42nd ASSOCIATION FOR EDUCATIONAL ASSESSMENT IN AFRICA (AEAA) ANNUAL CONFERENCE

PROGRAMME AND ABSTRACTS

17th – 21st AUGUST 2026

THEME: Rethinking Educational Assessment in the Age of Artificial Intelligence (AI)

GRAN MELIA HOTEL
ARUSHA
TANZANIA

SPONSORS

The Local Organising Committee of the 42nd AEAA conference highly appreciate and wish to thank the following sponsors for their continued support.

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ABOUT ARUSHA

Arusha, the third largest city in Tanzania, is situated in Northern Tanzania, nestled at the base of Mount Meru. Arusha is often referred to as the "Geneva of Africa" because of its significant role in diplomacy, peacekeeping, and international cooperation. Arusha is home to several major regional and international organizations, including the East African Community, the East African Court of Justice, the International Criminal Tribunal for Rwanda (ICTR), and various diplomatic missions and regional offices. Arusha is more than just a stopover on the way to and from safari adventures. One of the fastest growing cities in Tanzania and the best tourist destinations in East Africa, Arusha is the safaris gateway to some of Africa’s most famous landscapes and famous natural attractions such as Ngorongoro Crater, Lake Manyara, Olduvai Gorge, Tarangire National Park and Arusha National Park.

ABBREVIATIONS AND ACRONYMS

AEAA	Association for Educational Assessment in Africa
AEBESA	Association of Educational Bodies -Eastern and Southern Africa
ADEMNEA	Adaptive Environment Monitoring Network for East Africa
AI	Artificial Intelligence
AI CFT	Artificial Intelligence Competency Framework for Teachers
APPPF	Academic-Public-Private Partnership Forum
AU	African Union
BEC	Botswana Examinations Council
BECF	Basic Education Curriculum Framework
CBE	College of Business Education
CBET	Competency Based Education and Training
CCNA	Cisco Certified Network Administrator
CEO	Chief Executive Officer
CIRA	Candidates Items Response Analysis
COSTECH	Commission for Science and Technology
DICT	Director of Information and Communication Technology
DIT	Dar es Salaam Institute of Technology
DRVTSC	Dar es Salaam Regional Vocational Training and Services Centre
EMIS	Education Management Information System
EXCO	Executive Committee
ERB	Engineers Registration Board of Tanzania
GenAI	Generative Artificial Intelligence
GEQIP	General Education Quality Improvement Program
GePG	Government electronic Payment Gateway
HEET	Higher Education for Economic Transformation
IAEA	International Association for Educational Assessment
ICTR	Inter Criminal Tribunal for Rwanda
IDS	Institute of Development Studies
IEEE	Institute of Electrical and Electronic Engineering

JAMB	Joint Admissions and Matriculation Board
KNEC	Kenya National Examinations Council
KTH	Kunglighga Tekniska Hogskolan
LMC	Learning Management Committee
LOC	Local Organizing Committee
MIT	Massachusetts Institute of Technology
MP	Member of Parliament
MUCE	Mkwawa University College of Education
NABTEB	National Business and Technical Examinations Board
NACTVET	National Council for Technical and Vocational Education and Training
NCE	Nigeria Certificate of Education
NECO	Nigerian Examinations Council
NECTA	National Examinations Council of Tanzania
NULIS	National University of Lesotho International School
OCIATQ	Opportunities and Challenges in Integrating AI-Based Tools Questionnaire
OER	Open Education Resource
OMS	Online Management Systems
PCOC	Process Control and Optimization Consortium
PIRA	Pupils Items Response Analysis
SGCI	Sub-Saharan Science Granting Council
SLMs	Small Language Models
SEQUIP	Secondary Education Quality Improvement Project
STEM	Science Technology Engineering and Mathematics
SUZA	State University of Zanzibar
TEVETA	Technical Education, Vocational and Entrepreneurship Training Authority
TVET	Technical and Vocational Education and Training
UCE	Uganda Certificate of Education
UCC	University Computing Centre
UDL	Universal Design for Learning
UDOM	University of Dodoma

UNEB	Uganda National Examinations Board
UNFPA	United Nations Population Fund
UNESCO	United Nations Education and Scientific and Cultural Organization
UNISEC	University Space Engineering Consortium
USA	United States of America
UTAUT	Unified Theory of Acceptance and Use of Technology
UTME	Unified Tertiary Matriculation Examination
VETA	Vocational Education and Training Authority
WAEC	West African Examination Council
WASSCE	West African Senior School Certificate Examination

A WELCOME MESSAGE BY NECTA EXCUTIVE SECRETARY
PROF. SAID ALLY MOHAMED

On behalf of the National Examinations Council of Tanzania (NECTA), I warmly welcome you to Arusha for the 42nd Association for Educational Assessment in Africa (AEAA) Annual Conference**,** held under the theme "*Rethinking Educational Assessment in the Age of Artificial Intelligence*." We are honoured to host this conference for the fifth time, bringing together educational assessment professionals, researchers, policymakers, and practitioners from across and beyond Africa.

Artificial Intelligence is transforming teaching, learning, and assessment, creating new opportunities while presenting important challenges. As we embrace these technological advances, our assessment systems must remain fair, inclusive, ethical, and capable of measuring the knowledge, skills, values, and competencies needed for the twenty-first century. This theme also echoes with the vision of our founding father, Mwalimu Julius Kambarage Nyerere, whose philosophy of Education for Self-Reliance emphasized that education should develop critical thinkers, problem-solvers, and responsible citizens—not merely prepare learners to pass examinations. The philosophy reminds us that, in this age of Artificial Intelligence, assessment should move beyond memorisation to evaluate creativity, innovation, collaboration, ethical reasoning, and the ability to apply knowledge to real-life challenges.

I wish to express my sincere appreciation to Her Excellency Dr. Samia Suluhu Hassan, President of the United Republic of Tanzania**,** for her steadfast commitment to advancing education, science, technology, and innovation. Her inauguration of the Scientific Strategic Plan for Building Foundational Literacy and Numeracy Skills for Pre-Primary Children and Grade One and Grade Two Pupils as well as the National Development Vision 2050 demonstrates Tanzania's commitment to evidence-based educational reform. This initiative aligns well with the theme of this conference by emphasizing the use of research, innovation, and emerging technologies, including Artificial Intelligence, to strengthen assessment, identify learning needs, and improve educational quality and equity. I also extend my gratitude to the Ministry of Education, Science and Technology, under the leadership of Honourable Professor Adolf Faustine Mkenda (MP), for its continued guidance and support. My sincere thanks also go to the Local Organising Committee, our partners, sponsors, and all participants whose dedication has made this conference possible.

Your presence and active participation are what make this conference meaningful. I am confident that our deliberations will generate practical ideas and innovative approaches that strengthen educational assessment across Africa while ensuring our education systems remain responsive to rapid technological change. Together, let us harness the potential of Artificial Intelligence while upholding the values of equity, integrity, innovation, and self-reliance that will shape the future of education on our continent.

Once again, I warmly welcome you to Arusha and wish you engaging, inspiring and productive conference. **Thank you.**

WELCOME MESSAGE BY AEAA PRESIDENT: ESHETU KEBEDE GICHORO (Ph.D.)

May I take this opportunity to welcome all the AEAA members who have participated in the 42nd Conference in Tanzania, particularly in this tourist city of Arusha. This is a very special and important meeting that marks a milestone for educational assessment and evaluation in the African continent. It is the conference that brings together the collaborative efforts of African stakeholders whose responsibilities and commitment to African education are crucial.

We are here in Arusha to share knowledge and experiences related to rethinking educational assessment in the Age of Artificial Intelligence. The purpose is to ensure that this conference produces research-based results that emerge from focused analysis, meaningful discussions and actionable solutions that support the examination bodies to navigate safely and successfully in the new world of artificial intelligence. For that matter, our aim is to improve assessment and evaluation practices and methods, increase the use of evaluation data, promote assessment as a profession, and support the contribution of evaluation to the generation of theory and knowledge about effective human action regardless of the challenges caused by artificial intelligence. We expect this conference to turn all artificial intelligence challenges into opportunities that can be used to improve School-Based Assessment and summative national examinations.

In addition, it is my hope that this conference will reflect on the best ways to use Artificial Intelligence to foster an inclusive, diverse, and international community of practice that serves as a respected source of knowledge and information on assessment and evaluation. The AEAA leadership, therefore, values all the research-based articles that will be presented during the conference and we are sure that they are going to bring about excellence in evaluation practice, foster harmonisation of educational assessment in Africa, and provide personalised, equitable, and inclusive assessment. We also expect this conference to build a better future for e-assessment and settle the security dilemma of Artificial Intelligence. As we are in favour of new life skills, we believe these presentations will leverage Artificial Intelligence to reshape the technical and vocational training assessments.

Colleagues, ladies and gentlemen, as we are currently living in the evidence-based world, it is our hope that the presentations will stimulate the educationists to use AI to lead them into data-driven decisions for educational policy management and align scenario-based simulations with Continuous Assessment and competency-based learning. Moreover, we look forward to seeing the presentations persuade the use of AI in promoting academia-industry collaboration for technological literacy and effective practical assessment. Lastly, we expect the presentations to bring about digital solutions for assessment feedback and evaluation of teaching and learning. For that matter, I call on all of us to actively participate in the conference so that we can successfully accomplish our mission.

Ladies and gentlemen, I once again take this opportunity to thank the Tanzanian leadership for hosting this conference for the 5th time. It really shows a high commitment of Tanzanians to matters related to fighting against ignorance in Africa, and prioritising on matters related to educational assessment and evaluation which is key in fostering teaching and learning process and curriculum reforms.

I wish you all a good stay and fruitful presentations and discussions in this conference.
Thank you.

A WELCOME ADDRESS BY PROF. ADOLF FAUSTINE MKENDA, THE MINISTER FOR EDUCATION, SCIENCE AND TECHNOLOGY

The AEAA president, Distinguished Guests, Ladies and Gentlemen; It is my great pleasure to welcome you to Tanzania and to the city of Arusha for the 42nd Annual Conference of the Association for Educational Assessment in Africa (AEAA). On behalf of Her Excellency President Dr. Samia Suluhu Hassan – The President of the United Republic of Tanzania, the Government, and the people of Tanzania, I extend my warmest greetings and appreciation for your commitment to advancing quality education and strengthening educational assessment across Africa.

This year's theme, "Rethinking Educational Assessment in the Age of Artificial Intelligence," is both timely and important. Artificial Intelligence is rapidly transforming education, the world of work, and society. As a result, our assessment systems must evolve beyond testing knowledge recall to measuring critical thinking, creativity, problem-solving, collaboration, communication, ethical judgement, and other competencies required for the twenty-first century.

Artificial Intelligence offers significant opportunities to improve assessment through adaptive testing, personalized feedback, enhanced examination management, and data-driven decision-making. At the same time, we must address challenges related to academic integrity, data privacy, cybersecurity, algorithmic bias, equity, transparency, and the ethical use of Artificial Intelligence to ensure technology promotes inclusive and high-quality education.

Africa's youthful population presents a unique opportunity to become a global leader in innovation and knowledge creation. To realize this potential, our education systems must equip learners with the skills and competencies needed to thrive in a rapidly changing digital world. Assessment should therefore inspire learning, encourage innovation, and recognize both academic achievement and practical competencies.

In Tanzania, these priorities are reflected in the Government's ongoing education reforms under the leadership of President Dr. Samia Suluhu Hassan. The reforms include expanding access to quality education, strengthening digital learning infrastructure, enhancing teacher development, reviewing curricula, and modernizing educational assessment to prepare learners for the future of work.

This conference provides an important platform for African countries to share experiences, exchange innovations, strengthen partnerships, and develop assessment systems that are credible, inclusive, and responsive to both African realities and global standards. Together, we can build education systems that empower every learner and contribute to sustainable development across the continent.

I wish you fruitful deliberations and every success during the conference. **Thank you.**

ABOUT THE ASSOCIATION FOR EDUCATIONAL ASSESSMENT IN AFRICA (AEAA)

The existence of AEAA dates back to 1982, when it was born out of what was known as the sub-regional Conference for Heads of Institutions responsible for Educational Assessment in Eastern and Southern Africa (AEBESA), whose founding members were Kenya, Uganda, Tanzania, Botswana, Lesotho and Malawi. Many other African Countries later joined the Association. In 1992, at Arusha, Tanzania, the AEBESA metamorphosed into the AEAA, drawing its membership from across the continent of Africa.

VISION STATEMENT

To harmonize Educational Assessment on the African continent.

MISSION STATEMENT

To promote co-operation amongst examining and assessment bodies in Africa.

AFFILIATION

The AEAA is affiliated with the International Association for Educational Assessment (IAEA), which constitutes assessment bodies from around the world.

OBJECTIVES OF THE ASSOCIATION

- To promote co-operation amongst examining and assessment bodies in Africa;
- To encourage relevant examining and assessment activities among members;
- To sponsor international participation in the field of educational testing and examining;
- To commission/co-ordinate research projects;
- To improve assessment, testing and examining within the individual member countries;
- To address and share experience on issues of evaluation and assessment;
- To carry out such other activities as may appear to the Association to be incidental or conducive to the attainment of its objects.

MEMBERSHIP OF THE AEAA

The membership of the AEAA is organised into four sub-regions, which are East Africa, West Africa, Central Africa and Southern Africa with three categories:

- Primary Membership Open to non-profitable regions and national examining boards;
- Affiliate Membership Available to commercial films and profit –making organizations; and
- Individual Membership Comprise organizations or individuals interested in education assessment and testing.

ADMINISTRATIVE STRUCTURE OF THE AEAA

The structure comprises four organs:

- General Assembly - All members of the Association.
- Executive Committee (EXCO) - President, Vice President, Treasurer, Executive Secretary and Regional Representatives
- Secretariat
- Regional Representatives

SECRETARIAT ADDRESS

All correspondence should be directed to the Executive Secretary, AEAA:
Kenya National Examinations Council
P. O Box 73598-00200
Nairobi, Kenya.
Email: infor@knec.ac.ke

AEAA EXECUTIVE COMMITTEE MEMBERS

The Name, Position, Organisations and Country of Committee Members are as follows:

Name	Designation	Organisation	Country
Dr. Eshetu Kebede Gichoro	President	Educational Assessment and Examinations Service	Ethiopia
Prof. Said Ally Mohamed	Deputy President	National Examinations Council of Tanzania	Tanzania
Dr. David Njengere	Executive Secretary	Chief Executive Officer of Kenya National Examinations Council	Kenya
Dr. Rosemond Wilson	Treasurer	Head of National Office, West African Examinations Council (WAEC)	Ghana
Dr. Mafu Rakometsi	Immediate past President	Umalusi	South Africa
Dr. Mandlenkosi Dlamini	Southern Africa Representative	The Examinations Council of Eswatini (ECESWA)	Eswatini
Mr. Dan N. Odongo	East Africa Representative	Executive Secretary, Uganda National Examinations Board (UNEB)	Uganda
Prof. Ibrahim DanstaniWushishi	West Africa Representative	Nigeria's National Examinations Council (NECO)	Nigeria
Prof. Peter Tambi	Central Africa Representative	University of Buea	Central Africa

WORLD BANK SUPPORT TO TANZANIA'S EDUCATION SECTOR

Introduction

The World Bank has been a longstanding partner in Tanzania's education sector, providing financial and technical support to expand access, improve quality, promote equity, and strengthen education system resilience. This partnership has been reinforced through a series of major education programmes, beginning with the General Education Quality Improvement Program (GEQIP) in 2008 and continuing through subsequent investments that support Tanzania's education reform agenda.

The World Bank's current education portfolio includes the BOOST Primary Student Learning Project, the Secondary Education Quality Improvement Project (SEQUIP), and the Higher Education for Economic Transformation (HEET) Project. Together, these initiatives focus on improving foundational learning, expanding equitable access to quality primary and secondary education, strengthening teacher effectiveness, enhancing education system management, and increasing the relevance and quality of higher education and skills development. The World Bank also supports the Government of Tanzania's efforts to strengthen human capital through investments that improve learning outcomes and equip young people with skills needed for economic transformation.

Key Areas of Support

Expanding Access

The World Bank has supported Tanzania in expanding access to quality education at all levels, with particular emphasis on ensuring that children in underserved rural communities, disadvantaged urban areas, and vulnerable groups can access and complete basic education. Investments in school infrastructure, classrooms, sanitation facilities, and learning environments have contributed to increased enrolment and improved participation, particularly among girls and children from disadvantaged communities.

Enhancing Quality

Through programmes such as the BOOST Project and SEQUIP, the World Bank supports improvements in teaching and learning by strengthening curriculum implementation, increasing the availability of quality teaching and learning materials, improving school leadership, and enhancing education system performance. These interventions aim to improve literacy, numeracy, and overall student learning outcomes across primary and secondary education.

Advancing Equity

The World Bank promotes equitable and inclusive education by supporting interventions that reduce disparities in access and learning outcomes. Its support includes initiatives that improve educational opportunities for girls, children with disabilities, and learners from marginalized communities, while strengthening inclusive education practices and creating safer, more supportive learning environments.

Strengthening Teacher Development

Recognizing that teachers are central to improved learning, the World Bank supports both pre-service and in-service teacher professional development. These initiatives strengthen teachers' pedagogical knowledge, subject content mastery, classroom assessment practices, and the effective implementation of competency-based teaching approaches, ultimately contributing to improved student achievement.

Curriculum and System Reform

The World Bank supports Tanzania's efforts to strengthen curriculum implementation and improve education system management. Assistance includes enhancing learning assessment systems, strengthening Education Management Information Systems (EMIS), improving school quality assurance, and building institutional capacity for planning, monitoring, and evidence-based decision-making.

Analytical Work and Knowledge Generation

The World Bank undertakes analytical work to inform education policy and reform in Tanzania. This includes research on foundational learning, learning poverty, education financing, teacher effectiveness, school quality, and education system performance. Analytical studies and policy dialogue help identify challenges affecting student learning, inform education sector planning, and strengthen monitoring and evaluation systems. The Bank also supports the generation and use of education data to improve accountability and guide investments that enhance learning outcomes across the education sector.

In line with its commitment to evidence-based education policy and improved learning outcomes, the World Bank in Tanzania is proud to support the **42nd Annual Conference of the Association for Educational Assessment in Africa (AEAA)**.

CHRONOLOGICAL LIST OF PAST AEAA CONFERENCES

The Association for Educational Assessment in Africa (AEAA) was establishment in 1982. AEAA conferences are held annually and are hosted in rotational basis by member institutions. A chronological list of these conferences is provided in the following table.

