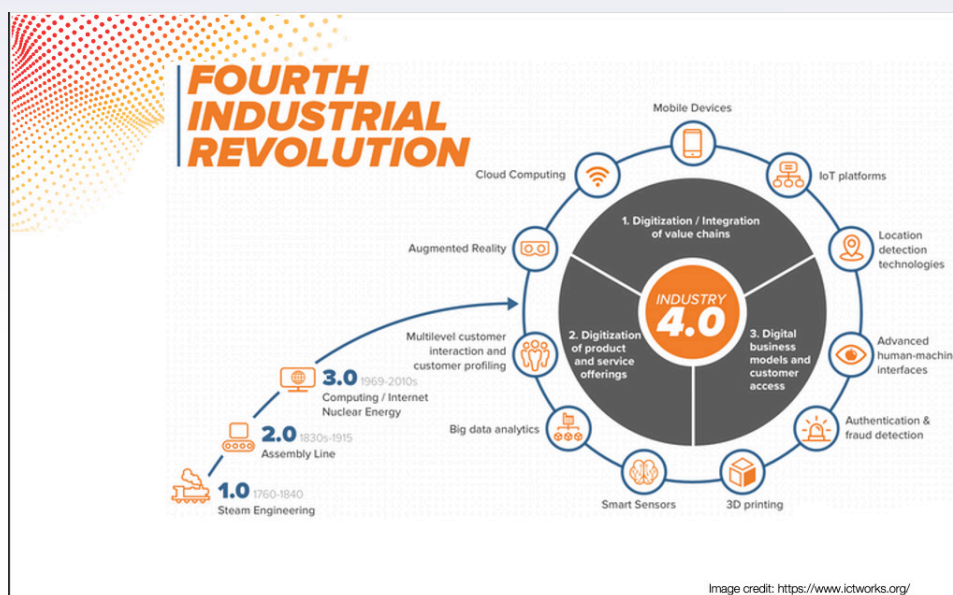


Source: AI4D Africa

Image credit: GSMA AI for Africa, 2024

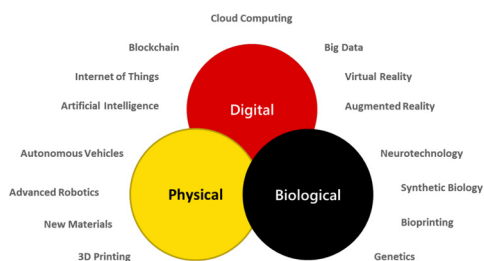


Landscape



4IR technologies

- 4IR is the **convergence** of digital (virtual), physical and biological interactions **facilitated** by technology¹.
- Technology driven revolution - we are **IN** this wave of technologies.
- (Artificial) Intelligence is proving to be a biggest “technology” for 4IR.



¹. Uganda 4IR national strategy.

Higher education curricula

- Slow change/adoption in curricula/courses e.g only approx. 3/50 of universities in Uganda have a degree course in AI.
- Trade-off between early adoption and stabilization of discipline.
- Alternate community efforts have emerged to close the gap.



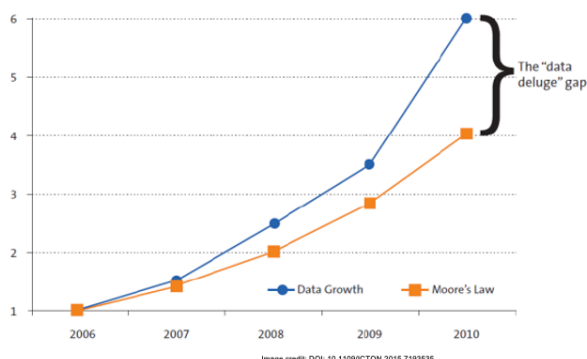
Community/alternate initiatives



Community/alternate initiatives



Data



- It's no longer about having access to data/information but about making sense of it.
- We have used all the data on the internet to train AI models, yet we need more.
- The rise of synthetic data, and a premium on human generated data.



Internet data

- In the year 2000, the Internet was approx. 1 petabyte of data (1 m GB). Currently it's about 120 zettabytes (120 million-fold increase in 24 years)
- If you stored 120 zettabytes on 1TB hard drives, and stacked them, the pile would wrap around the Earth more than 10,000 times.
- The internet doubles in size roughly every two years!



Compute

- A typical AI model like GPT-4 is a large AI model with trillions of parameters, requiring massive compute power to train.
- A normal computer CPU (Intel Core i7) with 8-32 cores would take thousands to millions of years to train such a model.
- Even with a decent gaming GPU, it would take thousands of years to train GPT-4
- GPT-4 is trained on an estimated 10,000–25,000 GPUs working together (each \$3K USD+) for weeks to months.



Large Language Models

| Model | Developer | Release Date | Number of Parameters | Notes |
|----------------|---------------------------------|--------------|----------------------|---|
| GPT-4 | OpenAI | 2024 | 1.76 trillion | Notable for its advanced language understanding and generation capabilities. |
| Claude 3 | Anthropic | 2024 | 2 trillion | Recognized for its safety-focused design and robust performance. |
| Gemini 1.5 Pro | Google | 2024 | 1.5 trillion | Features a one million-token context window, enhancing its processing capabilities. |
| Llama 3.3 | Meta | 2024 | 405 billion | An open-source model with significant improvements over its predecessors. |
| Command R+ | Cohere | 2022 | 52 billion | Supports ten languages and offers a 128,000-token context length. |
| PaLM 2 | Google | 2023 | 340 billion | Known for its multilingual proficiency and advanced reasoning skills. |
| BLOOM | BigScience | 2022 | 176 billion | An open-source model trained on data in 46 natural and 13 programming languages. |
| Falcon | Technology Innovation Institute | 2024 | 180 billion | An upgraded version with enhanced performance and capabilities. |
| GLM-130B | Tsinghua University | 2022 | 130 billion | A model designed for efficient training and inference. |
| NeMo L | NVIDIA | 2022 | 530 billion | Noted for its scalability and performance in various applications. |



Compute

- At Sunbird AI we fine tune these LLMs over 2 - 4 epochs, for 24 hours at about \$200 USD to start to see some performance.
- Trade off is smartphones have over time become more powerful as well as access to the cloud.
- To compete (even as a nation) we would require significant investment in compute.



Algorithms

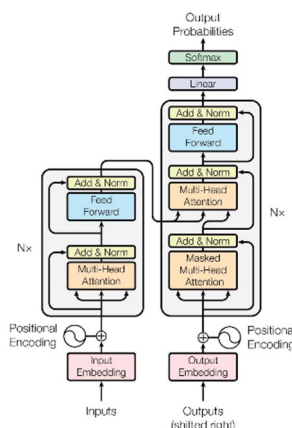
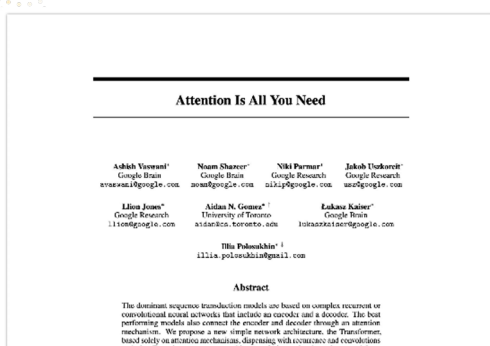
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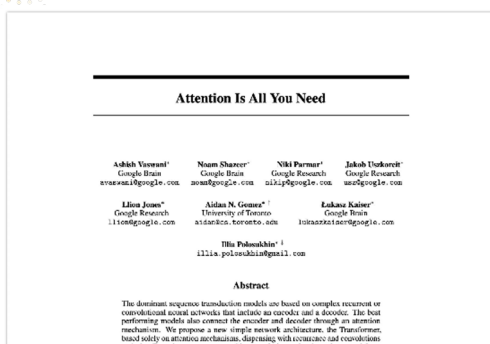
On algorithms

- Large Language Models (LLMs) are the latest fad in algorithms.
- LLMs are next word predictors (in essence)
- Previous next word predictors like RNNs lacked the ability to expand the context of the prediction.
- Transformer architecture and attention mechanism revolutionized this.

Transformer architecture



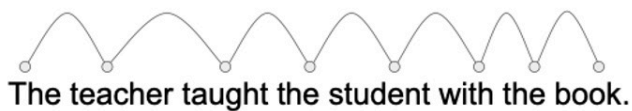
Transformer architecture



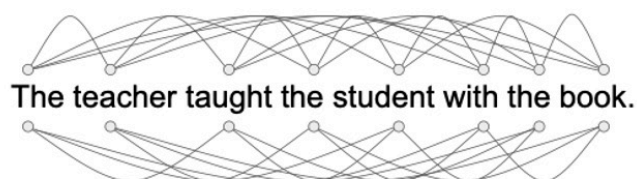
- Scales efficiently to use multicore GPU
- Parallel process data and make use of a lot of data.
- Attention to input meaning



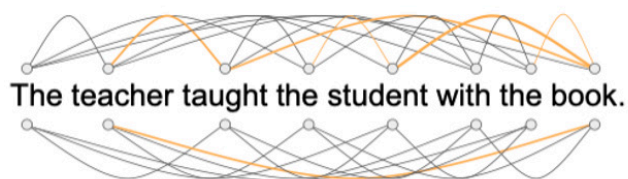
Tranformers



Tranformers

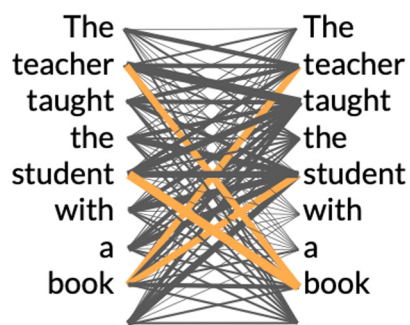


Tranformers



Self attention

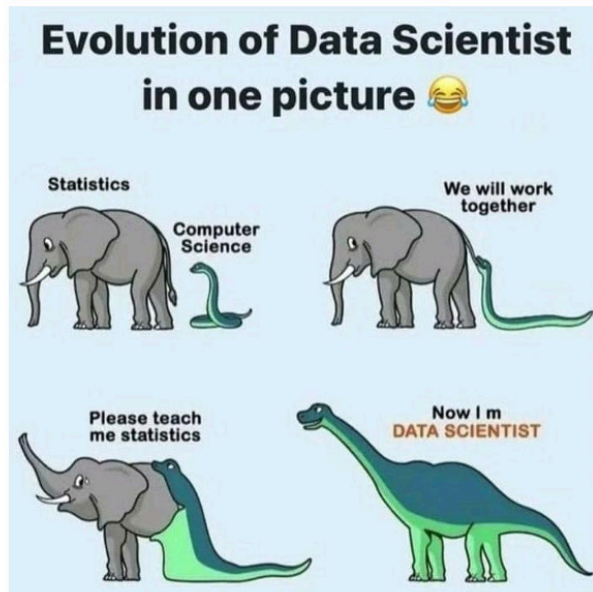
Tranformers



Future trends to inform curricula



Courses/programmes/
careers are morphing
and re-aligning.



Education/skills/careers

- Is there a changing role for Higher Education? To skills-based curricula?
- Is the gap between what is studied and the field widening?
- Curricula based on teaching to self-learn?



What degree courses should one do to be eligible for such jobs?



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Open positions include:

- **Digital Development Specialist** – Digital Government (req32232)
- **Digital Development Specialist** – Digital Society (req32232)
- **Digital Development Specialist** – Digital Economy (req32238 & req32234)
- **Senior Digital Development Specialist** – Digital Society (req32241)
- **Senior Digital Development Specialist** – Digital Economy (req32243)

Applications are open until **March 25, 2025**.

Please visit www.worldbank.org/en/about/careers to find the specific job opportunities by searching on the requisition number.

If you or someone in your network would be a great fit, we encourage you to explore these roles and join us in advancing digital transformation on a global scale.



Should we look at the inputs to higher education as well?



22 Articles • 2 days ago

Beijing Introduces Mandatory AI Education Starting in Elementary School



Pre-requisites for new curriculum

- Hardware? Compute/storage/data?
- What about the lecturers/professors? Re-skilling?
- The universality of AI - and its effects in several domains: health, law, humanities, etc



Other considerations

- Our local Ugandan/regional context.
- AI colonialism - the people who control the technology have always been the people with the power.
- Responsible AI and harms that need to be mitigated.
- The changing nature of 'work' in the AI future.



Generation and usage of datasets globally



Note: This map shows how often 1,933 datasets were used (43,140 times) for performance benchmarking across 26,535 different research papers from 2015 to 2020. Countries are distorted by frequency of usage. Data sets originating in the US account for the most usages (26,910).
Source: Mozilla Foundation



Conclusion

Good decisions come from
experience. Experience comes
from making bad decisions.

Mark Twain



Wilson Okaka (Professor)

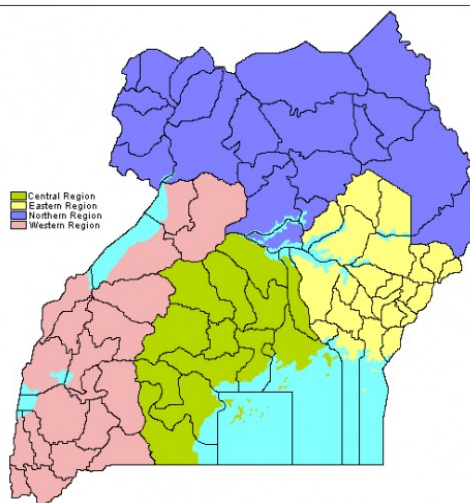
**Co-authors: Justine Nakirijja. Wilberforce Okongo,
and Henry Kibedi**

Presentation:

Public Communication Campaign to Revolutionize National Curriculum Design for Transformative Teaching And Learning Assessment Through Artificial Intelligence in Higher Education in Uganda

Presentation

- TITLE SLIDE
- PRESENTATION OUTLINE
- INTRODUCTION
- PROBLEM STATEMENT
- OBJECTIVES
- METHODOLOGY
- RESULTS
- DISCUSSION
- CONCLUSIONS
- RECOMMENDATIONS
- ACKNOWLEDGEMENTS

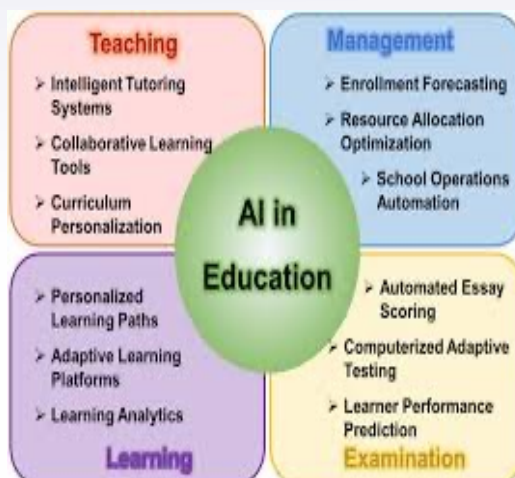


Regional Map of Uganda's 4 Regions



Introduction

- The integration of Artificial Intelligence (AI) into higher education presents a transformative opportunity to enhance curriculum design, teaching methodologies, and assessment strategies globally.
- In Uganda, AI holds significant potential to address enduring challenges within the educational system, particularly by facilitating personalized learning and developing a competency-based curriculum aligned with 21st-century demands.
- We propose a public communication campaign aimed at revolutionizing Uganda's national curriculum design for higher education through AI integration. The focus on AI ethics, gender equality, infrastructure, implementation steps for financial and policy constraints.



Problem Statement

- Uganda's higher education system faces critical challenges, including outdated curricula, limited resources, and a reliance on traditional assessment methods that inadequately address diverse student needs and global competencies. These issues hinder the alignment of higher education with national development goals and the demands of a globalized workforce. AI offers an opportunity to modernize curriculum design and create adaptive learning environments.
- However, public awareness and institutional readiness remain significant barriers to implementing such transformative technologies effectively. Globally, AI has been leveraged to enhance educational outcomes by enabling data-driven decision-making, predictive analytics, and personalized learning paths. In countries like the USA and China,
- AI tools have been successfully integrated into curriculum design, resulting in improved student engagement and learning outcomes. A recent meta-review of empirical studies indicates that AI applications in education have led to significant improvements in personalized learning and administrative efficiency.



HE AI Curriculum Policy Strategy in Uganda

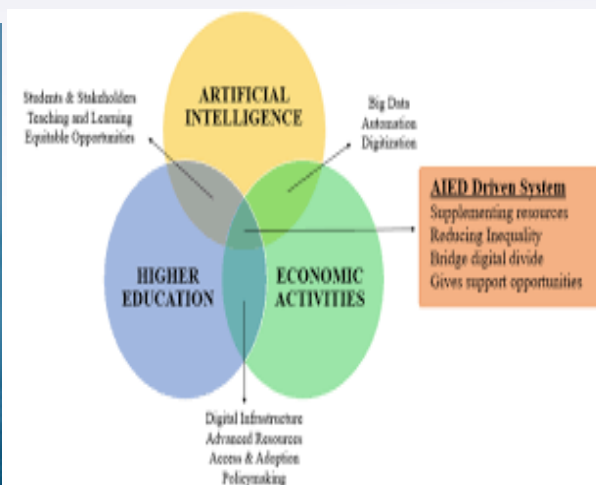


Objectives

- Objectives are to raise public awareness of the benefits and potential of AI in curriculum design and assessment,
- Advocate for AI integration in HE, and
- Discuss successful case studies and projects to highlight the effectiveness of AI in education public communication campaign With a focus on mass communication Theories like the Diffusion of Innovation, Agenda-Setting, Priming, Framing, and the Social Responsibility Theory of the Press.



HE AI Curriculum Adoption Is Not An Option



Methodology

- A comprehensive systematic literature review was undertaken to inform the design of the public communication campaign.
- The review focused on research published between 2023 and 2025, on AI's role in HE curriculum design and assessment practices.
- Recent studies highlight AI technologies, such as machine learning, natural language processing, and predictive analytics, potential to revolutionize HE by making it personalized and adaptable to individual student needs (Smith & Jones, 2024; Kaur, 2025)
- Public communication campaign use theories like: Agenda setting, Diffusion of Innovations, Framing/ Priming, Spiral of Silence, and the social responsibility of the media

How communications teams can reduce AI risks



Double-check everything

Always ask for sources from AI-powered assistants. Take time to verify their validity.



Prioritize data security

Work with IT and Legal teams to create policies around employee AI usage at work.