S/N.	Year	Host Country	Conference Theme
1.	1983	Tanzania	Continuous Assessment: A case of Aptitude Testing and Technical Examination
2.	1985	Malawi	Security Issues in Examinations
3.	1986	Uganda	Continuous Assessment and Selection
4.	1987	Kenya	Standard Setting in Public Examinations
5.	1988	Kenya	Assessment of Skills for Self-Reliance
6.	1989	Malawi	Achievement of Examinations in Certification and Placement
7.	1990	Zambia	Processing of Examination Results from Marking to the Time Results are Released
8.	1991	Uganda	Innovation in Assessment
9.	1992	Tanzania	Assessment of Practical and Professional Skills in examinations
10.	1993	Kenya	Challenges of Education Assessment in Africa
11.	1994	Ghana	Capacity Building in Examinations
12.	1995	South Africa	Assessment and Opportunities: The Ethos, Practice and Impact of Assessment for Restructuring and Development in Education
13.	1996	Zimbabwe	Guaranteeing Quality in Assessment: The challenges, agonies and benefits of indigenisation of Curriculum
14.	1997	Nigeria	Quality Assurance in Education Assessment
15.	1998	Malawi	Education Assessment in African Countries: Challenges and prospects
16.	1999	Zambia	Enhancing relevance and appropriateness of Education Assessment
17.	2000	Cameroon	Capacity Building in the conduct of Public Examination
18.	2001	Kenya	School Based Assessment
19.	2002	Tanzania	The Management and Administration of Public Examinations System in Africa: Experiences in Examination Irregularities
20.	2003	South Africa	Assessment and Certification in a changing Educational, Economic and Social Context
21.	2004	Botswana	The role of Assessment in the Implementation of National Education Policy
22.	2005	Uganda	Enhancing the quality of Education through Assessment
23.	2006	Swaziland	Curriculum Change and Challenges in Education Assessment
24.	2007	Ghana	Adherence of Public and Private Universities to Examination Regulatory Frameworks
25.	2008	Nigeria	Political Goodwill to surmounting the Barrage of Problems Threatening Education Sector in Developing African Region
26.	2009	Uganda	Enhancing Efficiency and Effectiveness in Education Assessment in an Era of Rapid Change
27.	2010	Nigeria	The Challenges of Quality Assessment in a Changing Global

S/N.	Year	Host Country	Conference Theme
			Economy
28.	2011	Kenya	Best Practices In Educational Assessment for Regional Integration
29.	2012	Botswana	Enhancing Assessment Practices
30.	2013	Tanzania	Enhancing Assessment Practice for Quality Education
31.	2014	Zambia	Contextual responsiveness: An enduring Challenges for Education Assessment in Africa
32.	2015	Ghana	Quality Assurance in Educational Assessment in an Era of Rapid Change
33.	2016	Zimbabwe	Promoting Holist Development through Innovative Educational Assessment Initiatives
34.	2017	Uganda	Enhancing Efficiency and Effectiveness in Educational Assessment in an Era of Rapid Change
35.	2018	Lesotho	Reforming Educational Assessment: A Renewed Agenda
36.	2019	Nigeria	Innovations in Educational Assessment
37.	2022	Zambia	Educational Assessment for Developing 21st Century Skills
38.	2023	Kenya	Education Assessment for Nurturing Every Learner's Potential
39.	2024	South Africa	Reimaging Education Assessment in the Age of Multiple Dimensions of Learning in a Global Society
40.	2025	Ethiopia	Transforming Educational Assessment: Towards Quality Learning and Informed Decision Making
41.	2026	Tanzania	Rethinking Education Assessment in the Age of Artificial Intelligence (AI)

Note: In 1984 the conference was not conducted. However, in 2020 and 2022 the Conference was suspended due to COVID -19 Pandemic

A WELCOME MESSAGE FROM THE LOC CHAIRPERSON

On behalf of the Local Organising Committee and the host organisation, the National Examinations Council of Tanzania (NECTA), I would like to welcome you to the 42nd AEAA Annual Conference at the Gran Melia Hotel in Arusha, Tanzania. The conference is organised under the theme: *Rethinking Educational Assessment in the Age of Artificial Intelligence*. The theme is directing us to think of helpful ways of utilising AI to further improve educational assessment, which is vital to students' learning While engaging in academic discussions during the conference, we hope you will have a peaceful, joyous and entertaining stay in this tourist city of Arusha, Tanzania. As a member of the East African Community, we hope you will also have opportunities to visit a variety of beautiful sceneries available in East African Countries. Tanzania hosts a vast majority of these sceneries such as the Snow-Caped Mount Kilimanjaro, the Ngorongoro Crater, and the Serengeti just to mention a few. You may also opt to visit other East African countries, preferably after the conference, to expand your knowledge of our beautiful East African region.

We hope that the academic discussion that will be conducted during the conference will set an important beginning towards utilising technology and AI in particular to further improve our assessment and evaluation practices. Such an improvement will enhance students' knowledge and skills important for the development of our continent in general and of our individual countries in particular.

With kind regards

Kamili Joseph Mark
Chairperson, Local Organising Committee for the 42nd AEAA Annual Conference,
The National Examinations Council of Tanzania.

ABOUT NATIONAL EXAMINATIONS COUNCIL OF TANZANIA (NECTA)

The National Examinations Council of Tanzania (NECTA) is a Government Institution which was established by the Parliamentary Act No. 21 of 1973. It is responsible for the administration of all National Examinations and Assessments in Tanzania.

VISION

To be the Centre of Excellence in Quality Education Assessment and Certification.

MISSION

To Provide Fair, Efficient and Effective Educational Assessment.

NECTA'S CORE VALUES

- Fairness
- Accountability
- Integrity
- Responsiveness
- Confidentiality and Security
- Efficiency

ROLES OF NECTA

- To formulate examinations policy in accordance with the principles of education for self-reliance and the education and training policy;
- To assume responsibility for examinations within the United Republic of Tanzania and to make provision for places and centres of examinations;
- To receive from other persons or bodies of persons reports or other material affecting examinations policy and from time to time to consider and review examinations policy as circumstances may require;
- To co-operate with other persons or bodies of persons in the orderly development of an examination system in the United Republic of Tanzania;
- To conduct examinations for, and to grant, diplomas, certificates and other awards of the council;
- To act as the body, which shall facilitate, administer and supervise foreign examinations in Tanzania.

LIST OF LOCAL ORGANISING COMMITTEE (LOC) MEMBERS

OVERALL COORDINATION OF AEAA CONFERENCE	
Prof. Said Ally Mohamed	Executive Secretary (Conference Convener)
Angela Jackson Kitali	Deputy Executive Secretary (Coordinator)

Sub-Committees for the Local Organising Committee of the 42nd Association of Educational Assessment in Africa (AEAA) Annual conference to be held from 17th to 21st August 2026

SUB-TEAM MEMBERS	SUB-TEAM ROLES
1.0 STEERING/COORDINATING TEAM	
Kamili Joseph Mark	Chairperson
Esther Thomas Ajabu	Deputy Chairperson
Sabath Christian Cazmiry	Secretary
Deogratias Joseph Mbatta	Member
2.0 ACADEMIC AND PUBLICATIONS	
Julius Abdallah Singo	Chairperson
Mpuya Kamuli Malaba	Secretary
Beata Xavery Massawe	Member
Mary James Sige	Member
Mary January Marugu	Member
Dr. Alfred Daniel Mdima	Member
3.0 FINANCE AND SPONSORSHIP	
Paress Jesse Kiwelu	Chairperson
Fredy Jackson Haonga	Secretary
Edmund Lweyendela Luasha	Member
Devina Simon Kagizo	Member
Evance Witson Kijallo	Member
4.0 PROTOCOL AND LOGISTICS	
Esupat Zephania Mattasia	Chairperson
Angelina Francis Akili	Secretary
Varian Julius Kingu	Member
Vicent Goodluck Mark	Member
Simon Leonard Mushi	Member
Restituta Eugen Kisoka	Member
5.0 COMMUNICATION AND PUBLICITY	

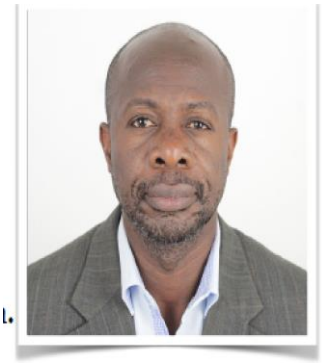
SUB-TEAM MEMBERS	SUB-TEAM ROLES
John John Nchimbi	Chairperson
Ulrick Faustine Mkenda	Secretary
Glee John Magembe	Member
Joshua Josephat Sanga	Member
Prospective Pophance Gikanka	Member

KEYNOTE SPEAKERS AND THEIR BIOGRAPHIES

Prof. Joel Mtebe

Prof. Joel S. Mtebe is an Associate Professor of Computer Science at the University of Dar es Salaam (UDSM), Tanzania. He has over two decades of experience in higher education, educational technology, e-learning, human-computer interaction, digital transformation, and ICT for development. He has held several senior leadership positions, including Deputy Vice Chancellor for Academic, Research and Consultancy at Mwalimu Nyerere University of Agriculture and Technology; Principal of the College of Information and Communication Technologies; Director of the Centre for Virtual Learning at the University of Dar es Salaam; Alternate Coordinator of the World Bank ICT-Mediated Distance Education Project, and Manager of the UDSM Smart Card Unit. Prof. Mtebe has published more than 80 scholarly articles and has supervised or examined over 30 Master's and more than 10 PhD students. He has also served as Editor-in-Chief of the Journal of ICT Systems, Associate Editor of IEEE Transactions on Learning Technologies, and Associate Editor of the East African Journal of Science, Technology and Innovation. His national digital transformation work includes coordinating curriculum review and digitization portfolios under the Higher Education for Economic Transformation (HEET) Project, contributing to national AI and digital education guidelines, and supporting LMS, OER, teacher professional development, learning analytics, and local digital content initiatives. He also serves on the Board of the Tanzania Institute of Education and as a co-opted Board Member of the Higher Education Students' Loans Board.

Dr. Joseph Wambura Matiko



Dr. Joseph Wambura Matiko is an accomplished academic, researcher, technology innovator, and engineering educator with extensive expertise in ICT, digital systems, engineering, and technical and vocational education and training (TVET). He currently serves as Acting Campus Director of Dodoma Technical College under the Dar es Salaam Institute of Technology (DIT) and coordinates the World Bank-funded Regional Flagship TVET ICT Centre (RAFIC), while also representing Tanzania as the UNISEC Point of Contact for satellite engineering and space technology collaboration.

Throughout his career, Dr. Matiko has combined academic leadership, research, and innovation to develop advanced digital solutions, supervise research, and contribute to national and regional development initiatives, including Tanzania's first satellite project, environmental monitoring systems, and the National Broadband Strategy. His scholarly work spans ICT, embedded systems, blockchain, digital innovation, and sustainable technologies.

Recognised through prestigious awards, including the Erasmus Mundus Scholarship and the Engineers Registration Board (ERB) Best Graduating Engineer Award, Dr. Matiko is an active contributor to the global academic community. He has delivered keynote addresses and presented research at major international conferences and continues to promote digital transformation, engineering education, and workforce development through teaching, research, innovation, and strategic partnerships across Tanzania and Africa.

Dr Salome Maro

Dr. Salome Maro is currently serving as the Director of Information and Communication Technology (DICT) at the University of Dar es Salaam. She earned her PhD in Software Engineering from the University of Gothenburg, Sweden, in 2020. Her professional expertise focuses on Software Engineering, with a particular emphasis on improving the efficiency of software development processes.

Beyond her core area of expertise, Dr. Maro is actively engaged in leveraging ICT to enhance educational practices, foster the growth of software start-ups, and address gender disparities in the ICT sector. More recently, she has developed a strong interest in exploring how Artificial Intelligence (AI) can be employed to create educational content and streamline administrative tasks in the educational sector.

Dr. Maro has participated in a number of conferences in which she presented papers as a panellist and also took the role of keynote speaker. Some of recent conferences she participated in include the Academic-Public-Private Partnership Forum (APPPF) organized by the Inter-University Council for East Africa (2024), The University of Dar es Salaam's Research Week Symposium on Artificial Intelligence (2024), and IDACA Tanzania. She participated as keynote speaker in two Tech events namely the International Women's Day (2023) and the Women in Data Science Africa (2022).

Dr. Aron Kondoro

Dr. Aron Kondoro is a Lecturer in the Department of Computer Science and Engineering at the University of Dar es Salaam (UDSM) and an ICT consultant with expertise in information security, blockchain, mobile technologies, educational technology, and digital transformation. He holds a PhD in Information and Communication Technology from the Royal Institute of Technology (KTH), Sweden, a Master's degree in Information and Communication Systems Security, and a Cisco Certified Network Associate (CCNA) certification. His work integrates teaching, research, and consultancy to advance ICT applications in education, government, and industry.

Dr. Kondoro has provided consultancy services to national and international organisations, including the United Nations, Cambridge Education Tanzania Limited, EdTech Hub, and several Tanzanian government institutions. His consultancy work has covered ICT readiness for e-commerce, evaluation of the Government e-Payment Gateway (GePG), ICT systems assessment at the Tanzania Revenue Authority, and feasibility studies for the National Human DNA Database. He has also contributed to educational technology initiatives, including the UDSM–KTH Challenge Driven Education programme, the evaluation of Tanzania's School Information System (SIS), and the development of mobile applications such as TCPD Mobile LMS, UDSM Mobile LMS, Halo-study, and Smart-Pay.

He is an active researcher with publications in ICT security, blockchain, mobile computing, and educational technology. He regularly presents his research at national and international forums, including the IST-Africa 2025 Conference and the 9th National Science, Technology and Innovation Conference and Exhibition. He also served as a panelist at the ISACA Tanzania Chapter Cybersecurity Day in 2024. Through his research, professional engagement, and innovation, he continues to contribute to the advancement of ICT-driven solutions for education, governance, and sustainable development.

Mr. Yesaya Athuman

Yesaya R. Athuman is a PhD candidate in Computer Science at the University of Dodoma, Tanzania, where his research develops adaptive, culturally grounded tools for teaching programming to Swahili-speaking learners. His work sits at the intersection of artificial intelligence, natural language processing for low-resource languages, and computing education, with particular interest in technology acceptance, cognitive load, and the ethics of AI.

He is Senior ICT Officer and Technical Lead at the Tanzania Ports Authority, where he has led the evolution of mission-critical systems underpinning the majority of the organisation's revenue and championed its transition from manual to digital workflows. Earlier, as a senior software developer, he built eShangazi, an award-winning Swahili-language conversational chatbot for youth health information.

A committed advocate for Swahili in STEM, Yesaya founds and hosts the @YesayaSoftware channel producing Swahili-language programming tutorials, and organises and speaks at Google Developer Groups Dar es Salaam on AI and ethical technology. He holds an MSc in Computer Science from the University of Dodoma and a BSc in Computer Science from St. Augustine University of Tanzania. He has presented on Swahili and AI at forums across sub-Saharan Africa

Prof. Raghunathan Rengaswamy

Prof. Raghunathan Rengaswamy is an institute chair professor at IIT Madras, a core member of the Robert Bosch Centre for Data Science and AI, and head of the Walmart Center for Tech Excellence. He was the Dean of Global Engagement, IIT Madras (2020-2026) and led the delegation that worked on the establishment of the IIT Madras campus at Zanzibar. He is also a fellow of the Indian National Academy of Engineering. Prior to this, he has been an academic at Texas Tech. University, Lubbock, TX, USA; Clarkson University, Potsdam, NY; and IIT Bombay, Mumbai, India. He has also been a visiting professor at Purdue University, USA, University of Delaware, USA and University of Alberta, Canada. His research interests are in the areas of data science, ML, and AI and he has been working in these areas for nearly 30 years. His work has been cited more than 16500 times, with an h-index of 49. More than a million students have registered and learnt from his MOOC courses on “Python for Data Science” and “Data Science for Engineers”. He is the author of two textbooks “Data Science for Engineers” and “Process Control Fundamentals”. He has been involved in the implementation of AI solutions in industries from both IIT Madras and his three startups Gyan Data Pvt. Ltd., GITAA Pvt. Ltd., and Elicius Energy Pvt. Ltd.

CONFERENCE PROGRAMME AND SCHEDULE

DAY 0: SUNDAY 16TH AUGUST, 2026	
06:00 – 23:59	Registration and Transfer of Delegates from the Airport to their Respective Hotels
09:00 – 16:00	AEAA Executive Committee (EXCO) Meeting
MONDAY 17TH AUGUST, 2026	
07:00 – 08:00	Arrival and Registration of Delegates
Plenary Session	
08:00 – 08:05	Tanzanian and AU Anthem
08:05 – 08:10	Prayer
08:10 – 08:15	Entertainment: Traditional Dance
08:15 – 08:25	Introductions and Welcome Remarks: Prof. Said Ally Mohamed, ES – NECTA & AEAA Vice President.
08:25 – 08:30	Entertainment: NECTA Choir
08:30 – 08:40	Foreword by Dr. Eshetu Kabede, the AEAA President & CEO - EAES
08:40 – 09:40	Opening Address: Prof. Adolf Mkenda (MP), Minister for Education, Science and Technology.
09:40 – 10:10	**Keynote Speech 1**: **Prof. Joel Mtebe:** From National Examinations to National Learning Intelligence: How African Examination Councils Can Use AI to Strengthen Assessment Quality, Integrity, and Policy Impact.
10:10 – 10:40	Discussion about Keynote Speech 1: Dr. Mafu Rakometsi; Umalusi, South Africa Rapporteur: **Prof. Cosmas B. Mnyanyi**
10:40 – 11:10	Tea Break

11:10 – 11:40	**Keynote Speech 2**: **Dr. Salome Maro**: Why Traditional Teaching and Assessment is Breaking: Redesigning Teaching and Assessment Around AI.				
11:40 – 12:10	Discussion about Keynote Speech 2: Mr. Dan Odongo CEO - UNEB Rapporteur: Dr. John Kalolo				
12:10 – 12:40	Elimu Soko's AFLAI Launch: Strengthening Assessment Quality for Foundational Learning: Practical Pathways for Country Systems and SDG4.1.1 Reporting				
12:40 – 13:00	Entertainments: NECTA				
13.00 – 14.00	**Lunch Break**				
14:00 – 17:00	Parallel Sessions				
Session 1	**Hall 1**	**Hall 2**	**Hall 3**	**Hall 4**	**Hall 5**
	Session Chair: Dr. Godson Shendemuni Lema ***Rapporteur** : Khamisi Juma Lubattillah*	**Session Chair: Dr Grace O. Onoja** ***Rapporteur**: Mary James Sige*	**Session Chair: Dr Kokuberwa Katunzi** ***Rapporteur**: Beata Xavery Massawe*	**Session Chair: Dr Evaristo Tukamuhabwa** ***Rapporteur**: Kingtini Kisamo Msangi*	**Session Chair: Dr. Mamathe Eliza Malepa-Qhobela** ***Rapporteur**: Safarath Issa Byabato*
14:00 – 14:30	**Amos Josiah Dangut (Ph.D), Edmund Osayuki Iyawe and Shehu Tijani Babajide** **101** Awareness and Adoption of Inclusive Teaching, Assessment and Artificial Intelligence Tools in Practical Science Education among Visually Impaired	**Dana Kelly, Julian Fraillon, Oliver Neuschmidt, and Katherine Reynolds1** 116 Mapping Artificial Intelligence in Education: Evidence and Opportunities from IEA International Large-Scale Assessments	**Florence Kyaruzi** 711. Teacher Practices of Peer Learning and ICT Integration in Teaching and Assessment	**Oluoch George, Kananu Carolyne, Kisaka Sella and Wabwile Justus** 303 Artificial Intelligence-Driven TVET Assessment and Skills Intelligence for Competency-Based Certification in Kenya	**Dr. Tukamuhabwa Evaristo** **501** Artificial Intelligence in Competency-Based Assessment: Balancing Innovation Security, Integrity, and Credibility in National Examination Systems- A

	Learners in Nigeria **WAEC, Nigeria**	**IEA;, , TIMSS & PIRLS GERMANY & USA**	**UDSM, Tanzania.**	**TVET-CDAC Kenya**	Systematic Review **UNEB, Uganda**
14:30 – 15:00	**Nts'asa L.S** 102 Harnessing digital Tools to Enhance the Level of Participation and Performance in the Extended Mathematics. **ECL, Lesotho**	**Alfred D. Mdima (PhD Ed)** 117 Merits and Challenges of Using Artificial Intelligence for Personalized, Equitable and Inclusive Educational Assessment **NECTA, Tanzania**	**Esuola, Olayinka Adesola PhD** 302 Challenges and Prospects of Assessing Music Items Using Artificial Intelligence among High-Stakes Examination Bodies in Nigeria: Perception of Item Writers. **JAMB, Nigeria**	**Mohammed Juma Semsue** 402 Artificial Intelligence–Driven Analytics for Enhanced Educational Policy Management: Evidence from the National Examinations Council of Tanzania **NECTA, Tanzania**	**Seleman C. Mafuru** 106 Human-Centred AI in Secondary Education: Evaluating Teacher Competencies and Learning Support through the UNESCO AI CFT Lens **NECTA, Tanzania.**
15:00 – 15:30	**Emmy M. Mugailwa** 504 Classroom Assessment and the Acquisition of 21st Century Skills among Learners in Primary Schools in Kenya**.** **KNEC, Kenya**	**Dr Hellen N Mkhwanazi** 119 Educators' Readiness to Integrate Artificial Intelligence (AI) in Test Development: A Study of Perceptions, Skills, and Challenges: A Case Study of Mpumalanga Province in South Africa **Assessment Services Mpumalanga**. **RSA**	**Collins O. Owino** 304 Artificial Intelligence and the Transformation of Technical and Vocational Education and Training (TVET) Modern Assessment Practices: Perspectives from Starehe Sub-County, Nairobi County, Kenya **NITA, Kenya.**	**Elizabeth Obade** 507 Reporting Learners' Competencies in Junior School, Kajiado North, Kenya **KNEC, Kenya.**	**Sarah Kasana** 503 Beyond Tests: Reimagining continuous Assessments through Culturally Responsive Scenario-based Simulations

					KNEC Kenya.
15:30 – 16:00	**Tea Break**				
Session 2	**Hall 1** **Session Chair: Dr. Godson Shendemuni Lema** ***Rapporteur*** *: Khamisi Juma Lubattillah*	**Hall 2** **Session Chair: Dr Grace O. Onoja** ***Rapporteur****:* *Mary James Sige*	**Hall 3** **Session Chair: Dr Kokuberwa Katunzi** ***Rapporteur****:* *Beata Xavery Massawe*	**Hall 4** **Session Chair: Dr Evaristo Tukamuhabwa** ***Rapporteur****:* *Kingtini Kisamo Msangi*	**Hall 5** **Session Chair: Dr. Mamathe Eliza Malepa-Qhobela** ***Rapporteur****:* *Safarath Issa Byabato*
16:00 – 16:30	**Polo Lemphane** 505 Evaluating the Effectiveness of Emma AI: A Case of Learning French in Maseru **ECL, Lesotho.**	**Edmund Osayuki Iyawe and Shehu Tijanni Babajide** 105 Awareness and Adoption of Inclusive Teaching, Assessment and Artificial Intelligence Tools in Practical Science Education among Visually Impaired Learners in Nigeria **WAEC, Nigeria.**	**Dr. Dangut Amos Josiah, Fanimokun Adebayo Ayo & Hiradi Kwatamdiya Solomon (Mrs.)** 201 From Deterrence to Redesign: Addressing the Security Dilemma of Generative AI in High-Stakes Assessment **WAEC, Nigeria**	**Abdulhameed, A.A, Adelakun, O.E. Kazeem. B, Sulaiman, N.O.** 406 Leveraging Artificial Intelligence for Sentimental Analysis of UTME and Registration Process via JAMB Social Media Platforms. **JAMB, Nigeria**	**Patricia Omunyang'oli** 506 Redesigning Assessments for Holistic Learning: A Case of Kenya **KNEC, Kenya**
16:30 – 16:35	Announcements and Closing				
16.35 – 19.00	Free Business				
19:00 – 22:00	**Welcoming Cocktail Party at Four Points Hotel**				
DAY 2: TUESDAY 18TH AUGUST, 2026					
07:00 – 08:00	Arrival and Registration of Delegates				

08:00 – 08:30	**Keynote Speech 3: Prof. Raghunathan Rengaswamy**: AI Driven Hyper-Personalization of Learning				
08:30 – 09:00	**Keynote Speech 4**: **Dr. Joseph Wambura Matiko**: Leveraging Artificial Intelligence for Competency-Based Assessment in Technical and Vocational Education and Training (TVET): A Framework for Enhancing Skills Verification and Workforce Readiness.				
09:00 – 09:30	Discussion about keynote speech 3 & 4: Dr Mandlankosi Dlamini CEO - Examinations Council of Eswatini (ECESWA) Rapporteur: Dr. Mohamed Msoroka				
09:30 – 10:00	Home languages and Foundational Learning in Africa. Bah, Alpha (UIS)				
10:00 – 10:30	**Tea Break**				
10:30 – 13:00	Parallel Sessions				
Session 3	**Hall 1** **Session Chair: Prof. Florence Kyaruzi** ***Rapporteur*** *: Khamisi Juma Lubattillah*	**Hall 2** **Session Chair: Dr John F. Kalolo** ***Rapporteur****:* *Mary James Sige*	**Hall 3** **Session Chair: Dr Amos Josiah Dangut** ***Rapporteur****:* *Beata Xavery Massawe*	**Hall 4** **Session Chair: Dr Alfred Mdima** ***Rapporteur****:* *Kingtini Kisamo Msangi*	**Hall 5** **Session Chair: Dr. Ebba Masiri** ***Rapporteur****:* *Safarath Issa Byabato*
10:30 – 11:00	**Mr Peter Ruddock** 203 Building AI-Resilient Authenticity through Activity System Realignment **IEB, South Africa**	**Kawu I. O., Rasheed A., *Atte, P. T., Jegede M., Ihedoro C. B., Uzonwanne J.N., Enatomen M. A** 202 Balancing Innovation and Privacy: The Security Dilemmas in AI-Driven E-Assessment Systems **JAMB, Nigeria**	**Justine Kimena** 307 Leveraging Artificial Intelligence in TVET Assessment: Opportunities, Apprehensions, and Institutional Realities from TEVETA**,** Zambia **TEVETA, Zambia**	**Rona Kerubo Kebati** 508. Strengthening Early Years Competency Acquisition through Scenario-Based Simulation **KNEC, Kenya**	**Samson Peter Massawe** 206. Addressing Security and Integrity Challenges in the Adoption of Artificial Intelligence for E-Assessment in Tanzania National Examinations **Ulanga District Council, Tanzania**

11:00 – 11:30	**Dr. Adunola, OSOBA** **Ven. Ayobode Mayokun, AKINBULUMA** **Dr. Adenike Adedigba, AKINLUA** 604. Inclusive Assessment for Inmates at the Nigerian Correctional Facilities **WAEC, Nigeria**	**Yohane Steven Dewa** 110. Reimagining Assessment in Malawi: Advancing Algorithmic Equity through Artificial Intelligence **MNEB, Malawi**	**Grace O. Onoja, PhD** 207. Leveraging Artificial Intelligence to Improve the Efficiency and Credibility of Jamb Operations: A Case Study of Chatbots Deployment **JAMB, Nigeria**	**Jivitius Ching'oro Sabatho[12]*** 510. Assessing What Matters? The Missing Listening and Speaking Components in Chinese Language Assessment in Tanzania **TIE, Tanzania**	**Endale Getachew Atile (BED, MA, MBA, PhD)** 702 A Systematic Review of Digital Assessment Feedback Systems and Their Influence on Teaching Practices in Ethiopian Education, 2022/23-2026 **EAES, Ethiopia**
11:30 – 12:00	**Yudatade D. Kessy & Glory G. Mphuru** 716. Readiness for Digital Assessment in Tanzanian Secondary Schools in the Emerging Age of Artificial Intelligence: Evidence from Public and Private Secondary Schools **NECTA, IAE, Tanzania,**	**Aisha Muhammad** 726 Advancing Secure E-Assessment in the Age of Artificial Intelligence: The Role of The Joint Admissions and Matriculation Board (JAMB), Nigeria **JAMB, Nigeria**	**Seraphine Mukami** 605. Evaluating the Role of Academia–Industry Collaboration in Promoting Technological Literacy and Effective Practical Assessment: Insights from A Diploma-Level Food and Beverage Programme Assessed by The Kenya National Examinations Council **KNEC, Kenya**	**Sibusiso Masuku & Nkululeko Dlamini** 310 Integrating Examiner Feedback and Psychometric Evidence through AI: A Grounded Theory Framework for Assessment Governance in EGCSE Physical Science **ECESWAT, Eswatini**	**Awol Nurhussein** 122. Harnessing Digital Data Collection Tools for Inclusive and Equitable Early Childhood Development and Education: Advancing SDG 4 in Climate- and Crisis-Affected Contexts in Ethiopia **Research & MEAL Lead | Save the Children Ethiopia**
12:00 – 12:30	**Mohamed S. Msoroka**	**Andy Thulo**	**Mukhtar Ozovehe SADIKU**	**Abeeb Ibrahim Adeyemi**	**Sindi Nonduduzo Simelane & Sibusiso**

	603 Rethinking Assessment in Higher Education in the Age of Artificial Intelligence: A Bibliometric Analysis of Global Research Trends **OUT, Tanzania**	215. External Moderation in the Age of AI: Perceptions of Quality Assurance Practitioners on School-Based Assessment in South Africa. **Umalusi, South Africa**	725 A Restorative Approach to Examination Integrity: The Unified Tertiary Matriculation Examination (UTME) and the Case for a Digital Remedy Model **JAMB, Nigeria**	216. Addressing The Artificial Intelligence Security Dilemma in Combatting Examination Malpractice: The JAMB Experience**:** **JAMB, Nigeria**	**Presiose Vilakati** 312. An Ethical and Governance Framework for Artificial Intelligence in Educational Assessment: A Case Study of the Examinations Council of Eswatini (ECESWA) **ECESWAT, Eswatini**
12:30 – 13:00	**Mukhtar Ozovehe SADIKU** 726. A Restorative Approach to Examination Integrity: The Unified Tertiary Matriculation Examination (UTME) and the Case for a Digital Remedy Model **JAMB Nigeria**	**Dlamini Nkululeko F.* & Matsebula Vuyisila L.** 217 Towards Secure AI-Driven Question Paper Development **ECESWAT, Eswatini**	**James Cosmas Kalulu, Zedi, Abdalla Khamis, Mwanamrisho Gora Haji** 214. Bridging the Policy-Practice Gap in AI-In-Education: Frontline Educators' Adaptation and Enforcement of Guidelines in Tanzania **IRDP SUZA, Tanzania.**	**Abubakar Umbe & Said Moshi Madorna** 120. Bridging the Inclusion Gap: Harnessing Artificial Intelligence to Support Assessment of Learners with Special Educational Needs (SEN) in Rural Tanzania. **NECTA, Tanzania**	**Erina Nalunga** 720. Use of Adaptive Learning Technologies for Personalised Feedback among Trainees with Special Needs in TVET institutions in Uganda **UVTAB, Uganda**

13:00 – 14:00	Lunch Break				
14:00 – 16:00	**Parallel Session**				
	Hall 1	**Hall 2**	**Hall 3**	**Hall 4**	**Hall 5**
Session 4	**Session Chair: Prof. Florence Kyaruzi** ***Rapporteur** : Khamisi Juma Lubattillah*	**Session Chair: Dr John F. Kalolo** ***Rapporteur**: Mary James Sige*	**Session Chair: Dr Kokuberwa Katunzi Mollel** ***Rapporteur**: Beata Xavery Massawe*	**Session Chair: Dr Alfred Mdima** ***Rapporteur**: Kingtini Kisamo Msangi*	**Session Chair: Dr. Ebba Masiri** ***Rapporteur**: Safarath Issa Byabato*
14:00 – 14:30	**Abubakar Umbe & Said Moshi Madorna** 112. Artificial Intelligence–Enabled Inclusive and Personalized Educational Assessment in Africa: Integrating National Assessment Systems with Assistive Technologies. **NECTA, Tanzania.**	**Zedi Abdalla Khamis. James Cosmas Kalulu and Mwanamrisho Gora Haji** 209. Contextual Factors of AI Assisted Academic Dishonesty in Tanzanian Higher Learning Institutions: A Mixed-Method Study **SUZA, IRDP, Tanzania**	**Abbas Francis Lugaenda** 115. The Use of AI in Formative Assessment in Government Secondary Schools in Tanzania: Teachers' Experiences and Challenges in Relation to Student-Centred Learning **The School of St. Jude, Sisia Campus-Moshono, Arusha, Tanzania**	**Crecencia V. Mwanilwa** 717. Leveraging AI-Driven Scenario-Based Simulations to strengthen Continuous Assessment and Competence-Based Learning in Tanzania **NECTA, Tanzania**	**Ann Move Oguti1 , Balinda Roland Mujungu2 , Joseph Walusimbi1 , Keith Ainebyona1 , Benjamin Joshua Ssentongo1 , Kiyai Sophie Okolong1 , Excellence Favor1 , Wanican Julian Okello** 515 Design and Validation of a CBC Lesson Plan Quality Rubric and an AI Co-Pilot Prototype for Ugandan Higher Education **Soroti University; UNEB, Uganda**

14:30 – 15:00	**Innocent Karuhanga & Onesmus Oyesigye** 718. ICT Adoption and Quality of Competence Based Assessment in TVET Institutions in Uganda **UVTAB, Uganda**.	**Joseph Ndunu Githinji** 210. The Authenticity of E-Assessment Practices in Teacher Education in Kenya **KNEC, Kenya**	**Nolwazi Ntombela and Lindiwe Sibandze** 513. Bridging the Gap: Integrating Scenario-Based Simulations to Enhance Learner Competency in Grade 10 Business Studies a Case of a School in Eswatini. **ECESWAT, Eswatini**	**Kehongo Jacob Siyange** 704. Examining the Accuracy of the Electronic Marking System Compared to Traditional Manual Marking Processes in The Context of Standard Seven Examinations in Tanzania: As one of the Digital Solutions A Case of the National Examinations Council of Tanzania. **NECTA Tanzania**	**Emmanuel Kahise** 113. Euroeducation and AI for Inclusive Mathematics Assessment in Tanzanian Secondary Schools **AKU-EAIED, Tanzania**
15:00 – 15:30	**Mohammed Juma Semsue** 309. Artificial Intelligence-Driven Recognition and Equivalence of Foreign Educational Qualifications: A Data-Driven Framework for Educational Policy Management **NECTA, Tanzania**	**Moeketsi Rakhosi** 723. Investigating the Comparability of a C Grade in LGCSE Core and Extended Physical Science Using Performance at BSC Programme **ECL, Lesotho.**	**Wanican Julian Okello** **Opio Henry Joe** 715. A Blueprint-Constrained, Human-Governed System for AI Assisted Examination Paper Development at the Uganda National Examinations Board **UNEB, Uganda**	**Enock Julius Kweka[1], Nicholas Wachira[2].** 721. Beyond Efficiency: Mobile-Based Learning Management Systems and the Limits of Feedback Transformation in Tanzanian Teacher Education **Dakawa T.C, Tanzania** **AKU-IEDEA, Tanzania**	**Namigadde Salimah** 703. Integrating Digital Feedback Systems for Continuous Evaluation of Teaching and Learning in Lower Secondary Schools in Uganda **UNEB, Uganda**
15:30 – 16:00	**Josephine Mutonyi Othieno**	**Olumuyiwa Titus Oluwanishola**	**Dr Amos Josiah Dangut, MSTAN, MNIM, RAS, Dr Busari Atinuke.Rashidat, Dr**	**Professor Dantani I. Wushishi, Dr. Benjamin S. Bargu, Dr. Tunde A.**	**Veronica Hipolity** 118 Harnessing Artificial Intelligence for Personalised,

	Integration of Assessment Strategies and Academic Achievement at Advanced Secondary School Level in Wakiso District, Uganda **UNEB, Uganda**	602. The African Blueprint: Recalibrating High-Stakes Assessment for Industrial Relevance through the JAMB's Model **JAMB, Nigeria**	**Adeosun Oluwatosin. Adebowale, Mrs Ogundele Isioma.Benedicta** 205. Ethical Dilemma in AI-Driven High-Stakes E-Assessment: Balancing Innovation and Examination Security in WASSCE **WAEC, Nigeria**	**Adedoku, Dr. Ebenezar J. Etim** 407 Leveraging National Assessment Data to Address Gender and Regional Inequities in Nigerian Secondary Schools **NECO, Nigeria.**	Equitable, and Inclusive Education: Teachers' and Students' Perceptions of AI-Enabled Assistive Technologies for Functional Literacy in Inclusive Secondary Education: A Systematic Review. **NECTA, Tanzania**
16.00 – 16.05	**Announcements and Closing**				
16:05 – 16:35	**Tea Break**				
16.35 – 19.00	**Free Business**				
19:00 – 22:00	Cultural Night at Arusha Coffee Lodge				
DAY 3: WEDNESDAY 19TH AUGUST, 2026					
07:00 – 08:00	Arrival and Registration of Delegates				
08:00 – 08:30	**Keynote speech 5**: **Dr. Aron Kondoro**: Beyond the Arms Race: The AI Security Dilemma in African E-Assessment and the Case for Integrity by Design.				
08:30 – 09:00	**Keynote Speech 6**: **Dr. Yesaya Athuman**: Rethinking Programming Assessment in the Age of AI: An Adaptive Swahili–English Transitional Environment for Equitable Computational-Thinking Assessment in Tanzanian Secondary				
09:00 – 09:30	Discussion about Keynote Speech 5 & 6: Prof. Agborbechem Peter Tambi; a Chief Executive Officer of the National Examinations Council of Cameroon Rapporteur: **Dr. Grace O. Onoja**				
09:30 – 10:00	**Tea Break**				
10.00 – 13.00	Parallel Sessions				

Session 5	Hall 1	Hall 2	Hall 3	Hall 4	Hall 5
	Session Chair: Dr. Prof. Cosmas B. Mnyanyi ***Rapporteur** : Khamisi Juma Lubattillah*	**Session Chair: Dr Mohamed Msoroka** ***Rapporteur**:* *Mary James Sige*	**Session Chair: Prof. Florence Kyruzi** ***Rapporteur**:* *Beata Xavery Massawe*	**Session Chair: Dr Evaristo Tukamuhabwa** ***Rapporteur**:* *Kingtini Kisamo Msangi*	**Session Chair: Dr. Mamathe Eliza Malepa-Qhobela** ***Rapporteur**:* *Safarath Issa Byabato*
10:00 – 10:30	**Masatu Daudi Masatu & Rosemary Makiya** 705. Transforming Teachers Through Artificial Intelligence in The Preparation of Teaching Aids: A Case of Secondary Schools in GEITA District, Tanzania **Buyombe S S, Tanzania**	**Mr. Okello Jimmy** 401 A Systematic Review on Artificial Intelligence Augmentation of Social skills and Critical thinking in Learners **UNEB, Uganda**	**Kokuberwa Katunzi & Obeid Mahenya** 305 Artificial Intelligence and TVET Assessment Standards in Tanzania: A Regulatory Perspective - **NACTVET, Tanzania.**	**Dr. Ebba Masiri** 211. Using AI in the Onscreen Marking Environment: A Literature Review **ZSEC, Zimbabwe.**	**Ashenafi Tesfaye Bogale** Enhancing teaching and learning through formative assessment: The case of Addis Ababa, Ethiopia **EEA ES, Ethiopia**
10:30 – 11:00	**Joyce Jonas Kahembe** 509. Teacher Questioning as Cognitive Scaffolding in Tanzania's 2023 Competence-Based Curriculum	**Fabious Karls Ambama and Mary Kwajo Kwaka.D.** 712. Artificial Intelligence in Ugandan Secondary Schools: Adoption, Governance, and Equity	**Angela N. Obi, Efetobore I. Akpovwovwo, Kolawole E. Orowole** 708. Digital Solutions for Assessment Feedback in English Composition Writing: Lagos Senior Secondary School Students' Perspectives	**Ben Maisiba Nyangwara** 311. Leveraging Artificial Intelligence (AI) to Shape Technical, Vocational Education and Training (TVET) Assessments .	**[1]Dr. Mohammed Aminu Mohammed** **[2]Mr. Pius Osaigbovo Stephen** **[3]Enojo Ukamaka Vivian** **[4]Dr. Evans Omorodion** 722. Influence of Multimedia Technology Systems on Students' Practical Skills