Embrace experimentation

Encourage your team to engage in responsible AI experimentation.

sproutsocial.com/insights

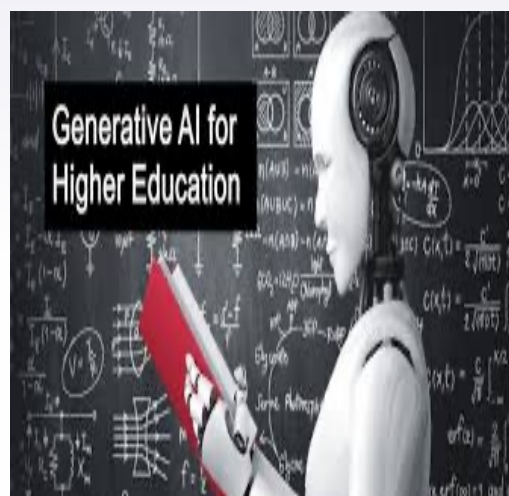
sproutsocial



Results 1 - Outputs

Public Communication Campaign Strategy

- To facilitate AI integration in Uganda's higher education sector, a national public communication campaign will be launched. Key strategies include:
- Stakeholder Engagement: Collaboration with educators, policymakers, students, and AI experts to promote AI's role in education.
- Multimedia Dissemination: Utilizing social media, webinars, podcasts, and online forums to share AI-related insights and success stories.
- Training and Capacity Building: Organizing workshops for faculty on AI applications in curriculum design and assessment.
- Policy Advocacy: Developing and distributing AI policy recommendations to Uganda's education sector decision-makers.



Results 2 - Outputs

- Traditional Media Utilization:
- Leveraging television, radio, and print media to educate the public on AI's transformative potential.
- IEC materials promote HE AI curriculum development advocacy
- Set up systems guidelines for monitoring progress on work plan activities monthly and quarterly.
- Assign responsibility for tracking your performance indicators to designated lead team individuals or teams
- Utilize project management draft tools, surveys feedback information databases, from potential partners or from the spreadsheets to collect and organize data on activities and outcomes for stakeholders,.



Discussions 1

- According to Allen (2023), effective public campaigns require a multi-channel approach, engaging diverse audiences through both traditional and digital media. Tailoring content to stakeholders' needs ensures better understanding and acceptance of AI-driven education reforms.
- Adoption and diffusion of an innovation *Rogers EM,2003)- AI awareness to adption/diffusuion stages, types if adopters from early adopters
- Agenda- setting theory/Priming/Framing theories
- (Iyengar, MacCombs)
- The social responsibility theory of the press (media)
- Share key HE AI publications
- (papers, reports, articles) on research; concepts,tools
- Present research findings at workshops,relevant meetings.
- Website development and
- management in addition to other social media like: X (former tweeter), Face book, LinkedIn as well as Research Gate.



Discussions 2

Building HE AI Partnerships

- Build synergies with individuals, networks,government MDAs, private sector agencies and organizations with HE AI specialization to develop quality human resources capacity to intensify the Uganda's AI ecosystems / security system, curriculum production and competencies



Conclusions 2

- To ensure long-term success, universities and government institutions must commit to continuous investments in AI infrastructure, faculty training, and research on AI applications in education (Torrance, 2023).
- Establishing dedicated AI integration units within universities can provide the necessary institutional support for ongoing innovation and adaptation.
- Ethical frameworks must be established to regulate AI's use in education, ensuring that it serves all students equitably and responsibly.
- Through careful planning, collaboration, and execution, AI integration in Uganda's higher education sector can set a precedent for educational transformation across Africa.
- If implemented HESystem, will prepare students for the demands of the 21st century.



Recommendations 1

- Develop a National AI Education Strategy: Policymakers should prioritize AI adoption in education through a well-defined national strategy that aligns with Uganda's Vision 2040 and the NDP (Republic of Uganda, 2025).
- This strategy should outline clear objectives, implementation timelines, and performance indicators to measure AI's impact on learning outcomes.
- Strengthen Infrastructure and Connectivity: Addressing infrastructure challenges is crucial for AI implementation.
- The government should invest in expanding broadband internet access, improving electricity reliability, and ensuring that educational institutions have the necessary hardware and software to support AI applications (Bailey et al., 2022).



Recommendations 2

- Launch a Public Communication Campaign: A structured communication campaign is necessary to raise awareness, engage stakeholders, and advocate for AI integration in higher education.
- The campaign should utilize digital and traditional media platforms, webinars, workshops, and stakeholder networks for support and address misconceptions (Brown & Ramez, 2023).
- Establish Partnerships for Sustainable AI Adoption: Collaboration with international research institutions, technology providers, and private-sector stakeholders can provide financial and technical support for AI adoption in Uganda's higher education system. Such partnerships will also facilitate knowledge exchange and capacity building (Kearney & Reynolds, 2022).
- Ensure Continuous Monitoring and Evaluation: Regular assessment of AI integration efforts is crucial for long-term success.



Acknowledgements

- We convey my special thanks to the The 6th NCHE Annual Higher Education Conference National Organizing Committee ,members Under the Leadership of NCHE ED Prof.Mary J.N Okwakol for their national drive for the quality of HE with a focus on the role of AI in HE curriculum,
- Congratulations to the First Lady and Minister of Educations and Sports, Hon. Janet Kataaha Museveni, for her renown revolutionary passion for practical education curriculum for sustainable development in Uganda focusing on morality.
- Likewise, we pay special tribute to the second chief guest. Hon. Minister of ICT and National Guidance, Dr, Chris Baryomunsi for his policy eloquence in articulating the value of AI in SDGs
- We honor all the VCs and their teams, keynote speakers, paper presenters, sponsors, the press. Rapporteurs, Hotel management and all staff,

We thank special guests, participants, and authors

Thank for your kind attention. May God bless you



Michael Adelani Adewusi

Dean School of Mathematics and Computing
Kampala International University, Uganda

Presentation:

AI in Universities: The Good, the Bot, and the Ugly Truths!

AI in Universities: The Good, the Bot, and the Ugly Truths!

Authors:

- 1 Michael AdelaniAdewusi,
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Provoking Statements

"Imagine a world where AI-powered tutors replace human professors. Is this the future of education, or are we losing something valuable?"

"AI is already grading your essays, answering your university queries, and even predicting student dropout rates. But is this good, or are we handing over too much control to machines?"

Studies show that universities using AI-driven chatbots for student services have seen a 30% reduction in administrative workload - Musundire, 2025

Did you know that AI-powered tools like Grammarly and ChatGPT are used by over 60% of university students today – Chang, 2024



The Title

The Good, the Bot, and the Ugly Truths'

A play on words

The Good: AI enhances learning

The Bot: AI-driven automation

The Ugly Truths: Biases, ethical concerns, and unequal access



Introduction

Artificial intelligence (AI) is reshaping higher education, enhancing personalized learning, streamlining administrative tasks, and improving campus management (Singh, 2023; Sajja et al., 2024)

However, its adoption presents challenges such as ethical concerns, disparities in access, and over-reliance on technology (Atuahene & XuSheng, 2024; Bulathwela et al., 2024)



Purpose and Objectives

- To assess the current state of AI adoption in Ugandan universities
- To analyze AI-powered administrative tools in institutional efficiency
- To evaluate ethical considerations and data privacy concerns in AI adoption
- To propose policy recommendations for equitable AI integration



Research Questions

- How are Ugandan universities currently using AI in teaching, learning, and administration?
- How do institutional resources and access to AI tools influence perceptions of its effectiveness?
- What policy measures can support AI-driven innovation while ensuring equitable access?



Methodology

- Mixed-methods research design (Quantitative & Qualitative)
- Surveys from 123 students and 43 faculty members
- Interviews with key administrators and IT personnel
- Data analysis: ANOVA for quantitative data and NVivo for qualitative data



Key Findings:

AI in Teaching and Administration

- AI use is limited to plagiarism detection tools like Grammarly and Turnitin
- Some adoption of AI-powered learning platforms like Google Classroom and Moodle
- AI chatbots are used for student support and admissions
- Infrastructure and faculty training gaps hinder AI's full integration



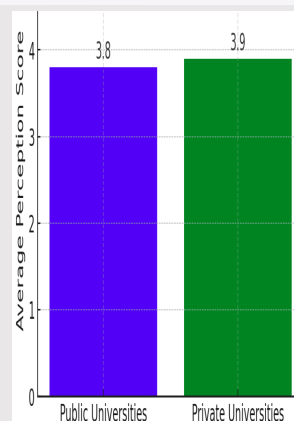
Hypothesis 1

Institutions with better digital infrastructure and finding will have higher levels of AI adoption and more positive perception of its effectiveness.

There is no statistically significant difference in the perception of AI's benefits across Public and Private Universities [$F(1, 164) = 0.733$; $p > 0.05$]

This result indicated that both students and the lecturers from the universities perceived the benefits of AI similarly with no differences among them

This further implies that any efforts to promote the adoption of AI can be directed uniformly across the universities, as students and lecturers share similar views about AI's potential benefits



Key Findings:

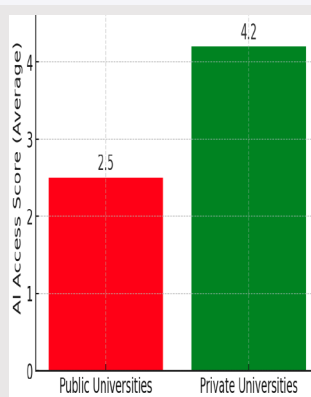
Institutional Resources and AI Perception

- Private universities with better infrastructure have more positive perceptions of AI
- Public institutions struggle with digital limitations
- Lack of faculty training affects AI adoption
- AI is seen as useful for administrative efficiency but not yet trusted for teaching and grading



Hypothesis 2

Faculty members with prior exposure to AI technologies will show greater willingness to integrate AI into their teaching and administrative tasks



There is a statistically significant difference in access to AI tools between Public and Private Universities [$F(1, 164) = 6.608$; $p < 0.05$]. This indicates disparities in access across institutions

This result implies that there is or are disparities in how public and private universities provide or utilize AI tools which could be due to differences in funding, infrastructure, or institutional priorities

The limited access to AI tools in the public institutions, may negatively affect how students and faculty perceive AI's effectiveness. The result shows the importance of equitable access to AI tools as a key determinant of how effectively institutions can integrate AI into education



Key Findings:

Policy measures for the support of AI-driven innovation

- Government-led expansion of AI infrastructure in public universities
- Mandatory AI training for faculty members
- Ethical AI policies to address bias in AI grading and data privacy
- Public-private partnerships to support sustainable AI adoption



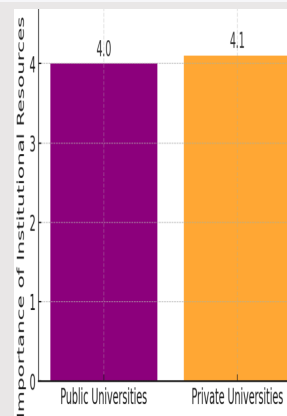
Hypothesis 3

Students and faculty in institutions with limited AI access will express stronger concerns about its ethical implications and potential biases

There is no statistically significant difference in perceptions of the role of institutional resources across Public and Private Universities [$F(1, 164) = 0.002$; $p > 0.05$]

The result implies that both universities perceive the role of institutional resources (funding, infrastructure, and so on) in AI adoption similarly

This could mean that regardless of actual resource availability at any of the university, they acknowledge the importance of institutional support for successful AI integration



Recommendations

- Investment in ICT facilities, and AI-powered educational tools in public universities to bridge the digital divide (Priharsari et al., 2023).
- Universities should implement professional development programs to equip educators with AI literacy and practical AI applications (George, 2023).
- Clear guidelines should be established on AI grading, student profiling, and data privacy to mitigate algorithmic bias and ensure ethical AI use in educational settings (Cerf, 2023).
- Universities should collaborate with technology firms, policymakers, and private-sector stakeholders to drive sustainable AI implementation, and expertise (Semlali et al., 2023).
- Public universities should receive targeted government support to ensure that students from low-income backgrounds have the same opportunities to benefit from AI-powered learning tools as those in better-funded private institutions (Nguyen et al., 2023).



Conclusion

- AI adoption in Ugandan universities is in its early stages but holds significant potential
- Key barriers include lack of infrastructure, faculty training, and funding constraints
- Targeted investments and policy interventions can accelerate AI adoption
- Inclusive AI adoption strategies are crucial to ensuring equitable access



Limitations & Future Research

- The study focused on few universities, limiting generalizability
- Findings rely on self-reported data, introducing possible response bias
- Future research should track AI adoption over time
- Ethical implications of AI in Ugandan universities need further investigation



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Brief

Michael Adelani Adewusi, Ph.D., is a Nigerian academic with extensive qualifications in ICT STEM Education, Cyber-Security, Educational Technology, and Mathematics. He earned his Ph.D. from Lagos State University and has multiple professional certifications, including those in Data Science, Python, and Disaster Risk Reduction. Adewusi has held significant high academic positions at Kampala International University, such as the present *Dean of the School of Mathematics and Computing*, and the former *Principal of the College of Education Open and Distance Learning*. He has a robust background in teaching a wide range of undergraduate and postgraduate courses (over 23), from Management Information Systems to Cyber Security and the committee on both new and reviewed of over 20 programmes



Thank You!

Questions & Discussion



Dr. Joyce Nabende Nakatumba

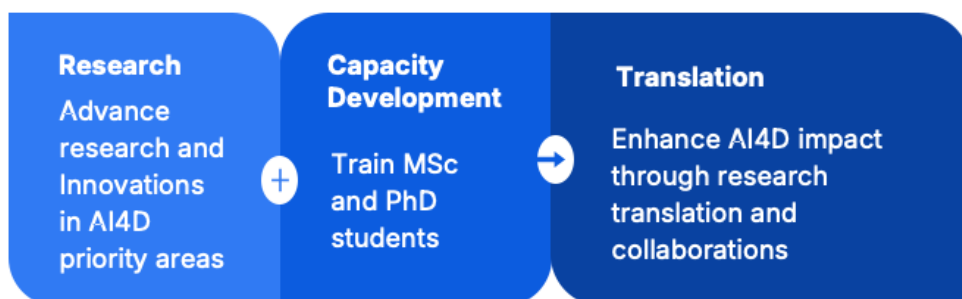
Presentation:

Leveraging AI in support of teaching & learning and research in higher education

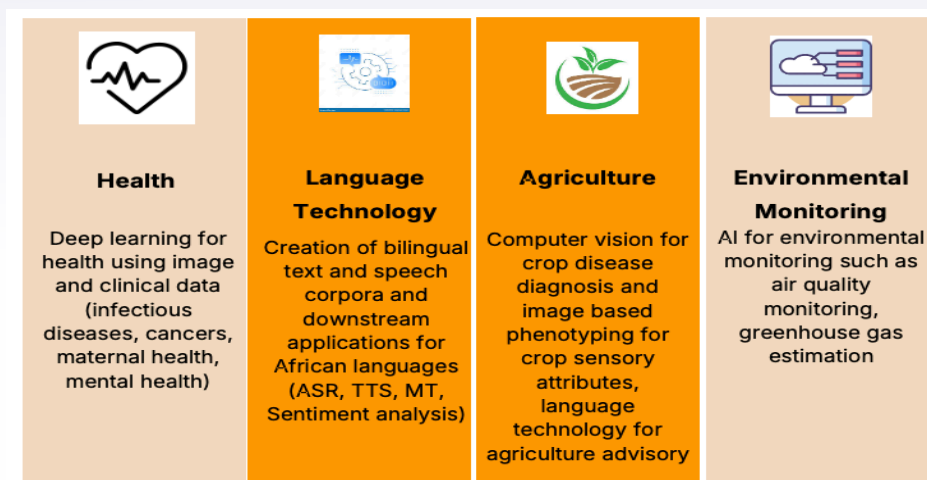
Makerere University Centre for Artificial Intelligence and Data Science

Vision “excellence in Artificial Intelligence research for accessible solutions”

Mission “to advance Artificial Intelligence research to solve real-world problems



Research Focus



Ethical and Responsible AI

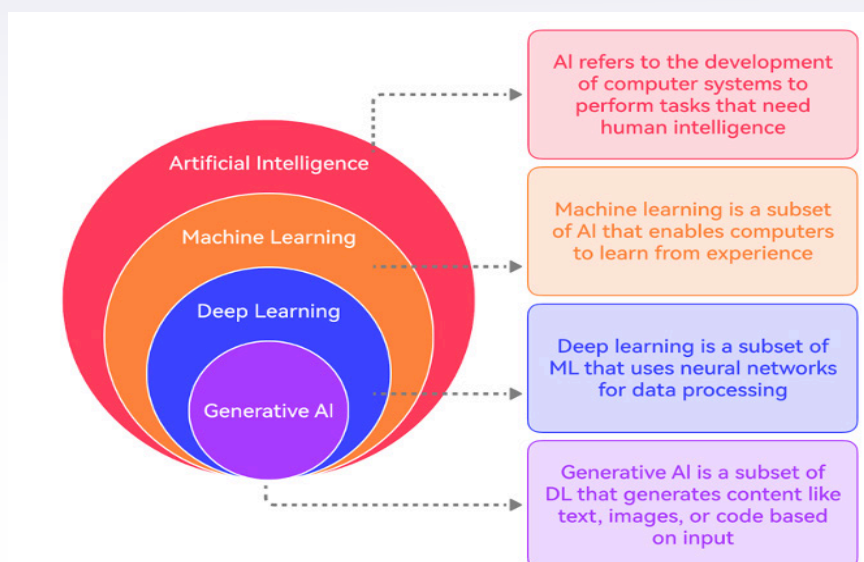


Introduction

- The AI revolution is transforming nearly every aspect of our lives, and education is no exception.
- As AI technologies become more sophisticated and accessible, their potential to reshape teaching and learning is becoming increasingly apparent.
- From personalizing instruction to automating administrative tasks - AI promises to enhance educational outcomes and empower educators to better aid their students.