	TIE, Tanzania	**UNEB, Uganda**	**WAEC, Nigeria**	**Nyandarua National Polytechnic, Kenya**	Acquisition in Technical Colleges in Nigeria. **NABTEB, Nigeria**
11:00 – 11:30	**Dr John F. Kalolo** 528 Why Scenario-Based Questions Matter in Competence-Based Curricula in East and Southern African Schools: Understanding the Assessment Dilemma in Practice **MUCE, Tanzania.**	**Mariam Ally Tambwe** 606. "Promoting Academia–Industry Collaboration for Enhancing Technological Literacy and Competency-Based Practical Assessment in Tanzanian TVET Institutions" **CBE, Dar es Salaam, Tanzania**	**Abbas I. Kallage** 114. Improving Bookkeeping Achievement Through AI Supported Continuous Assessment: Evidence from Tanzania Secondary Schools **Libermann Boys' S S, Tanzania.**	**Dr. Malepa-Qhobela, M.** 511. Exploring Perspectives and Insights on the Benefits of Competency-Based and Scenario-Based Learning in the Mathematics Classrooms **ECL, Lethoto**	**Paul Paschal Majengo** 706. Digital Solutions for Assessment Feedback and Evaluation in Enhancing Competence-Based Learning in Tanzanian Secondary Schools **Sumbawanga DC, Tanzania**
11:30 – 12:00	**Siphiwe Sibiya & Mduduzi Hlophe** 218 Navigating the Security Dilemma: Detecting and Evaluating the Use of Generative AI in Eswatini's Prevocational Entrepreneurship School-Based Assessments **ECESWAT, Eswatini**	**Sakala Bathseba & Sophia Charles** 502 Rethinking Educational Assessment in Zambia: A Study of Form 1 and Form 2 Teachers' Assessment Literacy in Competence-Based Assessment **ECZ, Zambia**	**Dr. Godson Shendemuni Lema** 719. Head of Schools' Perspectives on the Implementation of the Revised School Curriculum in Tanzania: Evidence from Ruvuma and Dar es Salaam Regions **TIE, Tanzania.**	**Tito Paul Mende** 713. Digital Solutions for Assessment, Feedback and Evaluation of Teaching and Learning. **Ministry of Education, Science and Technology** **SQA, Chalinze**	**Vicent Charles Haule,** 109. Rethinking Educational Assessment in the Age of Artificial Intelligence. **Korogwe T.C, Tanzania**

				Tanzania	
12:00 – 12:30	**Margareth Amon Mapunda** 103 Harnessing Artificial Intelligence (AI) for Personalized, Equitable, and Inclusive Education in Tanzania. **CBE, Dar es Salaam Campus, Tanzania**	**Mariam Ally Tambwe** 606 Promoting Academia–Industry Collaboration for Enhancing Technological Literacy and Competency-Based Practical Assessment in Tanzanian TVET Institutions**"** **CBE, Tanzania**	**Phenyane Tlali** 607. The role of Artificial Intelligence (AI) in Transforming Classroom Instruction and Assessment at Lesotho Secondary Education: A case of ICT Subject **ECL, Lethoto**	**Marystella Baynit PhD1 & Prof. Cosmas Mnyanyi, PhD2** 108. The Integration of Artificial Intelligence-Driven Learning Technologies to Enhance Learning Outcomes: A Case of Selected Higher Learning Institutions in Tanzania. **IAA, Arusha, OUT, Tanzania**	**[1]Dr. Mohammed Mohammed Aminu, [2]Mr. Pius Osaigbovo Stephen** **[3]Prof. Emmanuel Raymond** **[4]Mrs. Irene O. Iluobe** 308. Perception of TVET Instructors and Learners On Artificial Intelligence (AI)-Driven Models **NABTEB, Nigeria**

12:30 – 13:00	**Dr. Anagrolia Faustino Mahenge** 403 AI-Driven Formative Assessment and Student Learning Outcomes in Tanzania's Competency-Based Secondary Education **AIA Tanzania**	**Lossaru Ngira** 107 AI-Powered Assistive Technologies for Equitable Learning and Assessment among Learners with Visual Impairments in Inclusive Primary Schools in Tanzania **Patandi T.C Tanzania**	**Catherine Koki Masila:** 111 From Scores to insights: Greening Assessment in the AI Era - AI-Driven Skill Gap Analysis, Personalized Remediation, and Equitable Reform **KNEC, Kenya**	**Joseph Gitonga Nyaga** 516 Project-Based Assessment as a Scenario-Based Approach for developing Competencies and Supporting learners' Transition: Kenyan Teachers' Perceptions on Students with Intellectual Disabilities **KNEC, Kenya**	**Mia Andersen, Kamogelo Matenchi, Sarah Howie & Brent Abrahams** **123 Rethinking Educational Assessment in the Age of Generative AI: Lessons from the Calculator Era** **Stellenbosch University**
12:50 – 14:00	Lunch Break				
14:00 – 16:00	General Assembly				
16.00 – 16:30–	Tea Break				
16:30: - 18.00	Free Business				
18:00 – 22:00	**White elegance dinner at Mount Meru Hotel**				
DAY 4: THURSDAY 20TH AUGUST, 2026					
07:30 – 09:00	Arrival and registration of Delegates				
09:00 – 10:00	**Tea Break**				
Presidency Handling Over Ceremony					
10:00 – 10:05	Tanzanian & AU Anthem				

10:05 – 10:20	Traditional Dance (ST Jude SS)
10:20 – 10:50	Remarks by Outgoing AEAA President
10:50 – 11:20	Speech by Incoming AEAA President
11:20 – 12:50	Conference Communique by the AEAA Executive Secretary
12:50 – 13:20	Closing Speech by Honourable Deputy Minister for Education Science and Technology, Tanzania
13:20 – 14:20	**Lunch Break at M social Hall**
14:20 – 18:30	**Free Business Time**
18: - 21:30	**Galla Dinner: Mount Meru Hotel**
DAY 5: FRIDAY 21ST AUGUST, 2026	
08:00 – 18:00	Excursions
18:30 – 21:30	CEO's Dinner
18:30 – 21:30	Departure

ABSTRACTS FOR KEYNOTE SPEAKERS

DAY 1: KEYNOTE SPEAKER 1

From National Examinations to National Learning Intelligence: How African Examination Councils Can Use AI to Strengthen Assessment Quality, Integrity, and Policy Impact

Prof. Joel S. Mtebe
University of Dar es Salaam

African examination councils are among the most consequential public institutions on the continent. They certify achievement, regulate progression, protect standards, and produce some of the most structured, longitudinal, and nationally comparable data that any African government holds. Yet the dominant institutional model still treats the annual examination as a high-stakes certification event: results are released, certificates are issued, and the deeper diagnostic value of item responses, scripts, centre patterns, and cohort trends remains largely unused. This paper argues that artificial intelligence (AI), when governed responsibly and embedded within assessment science, can help councils move from national examinations to National Learning Intelligence **(**NLI): the national capability to convert assessment evidence into timely, actionable, equitable, and policy-relevant knowledge about what learners know, where learning is breaking down, which groups are being left behind, and what action should follow. The paper does not advocate replacing examiners, psychometricians, teachers, or policymakers with machines. It proposes a human-led, AI-assisted transformation in which councils become national learning observatories. Drawing on the current mandates and live digital initiatives of NECTA (Tanzania), KNEC (Kenya), UNEB (Uganda), and WAEC, and on global assessment practice, the paper maps AI across the examination lifecycle; introduces a six-layer NLI architecture, a Learning Intelligence Maturity Model (LIMM), and a risk–safeguard matrix; and sets out a four-phase roadmap. The central message for council leaders is that the future is not merely digital examinations or automated marking. It is intelligent assessment governance: secure, valid, inclusive, data-rich, and oriented toward improving learning.

Keywords: artificial intelligence; educational assessment; examination councils; assessment quality; examination integrity; learning analytics; automated scoring; assessment governance; Africa; National Learning Intelligence.

DAY 1: KEYNOTE SPEAKER 2

Why Traditional Teaching and Assessment is Breaking: Redesigning Teaching and Assessment Around AI

Dr. Salome Maro
University of Dar es Salaam.

Postgraduate education has long relied on lectures, written assignments, and take-home assessments as reliable proxies for student understanding. The rapid, largely unsupervised adoption of generative AI tools by students has disrupted this assumption, particularly in institutions across the Global South where formal AI policy and pedagogical guidance are still emerging. This technology adoption draws on direct experience redesigning and teaching a postgraduate Business Process Management

(BPM) course at the University of Dar es Salaam across a full semester, during which AI tools were deliberately integrated into course design, delivery, and assessment.

Traditional assessment methods, particularly take-home assignments and written reports, could no longer distinguish genuine student understanding from AI-generated output. This created a validity crisis. Assessments continued to produce grades, but those grades increasingly failed to reflect what students actually knew or could do. The core challenge was not whether to allow AI, but how to redesign both teaching and assessment so that AI use strengthens rather than undermines learning outcomes.

The course was restructured around three interventions. First, a redesigned curriculum built around a real consulting project, giving students an authentic problem to apply AI-assisted reasoning to rather than reproduce. Second, a custom-built AI tutoring chatbot deployed to support students during independent learning, with engagement patterns logged and analyzed. Third, a shift in assessment weighting toward oral defences and process-based evaluation, designed to test reasoning and adaptability rather than polished written output. Student engagement data from the chatbot was analyzed alongside assessment performance to evaluate the approach.

Early evidence suggests that process-based and oral assessment components were substantially more resistant to AI-assisted misrepresentation than written assignments, while still allowing students to benefit from AI tools during the learning process itself. Chat-bot engagement data revealed distinct patterns of student use that correlated with depth of understanding demonstrated in oral defences. The talk concludes with practical, transferable lessons for educators seeking to redesign their own courses around AI rather than in opposition to it, along with open questions this experience surfaced for institutional assessment policy going forward.

DAY 2: KEYNOTE SPEAKER 3

AI Driven Hyper-Personalization of Learning

Prof. Raghunathan Rengaswamy
School of Eng. & Science, Chairperson - Advisory Council, IITMZ

AI is having a tremendous positive impact in several fields of human endeavor. Education is a field in which AI can leveraged to solve myriad problems related to access and information asymmetry. Educators can leverage AI to fine-tune pedagogy to a student body with rich demography. Learning happens in feedback loops. The student must first assess his/her level of understanding of a subject through an assessment could be the ability to explain things, synthesize ideas, or standardized tests. The assessment should be reasonably comprehensive conditioned on the learner's current level of understanding of the topic and be able to identify gaps. Based on the identified gaps, learning material should be identified for the learner to study from. This process can then be repeated until the learner gets to a level of understanding that is desired. In this talk, such an AI driven hyper-personalized learning platform will be discussed.

DAY 2: KEYNOTE SPEAKER 4

Leveraging Artificial Intelligence for Competency-Based Assessment in Technical and Vocational Education and Training (TVET): A Framework for Enhancing Skills Verification and Workforce Readiness

Joseph W. Matiko, PhD
Dar es Salaam Institute of Technology

The rapid advancement of Artificial Intelligence (AI) is transforming educational assessment by enabling more adaptive, data-driven, and authentic approaches to evaluating learner performance. Within Technical and Vocational Education and Training (TVET), where competency-based education emphasises the demonstration of practical skills, knowledge, and workplace readiness, conventional assessment methods often face challenges related to scalability, consistency, timeliness, and the objective evaluation of complex competencies. This paper proposes an Artificial Intelligence driven framework for competency-based assessment in TVET that enhances skills verification while supporting learners, assessors, institutions, and industry.

The paper examines the role of AI technologies in strengthening the assessment of cognitive, psychomotor, and affective competencies. The proposed framework integrates AI-assisted formative and summative assessments, simulation-based practical evaluations, digital portfolios, automated feedback mechanisms, and competency analytics to provide continuous evidence of learner achievement. The framework also promotes stronger alignment between assessment outcomes and industry competency standards, thereby improving the reliability, transparency, and authenticity of skills certification and workforce preparedness.

Drawing upon current literature, international best practices, and the evolving landscape of competency-based TVET, the paper discusses the opportunities presented by AI, including personalised assessment, improved assessment quality, reduced assessor workload, real-time performance monitoring, and data-informed decision making. It also critically examines implementation challenges related to ethical AI, data privacy, algorithmic bias, digital infrastructure, assessor capacity, governance, and policy readiness, particularly within resource-constrained educational contexts.

The paper concludes by presenting strategic recommendations for policymakers, TVET institutions, regulatory bodies and industry stakeholders to facilitate the responsible adoption of AI-enabled assessment systems. By proposing a comprehensive conceptual framework, the study contributes to the ongoing discourse on rethinking educational assessment in the age of AI and offers practical guidance for modernising competency-based assessment to better support skills verification, lifelong learning, and workforce readiness in TVET systems.

DAY 3: KEYNOTE SPEAKER 5

Beyond the Arms Race: The AI Security Dilemma in African e–Assessment and the Case for Integrity by Design.

Dr. Aron Kondoro
University of Dar es Salaam (UDSM).

The paper discusses how generative AI is disrupting e-assessment security and academic integrity, and argues that reliance on AI detectors, remote proctoring, and restrictive controls alone may lead to an unsustainable arms race. It proposes an integrity-by-design approach for African assessment systems focusing on authentic competency-based assessment, secure e-assessment infrastructure, transparent AI-use disclosure and human oversight. The main message is that assessment bodies should move beyond merely detecting AI misuse and instead redesign assessment systems to generate trustworthy, fair, and meaningful evidence of learning.

DAY 3: KEYNOTE SPEAKER 6

Rethinking Programming Assessment in the Age of AI: An Adaptive Swahili–English Transitional Environment for Equitable Computational-Thinking Assessment in Tanzanian Secondary

Yesaya R. Athuman
Tanzania Ports Authority, Dar es Salaam, Tanzania

The arrival of generative artificial intelligence has unsettled educational assessment worldwide, and nowhere is the challenge sharper than in the assessment of programming. For the majority of African learners, whose first language is not English, the difficulty is compounded: they must demonstrate computational competence through English-based tools and examinations while still acquiring the language itself, and they must now do so in an environment where AI code assistants can generate solutions on demand. Equitable assessment of computational thinking in the AI era requires rethinking not only how we assess, but the learning environments in which competence is built and made visible. It presents the conceptual and design-science foundations of an adaptive Swahili–English transitional programming environment for Tanzanian secondary school students. Grounded in Cognitive Load Theory, constructivist scaffolding, the Technology Acceptance Model and transfer theory, the environment progressively moves learners from first-language visual blocks to English-based text programming, fading linguistic and visual scaffolds as competence grows. The paper's central contribution is a set of design principles and a transitional model that reframe assessment as continuous, competency based and embedded in the learning process, and that make computational thinking, cognitive load, engagement, retention and cross-language transfer observable and measurable for Swahili-speaking learners. Further grounding conceptual understanding in the learner's own language is a precondition for using AI code assistants as instruments of learning and authentic assessment rather than as vectors of over-reliance and academic-integrity risk. The framework is aligned with Tanzania's competency-based Computer Science curriculum, the National Digital Education Strategy and Development Vision 2050, and with the AEAA theme of harnessing AI for personalised, equitable and inclusive education. A design-science evaluation plan is proposed. The paper offers African assessment bodies a concrete, theory-driven model for equitable, AI-resilient assessment of computational competence in multilingual settings.

BIOGRAPHY OF CHAIRPERSONS OF PARALLEL SESSIONS

Dr. Godson Shendemuni Lema

Dr. Godson Shendemuni Lema is a prominent **Curriculum Developer** at the Tanzania Institute of Education (TIE), specializing in educational research, formative assessment, and pedagogical improvement. His work heavily focuses on advancing Tanzania's Competence-Based Curriculum (CBC).

Dr. Mohamed Msoroka is a Tanzanian academic and senior lecturer at The Open University of Tanzania, specializing in adult education, distance learning, and lifelong education. He has served in several academic and administrative leadership roles within the university, including Director of the Dodoma Regional Centre and Chief Editor of the *Journal of Issues and Practice in Education (JIPE).* Dr. Msoroka earned his PhD in Education from University of Waikato, New Zealand. His doctoral research focused on prison education and issues related to adult learning and rehabilitation. His scholarly work has contributed to discussions on educational access, research ethics, and adult learning systems in Tanzania and internationally. At the Open University of Tanzania, he has been associated with the Department of Educational Foundations, Adult and Distance Education within the Faculty of Education. He has also played a major editorial role in academic publishing through JIPE, helping promote research in education and lifelong learning. Dr. Msoroka has co-authored academic publications on research ethics, access to research participants, and culturally responsive educational practices. His collaborations with researchers from New Zealand and other countries reflect his international academic engagement.

Dr. Evaristo Tukamuhabwa is a Ugandan education researcher and assessment specialist who works with the Uganda National Examinations Board (UNEB). He is recognised for his scholarly contributions to physics education, educational assessment practices, and curriculum-related research in East Africa. He holds several qualifications in education and science, including Bachelor of Education (Physics/Chemistry), Diploma in Education (Physics/Chemistry), a Master degree in Education Science (Physics), Postgraduate Diploma in Human Resource Management, and doctoral-level studies in Education, specialising in Curriculum studies. He has published and contributed to several academic studies on areas including effectiveness of Physics teaching and learning, formative and continuous assessment in secondary schools, student performance in science subjects, as well as the influence of school environment on teacher effectiveness.

Dr. Grace O. Onoja holds a Doctorate Degree in English Language from the University of Abuja, Nigeria. She is a Deputy Director with the Human Resource Management Department of the Joint Admissions and Matriculation Board (JAMB), a foremost public examination body in Nigeria. She is interested in Research; Critical Stylistics; Discourse Analysis; Pragmatics; adolescent and girl-child education.

Dr. John Kalolo is a lecturer at the Mkwawa University College of Education (MUCE), a constituent college of the University of Dar es Salaam situated in the Iringa Region, Tanzania. His areas of specialisation lie within teacher education and training, educational psychology, and curriculum studies and instruction. He is dedicated to developing and preparing future teachers for primary, secondary, and universities. Alongside his teaching responsibilities, Kalolo supervises postgraduate students in the areas of curriculum development and teacher training programmes.

Dr. **Kokuberwa Katunzi-Mollel** is a Tanzanian education administrator and information studies scholar with extensive experience in higher education management, admissions systems, quality assurance, and education data management. She has served in senior leadership roles in national education regulatory institutions, contributing to the modernization of admissions, digital information systems, and evidence-based policy. Her work continues to strengthen governance and quality in higher and technical education.

Dr. Amos Josiah Dangut is the Head of the Nigeria National Office of the West African Examinations Council (WAEC). With more than two decades of experience in educational assessment, he has held numerous leadership positions in test development, examination security, and quality assurance. He is recognized for promoting innovation, integrity, and digital transformation in examination administration across Nigeria and the West African region.

Florence M. Kyaruzi is an Associate Professor at the Dar es Salaam University College of Education (DUCE), University of Dar es Salaam. He specializes in mathematics education, educational assessment, learning sciences, and teacher professional development. His research has focused on formative assessment, feedback, curriculum implementation, and improving mathematics teaching and learning. He has held several academic leadership positions and has contributed extensively to educational research, policy, and capacity building in Tanzania and across Africa.

Prof. Cosmas Boniface Mnyanyi is an Associate Professor of Special and Inclusive Education at the Open University of Tanzania (OUT). Prof. Mnyanyi earned a **PhD in Special Education** from **Åbo Akademi University** in Finland, following postgraduate studies in Special Education and undergraduate training in Science Education. His academic expertise spans inclusive education, assistive technology, curriculum adaptation, teacher education, educational assessment, digital pedagogy, artificial intelligence in education, and open and distance learning. His work focuses on improving educational opportunities for learners with disabilities and other marginalized groups through technology-enabled solutions. Prof. Mnyanyi has published extensively in peer-reviewed journals and conference proceedings on topics such as inclusive education, visual and hearing impairment, assistive technologies, digital inclusion, teacher professional development, curriculum adaptation, and educational technology. He has supervised numerous postgraduate research projects and contributed to national and international initiatives aimed at strengthening inclusive education policies and practices across Tanzania and the wider East African region.

Dr. Mamathe Eliza Malepa-Qhobela is a Lesotho mathematics educator, researcher, and academic specializing in mathematics education, problem-solving pedagogy, and classroom assessment practices. She is affiliated with the National University of Lesotho International School (NULIS) in Roma, Maseru, Lesotho, where she has served as a secondary school mathematics and physics teacher. She earned a Doctor of Philosophy (PhD) with specialization in Subject Education in Mathematics from the University of the Free State, South Africa. Malepa-Qhobela is best recognised for her research on integrating problem-solving approaches into secondary school mathematics teaching. Her widely cited scholarly article, *A Framework to Assist Mathematics Teachers in Integrating Problem Solving in Secondary School Classrooms*, co-authored with Prof. Mogege Mosimege, explored how mathematics teachers in Lesotho integrate problem-solving activities into classroom practice. The study proposed a framework to support teachers in developing learners' mathematical problem-solving skills. Other research interests include mathematics classroom pedagogy, assessment practices, mathematical problem solving, teacher development and curriculum implementation. Beyond teaching and research responsibilities, Dr. Malepa-Qhobela has contributed to educational assessment and examination initiatives in Lesotho. Conference records from the Association for Educational Assessment in Africa (AEAA) identify her as affiliated with the Examinations Council of Lesotho, where she presented research on teachers' perceptions of digitalised national examinations and the future of electronic assessment systems in Lesotho. Through her conference presentations, scholarly publications, and collaborative research initiatives, she has made valuable contributions to the African mathematics education discourse, particularly in advancing efforts to strengthen mathematics teaching quality and improve learner achievement in secondary schools.

Dr. Ebba Masiri, based in Zimbabwe, is currently a Director Research and Development at Gemasi Education. Ebba Masiri brings experience from previous roles at ZIMSEC, Ministry of Primary and Secondary Education and Ministry of Primary and Secondary Education - Better Schools Programme (Zimbabwe. Ebba Masiri holds a 2017 - 2019 Doctor of Philosophy - PhD in Education @ University of South Africa.

LIST OF EXHIBITORS

Ministry of Education, Science and Technology

OMR India Outsources PVT. LTD.

Questions matter

PAPER ABSTRACTS

100 Harnessing Artificial Intelligence (AI) for Personalized, Equitable, and Inclusive Education.

101 Awareness and Adoption of Inclusive Teaching, Assessment and Artificial Intelligence Tools in Practical Science Education among Visually Impaired Learners in Nigeria

Amos Josiah Dangut (Ph.D), Edmund Osayuki Iyawe and **Shehu Tijani Babajide**

Achieving inclusive science education remains a major challenge in Nigeria, despite notable improvements in Special Education provisions outlined in the National Policy on Education (2014) and the country's commitment to Sustainable Development Goal 4 (SDG 4). Visually Impaired (VI) learners continue to face limited participation in practical science instruction and assessment, particularly in high-stakes public examinations where participation in laboratory-based tasks remains limited. This study examined levels of awareness and adoption of inclusive teaching, assessment and Artificial Intelligence (AI) tools in advancing practical science education among Visually Impaired (VI) learners in Nigeria. A descriptive survey design was employed, utilizing structured Likert-scale questionnaires administered to five respondent groups across Nigeria's six geopolitical zones. Two hundred and seventy respondents selected through purposive sampling and comprising special educators, visually impaired students, examiners, and assessment officers participated in the study. Data were analysed using percentages, mean scores and standard deviations. Findings revealed moderate to high awareness and favourable perceptions of AI-driven tools for inclusive practical science education. However, institutional adoption remains low due to infrastructural limitations, weak policy support, and inadequate teacher preparation. Respondents strongly supported the integration of AI tools such as text-to-speech systems, adaptive assessment platforms, object-recognition tools, and virtual simulations into science teaching and assessment for VI learners. These tools were considered useful for improving participation, access, and individualized learning. The study concludes that although awareness and readiness are growing, implementation remains constrained by systemic barriers. It recommends targeted teacher training, improved digital infrastructure, curriculum adaptation, and policy reform to support inclusive, technology-enabled science teaching and assessment for visually impaired learners in Nigeria.

Keywords: Artificial Intelligence, inclusive education, science practical, visually impaired learners, assessment

102 Harnessing digital tools to enhance the level of participation and performance in the extended Mathematics

Nts'asa L. S

Over recent years, examiner's reports documented a decline in learners' performance in extended mathematics. Poor performances led many learners to abandon the Extended Mathematics in favour of easier core component resulting in reduced participation. This posed a threat to the future of mathematics in the country. This study focused on enhancing level of participation and performance

in the extended mathematics using modern digital tools and technologies for teaching and learning. Guided by the Technology Acceptance model as a theoretical framework, emerging facts gave more insight about the level of participation and performance in this component as ignited about the digital tools. The study employed mixed methods explanatory design where quantitative approach focused on the candidature trends and qualitative approach focused on teachers' experiences on the use of digital tools. Data were collected by means of mathematical tasks worksheets, participatory observation trends and randomly selected teachers' interviews. The tasks were on algebra, space and shape all designed to be non-routine, so they develop higher order algebraic and spatial skills as required in extended mathematics. The findings revealed increased participation and higher level of motivation. The use of digital tools has assisted learners develop higher order thinking skills in algebra and self-check mechanism in their solution strategy. Learners developed deeper and conceptual understanding and improved algebraic manipulative skills and hence improved performance in mathematics overall. The study recommends that teaching and learning, in the times of artificial intelligence, should be explored to a level of harnessing digital tools. Further study on this aspect will involve many learning areas in mathematics.

Keywords: digital tools, algebra, performance, level of participation

103 Harnessing Artificial Intelligence (AI) for Personalized, Equitable, and Inclusive in Tanzania

Margareth Amon Mapunda

Tanzania's education system continues to face significant challenges, including rural-urban disparities, teacher shortages, disability inclusion, and unequal learning outcomes. Artificial Intelligence (AI) offers transformative potential through adaptive learning systems, predictive analytics, natural language processing, and data-driven decision-making to address these persistent issues. This study systematically reviews how AI can be harnessed to advance personalized, equitable, and inclusive education in the Tanzanian context while identifying key implementation barriers and policy priorities. Employing a qualitative systematic literature review guided by PRISMA standards, the study synthesizes 68 peer-reviewed articles, policy reports, and grey literature published between 2018 and 2026 from global, African, and Tanzanian sources. The analysis is organized around four core themes: personalized learning, educational equity, inclusion of marginalized learners, and institutional readiness, and is underpinned by an integrated theoretical framework combining Constructivism, Connectivism, and the Technology Acceptance Model (TAM). Findings reveal that AI-driven adaptive platforms and intelligent tutoring systems can significantly enhance personalized learning (effect sizes up to 0.47), while predictive analytics and mobile solutions show promise in reducing dropout rates and bridging rural-urban divides. Assistive AI tools improve access for learners with disabilities, particularly through Kiswahili localization and speech recognition. However, institutional readiness remains limited due to infrastructure gaps, low digital literacy, algorithmic bias risks, and inadequate policy implementation. The study emphasizes that successful AI integration in Tanzania requires mobile-first, offline-capable, and locally contextualized solutions supported by robust teacher training and ethical frameworks. This research contributes practical insights for policymakers, educators, and technology developers to strengthen

AI adoption, advance SDG 4 (Quality Education), and reduce long-standing educational inequalities in Tanzania and similar low- and middle-income contexts.

Keywords: Artificial Intelligence, Personalised Learning, Educational Equity, Inclusive Education, Systematic Literature Review

105 Awareness and Adoption of Inclusive Teaching, Assessment and Artificial Intelligence Tools in Practical Science Education among Visually Impaired Learners in Nigeria

Edmund Osayuki Iyawe and Shehu Tijanni Babajide

Achieving inclusive science education remains a major challenge in Nigeria, despite notable improvements in Special Education provisions outlined in the National Policy on Education (2014) and the country's commitment to Sustainable Development Goal 4 (SDG 4). Visually Impaired (VI) learners continue to face limited participation in practical science instruction and assessment, particularly in high-stakes public examinations where participation in laboratory-based tasks remains limited. This study examined levels of awareness and adoption of inclusive teaching, assessment and Artificial Intelligence (AI) tools in advancing practical science education among visually impaired (VI) learners in Nigeria. A descriptive survey design was employed, utilizing structured Likert-scale questionnaires administered to five respondent groups across Nigeria's six geopolitical zones. Eighty-five respondents selected through random sampling and comprising special educators, visually impaired students, examiners, and assessment officers participated in the study. Data were analysed using percentages, mean scores and standard deviations. Findings revealed moderate to high awareness and favourable perceptions of AI-driven tools for inclusive practical science education. However, institutional adoption remains low due to infrastructural limitations, weak policy support, and inadequate teacher preparation. Respondents strongly supported the integration of AI tools such as text-to-speech systems, adaptive assessment platforms, object-recognition tools, and virtual simulations into science teaching and assessment for VI learners. These tools were considered useful for improving participation, access, and individualized learning. The study concludes that although awareness and readiness are growing, implementation remains constrained by systemic barriers. It recommends targeted teacher training, improved digital infrastructure, curriculum adaptation, and policy reform to support inclusive, technology-enabled science teaching and assessment for visually impaired learners in Nigeria.

Keywords: Artificial Intelligence, Inclusive Education, Science Practical, Visually Impaired Learners, Assessment

106 Human-Centred AI in Secondary Education: Evaluating Teacher Competencies and Learning Support Through the UNESCO AI CFT Lens

Seleman C. Mafuru

In 2024, UNESCO published the Artificial Intelligence Competency Framework for Teachers (AI CFT) to provide a global roadmap for sustainable, human-centric, ethical, inclusive, and secure AI adoption in education. Despite the publication of this fundamental framework, formal adoption remains limited to a few nations. Globally, AI integration in education remains low, with only 15 countries having adopted AI curricula by 2022. In Africa, AI adoption is in a nascent phase; formal guidelines and frameworks are limited to a few nations (Egypt, South Africa, Mauritius, Rwanda, Kenya, and Senegal), while the majority remain uninitiated. Although individual teacher usage of AI for teaching has surged, formal institutional integration remains limited and impromptu. Furthermore, studies indicate that less than 10% of schools worldwide have established formal guidance on generative AI, creating a security dilemma regarding trustworthiness, data privacy, and inclusivity. Teachers are the primary facilitators of AI in education, yet the profession has been slow to restructure in ways that empower educators with AI-driven approaches for inclusive learning. While addressing AI's pedagogical potential, an empirical gap exists in assessing educator competency within low-resource settings. This mixed-methods study is designed to assess 200 secondary school teachers' AI security hygiene and learning support proficiency in Longido District (Arusha region) and Wete District (North Pemba region) of the United Republic of Tanzania. Using a Human-in-the-Loop approach, the research will utilise an AI-TPACK competency survey administered to 100 teachers per district, supplemented by 12 semi-structured interviews (6 per district) to explore AI integration across mainland pastoralists and island contexts. Quantitative data will be analysed using descriptive statistics (frequencies, means, standard deviations, and cross-tabulations) to benchmark levels of awareness and proficiency. Qualitative data will undergo reflexive thematic analysis to identify structural barriers, enablers, and teacher agency in pedagogical integration. The research aims to provide a diagnostic roadmap for tiered professional development that prioritises teacher agency and data safety in AI integration for secondary school teachers. Ultimately, this study recommends that regional assessment bodies, such as those under the Association for Examining Boards in Africa (AEAA), leverage these AI-aligned benchmarks to refine continuous assessment frameworks, ensuring data-driven feedback mechanisms that remain human-led and inclusive of learners in resource-constrained environments.

Keywords: Artificial Intelligence in Education (AIED), UNESCO AI Competency Framework for Teachers (AI CFT), Human-Centred Artificial Intelligence (HCAI), AI-TPACK, National Examinations Council of Tanzania (NECTA), Longido District, North Pemba District, Generative AI, Shadow AI, Low-Resource Settings, Teacher Professional Development, Educational Assessment.

107 AI-Powered Assistive Technologies for Equitable Learning and Assessment among Learners with Visual Impairments in Inclusive Primary Schools in Tanzania

Lossaru Ngira

This paper examines how AI-powered assistive technologies operate within the broader assistive ecosystem available to learners with visual impairments in inclusive primary schools in Arusha, Tanzania using a qualitative dataset. The study makes three contributions: methodologically, it introduces a five-category assistive technology classification that distinguishes AI-enabled from non-AI supports at the function level; empirically, it centres the voices of visually impaired learners alongside teachers, tutors, parents, and institutional actors; theoretically, it demonstrates that AI-enabled AT operates as a conditional supplement, not a standalone solution. Employing a qualitative multiple-case design across two inclusive primary schools and one teacher training college, we drew on 42 interviews, six focus group discussions, 18 classroom observations, 10 assessment observations, three assessment case files, 60 device-use episodes, and 20 institutional documents. Braun and Clarke's reflexive thematic analysis produced nine themes across 67 codes. Findings show that Braille and human supports remain the ecosystem's foundation, while AI-enabled tools provided genuine but conditional support contingent on stable electricity, functional internet, teacher mediation, device availability, and Kiswahili language accuracy. Assessment accommodation was the weakest domain, with Braille delays, inconsistent extra-time allocation, and diagram inaccessibility producing compounded inequities. The study recommends that, infrastructure stabilisation, teacher preparation, and Braille-first investment should precede technology-forward policy.

Keywords: assistive technology; visual impairment; inclusive education; artificial intelligence; Tanzania; qualitative research; Braille

108 The Integration of Artificial Intelligence-Driven Learning Technologies to Enhance Learning Outcomes: A Case of Selected Higher Learning Institutions in Tanzania

Marystella Baynit PhD[1] & Cosmas Mnyanyi, PhD[2]

The integration of Artificial Intelligence (AI) - driven learning technologies has become a central pillar of digital transformation in higher education worldwide, with growing evidence that AI can support personalised learning, adaptive assessment, automated feedback, and improved learner support. Despite this global momentum, the adoption and institutional integration of AI in many developing higher education systems remain limited and uneven. This study, therefore, examined how AI-driven learning technologies can enhance learning outcomes in selected higher learning institutions in the **United Republic of Tanzania**, with specific reference to the **OUT** and the **IAA**. The study was guided by the Technological Pedagogical Content Knowledge (TPACK) framework and the Technology Acceptance Model (TAM) to explain how pedagogical alignment, technological competence, and lecturers' perceptions influence the effective use of digital and AI-related learning tools. A cross-sectional mixed-methods design was employed. Data were collected from 237 academic staff through structured questionnaires, supplemented by face-to-face interviews with key

informants and focus group discussions. Quantitative data were analysed using descriptive statistics and binary logistic regression, while qualitative data were analysed thematically. The findings reveal that, although awareness and informal use of digital and AI-related learning tools among lecturers are increasing, institutional integration remains limited and fragmented. Hardware-related digital competencies, particularly the use of projectors or smart screens, audio systems, and interactive response tools, were found to significantly predict students' learning outcomes. In contrast, most software-based ICT and AI-related applications, including learning management systems, video-conferencing platforms, digital collaboration tools, and specialised educational software, did not show a statistically significant contribution to learning outcomes. Qualitative evidence indicates that unreliable internet connectivity, outdated platforms, large class sizes, limited access to functional digital facilities, and inadequate professional training significantly constrain effective use of AI-driven learning technologies. The study additionally demonstrates that while Tanzanian higher learning institutions exhibit growing interest in AI and digital innovation, insufficient institutional infrastructure, weak infrastructure, and the absence of clear governance and pedagogical frameworks hinder meaningful integration. The study concludes that strengthening digital infrastructure, enhancing academic staff capacity, and establishing comprehensive institutional policies are essential for enabling AI-driven learning technologies to contribute systematically to improved learning outcomes and sustainable educational innovation in Tanzanian higher education.

Keywords: Artificial intelligence (AI)–driven learning technologies, Institutional infrastructure for digital and AI integration, and Learning outcomes

109 Rethinking Educational Assessment in the Age of Artificial Intelligence

Vicent Charles Haul

The rapid advancement of Artificial Intelligence (AI) technologies is transforming educational systems globally, particularly in the area of assessment. Traditional assessment practices, largely characterized by standardized testing and summative evaluation, have been criticized for their inability to address learner diversity, promote equity, and support inclusive education. In response, this paper rethinks educational assessment in the age of Artificial Intelligence by examining how AI can be harnessed to support personalized, equitable, and inclusive learning experiences. Anchored within contemporary assessment theory and inclusive education frameworks, the paper explores the potential of AI-driven assessment tools to adapt to individual when learner needs, provide timely and meaningful feedback, and reduce systemic bias in educational evaluation. Using a conceptual and analytical approach grounded in existing literature, the study examines AI applications such as adaptive testing, learning analytics, intelligent tutoring systems, and automated feedback mechanisms. The study recommends that thoughtfully designed and ethically implemented, AI-powered assessments can enhance fairness by recognizing diverse learning pathways, accommodating learners with special educational needs, and supporting data-informed instructional decisions. Particular attention is given to the relevance of AI-based assessment in developing country contexts, where large class sizes, limited resources, and inequitable access to quality education present persistent challenges. However, the study also critically interrogates the risks associated with

AI in assessment, including algorithmic bias, data privacy concerns, digital divides, and the marginalization of human judgment. It emphasizes the need for robust policy frameworks, educator capacity building, and inclusive design principles to ensure AI serves as a tool for empowerment rather than exclusion. The study concludes that AI should not replace educators but should augment professional judgment and support learner-centered assessment practices. The study further recommends for policymakers, educational institutions, and practitioners to guide the responsible integration of AI into assessment systems in ways that promote equity, inclusivity, and sustainable educational development.

Keywords: Artificial Intelligence, Educational Assessment, Inclusive Education, Equity, Personalized Learning

110 Reimagining Assessment in Malawi: Advancing Algorithmic Equity through Artificial Intelligence.

YOHANE STEVEN DEWA

Malawi National Examinations Board Email: ysdewa90@gmail.com

The global pursuit of inclusive and equitable quality education under Sustainable Development Goal 4 (SDG 4) remains significantly constrained in many Sub-Saharan African contexts where assessment systems continue to reproduce structural inequalities. In Malawi, the dominance of high-stakes examinations, particularly the Malawi School Certificate of Education (MSCE), reinforces disparities in learning outcomes linked to geographical location, resource distribution, and school capacity. This study investigates the potential of Artificial Intelligence (AI)-enabled assessment to enhance equity, inclusivity, and continuous learning within Malawi's secondary education system, with a specific focus on rural schools in Zomba District. Employing a mixed methods research design, data were collected from 120 participants, including students, teachers, and education officials, using questionnaires, semi-structured interviews, and document analysis. The findings reveal that existing assessment practices disproportionately disadvantage learners in under-resourced schools due to limited feedback mechanisms, over-reliance on summative examinations, and systemic capacity constraints. The study further demonstrates that AI-driven tools such as adaptive testing, automated feedback systems, and learning analytics hold significant potential to support personalised and competency-based learning. However, structural challenges, including inadequate ICT infrastructure, low digital literacy, and absence of policy frameworks, pose critical barriers to implementation. The paper contributes to emerging scholarship on algorithmic equity by offering practical and policy-relevant insights into leveraging AI for inclusive education in resource-constrained environments.