Definitions



The opportunities for AI are: to empower teaching, learning, research and assessment with integrity



AI in Education

- Increasing accessibility
 - Learning resources can be accessed from anywhere
 - Personalized learning inside and outside the classroom.
- Learning can be tailored and adapted to each student's goals and abilities through personalized programs
- Time-consuming, tedious tasks such as record keeping or grading multiple-choice tests can be completed through AI automation



AI Opportunities for Learners

- Offloading skills not assessed
 - e.g., programming course core - syntax, data structures, problem-solving, and potentially advanced topics like OOP and libraries
- Instant feedback on assessments
- Mastery-based assessment - higher levels of Bloom's taxonomy
- Individual assessments
- Practice materials
- 24/7 tutors



AI Opportunities for Teachers

- Course redesign
- Question generation
- Learning Outcome revision
- Assessment revision
- Class activities generation

EXAMPLES OF AI IN EDUCATION

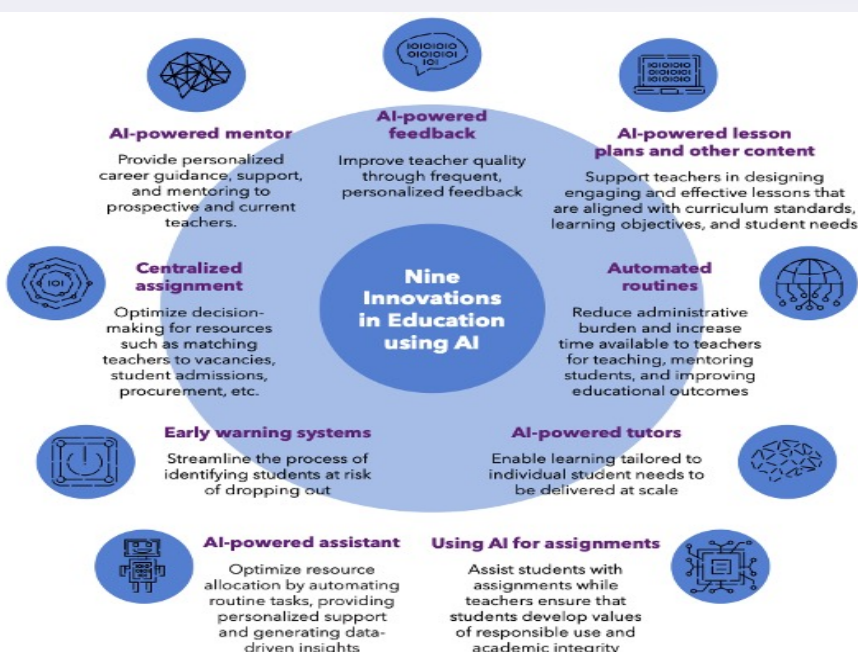
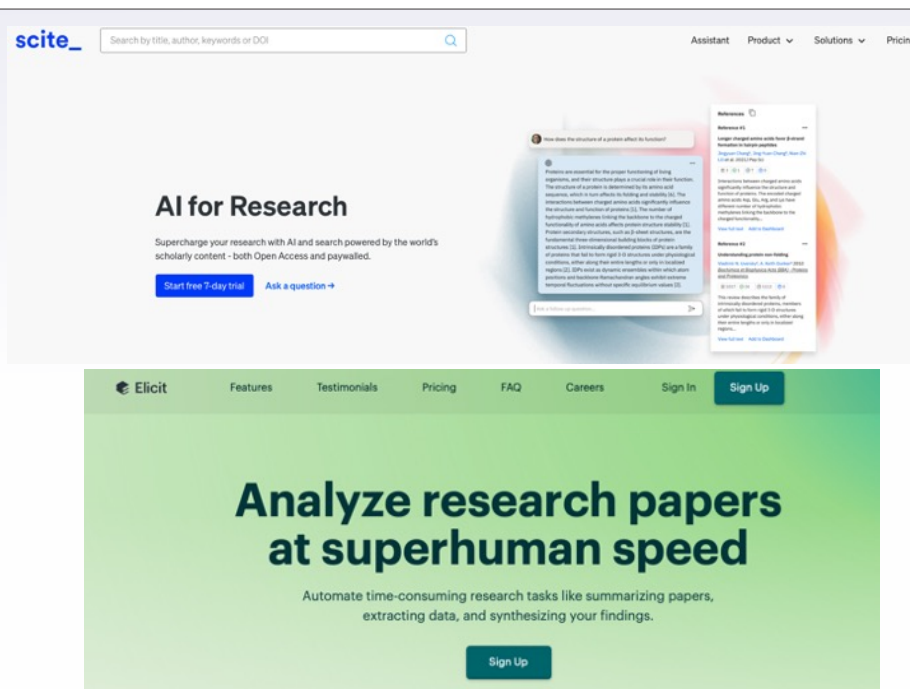


The Molley Factor



AI Opportunities for Researchers

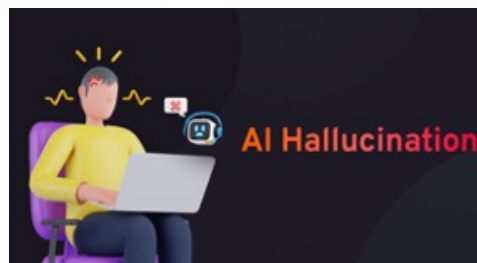
- AI can be used by researchers throughout the lifecycle of a research project
 - designing the research through to data collection and analysis, and writing up/presenting and disseminating research results.
- Machine learning can help researchers go through very large datasets & find patterns in the datasets.
- AI-driven document search tools can search through large amounts of literature and academic papers to quickly find the most relevant and up-to-date research.



Barriers to Change

Within GenAI

- AI hallucinations - they don't think, they make mistakes and produce outputs that are:
 - Factually inaccurate or fabricated
 - Contextually incorrect
 - Contradictory
- This can be caused by:
 - Inherent nature of LLMs
 - Training and training data quality
 - Large language model settings
 - Input context and prompting



Barriers to Change

Within Higher Education Institutions

- Lack of training, support, and time for faculty to rethink pedagogy and assessment within their courses.
- Lack of focus on degree integrity.
- Segmented/absent critical thinking (information, digital, AI literacy, ethical reasoning) curriculum
- Focus should be on competency based learning



Major Implications of AI in Education

- Academic integrity
- Data privacy
- Citation & Attribution
- Copyright & Intellectual Property
- Environmental impact
- Digital inequity
- Misinformation



“Your current course includes several written essay assignments. Currently your syllabus does not include any policy about students using generative AI tools. In a recent meeting, your teaching assistant has told you that several students have asked them whether they can use AI tools in the course or not. They suspect that some students are already using AI tools for class assignments.”

- How might you approach this conversations with your teaching assistant?
- What factors might you consider when thinking through this issue?

As higher educational institutions, do we have policies in place for use of AI (Generative AI) in education.



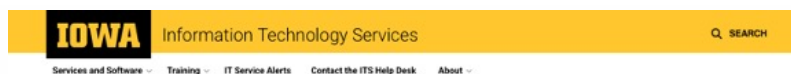
Effective and Responsible Use of AI in Research

Effective and Responsible Use of AI in Research Guidance for Performing Graduate Research and in Writing Dissertations, Theses, and Manuscripts for Publications

[Lifted in its entirety from Georgia Tech (Georgia Institute of Technology), and revised in response to feedback from the UW Graduate School Council and key stakeholders across all three UW campuses^{[1], [2]}]

The use of artificial intelligence has expanded greatly in recent years to all sectors of society. Generative AI and Large Language Models, like [ChatGPT®](#), [Microsoft Co-Pilot®](#), and [Google Gemini®](#) are rapidly becoming available, expanding access to this technology for use by anyone who is digitally literate.

These tools can be used effectively in conducting research, and this guidance document is developed to assist researchers, especially graduate students, in this purpose. The guidelines presented here are recommendations only and will evolve with the rapidly changing landscape of AI.^[2]



Using Artificial Intelligence (AI) Tools in Research

Guidance on using AI tools in research

The University of Iowa recognizes the rapidly evolving landscape of Artificial Intelligence (AI) and its potential to advance knowledge, research, and scholarly work. AI tools can save researchers time and resources, enable them to tackle more complex problems, and enhance the quality of their work. However, it's essential to use AI responsibly, understand its limitations, be aware of the UI policies and guidance that apply to AI tools, and ensure that human expertise remains central to the research process.

The technology continues to advance and as such, remains an evolving discussion across the University of Iowa and requires diligence in staying up-to-date. Several departments have provided additional guidance on using AI tools and links can be found below:



Solution for Use of GenAI in HEI

First step solution for Instructors

- Play with the AI(GenAI) tools
- Revise learning outcomes
- Reconsider assessments
 - Assessment of vs for learning
- Communicate to the students about the tools
 - Ask them what they think!
- Develop a clear AI-use policy
 - If your going to ban the use of GenAI models then secure the assessments.
 - If allow it, teach students how to use it ethically



Conclusion

- Educators need to develop a better understanding of AI's impact including on teaching, research and learning.
- Educators and students should have a basic understanding of AI to be able to engage positively, critically and ethically with this technology and to exploit its full potential in their different domains.





Thank you




Rose Nakasi, PhD

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Presentation: Adopting and Implementing AI Technologies in Higher Education setting





About Us

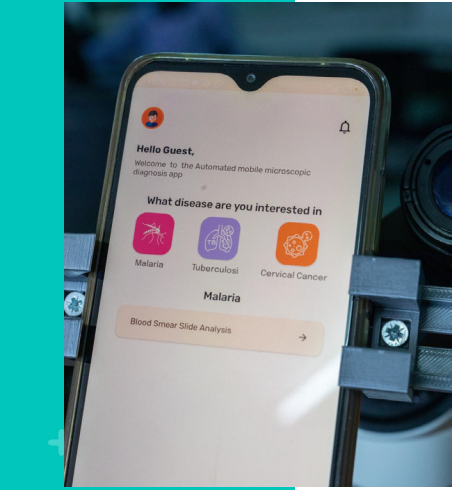


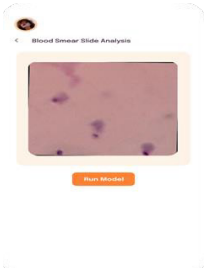
Our goal is to address pressing health challenges effectively by leveraging cutting-edge technology and fostering interdisciplinary collaboration to revolutionize healthcare delivery, improve patient outcomes, and ultimately, make a meaningful difference in lives