Keywords: Artificial Intelligence, Algorithmic equity, education assessment, Competency-based education, Educational inequality, MSCE, SDG 4, Malawi.

111 From Scores to insights: Greening Assessment in the AI Era - AI-Driven Skill Gap Analysis, Personalized Remediation, and Equitable Reform

Catherine Koki Masila:

In the era of Artificial Intelligence (AI), transitioning from traditional examinations to insight-driven evaluation has become a strategic imperative for assessment bodies. This paper examined the KNEC E-Assessment Model, which has grown from a 2021 pilot involving 45 candidates in a single learning area to over 50,000 candidates across 10+ programmes and 100+ learning areas by 2026. During this period, the model evolved from centralized to remote e-marking, exemplifying a deliberate transition from pen-and-paper assessments to a paperless, environmentally sustainable, multi-dimensional Competency-Based Education assessment ecosystem.. A descriptive survey was conducted with 350 stakeholders including trainees, tutors, and officers from 62 teacher colleges, as well as representatives from KNEC, MoE, KICD and TSC. Data collected using Microsoft Forms and analyzed in SQL and Stata (Version 18), employing both descriptive statistics and thematic analysis. Findings revealed strong endorsement of the "green" model which integrates offline-hybrid delivery, remote e-marking, and cloud-based data management to reduce logistical and environmental burdens of traditional examinations. Specifically, 95 of the participants affirmed this model, while 94% highlighted the offline mode's capacity to bridge infrastructure and connectivity gaps. Additionally, 92% supported a robust change management strategy anchored in stakeholder collaboration and a spiral development approach. Finally, 86% endorsed iterative feedback loops and intensive testing. Eighty two percent (82%) of the respondents affirmed that AI enhances KNEC's model by identifying skill gaps at granular cognitive levels and generating structured, machine-readable data that traditional pen and paper methods cannot produce.. Therefore, KNEC's approach offers a resilient blueprint for transforming assessment into an equitable, insight-driven, and environmentally sustainable driver of systemic educational reform.

Keywords: E-assessment transformation; AI-driven skill gap analysis; Personalized remediation; Equitable and inclusive assessment; Remote e-marking; Competency-based education; Data-driven reform; Sustainable (green) assessment.

112 Artificial Intelligence-Enabled Inclusive and Personalized Educational Assessment in Africa: Integrating National Assessment Systems with Assistive Technologies

Abubakar Umbe & Said Moshi Madorna

The aim of this study was to examine the influence of Artificial Intelligence (AI) - enabled educational assessment systems on inclusive and personalized educational assessment outcomes in Africa, with a specific focus on the integration of national assessment systems with assistive technologies. A quantitative research approach was employed, and data were collected from 120 students using a structured questionnaire based on a Likert scale. The study examined key variables including AI integration, availability of assistive technologies, ICT infrastructure, teacher technological competence, and institutional readiness in relation to inclusive and personalized assessment outcomes. The study further investigated students' perceptions regarding accessibility, fairness, and personalized feedback in AI-enabled assessment systems. Descriptive statistics and inferential analysis, including Analysis of Variance (ANOVA) and multiple regression analysis, were used to analyse the data. The findings indicate that students had positive perceptions of AI-enabled assessment systems, reporting higher levels of accessibility, fairness, and personalized learning support. The results further show that AI integration, availability of assistive technologies, teacher technological competence, and institutional readiness significantly influence inclusive and personalized educational assessment outcomes. Among these factors, AI integration and teacher competence demonstrated stronger effects, suggesting that effective implementation and skilled human support are critical for successful outcomes. This study concludes that AI-enabled assessment systems have strong potential to enhance inclusivity and personalization in education, particularly when supported by adequate infrastructure and competent educators. The findings support the need for strengthening AI integration and assistive technologies in African educational assessment systems.

Keywords: Artificial Intelligence, Inclusive Assessment, Personalized Learning, Assistive Technologies, Educational Assessment, UDL Theory

113 Neuroeducation and AI for Inclusive Mathematics Assessment in Tanzanian Secondary Schools: Harnessing Artificial Intelligence (AI) for Personalized, Equitable, and Inclusive Education

Emmanuel Kahise

Integrating neuroeducation and Artificial Intelligence (AI) offers promising solutions to persistent disparities in mathematics education across Tanzanian secondary schools. Despite global commitments to Sustainable Development Goal 4 (SDG4), significant inequities in STEM learning outcomes continue to exist between well-resourced and under-resourced schools, limiting access to quality education for many students. This qualitative case study investigates how neuroeducation, grounded in cognitive neuroscience, can inform AI-driven personalized learning systems to enhance mathematics instruction and assessment in the Tanzanian context. By aligning instructional strategies

with students' cognitive processes, such as working memory, attention, and executive control, the study explores opportunities for creating inclusive and individualized learning experiences that address diverse learner needs. Adopting an interpretivist paradigm, the research employed a multiple case study design across three secondary schools, including one private and two public institutions. Data were collected through semi-structured interviews with 18 participants comprising 12 mathematics teachers, 4 school administrators, and 2 education technology coordinators alongside classroom observations and curriculum document analysis. Thematic analysis of the data identified four key themes: (1) teachers' perceptions of neuroeducation-informed AI tools as potential mechanisms for bridging resource gaps; (2) the role of adaptive feedback in reducing mathematics anxiety and supporting learner confidence; (3) infrastructural and cultural barriers to effective integration of digital technologies in the classroom; and (4) the critical need for culturally responsive AI design that aligns with local educational values and practices. Findings suggest that when AI-driven tools are informed by neuroeducation principles, they can foster equitable learning outcomes by providing adaptive, personalized, and engaging instructional experiences. Teachers recognized the potential of these tools to support students in under-resourced schools, particularly by promoting active learning, reducing anxiety, and enhancing engagement. However, challenges such as limited digital infrastructure, inadequate professional development, and socio-cultural constraints remain significant barriers to successful implementation. The study highlights that AI integration must be complemented by pedagogical reforms, systemic support, and sustained investment in teacher capacity-building. By situating neuroeducation and AI within the broader discourse on inclusive and equitable education, this research contributes to ongoing debates on achieving SDG4 in sub-Saharan Africa. The paper concludes with actionable policy and practice recommendations for holistic, culturally responsive, and digitally enhanced mathematics education.

Keywords: Neuroeducation, Artificial Intelligence in Education, Inclusive Mathematics Assessment.

114 Improving Bookkeeping Achievement Through AI Supported Continuous Assessment: Evidence from Tanzania Secondary Schools

Abbas I. Kallage

Persistent underperformance in bookkeeping among secondary school students remains a significant concern in Tanzania, particularly at the Form Two level where foundational accounting competencies are expected to be established. Traditional teaching and assessment approaches often fail to address individual learner differences, resulting in limited conceptual understanding and poor examination outcomes. This study investigates the effectiveness of Artificial Intelligence (AI) supported continuous assessment in improving students' academic achievement in bookkeeping. Using a quasi-experimental classroom based design, the study was conducted with Form Two students at Libermann Boys' Secondary School. A combination of AI-supported tools such as automated quiz platforms, adaptive practice systems, and instant feedback mechanisms were integrated into daily teaching and assessment over a six-week period. Baseline data were collected through pre-tests, followed by continuous formative assessments and a post-intervention evaluation to measure learning gains. Preliminary findings indicate a noticeable improvement in students'

performance, particularly in double-entry concepts, ledger posting, and trial balance preparation. Students exposed to AI supported assessments demonstrated higher engagement levels, improved accuracy, and increased confidence compared to those relying solely on traditional methods. Additionally, the use of AI reduced marking workload and enabled timely identification of learner misconceptions. The study highlights the potential of AI-driven continuous assessment to transform the teaching of bookkeeping in resource-constrained educational settings. It recommends the gradual integration of low-cost digital tools to support personalized learning and data-driven instructional decisions. By aligning assessment practices with technological advancements, this research contributes to ongoing efforts to rethink educational assessment in the age of artificial intelligence, with implications for policy and classroom practice in Tanzania and similar contexts.

115 The Use of AI in Formative Assessments in Government Secondary Schools in Tanzania: Teachers' Experiences and Challenges in Relation to Student-Centred Learning

Abbas Francis Lugaenda

The integration of digital tools in teaching and assessments is emphasized in national frameworks such as the ICT Policy for Basic Education and Tanzania Development Vision 2025, where technology is linked to improving educational quality. In secondary schools, formative assessments remain an important part of everyday teaching, especially in supporting continuous learning and feedback. AI tools are increasingly discussed in this area, though what happens in actual classrooms is less clear particularly in Tanzanian settings. This study examined teachers' experiences and challenges with AI in formative assessments and how these relate to student-centred learning in selected secondary schools in the Morogoro Municipal Council. A mixed-methods design was used. Data were collected from 80 teachers selected from ten schools through structured questionnaires and three focus group discussions. Quantitative data were analysed using descriptive statistics, while qualitative responses were analysed thematically. Findings showed that 60 out of 80 teachers had some familiarity with AI tools, though fewer than 30 reported using them regularly in classroom assessments. Teachers with regular usage pointed to quicker feedback and easier tracking of individual student progress, which supported ongoing learning. Differences were observed across schools, where those with more stable internet and better access to devices showed higher levels of use, while others struggled with even basic digital tools, reflecting a clear gap in access and practice within the same council. Teachers also raised several challenges, including unreliable internet, limited skills in using AI tools, and lack of a proper guidance on how these tools should be used in assessments. The study concluded that AI integration in formative assessments within Tanzanian government secondary schools remains at an early and uneven stage, shaped more by access conditions and individual teacher initiative than by any coordinated institutional effort, and that meaningful progress toward student-centred assessment practices through AI is unlikely without deliberate systemic support. The study recommended practical teacher training focused on real classroom use, improvements in school infrastructure, and clearer direction from bodies such as the NECTA to guide AI use in assessments in a way that fits conditions found in Tanzanian secondary schools.

Keywords: Formative Assessment, Artificial Intelligence, Student-Centred Learning, Secondary Education, Teacher Experience

116 Mapping Artificial Intelligence in Education: Evidence and Opportunities from IEA International Large-Scale Assessments

Dana Kelly, Julian Fraillon, Oliver Neuschmidt, and Katherine Reynolds

The rapid emergence of Artificial Intelligence (AI) is reshaping education systems globally, yet internationally comparable evidence on how schools are responding to it remains limited. This paper examines how international large-scale assessments conducted by IEA are evolving to address this gap by capturing data on AI-related policies, practices, and capabilities from students, teachers, parents, and school leaders. Through a content analysis of assessment frameworks and instruments used in IEA's International Computer and Information Literacy Study (ICILS), Progress in International Reading Literacy Study (PIRLS), and Trends in International Mathematics and Science Study (TIMSS) the paper analyzes how AI is conceptualized and operationalized not only as a technological tool, but also as a pedagogical, ethical, and governance issue. The paper maps AI-related domains across these studies to a common framework and compares areas of emphasis. Finally, the paper considers how these approaches could be extended to IEA's Literacy and Numeracy Assessment (LaNA) and adapted for national and regional assessments, particularly in African contexts where evidence on digital transformation is still emerging.

117 Merits and Challenges of Using Artificial Intelligence for Personalized, Equitable and Inclusive Educational Assessment

Dr. Alfred D. Mdima (PhD Ed)

This study was motivated by limited opportunities for the majority of people in accessing higher formal education in Africa. Most Africans end up at primary and lower secondary school education because of missing opportunities to access higher education in their countries. This situation led to the need of analysing the possibility of these people to use the new technology of artificial intelligence as an alternative solution. So, the aim of this study was to find out how the Artificial Intelligence can be used for promoting access to higher education for majority Africans. Specifically, this study focused on exploring the merits of using AI for personalized, equitable and inclusive education. It also fixated on identifying the challenges hindering the use of AI in promoting personalized, equitable and inclusive education. The study also investigated the relevant strategies for combating the challenges that hinder majority of African people to use AI as an alternative means to access education at higher levels. In terms of research methodology, this study used mixed approach. The sample was obtained from three countries (Tanzania, Malawi and Zimbabwe) and included 1200 people included those ended at Primary, ordinary secondary, high secondary, universities levels of education and whose ages were 20 years and above. The findings showed that the advantages of using AI for Africans were easier accessing learning materials, facilitations from various sources, unlimited age for studying, and unbounded choices of courses to study. It also simplifies and makes learning assessments fair. On challenges, the study found limited internet

facilities in some areas, need of advanced electronic devices, and limited access to some people with disabilities. However, the study suggested strategies such as creating awareness to people on registering to online courses and use AI to search for knowledge and skills of their talents and interests, governments to improve internet infrastructures in rural areas, and lowering prices of advanced electronic devices.

Key words: Artificial Intelligence, Personalized education, Equitable education and Inclusive Education.

118 Harnessing Artificial Intelligence for Personalised, Equitable, and Inclusive Education: Teachers' and Students' Perceptions of AI-Enabled Assistive Technologies for Functional Literacy in Inclusive Secondary Education: A Systematic Review.

Veronica Hipolity, NECTA.

Artificial Intelligence (AI) enabled Assistive Technologies (AT) are transforming inclusive secondary education aimed at improving access to learning and supporting functional literacy among students with disabilities. Innovations such as intelligent screen readers, speech-to-text applications, automatic speech recognition captioning, and adaptive learning platforms enhance reading, writing, communication, and independent learning. However, limited evidence exists on how teachers and students perceive and experience these technologies in resource-constrained settings such as Tanzania. This review synthesises evidence on AI-AT in inclusive secondary education, focusing on functional literacy, personalisation, equity, and the contextual conditions that enable or constrain adoption in Sub-Saharan Africa. Through PRISMA 2020 guidelines, a systematic search was conducted across Scopus, Web of Science, ERIC, and Google Scholar for peer-reviewed studies published between 2018 and 2026. Screening followed a modified PICOS framework; methodological quality was appraised using the Mixed Methods Appraisal Tool (MMAT) 2018. The review is guided by a dual theoretical lens combining the Technology Acceptance Model (TAM) and Multiliteracies Theory. Studies indicate that AI-AT is consistently perceived as useful for improving learner engagement, multimodal literacy development, and classroom participation, particularly through text-to-speech, speech-to-text, real-time captioning, and adaptive tutoring tools. Perceived ease of use, however, is constrained by low teacher digital competence, unreliable electricity and internet connectivity, and limited institutional support barriers documented specifically in Tanzanian secondary schools as well as across Ghana, Nigeria, and South Africa. AI-AT holds substantial promise for advancing personalised, equitable, and inclusive secondary education, but realising this potential in Tanzania requires coordinated investment in digital infrastructure, sustained teacher professional development, and policy instruments that translate national ICT and education strategies into classroom-level practice.

Keywords: Artificial Intelligence, Assistive Technology, Functional Literacy, Inclusive Education, Secondary Education.

119 Educators' Readiness to Integrate Artificial Intelligence (AI) in Test Development: A Study of Perceptions, Skills, and Challenges: A Case Study of Mpumalanga Province in South Africa

Dr. Hellen N Mkhwanazi

AI is transforming educational assessment, particularly in the development of tests. Test development is a critical educational assessment aspect, which requires designing, validating, and developing the test instruments. Traditionally, this has been a process that requires significant human effort and relied on human skills. Nevertheless, the development of AI is transforming the process of test development and administration. This paper investigates the readiness of educators to integrate AI in test development, readiness, their ability, willingness and preparedness to effectively integrate AI tools into designing, developing and managing tests. The objectives of the study were to examine educators' perceptions of AI in test development; investigate educators' skills and competencies in using AI tools; identify challenges affecting AI integration in test development and explore factors influencing educators' readiness to adopt AI development and find out what factors can influence readiness of educators to use AI. The study was conducted in Mpumalanga Province, South Africa. Mpumalanga consists of four districts which all of them cover urban, semi-urban and rural schools with varying levels of technological infrastructure and digital access. It adopted a mixed-methods research approach using a descriptive survey research design supported by a case study design. Questionnaires were sent to a sample of 100 secondary schools' teachers and semi-structured interviews with 10 educators responsible for the setting of provincial common papers in grades 10 and 11. Findings of the study revealed that educators are highly willing to use AI tools in the development of tests. AI is perceived as useful for generating test items; designing assessment tasks; creating marking guidelines and provisioning of feedback. However, educators experience challenges such as lack of AI literacy; lack of support; ethical concerns and lack of resources. The paper concludes that while AI presents transformative potential, its integration requires careful oversight, professional development, continuous support and ethical guidelines to ensure validity and quality in assessment.

Key words: Artificial Intelligence; Educational Assessment; Test Development; Common papers

120 Bridging the Inclusion Gap: Harnessing Artificial Intelligence to Support Assessment of Learners with Special Educational Needs (SEN) in Rural Tanzania.

Abubakar Umbe) & Said Moshi Madorna

This study investigated the use of Artificial Intelligence to enhance assessment support for learners with Special Educational Needs (SEN) in public secondary schools in Bagamoyo District Council. The study was guided by the pragmatism paradigm. Mixed-methods approach was employed, integrating quantitative and qualitative data for a comprehensive understanding. A sequential explanatory design was used, where quantitative data were collected first and supported by qualitative findings. The study involved 108 participants, including teachers, school heads, and the District Special Education Officer (DSEO). Data were collected through questionnaires and semi-

structured interviews. Quantitative data were analysed using descriptive and inferential statistics with SPSS version 27, while qualitative data were analysed using thematic analysis. Findings indicated that Artificial Intelligence tools such as adaptive testing systems, automated feedback, and assistive technologies enhanced assessment accessibility, learner participation, and individualized support. The study recommends that the government strengthen ICT infrastructure, provide continuous teacher training, and promote inclusive AI-based assessment policies to bridge the inclusion gap for learners with SEN.

Keywords: Artificial Intelligence, Inclusive assessment, Special Educational Needs, Adaptive testing, Tanzania

121 An Ethical and Governance Framework for Artificial Intelligence in Educational Assessment: A Case Study of the Examinations Council of Eswatini (ECESWA)

Sindi Nonduduzo Simelane & Sibusiso Presiose Vilakati

Artificial Intelligence (AI) is increasingly transforming educational assessment worldwide, enabling automation in marking, data-driven, decision-making and enhanced examination security. However, it is observed, in many African contexts, including the Examinations Council of Eswatini (ECESWA), AI adoption in assessment remains largely conceptual and exploratory. While digital systems are in place, there is currently no formal use of AI, nor established policies to guide its ethical and responsible implementation. This paper argues that for African assessment bodies, the challenge lies not only in technological adoption but also in the absence of clear governance frameworks to guide future AI integration. Introducing AI without adequate safeguards risks reinforcing bias, reducing transparency in decision-making, and undermining public trust in examination systems, an outcome that could be damaging in high-stakes national assessments. Drawing on international best practices, including principles from the OECD, European Union, and the United Kingdom, this study identifies key ethical foundations necessary for responsible AI use in educational assessment. It emphasizes, that it cannot be directly transplanted into African contexts without adaptation to local institutional capacities, resource constraints, and governance realities. As an examining board, ECESWA requires guiding policies on the use of AI to ensure the production of high-quality assessments in line with its vision, to be a centre of excellence in the provision of accessible and globally competitive assessment and qualifications. Using ECESWA as a case study, the paper assesses the current state of assessment processes, digital maturity, and governance structures. It highlights existing strengths on established examination regulations and data systems while identifying critical gaps in AI policy, technical preparedness, and institutional awareness. This study utilizes document and policy analysis to critically examine ethical and governance frameworks for AI in educational assessment.To address these gaps, the paper proposes a practical, phased ethical and governance framework tailored to emerging AI environments. The framework is built on five pillars: policy and regulation, ethical oversight, technical governance, data governance, and institutional capacity development. Rather than assuming immediate AI deployment, the framework emphasizes readiness, control, and gradual implementation. This study contributes a realistic and context-sensitive approach to AI governance in African educational assessment. It positions ECESWA not as a lagging institution but as an opportunity to demonstrate how responsible, well-

governed AI adoption can be built from the ground up. The proposed framework is designed to be scalable and adaptable for other African assessment bodies facing similar challenges.