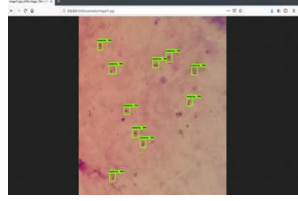





Ocular Project









This Presentation



Outline the Potential of AI for Education



Share Current Developments and Issues



Look at the Future



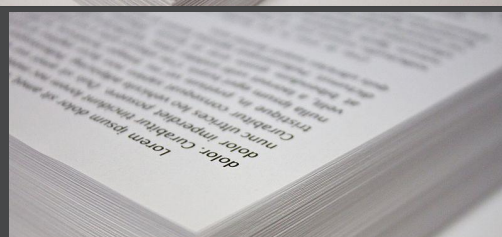
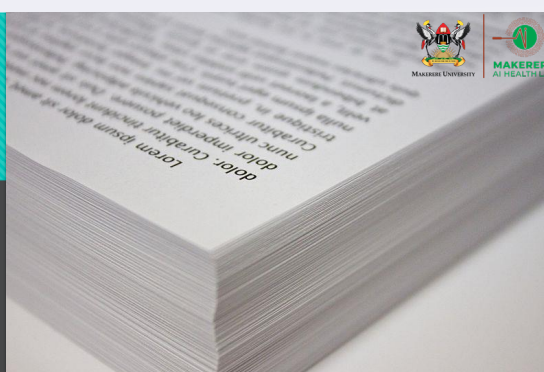
Ways in Which AI Could Impact Higher Education

"The future isn't what it used to be..." Yogi Berra



1. Natural Language Generation

- **Natural Language Generation:** Producing text from computer data. Currently used in customer service, report generation, and summarizing business intelligence insights. Sample vendors.
- **Imagine in Education:** Automatically generating assignment questions, course materials, teaching resources.





- **Speech Recognition:** Transcribe and transform human speech into a format useful for computer applications.
- **Imagine in Education:** Being able to support learners who find following conversation difficult because of hearing difficulties; enabling the reconstruction of important conversations between researchers.



2. Speech Recognition



3. Virtual Agents

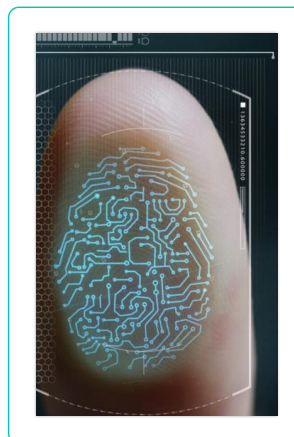


- **Virtual Agents:** From simple chatbots to advanced systems that can network with humans. Currently used in customer service and support and as a smart home manager.
- **Imagine in Education:** Expanding the use of chatbots to link to adaptive learning engines so that students are able to be engaged in adaptive learning.



4. Biometrics

- **Biometrics:** Enable more natural interactions between humans and machines; e.g. image and touch recognition, speech, and body language..
- **Imagine in Education:** Biometrics are already used as part of the remote proctoring systems for student exams and assessments; fingerprint, facial recognition and writing patterns



5. Text Analytics

- **Text Analytics and NLP:** Natural language processing (NLP) uses and supports text analytics
- **Imagine in Education:** The application of NLP in an education system is very effective for the analysis of errors in objective assessments and for the assessment of essays and complex answers to questions.



Current Use cases of AI in Higher Education



1. Automated Feedback and Grading The Open University UK's Open essayist

To support students in drafting essays, a team from the Open University developed **OpenEssayist**, an intelligent linguistic analytics tool used in real-time to analyze text in essays and generate automated feedback. It allows students to;

- 1) reflect on the draft text
- 2) review how the essay is organized
- 3) understand how the key terms are being used across the essay and how they combine to form a cohesive discussion.

The cohort of students using OpenEssayist achieved significantly higher overall grades than the students in the previous cohort.



2. Intelligent Microscopy teaching aid by Ocular project @ Makerere AI Health Lab, Makerere University

The Makerere AI Health Lab are developing intelligent microscopy teaching Aid for tutoring microscopy.

The Lecturer is able to go through a projected visual assisted platform to teach students. It has incorporated practical quizzes to assess if the student has understood the microscopy concepts.



Some Concerns and consideration for use of AI in education



Key Concerns

1. **Explain-ability** challenge; Our inability to interrogate some AI systems to determine just how decisions within the system.
2. **Bias** – when data is being used to create algorithms, what kind of bias is implicit in the system?
3. **Accountability-responsibility** problem. When a piece of software fails – for example, GPS software, it is possible to determine whether the problem is a hardware problem, a software problem, a data-entry problem or a human error problem.
4. **Privacy** is a key issue, especially given the huge appetite for data which AI systems appear to have.
5. **Bad actors** are also a major and growing problem for AI systems. Despite many with good intentions, not all uses of AI are benevolent
6. **The interface challenge** –As more and more people live their lives in partnership with technology, how do we manage both the people:technology interface



Thank you

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Dr. Ivan Mukiibi, ISBAT


Presentation:

Innovative Approaches for Revolutionizing Curriculum Design, Teaching Methods, and Assessment Practices through AI




Innovation Approaches for Revolutionizing Curriculum Design, Teaching Methods, and Assessment Practices through AI

Transforming Education With AI



Overview

- 01** • AI is reshaping education by enabling personalized learning, efficient teaching methods, and dynamic assessment practices.
- 02** • Focus: How AI can revolutionize curriculum design, teaching approaches, and assessments.
- 03** • **Objective:**
Explore innovative strategies and practical applications of AI in education.



Acknowledgements

- ChatGPT4 & perplexity.ai for summarizing, brainstorming, and suggestions on the content.
- Midjourney & DALL-E to generate images
- Designer feature within PowerPoint to suggest slide layouts and stock images.
- Grammarly for spelling, grammar, conciseness, word choice, and so on.
- Google for web search...



The Role of AI in Education

Key Areas of Impact:

- Curriculum design: Personalized and adaptive learning paths.
- Teaching methods: Intelligent tutoring systems and real-time feedback.
- Assessment practices: Automated grading and predictive analytics.

Potential Benefits:

- Improved student engagement.
- Enhanced learning outcomes.
- Streamlined administrative processes.

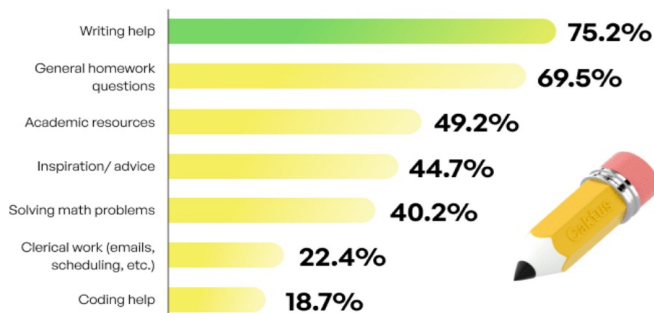


01

Revolutionizing Curriculum Design with AI



What are students using AI for?



source: surveymonkey.com



Revolutionizing Curriculum Design with AI

Personalized Learning Paths:

- AI analyzes student data to tailor content to individual needs

Intelligent Content Development:

- Automated generation of quizzes, multimedia resources, and interactive exercises

Real-Time Feedback:

- Continuous monitoring of student progress to adjust curriculum dynamically

Emerging Technologies Integration:

- Combining AI with AR/VR for immersive learning experiences (e.g., medical simulations)



Transforming Teaching Methods

AI-Powered Tutoring Systems:

- Provide personalized support and additional practice exercises.

Adaptive Instructional Strategies:

- AI identifies gaps in understanding and suggests alternative teaching methods.

Virtual Classrooms:

- AI creates interactive environments for remote learning.

Teacher Empowerment:

- Reduces workload by automating repetitive tasks like grading and lesson planning



Innovating Assessment Practices

Automated Grading Systems:

- Efficiently evaluate essays, assignments, and exams.

Predictive Analytics:

- Identify at-risk students early and recommend interventions.

Dynamic Assessments:

- Real-time tracking of student performance to modify assessments accordingly

Ethical Considerations:

- Address concerns about bias and data privacy in AI-driven assessments



Challenges in Implementing AI in Education

- Lack of infrastructure and funding for advanced technologies.
- Ethical concerns regarding data privacy and algorithmic bias.
- Resistance to change among educators unfamiliar with AI tools.
- Need for continuous training to effectively implement AI solutions



Best Practices for Successful Integration



Strategic Planning:

Develop clear frameworks for integrating AI into educational systems



Capacity Building:

Train educators on using AI tools effectively



Collaborative Development:

Partner with tech companies to co-create solutions tailored to educational needs



Pilot Testing:

Test AI applications on a small scale before full implementation



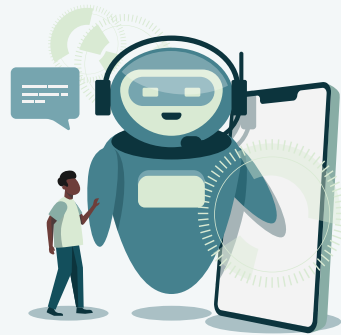


Future Directions for AI in Education

- Integration with emerging technologies like AR/VR for experiential learning.
- Use of generative AI to create dynamic content aligned with evolving curricula.
- Development of ethical guidelines to ensure fair use of AI in education.
- Leveraging predictive analytics for institutional decision-making



Use Cases



Coursera



Coursera Coach

An AI-powered virtual assistant using ChatGPT to provide real-time feedback, answer questions, and offer personalized course recommendations.



AI-Assisted Course Building:

This tool helps educators design courses by recommending readings, assignments, and glossaries.

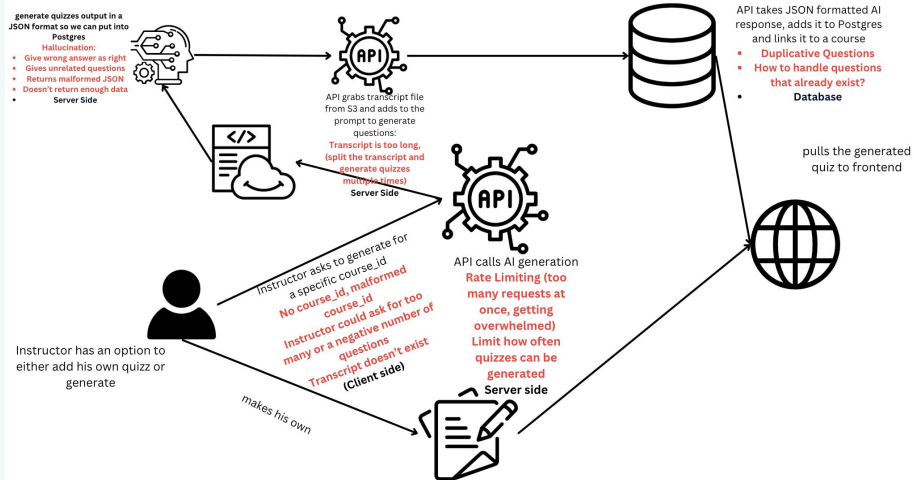
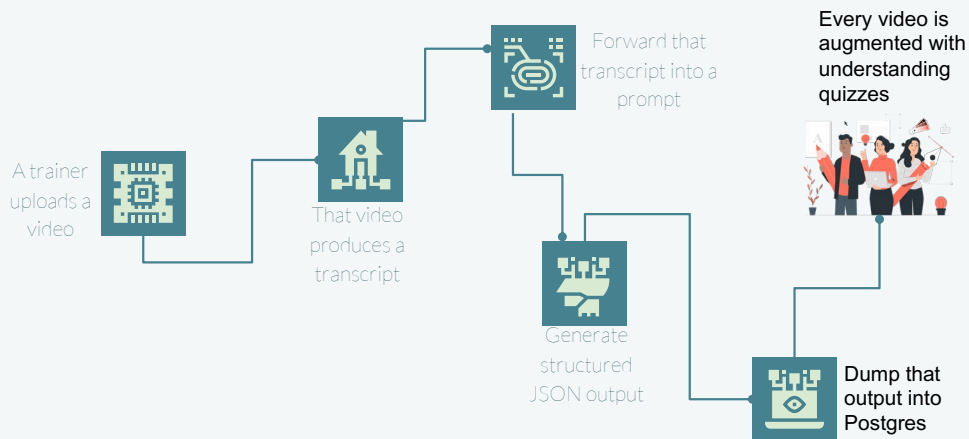


Automated Translation:

Machine learning tools translate course materials into multiple languages (e.g., Spanish, French, Arabic), increasing global accessibility.



ISBAT LMS Multiple Choice Quiz Generation



Conclusion & Call to Action



Embracing AI is essential for modernizing education.



Collaboration among stakeholders (educators, policymakers, tech developers) is key to success.



Let's harness the power of AI responsibly to create a more inclusive, effective, and innovative educational system.



Thanks!

Do you have any questions?
Ivan Mukiibi



CLOSING REMARKS BY THE EXECUTIVE DIRECTOR, NATIONAL COUNCIL FOR HIGHER EDUCATION

PROFESSOR MARY J.N. OKWAKOL

Hon. Minister of ICT and National Guidance

Chairperson, NCHE

Management of NCHE;

Vice Chancellors and Principals

Staff of NCHE

Distinguished Participants

Ladies and Gentlemen.

On behalf of National Council for Higher Education (NCHE), I welcome the Hon. Minister of ICT and National Guidance, and appreciate acceptance of our invitation to close the Conference.

As we close this 6th Annual Higher Education Conference. I want to thank everyone for the contributions you have made since yesterday.

In a very special way, I wish to sincerely appreciate the First Lady and Minister of Education and Sports, Maama Janet Kataaha Museveni, for having come in person to officially open the Conference. The Minister's speech, which was insightful, was crucial in setting the tone by urging higher education institutions to embrace AI technology. Please note the advice that AI should enhance rather than replace essential human values.

You will agree with me that this has been an instructive and productive conference on the role of AI in advancing quality higher Education.

I would like to extend our appreciation to the Keynote speakers, Prof. Azra Naseem, Dr. Lawrence Muganga and Dr. Ernest Mwebaze and the many paper presenters, for their contributions in ensuring a successful conference. Your expertise and innovative ideas and engaging interventions have enriched the Conference.

To all participants, your valuable presence and active participation in the discussions contributed a lot to the success of the Conference.

Over the course of the two days, the Conference has highlighted challenges, best practices, and strategies for integrating AI in higher education in Uganda, in keeping with the theme. The transformative potential of AI in advancing higher education was emphasized. It is evident that AI is touching every aspect of our lives, more so in the domain of higher education. The need to enhance infrastructure and tools and to revolutionise curricula design, teaching and assessment were emphasized.

As AI becomes increasingly integrated into various aspects of higher Education, there is need for better understanding of the risks it possess and putting in place appropriate mitigation measures.

To all session Chairpersons, your guidance of the discussions in the sessions ensured smooth and engaging conversations. Thank you very much.

Gratitude is also due to rapporteurs and all who played various roles- those at the reception desk etc.

And to the organizing committee, a very big thank you once again.

Thank you once again all for your participation and support.

I wish you safe travels home.

THANK YOU FOR YOUR ATTENTION

CLOSURE:

The conference was closed by **Hon. Dr. Chris Baryomunsi, Minister of ICT and National Guidance**

Chairperson and members of NCHE Council present

The Executive Director, NCHE

Vice Chancellors and Principals present

Senior Staff of the Ministry of Education and Sports

Staff of the National Council for Higher Education

Distinguished Participants

Ladies and Gentlemen

I bring you greetings from the Ministry of ICT and National Guidance (ICT & NG) and thank you for inviting me to close this conference.

The Ministry of ICT and National Guidance (NG) was established in 2006 with the mandate of providing strategic leadership and supervision of ICT in the country. We work to ensure that we have a knowledgeable and productive society driven by Information, Communications Technology.

The Ministry of ICT and NG is happy to associate with the National Council for Higher Education not only in the areas of training human resources but also in communicating government programmes. This not only helps the Ministry to achieve its mandate but also helps the National Council for Higher Education to fulfill its mandate function of disseminating information about higher education in Uganda for the benefit of the public.

I am reliably informed that in this Conference, you have been deliberating on issues around the integration of Artificial Intelligence in higher education, especially focusing on the challenges, best practices and strategies, as per the theme *Challenges, best practices and strategies of Artificial Intelligence integration in Higher education in Uganda.*

Artificial Intelligence (AI) is one of the new technological advancements in the world resulting from the exceptional revolutionary transformation with significant developments such as the internet, smart gadgets, virtual reality, cloud computing, and the 4th Industrial Revolution (4IR), among others..

The Ministry of ICT and NG launched the Digital Transformation roadmap in September 2023 outlining Uganda's journey to incorporate digital solutions in areas of education. It is aligned to the National Development Plan (NDP IV) with the aim of strengthening the implementation of enabling policies and laws to accelerate Uganda's Digital Revolution.

The Ministry is developing a national strategy and establishing an institutional framework to guide the adoption and usage of AI. It includes developing best practices and implementing checks and balances through policies, regulations, and laws in order to ensure policy coordination and coherence.

Currently there is no legal framework specifically on AI to provide a regulatory oversight and diverse actors in the AI ecosystem. There are various pieces of legislation which majorly focus on general-purpose technologies. The National Information Technology Authority, Uganda (NITA-U) Act offers a foundation for improving infrastructure to support AI regulation efforts. The current policy and legal framework, provide a starting point for enacting comprehensive, AI-specific legislation.

This Conference is in line with our strategy of implementing a national program to educate citizens on AI, as well as promoting responsible engagement and ethical practices.

Well aware that the Ministry alone cannot effectively and timely address the AI needs of the country, we are in partnership with the private sector such as Sunbird AI to enhance ICT services. Further, in collaboration with the International Telecommunications Union (ITU), the Ministry is undertaking a project to establish a foundation for Uganda's data-driven future.

Cognizant of the high costs to integrate AI in all sectors, especially research which is vital in generating new knowledge and providing solutions to societal problems, the Ministry is establishing a National Research and Innovative Fund on AI to tap into and harvest the dividends that come with AI.

The Ministry of ICT and National Guidance is working with the Ministry of Education and Sports on the implementation of the Education Digital Agenda Strategy 2021 – 2025, which provides a Rationale and Action Plan for integrating ICT into teaching, learning, and assessment. This will equip students with AI skills and prepare them for a tech-driven future and create opportunities that will positively impact society, improve productivity and efficiency for research and academia.

My Ministry through the Uganda Communications Commission (UCC), alongside the Uganda Communications Universal Service and Access Fund (UCUSAF) as embedded in the Sustainable Development Goal (SDG) 4, has been a key player in supporting educational institutions with ICT infrastructure. We have also worked to increase internet connectivity in schools, supported ICT clubs, conducted teacher ICT skilling, and are creating an E-learning platform.