Key Words: Artificial Intelligence in Educational Assessment; Ethical Governance of AI Examinations Council of Eswatini (ECESWA); Policy and Regulation Frameworks African Contexts in AI Adoption

122 Harnessing Digital Data Collection Tools for Inclusive and Equitable Early Childhood Development and Education: Advancing SDG 4 in climate- and crisis-affected contexts in Ethiopia

Awol Nurhussein Research and MEAL Lead of EiE program (SCI)

Harnessing Digital Data Collection Tools for Inclusive and Equitable Early Childhood Development and Education: Advancing SDG 4 in climate- and crisis-affected contexts in Ethiopia Sub-theme: Personalized, Equitable, and Inclusive Education for Diverse Learners Early Childhood Development and Education (ECDE) is foundational to achieving Sustainable Development Goal 4 (SDG 4), particularly Target 4.2, which calls for inclusive and equitable access to quality early learning opportunities. In climate - and crisis-affected contexts, traditional education systems often struggle to respond effectively to the diverse and evolving needs of young learners. This paper examines how Artificial Intelligence (AI) enabled and digital data-driven approaches, embedded within ECDE programming, can advance personalized, equitable, and inclusive education for vulnerable children. Drawing on programmatic experience from the Save the Children, Ethiopia and its seven local implementing partners operated Childhood Development Activity (CDA) and emerging evidences. The paper explores how ECDE interventions such as play-based learning, school readiness initiatives, and community engagement support children's cognitive, social, and emotional development. It highlights the growing role of AI-supported digital tools, including mobile-based data collection platforms (KOBO Toolbox and SCI MEAL systems), real-time monitoring dashboards, and learning analytics, in strengthening early identification of developmental gaps and enabling timely, evidence-based programmatic adjustments. The study demonstrates how digitally-enabled data systems enhance the visibility of marginalized learners, including children with disabilities, girls, children from economically disadvantaged households, and those affected by displacement. By enabling real-time tracking of enrollment, attendance, learning outcomes, and learning environment quality, these tools support more responsive and inclusive ECDE programming. Integration of GIS and remote monitoring dashboards further facilitates coordination among education authorities, implementing partners, and communities, even in hard-to-reach settings. Using a mixed-methods approach, the paper combines quantitative data collected through digital platforms with qualitative insights from ECDE coordinators, teachers, and education officials. While findings point to significant improvements in data quality, timeliness, and decision-making, the study also identifies key challenges, including limited connectivity, workforce capacity gaps, and data governance considerations. Strengthening Monitoring, Evaluation, Accountability, and Learning (MEAL) systems and ensuring ethical, context-appropriate use of AI are therefore critical for tracking progress toward SDG 4.2.1 and informing policy and planning. The paper concludes that responsibly harnessing digital data collection tools within ECDE offers a powerful pathway to advance inclusive, equitable, and personalized early learning, contributing to resilient education systems and sustainable development outcomes in fragile contexts.

123 Rethinking Educational Assessment in the Age of Generative AI: Lessons from the Calculator Era

Mia Andersen, Kamogelo Matenchi, Sarah Howie & Brent Abrahams

The rapid mainstreaming of generative AI presents education systems with a challenge comparable in structural logic to the introduction of calculators in the late twentieth century, but with more extensive implications for cognition, assessment validity and equity. In many African education systems, where assessment plays a high-stakes role in credentialling and opportunity, generative AI intensifies existing tensions between academic integrity, unequal access to technology, and the need for more inclusive and responsive forms of assessment. This paper argues that lessons from calculator-era assessment reform offer a historically-grounded lens for guiding the principled integration of generative AI into curriculum design, assessment practice and quality assurance.

The paper is based on a critical, historically informed review of peer-reviewed literature, education policy documents, and assessment reforms across selected African education systems and applying a thematic content analysis. During the calculator era, assessment reforms distinguished between tasks that required unaided demonstration of conceptual understanding and those where technology could legitimately support higher-order reasoning. This distinction prompted curricular shifts towards problem solving, modelling and conceptual knowledge. Generative AI similarly automates many lower-level cognitive processes, including recall, summarisation and routine application, creating a misalignment between traditional assessment taxonomies and contemporary epistemic conditions.

Building on this parallel, the paper proposes a conceptual distinction between AI-unaided and AI-aided assessment tasks. AI-unaided tasks, which require learners to demonstrate independent conceptual understanding and critical reasoning, are argued to be more appropriate for high-stakes summative assessment contexts, where fairness, interpretability and comparability are essential. In contrast, AI-aided tasks intentionally incorporate AI tools to support interpretation, drafting, critique and collaborative knowledge construction. These tasks are particularly well suited to formative assessment, enabling personalised feedback, linguistic and cognitive scaffolding, and responsiveness to diverse learner needs, thereby supporting more equitable learning trajectories.

Finally, the paper proposes a reimagining of educational taxonomies that explicitly account for the automation of lower-order cognitive processes. Such a reorientation has direct implications for African education systems grappling with unequal digital access, multilingual assessment demands, and post-colonial curriculum pressures.

The paper concludes by arguing that equity-focused assessment design is central to harnessing the transformative potential of AI without compromising academic integrity, inclusion or cultural relevance

200 Future of e-Assessment and the Security Dilemma of Artificial Intelligence (AI).

201 From Deterrence to Redesign: Addressing the Security Dilemma of Generative AI in High-Stakes Assessment

Dr. Dangut Amos Josiah, Fanimokun Adebayo Ayo & Hiradi Kwatamdiya Solomon (Mrs.)

The rapid evolution of Generative Artificial Intelligence (GAI) technologies, especially Large Language Models (LLMs), presents a remarkable threat through sophisticated answer generation and real-time support, which compromises the integrity and validity of high-stakes assessments. The study examined the role of assessment institutions in mitigating these risks, tracing a shift from reactive deterrence strategies toward structural assessment redesign. A qualitative multiple-case study was conducted using policy documents and institutional communications issued from 2022 to 2026 by six major examination bodies across Africa and internationally, including The West African Examinations Council (WAEC), Kenya National Examinations Council (KNEC), Umalusi, Cambridge Assessment, College Board and International Baccalaureate. Institutions were selected purposively based on their administration of high-stakes assessments and the availability of publicly accessible documents on generative AI, academic integrity, assessment security, or assessment redesign. Qualitative data obtained were analysed thematically to examine institutional risk framing, security responses, and evidence of incremental mitigation or substantive assessment redesign. Findings revealed four distinct response patterns. WAEC adopted a deterrence-dominant approach centred on malpractice prevention and enforcement. KNEC and the College Board held transitional positions, shaped respectively by digital security infrastructure and fragmented AI-use policy adaptation. Cambridge Assessment demonstrated a cautious redesign orientation emphasizing ethical AI integration and human-centred principles. The International Baccalaureate represented the strongest redesign commitment through explicit process-based assessment policies. Umalusi occupied a validity-oriented position, with quality assurance frameworks providing a conceptual foundation for future AI-responsive reform. The study contributes to emerging discourse by proposing a shift from security-centred deterrence to validity-driven assessment redesign in the age of generative AI. The study recommends a strategic shift from surveillance-heavy models toward validity-driven assessment systems grounded in authenticity, transparency, and ethical AI integration. It argues that Generative AI should be viewed not only as a threat but as a catalyst for strengthening the resilience and credibility of high-stakes assessments. It is recommended that future research should explore empirical validation of redesigned assessment models, cross-regional differences in institutional capacity, and the long-term implications of AI-integrated assessment on construct validity and fairness.

Keywords: academic integrity, assessment redesign, examination security, generative artificial intelligence, high-stakes assessment.

202 Balancing Innovation and Privacy: The Security Dilemmas in AI-Driven E-Assessment Systems

Kawu I. O., Rasheed A., *Atte, P. T., Jegede M., Ihedoro C. B., Uzonwanne J.N., Enatomen M. A

The increasing use of Artificial Intelligence (AI) in assessment in the digitised classrooms and examination halls of today has brought to the fore some issues concerned with the deployment of advanced AI technologies for e-assessment while ensuring the privacy and security of student data and the assessment systems as well. Thus, ensuring that ethical challenges posed by AI surveillance as related to data privacy, consent, algorithmic bias, and the potential for mass surveillance are addressed is of paramount importance. Hence, there is an urgent need to explore existing regulatory frameworks, data protection laws, and ethical practices that institutions must leverage while implementing AI solutions in assessment. This paper, therefore, explores the security dilemmas that arise with the rapid development of AI especially as related to bias, transparency, and privacy issues in education sectors. The paper notes the limitations in wider deployment of relevant AI-driven assessment systems in Nigeria's classrooms, but noted the deployment of e-examination, biometrics and AI tools to establish the identities of students tested. In this paper, efforts will be made to highlight these challenges and how to balance innovation with responsibility given that the goal of responsible innovation is to put in place safeguards that protect everyone. The paper adopted the qualitative method of research by relying on both primary and secondary sources of gathering requisite data. Challenges identified include potential data misuse, lack of regulation, unfair outcomes, and the complexity of building truly transparent systems, lack of comprehensive ethical guidelines with a UNESCO survey showing that less than 10% of schools had institutional policies or formal guidance for the use of AI. The absence of such guidelines means a greater risk of privacy breaches, uneven disciplinary actions, among others. The findings highlight the importance of stronger rules, and more research to help in creating safe, fair, and trustworthy AI systems. The study concludes that for institutions to achieve the requisite balance in innovation and privacy, necessary safeguards have to be entrenched in their AI architecture. Recommendations include having school authorities develop robust AI safeguards to guide and institute responsible use of AI.

Keywords: AI technologies for e-assessment, security dilemmas, privacy issues, AI safeguards

203 Building AI Resilient Authenticity through Activity System Realignment

Mr. Peter Ruddock

Imitation has always been central to learning. Following Bandura's Social Learning Theory, students develop competence by observing and reproducing the practices they encounter. The challenge posed by generative AI is not the presence of imitation but its increasing indistinguishability from authentic learning. Drawing on Girard's account of mimetic convergence, this paper focus on the security dilemma facing e-assessment arises when the difference between genuine learner development and sophisticated simulation collapses. In brick-and-mortar schools, teachers rely on relational familiarity to contextualise learner performance, but in online schools, where teachers may never meet their learners, these relational cues are drastically diminished. Viewed through Social Presence Theory, the reduced co-presence in online schooling amplifies this mimetic crisis by limiting teachers' ability

to recognise a learner's characteristic patterns of thinking, voice, and growth over time. Using the IEB's process-based Creative Writing Common Assessment Task pilot, the paper demonstrates how assessment designs that foreground visible learning processes reintroduce the relational signals required to differentiate formation from imitation. Analysing the feedback from the 34 participating schools through Engeström's Activity Theory, the paper argues that process-oriented assessments function as mediating artefacts that help resolve systemic contradictions in the online assessment activity system, particularly the weakened rules, tools, and community structures that normally support teachers' recognition of learners' developmental trajectories. Rather than escalating surveillance or improving policing mechanisms, process-oriented approaches to assessment build AI-resilient authenticity by making the process of learning harder to mimic than its products. The analysis concludes that AI has exposed a deeper relational vulnerability that exists across all schooling contexts but becomes acute in online environments where social presence is diminished. Addressing this vulnerability requires shifting our understanding of assessment security from product verification to relational and developmental visibility though reconfigured activity systems.

Keywords: Generative Artificial Intelligence, Social Learning Theory, Mimetic Theory, Social Presence Theory, Activity Theory, Online Schooling, Assessment Authenticity, Process-based Assessment, Creative Writing CAT

204 Navigating the Security Dilemma: Detecting and Evaluating the Use of Generative AI in Eswatini's Prevocational Entrepreneurship School-Based Assessments

Siphiwe Sibiya & Mduduzi Hlophe

The rapid emergence of Generative Artificial Intelligence (GenAI) has created both opportunities and challenges for educational assessment, particularly regarding academic integrity and the authenticity of learner-produced work. This study investigated the extent of GenAI use in Entrepreneurship School-Based Assessments (SBAs) within the Eswatini Prevocational Certificate of Secondary Education (EPCSE) programme and examined the consistency of AI-use estimates produced by two large language model-based detection systems, Gemini and Copilot. A convergent mixed-methods research design was employed, integrating quantitative AI-detection estimates with qualitative document analysis. Purposive sampling was used to select all 16 schools offering the EPCSE programme in Eswatini, from which 32 Entrepreneurship SBA projects were randomly selected for analysis. Quantitative data were analysed using descriptive statistics, a paired-samples *t*-test, and Pearson correlation, while qualitative data were analysed through thematic document review. The findings revealed extensive AI involvement, with an average estimated AI utilisation of 62.5% across the sample. Project classifications indicated that 50% of submissions fell within the Severe/AI category, 40.6% were classified as Moderate/Hybrid, and only 9.4% were categorised as Low/Human. A statistically significant difference was found between the estimates generated by Gemini and Copilot, $t(31) = 14.69$, $p < .001$, with Copilot consistently producing higher AI-use estimates. However, a moderate positive correlation ($r = .649$, $p < .001$) suggested relative agreement in project rankings. Qualitative analysis revealed a pattern of hybrid authorship in which students utilised AI to generate executive summaries, marketing plans, and strategic business narratives while

independently completing contextualised operational and financial sections. The study concludes that AI detection tools alone are insufficient for high-stakes assessment decisions and recommends assessment redesign, oral defences, enhanced AI literacy, and the integration of human judgement with technological tools to safeguard assessment validity and academic integrity in Eswatini's examination system.

Keywords: Generative artificial intelligence, academic integrity, hybrid authorship, entrepreneurship education, school-based assessment, assessment validity

205 Ethical Dilemma in AI-Driven High-Stakes e-Assessment: Balancing Innovation and Examination Security in the West African Examinations Council

Dr. Amos Josiah Dangut, MSTAN, MNIM, RAS, Dr. Busari Atinuke.Rashidat, Dr. Adeosun Oluwatosin. Adebowale & Mrs. Ogundele Isioma.Benedicta

The integration of Artificial Intelligence (AI) into high-stakes electronic assessment has significantly transformed examination development and administration, scoring, and feedback processes. However, these benefits introduce complex ethical and security concerns that threaten the credibility of examinations, particularly in contexts where digital assessment systems are still evolving. This study examined the ethical dilemmas associated with the potential use of AI in high-stakes e-assessment and explored strategies to balance technological innovation with examination security in the West African Senior School Certificate Examination (WASSCE). A systematic review using a qualitative descriptive design was employed to provide a holistic overview of the study. Data were examined through thematic content analysis. Findings indicated that although AI improves the efficiency of examination monitoring and scoring, its adoption also raises significant ethical and security concerns. These include increased reliance on automated decision-making with minimal human input, risks to candidate data privacy, and vulnerabilities within the digital examination system. Security weaknesses include inadequate authentication mechanisms, insufficient data encryption, software flaws, and insecure examination servers, all of which increase the risk of unauthorized access and system compromise. The study contributes to the literature by providing insights into the ethical and security challenges associated with innovations in high-stakes assessments within the African context. The study concluded that without clear ethical guidelines and strong cybersecurity measures, AI, despite its many advantages, may likely undermine or subvert the credibility of examinations. Therefore, the study recommended integrating AI tools with human verification processes, developing clear AI strategic policies, and implementing comprehensive risk assessments before their incorporation into examination systems.

Keywords: Artificial Intelligence (AI), high-stakes e-assessment, examination security, ethical dilemmas, WASSCE

206 Addressing Security and Integrity Challenges in the Adoption of Artificial Intelligence for e-Assessment in Tanzania National Examinations.

Samson Peter Massawe

In Tanzania, the National Examinations Council of Tanzania (NECTA) is the government institution that has the responsibility to administer Primary School Leaving Examination (PSLE), Certificate of Secondary Education Examination (CSEE), Advanced Certificate of Secondary Education Examination as well as Diploma in Education. The institution till today still uses the paper based traditional method of national examinations. Though the method has been effective in maintaining standard procedures for quite some time, it has also been faced with challenge such as malpractice cases. The emergence of Artificial Intelligence (AI) in the world has brought changes on how the assessment system of the educational tend to be conducted. The development in AI has brought about great deal of opportunities that come with a great deal of efficiency in assessment system. However, with the improvement in technologies and the use of various technologies that were meant to enhance the efficiency and integrity of the assessment system of the educational sector, it has also brought about various challenges in the integrity as well as related to cyber security concerns. This study uses qualitative method of analysis based on policy to analyse opportunities for the application of AI in automated scoring systems, biometric identification systems, intelligent proctoring systems, predictive analytics systems and management of question banks. It will also offer guidelines on the differentiated approach for the effective and responsible integration of AI in the national examinations in Tanzania. This includes phased approaches, investments in digital infrastructure, building skills, and addressing governance and fairness concerns. The paper recommends a tailored approach for responsibly incorporating AI into Tanzania's national examinations. It suggests phased implementation, investment in digital infrastructure, skill development, ethical and regulatory protections and inclusive strategies to address rural-urban gaps. By balancing innovation with institutional readiness as well as security concerns, this study offers practical guidance for modernizing Tanzania's examination system while maintaining public trust, fairness and integrity.

Keywords: Integrity challenges, Artificial Intelligence, inclusive strategies

207 Leveraging Artificial Intelligence to Improve the Efficiency and Credibility of JAMB Operations: A Case Study of Chatbot Deployment

Grace O. Onoja, PhD

In an era when digital transformation is reshaping public service delivery, the integration of Artificial Intelligence (AI) offers a paradigm shift in efficiency, responsiveness, and transparency. This paper examines how Artificial Intelligence (AI)-powered chatbots can enhance operational efficiency and service credibility within the Joint Admissions and Matriculation Board (JAMB), with particular focus on the Board’s e-ticketing support system used by candidates to submit inquiries, complaints, and service requests. The study adopts a qualitative case-study design based on documentary analysis. Relevant documents reviewed include JAMB operational reports, records of candidates’ service requests on the e-ticketing platform, policy documents on digital service delivery, and

scholarly literature on Artificial Intelligence applications especially as it relates to chatbot deployment in public service systems. The documents were purposively selected based on their relevance to AI integration and digital service delivery and were analysed using thematic content analysis. Findings reveal that the current e-ticketing support system deployed by JAMB experiences challenges such as high volumes of repetitive inquiries, delays in response time, and operational workload for staff. The study demonstrates that the integration of AI-powered chatbots into the JAMB e-ticketing platform can automate responses to Frequently Asked Questions (FAQ), provide instant support to candidates, and escalate complex issues to appropriate personnel. The proposed chatbot deployment is expected to reduce response time, enhance user satisfaction, support data-driven decision-making, and strengthen the credibility of JAMB's digital service delivery. The paper concludes that the adoption of AI chatbots within JAMB's e-ticketing support infrastructure can significantly improve institutional efficiency and transparency in candidate services. It therefore recommends the strategic deployment of AI-driven chatbot systems to complement existing human support mechanisms in JAMB operations.