To you educators, I want to remind you that the future of our education demands a workforce that can adapt to rapidly evolving technological advancements. It is high time Universities and Tertiary Institutions laid ground for mastery of AI by integrating AI in the programmes you are running and reviewing your curriculum to develop innovative ways and stay on course with ever-changing technologies.

In my language we say that *"okugyenda n'empinduuka"*; literally meaning that we have to move with change. I therefore call upon all stakeholders in the education sector to move with the Ministry of ICT and NG in this journey of technological change to accept and embrace the new technological advancement. It is our responsibility to make well-thought-out changes in the ICT system for the better.

I am convinced that you have found this conference relevant as we strive to change our goals to align them to the global technological changes. Apply the knowledge attained from this conference to see how best we can integrate AI in the higher education sector in Uganda.

I commend the Council, Management, staff of NCHE and the presenters on this great initiative and for organizing this conference.

It is now my pleasure to declare this 6th Annual Higher Education Conference officially closed.

For God and my country

Dr. Chris Baryomunsi (MP)

Minister of ICT and National Guidance

END OF CONFERENCE

Appendix 1

THE 6th NCHE ANNUAL HIGHER EDUCATION CONFERENCE

Venue: Hotel Triangle, Mbarara City

Date: 24th & 25th MARCH 2025

THEME: Challenges, Best Practices, and Strategies for Artificial Intelligence Integration in Higher Education in Uganda

CONFERENCE PROGRAMME

| DAY ONE | 24 th March 2025 | |
|--|---|--|
| Time | Activity | Responsible |
| 7:00 – 9.00: | Arrival and Registration | Ms. Susan Nanyombi, Ms. Lynatte Atuhaire & Ms. Annet Lyaka |
| Master of Ceremony: Dr. Nora Mulira, Director IRI & Mr. Arthur Babu Muguzi, Director FPA, NCHE | | |
| 9:00-9:10 | Welcome Remarks | Professor Mary J.N Okwakol, Executive Director, NCHE |
| 9:10-9:40 | Artificial Intelligence in Higher Education: Policies, Regulations, and Adoption Strategies for Sustainable Transformation. | Prof Azra Naseem: Senior Instructor & Associate Director Aga Khan University Network of Blended and Digital Learning |
| 9:40-10:00 | Discussion: Question and answer | PLENARY |
| SESSION ONE: Policy and Regulatory Environment for Effective Artificial Intelligence Integration in Higher Education. | | |
| CHAIRPERSON: Dr. Nora Mulira, Director ICT, Research and Innovation, NCHE | | |

| | | |
|---|--|---|
| | PANEL DISCUSSION | |
| 10:00- 11:00 | Topic: Policy and Regulatory Environment for Effective Artificial Intelligence Integration in Higher Education | |
| | Ethical Considerations in AI Integration in higher education | Mr. Julius Peter Torach, Commissioner, Ministry of ICT and National Guidance |
| | Policies and regulations for AI adoption in higher education | Hon. Nyombi Thembo, ED, UCC |
| | The role of NCHE in the AI integration and adoption in Higher Education | Dr. Vincent Ssembatya, Director, Quality Assurance and Accreditation, NCHE |
| | Evaluating the Impact of AI Policies and Regulations on Higher Education: Leadership Strategies for Effective Adoption | Prof John Mugisha, VC Bishop Stuart University |
| 11:00-11:40 | Discussion: Question and answer | PLENARY |
| 11:40-12:20 | Break | |
| SESSION TWO: CONFERENCE OPENING | | |
| Master of Ceremony: Dr. Nora Mulira, Director IRI & Mr. Arthur Babu Muguzi, Director FPA, NCHE | | |
| 12: 30 pm | Arrival of the Guest of honour | |
| 12:40 -12:50 | Uganda & East African Anthems | |
| 12:50-12:55 | Opening Prayer | Rev. Fr. Dr. Deus Karemire, VC University of St. Joseph Mbarara |
| 12:55-13:05 | Welcome Remarks | Professor Mary J.N Okwakol, Executive Director, NCHE |
| 13:05 -13:10 | Opening Remarks | Prof Joy Kwesiga Chairperson, NCHE |
| 13:10- 13:20 | Panel Discussion Recap | Dr. Nora Mulira, Director ICT, Research and Innovation, NCHE |
| 13:20-14:00 | KEYNOTE SPEAKER PRESENTATION | |
| | Exploring the transformative role of technology and artificial intelligence in higher education. | Dr. Lawrence Muganga, VC Victoria University |

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|---|---|--|
| 14:00 | Official Opening | |
| | | Dr. Kedrace Turyagyenda, Permanent Secretary, Ministry of Education and Sports |
| | | First Lady and Minister of Education and Sports, Hon. Janet Kataaha Museveni |
| | Anthems (EastAfrican and Ugandan) | |
| | Photo moment | |
| | Guest of Honour Departs | |
| 14:20-15:20 | Lunch | |
| SESSION THREE: Artificial Intelligence Adoption in Higher Education. | | |
| CHAIRPERSON: Mr. Sam Byagweri, Principal, Uganda Technical College, Bushenyi | | |
| 15:20-15:35 | <i>Enhancing Personalized Learning through Artificial Intelligence at Bugema University: Experience, Opportunities and Challenges</i> | Dr. Eria Muwanguzi: Hall 1 |
| 15:35-16:00 | Question and answer | |
| 15:20-15:35 | <i>Adaptation of artificial intelligence in Ugandan universities: insights from a highly digitalized university</i> | Prof. Arthur Ahimbisibwe: Hall 2 |
| 15:35-16:00 | Question and answer | |
| 16:00-16:15 | Artificial Intelligence Adaptation in Higher Education: Supervisors Ease or Difficulty in Detecting AI-Generated Research in Postgraduate Research | Dr. Solimo Rajab: Hall 1 |
| 16:15-16:40 | Question and answer | |
| 16:00-16:15 | Enhancing information flow from graduates to continuing and prospective University entrants on the best courses to select, and specialize in using AI for decision-making | Dr. Rashid Kisejjere: Hall 2 |
| 16:15-16:40 | Question and answer | |
| 16:40 - | Cocktail | |
| | END OF DAY ONE | |

| | | |
|---|---|--|
| DAY TWO | 25 th March 2025 | |
| SESSION ONE: OPENING SESSION | | |
| Time | Activity | Responsible |
| 8:00 – 9:00 | Arrival and Registration of Participants | Ms. Susan Nanyombi, Ms. Lynatte Atuhairi & Ms. Annet Lyaka |
| Master of Ceremony: Dr. Nora Mulira, Director IRI & Mr. Arthur Babu Muguzi, Director FPA, NCHE | | |
| 9:00 –9:10 | Welcome Remarks | Professor Mary J.N. Okwakol Executive Director NCHE |
| 9:10-9:50 | KEYNOTE SPEAKER PRESENTATION Empowering Higher Education: AI-Driven Infrastructure, Skills, and Curriculum for the Future | Dr. Ernest Mwebaze, ED, Sunbird AI |
| 9:50-10:30 | DISCUSSION: Question and answer | Plenary |
| 10:30-11:00 | Break Tea | |
| SESSION TWO: Infrastructure, tools, and skills for Artificial Intelligence Integration in Higher Education Institutions. | | |
| CHAIRPERSON: Dr. Evarist Nabasa (Dean of the Faculty of Computing and Informatics, Mbarara University) | | |
| 11:00-11:40 | Infrastructure, tools, and Skills Required for Effective AI Integration in Higher Education Institutions | Prof. John Quinn, director of Sunbird AI and Mr. Imran Sekalala, Data Scientist & Machine Learning Eng, Subur AI |
| 11:40-12:20 | DISCUSSION: Question and answer | Plenary |
| 12:20-12:35 | Public communication campaign to revolutionize National curriculum design for transformative teaching and learning assessment through artificial intelligence in higher education in Uganda | Mr. Wilson Okaka: Hall 1 |

| | | |
|--|--|---|
| 12:35-13:00 | DISCUSSION: Question and answer | Plenary |
| 12:20-12:35 | AI in Universities: The Good, the Bot, and the Ugly Truths! | Michael Adelani Adewusi: Hall 2 |
| 12:35-13:00 | DISCUSSION: Question and answer | Plenary |
| 13:00-14:00 | LUNCH | |
| SESSION THREE: Revolutionising Curriculum Design, Teaching, and Assessment through Artificial Intelligence in higher education. | | |
| CHAIRPERSON: Prof Pius Achanga, Vice Chancellor Mountains of the Moon | | |
| 14:00-14:30 | Leveraging AI in support of teaching & learning and research in higher education. | Dr. Joyce Nabende Nakatumba |
| 14:30-15:00 | Experiences on adopting and implementing AI technologies within higher education settings. | Dr. Rose Nakasi, Lead Coordinator, Ocular Project. |
| 15:00-15:30 | Innovative Approaches for Revolutionizing Curriculum Design, Teaching Methods, and Assessment Practices through AI | Dr. Vineet V. Tyagi & Dr. Ivan Mukiibi, ISBAT |
| 15:30-16:00 | DISCUSSION: Question and answer | Plenary |
| 16.00- 16:20 | CLOSURE | Hon. Dr. Chris Baryomunsi, Minister of ICT and National Guidance |

Rapporteurs:

1. Dr. David Musimaami (Leader)
2. Dr. Olive Lunyolo
3. Dr. Justin Ayebare
4. Ms. Naomi Turyahabwa

Conference Coordinator: Dr. Cosmas Muhumuza

Conference supervisor: Dr. Nora Mulira



National Council for Higher Education

Ensuring Quality for Excellence

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