Keywords: Artificial Intelligence (AI), Chatbots, JAMB, E-Ticketing, Operational Efficiency, Service Credibility

209 Contextual Factors of AI-Assisted Academic Dishonesty in Tanzanian Higher Learning Institutions: A Mixed-Method Study

[a]Zedi Abdalla Khamis, James Cosmas Kalulu, & Mwanamrisho Gora Haji

The rapid integration of Artificial Intelligence (AI) technologies in education poses new challenges to maintaining academic integrity worldwide. In Tanzania, where higher education is undergoing a significant digital transformation, the combined impact of AI tools, electronic assessment (e- assessment), and academic dishonesty requires focused investigation. Using the Routine Activity Theory, this study explores contextual factors of AI-assisted dishonesty in Tanzanian higher learning institutions. Data were collected from 168 respondents in Tanzanian higher learning institutions using a mixed-method approach. Quantitative data were analysed using descriptive and multiple regression methods, while qualitative data were used thematic analysis. The findings suggest that the absence of capable guardianship is the strongest factor influencing AI-assisted dishonesty. In Tanzanian higher learning institutions, the limited adoption of AI detection tools and the absence of clear academic integrity policies create an environment where AI-assisted dishonesty can occur with minimal risk of detection. Findings indicate that despite groups' recognition of AI's potential to enhance learning, students tend to hold more permissive attitudes toward AI-assisted dishonest behaviors, often influenced by systemic pressures and unclear institutional policies. Conversely, teachers expressed concerns about assessment validity and advocated for improved detection methods, clear ethical guidelines, and faculty training. The study uncovered fundamental misalignments in how students and teachers perceive legitimate AI use, highlighting gaps in current institutional frameworks. To minimize AI-assisted dishonesty, higher learning institutions should develop AI-specific academic integrity policies and prioritize regular training on ethical AI use to students

and academic staff. Policymakers and regulatory bodies should integrate AI ethics into higher education curricula and facilitate continued research on AI-related academic integrity challenges. Moreover, this study underscores the need for collaborative efforts in navigating academic ethics in the AI era.

Keywords: Artificial Intelligence; Academic integrity; AI-assisted dishonesty; Higher Learning Institutions; Tanzania.

210 The Authenticity of e-Assessment Practices in Teacher Education in Kenya

Joseph Ndunu Githinji

Kenya has progressively migrated its national assessment systems from traditional pen-and-paper formats to electronic assessment (e-assessment) modalities since 2022, initially focusing on teacher education assessments administered in Teacher Training Colleges (TTCs). This transition reflects broader national commitments to digital transformation within the education sector and the need for assessment approaches that align with contemporary pedagogical, technological, and labour-market demands. Drawing on empirical data collected in 2025 from 59 TTCs, comprising valid responses from 332 teacher trainees and 76 teacher trainers, this study interrogates how authenticity in e-assessment is conceptualized, designed, implemented, and safeguarded within digitally mediated environments. The dataset and accompanying instruments intentionally capture emerging AI-era integrity risks and opportunities, including identity assurance challenges, generative-AI misuse, secure browser deployment, and hybrid human-plus-technology invigilation models. Findings demonstrate high perceived educational value in realistic, scenario-based online examinations that emphasize application, problem-solving, and transfer of knowledge to professional contexts. Respondents also affirm the robustness of item quality, with particular strength in organization, difficulty gradation, and cognitive demand. However, the study reveals greater variability in the quality and consistency of formative school-based assessment practices compared to summative e-assessment processes. This disparity reflects structural differences across TTCs, including uneven ICT infrastructure and connectivity, inconsistent availability of institution-grade devices, and marked differences in digital pedagogy competence among both tutors and trainees. Additional constraints relate to the financial and operational sustainability of institution-wide e-assessment ecosystems, particularly in TTCs serving remote or resource-constrained regions. The study argues for an authenticity-by-design paradigm that integrates task realism, transparency regarding permitted resources, use of rotated or equivalent assessment forms, and clear integrity workflows that preserve fairness while minimizing opportunities for malpractice. These human-centered approaches should be complemented, but not replaced, by responsible use of AI-enabled identity verification, anomaly detection, and feedback analytics. The paper concludes with context-sensitive recommendations to support Kenyan TTCs and comparable African institutions in strengthening assessment credibility, enhancing scalability, and improving feedback cycles while maintaining proportional, ethical, and inclusively designed assessment safeguards.

Keywords: Teacher education; e-assessment; authenticity; academic integrity; AI in assessment; school-based assessment (SBA).

211 Using AI in the onscreen marking environment: A Literature Review

Dr. Ebba Masiri

This paper reviewed literature on the use of Artificial Intelligence (AI) to mark public examinations in contexts where Onscreen Marking (OSM) is already in use. The ZIMSEC, a government parastatal, formulated a five-year strategic plan (2026-2030) in order to contribute to specific national priorities stated in the National Development Strategy 2 (NDS2), crafted by the government of Zimbabwe to transform the country into a prosperous and empowered upper middle-income society by 2030. One of the key strategic thrusts for ZIMSEC is to deliver modernized and technology-driven assessments to improve efficiency and relevance. The Council, therefore, planned to re-introduce e-marking (a technology ZIMSEC used to mark 20 subject components between 2012 and 2017), by 2030. The e-marking technology delivers scanned images of candidates' scripts to computer screens for marking by examiners. Artificial intelligence is a technology where computer algorithms are trained to mimic human language. Now that AI in ZIMSEC needs to consider how to use it in the e-marking environment, hence the purpose of this paper. Data were gathered by searching for and reviewing original researches, literature reviews and scholarly articles on AI in marking and e-marking in order to answer the questions: What can AI do that e-marking cannot do? How credible are the scores generated by AI? How can AI be used together with e-marking? The results of the literature review showed that, as a marking tool, AI has the potential to automatically mark candidates' responses faster and more consistently than examiners. However, when there were concerns about the authenticity and validity of scores generated for longer responses; accountability, where scores are challenged; security of scripts and scores; and user competences. However, AI can complement e-marking by accurately identifying and classifying handwritten and typed responses, reducing the need for manual data entry; flagging answers that need human review; generating data that offer deeper insights; and strengthening quality assurance and security. It was concluded that AI cannot be used as the main marking tool in public examinations without worsening the usual concerns related to human marking, however, it can be in integrated with e-marking.

Keywords: e-Marking; Artificial Intelligence; Examiners; Automatic Marking

212 AI-Driven Marking of Short Answer Questions: Students' Perceptions and the Security Dilemma in e-Assessment.

Ijeoma Joy Chikezie

The integration of artificial intelligence into educational assessment offers scalability and efficiency but raises concerns about trust, fairness, and security. This mixed-methods study examined 60 postgraduate students' perceptions of AI-driven marking of Short Answer Questions (SAQs) and the associated security dilemma. Three SAQs from an Educational Research Methods and Statistics examination were marked manually and then by three AI chatbots: ChatGPT-4.0, Microsoft Copilot, and Google Gemini using the same rubric. Quantitative data from the "Students' Perception of AI-Based Marking Questionnaire" (SPAIBMQ). The three scales of the instrument yielded adequate reliability coefficient α = 0.77, 0.82, and 0.79 for Students' Perception on AI-Driven Marking (SPAIDM), AI-Driven Marking Reliability (AIDMR), and Students' Perception on Security Concern

(SPSC) scales, respectively. Data were analysed using descriptive and inferential statistics; qualitative feedback quality was evaluated using six indicators (clarity, relevance, accuracy, constructiveness, specificity, tone/fairness). Findings revealed that students held significantly more positive perceptions of AI-driven marking than concerns about security (t-value$_{(50)}$ =17.64, p<.001). They also perceived AI marking as significantly more reliable than human marking (t-value $_{(109)}$ = 12.90, p<.001). Among the chatbots, Copilot showed the strongest correlation with human scoring (r = 0.79) and lowest error (MAE=2.02); ChatGPT achieved the best classification accuracy ($F1$=0.208) and highest feedback quality across all six indicators; Gemini performed poorest. Despite positive perceptions, students remained concerned about data privacy, algorithmic bias, transparency, and academic integrity. The study concludes that while AI-driven marking is viewed favourably for its efficiency and consistency, hybrid AI-human assessment models and robust security protocols are necessary to sustain trust and fairness.

Key words: AI-driven marking, short answer questions, chatbots, students' perceptions, e-Assessment security, academic integrity.

214 Bridging the Policy-Practice Gap in AI-in-Education: Frontline Educators' Adaptation and Enforcement of Guidelines in Tanzania

James Cosmas Kalulu, Zedi Abdalla Khamis, Mwanamrisho Gora Haji

The global integration of Artificial Intelligence (AI) into education is outpacing the governance frameworks designed to regulate it, creating an urgent policy-practice gap in contexts where institutional readiness remains unevenly distributed. Tanzania's National AI-in-Education Guidelines represent one of the earliest regulatory efforts on the African continent to govern AI adoption across all tiers of education. However, the realities on the ground among frontline educators determine the adoption of these guidelines. This study investigates the adaptation and enforcement of the guidelines in teaching among educators in Tanzania. Using stratified sampling, data were collected through in-depth semi-structured interviews with 30 participants in Tanzania. Thematic analysis grounded on Lipsky's Street-Level Bureaucracy Theory and Contextual Interaction Theory revealed a pronounced disjuncture between policy intent and ground-level reality. Formal compliance is largely performative, with few higher learning institutions having localised frameworks aligned with national mandates. Critically, infrastructural deficits, limited professional development, and resource-constrained ecosystems constitute formidable barriers to meaningful implementation in higher learning institutions. Moreover, power asymmetries, information silos, and motivational misalignment among stakeholders further attenuate the enforcement of the guideline. This study contributes to AI in education literature by bridging macro-level frameworks with micro-level implementation dynamics, highlighting the persistent policy-practice gap in emerging regulatory environments. To advance AI in education within Global South contexts, policymakers should prioritize investment in digital infrastructure and resource ecosystems in education institutions. In addition, systematic and continuous professional development programmes should be implemented to enhance AI literacy and pedagogical competencies among educators.

Keywords: Artificial Intelligence in Education, Policy-practice gap, Street-Level Bureaucracy, Contextual Interaction Theory, Tanzania.

215 External Moderation in the Age of AI: Perceptions of Quality Assurance Practitioners on School-Based Assessment in South Africa

Andy Thulo

Recent studies highlight the growing integration of Artificial Intelligence (AI) in educational assessment. Its integration in educational assessment is reshaping established quality assurance practices, presenting both opportunities and unprecedented risks for assessment integrity, particularly in the external moderation of School-Based Assessment (SBA) tasks. In South Africa, where SBA contributes 25% toward the National Senior Certificate (NSC), reliable and credible external moderation outcomes become essential. The Council for Quality Assurance in General and Further Education and Training (Umalusi) is mandated to safeguard assessment credibility and integrity, assuming that learner work is human-generated and authentic. Historically, the credibility of SBA depended on robust external moderation processes led by Umalusi, which ensure consistency, fairness, and comparability across diverse schooling contexts. Its current framework for quality assurance of assessment is designed for human-generated and paper-based assessments but not for AI-mediated assessment environments. The emergence of AI-mediated assessment fundamentally challenges the underlying assumption that learner work is authentically human-generated. This disruption raises concerns about the authorship and validity of moderated evidence, the reliability of assessment judgments, and the adequacy of existing quality assurance frameworks. This study aims to understand the perceptions of quality assurance practitioners regarding the implications of AI-mediated assessment for the external moderation of SBA. The study adopts a qualitative interpretive research design. Data were collected through semi-structured interviews with purposively selected quality assurance practitioners involved in SBA moderation processes within Umalusi. Thematic analysis was employed to analyse the data, enabling the identification of recurring patterns, tensions, and emerging concerns in practitioners' perceptions. The findings reveal how AI disrupts traditional moderation practices, challenges existing assumptions of authorship and credibility, and necessitates new frameworks for ensuring trust in assessment outcomes. The study contributes to ongoing policy and scholarly debates by offering context-specific insights into how external moderation systems can adapt to AI-mediated assessment environments.

Keywords: Artificial intelligence; external moderation; school-based assessment; Umalusi

216 Addressing the Artificial Intelligence Security Dilemma in Combatting Examination Malpractice: The JAMB Experience

Abeeb Ibrahim Adeyemi

The deployment of Artificial Intelligence (AI) in the Unified Tertiary Matriculation Examination (UTME) conducted by the Joint Admissions and Matriculation Board (JAMB) reflects a paradox in which AI functions simultaneously as a powerful guardian of examination integrity and a catalyst for increasingly sophisticated malpractice. On one hand, defensive AI applications such as enhanced biometric authentication (fingerprint and facial recognition), anomaly detection algorithms, real-time behavioral analytics, and automated identity verification have substantially strengthened the security architecture of JAMB's fully Computer-Based Testing (CBT) system. On the other hand, generative and manipulative AI technologies have enabled fraud actors to devise countermeasures capable of bypassing these safeguards, thereby intensifying a technological arms race within the examination ecosystem. This dilemma became particularly evident during the 2025 UTME cycle. While the integration of biometric verification significantly curtailed traditional practices such as impersonation and question leakage, investigations by JAMB's Special Committee on Examination Infractions uncovered over 6,000 technology-enabled malpractice cases. These included approximately 4,251 instances of "finger blending," involving biometric manipulation designed to defeat fingerprint authentication, and about 190–192 cases of AI-assisted image morphing used to falsify candidate identity during registration and examination stages. These developments underscore the evolving sophistication of digital fraud mechanisms operating within high-stakes assessment environments. The study adopts Security Dilemma Theory as its conceptual framework to explain the escalation dynamic between AI-driven defense systems and adaptive malpractice networks. A sequential exploratory mixed-method design was employed, utilizing both primary and secondary data sources. Quantitative data were analyzed using regression analysis techniques to assess the effectiveness of AI interventions in UTME. The study finds out among others that, AI deployment has significantly reduced impersonation, multiple registrations, collusion networks, and identity fraud. However, emerging vulnerabilities including deepfake-enabled impersonation, cyber intrusion threats, insider compromise, algorithmic opacity, and data protection risks persist. The study recommends a multi-layered governance approach incorporating human-in-the-loop validation, periodic algorithmic audits, strengthened cybersecurity protocols, regulatory compliance mechanisms, AI ethics oversight, inter-agency intelligence collaboration, and adaptive risk modeling. The JAMB experience demonstrates that effectively managing the AI security dilemma requires aligning technological innovation with institutional accountability, transparency, and resilient governance structures.

Keywords: Artificial Intelligence (AI), Examination Malpractice, JAMB (Joint Admissions and Matriculation Board), Security Dilemma and UTME (Unified Tertiary Matriculation Examination)

217 Towards Secure AI-Driven Question Paper Development

Dlamini Nkululeko F., Matsebula Vuyisila L.

The increasing adoption of Artificial Intelligence (AI) in educational assessment has created new opportunities for improving the efficiency and quality of question paper development. However, the use of cloud-based AI platforms presents significant security, privacy, and regulatory challenges for examination bodies responsible for high-stakes assessments. This study explored the security challenges associated with AI-powered question paper development and proposed a customised offline AI deployment model as a secure alternative to cloud-based services. Using an action research design supported by a systematic review and meta-analysis of relevant literature, the study examined security risks and mitigation strategies related to AI implementation in assessment environments. Researchers from the Examinations Council of Eswatini participated in the design, deployment, and testing of the proposed model over a five-week period. The study employed LM Studio as a local inference engine and LLM as a knowledge management and retrieval interface within an air-gapped environment. Assessment syllabi and validated question bank content were chunked, embedded, and indexed using a Retrieval-Augmented Generation (RAG) pipeline to improve curriculum alignment and reduce model hallucinations. Meta-Llama-3.1-8B-Instruct was deployed and trained using Mathematics and Geography workspaces to pilot offline item generation. Findings identified five major security challenges associated with AI-assisted question paper development: data exposure during cloud transmission, non-compliance with data protection regulations, model hallucination and content drift, prompt injection attacks, and loss of institutional control over assessment materials. The proposed offline AI model effectively addressed these challenges through local processing, role-based access controls, air-gapped deployment, and RAG-grounded content generation. The model ensured that no assessment data left the institution's network while maintaining compliance with data protection requirements and significantly reducing hallucination risks. Human reviewers remained integral to the process by validating all AI-generated items before inclusion in the item bank. The study concludes that a customised, locally hosted, RAG-enabled AI architecture provides a practical, secure, and cost-effective solution for examination boards seeking to integrate AI into question paper development. The model demonstrates that AI-driven innovation and assessment integrity can coexist when supported by appropriate security controls, governance structures, and human oversight.

Keywords: Artificial Intelligence, LM Studio, AnythingLLM, Retrieval-Augmented Generation, Offline AI Deployment.

218: Navigating the Security Dilemma: Detecting and Evaluating the Use of Generative AI in Eswatini's Prevocational Entrepreneurship School Based Assessments

Siphiwe Sibiya & Mduduzi Hlophe

The rapid spread of Generative Artificial Intelligence (GenAI) has transformed the educational landscape, offering innovative pedagogical tools while presenting significant challenges to academic integrity (Crompton & Burke, 2023). This study investigated the extent to which ~~of~~ AI usage in Eswatini Prevocational Certificates of Secondary Assessment (EPCSE) Entrepreneurship School-Based Assessment (SBA) written projects within the Eswatini Pre-Vocational qualifications suite. As learners increasingly turn to AI for content generation, examination boards face an escalating security dilemma regarding the authenticity of student-submitted work, particularly in entrepreneurial processes like market analysis and business modelling (Imiren et al., 2023). Employing a quantitative, comparative evaluative design, the research focused on 16 Prevocational schools across Eswatini, analysing a purposive sample of 32 Entrepreneurship SBA projects from the 2025 cohort. Data collection involved subjecting these portfolios to two distinct online detection tools; TextGuard and JustDone to mitigate 'false positive' or 'false negative' limitations inherent in single-source detection, a critical factor for non-native English writing contexts (MDPI, 2025). The results revealed a significant range of AI integration, with descriptive statistics showing a mean AI probability score of 38% across the sample. Notably, in 37.5% of the projects, at least one tool flagged more than 60% of the content as AI-generated. A t-test score $p < 0.05$ indicated a moderate correlation between the two detectors, yet a detection gap of approximately 15% existed in several cases, where results lacked consensus. Analysis further showed that Marketing Plans yielded the highest AI markers (mean 52%), whereas Financial Plans involving local currency (SZL) and site-specific data showed the lowest AI signatures (mean 14%). Based on these findings, the study recommends that examination boards shift toward process-oriented assessments requiring step by step drafting and oral defences to confirm human input (UNESCO, 2025). Implementing hybrid detection protocols that combine automated tools with human-led marking and developing clear ethical frameworks for permissible AI use are essential to ensure that national qualifications in Eswatini remain secure and credible in an evolving technological era.

Keywords: Generative AI, credibility, School-Based Assessment

300 Leveraging Artificial Intelligence (AI) to Shape Technical, Vocational, and Education Training (TVET) Assessments

301 Leveraging Artificial Intelligence to Enhance Competency-Based Assessment in Technical, Vocational, and Education Training *"When assessment becomes a learning tool, not just a grade"*

Abdoulie Minteh

Emerging technologies offer alternatives such as adaptive quizzes, unobtrusive data-driven progress monitoring, and simulations replicating authentic work environments. This study examined how Artificial intelligence (AI) shape and reshape the assessment of skills in job-oriented education, particularly in African contexts. A comprehensive review of existing research with practical design efforts were undertaken in order to broadly understand the phenomena at hand. Evidence shows AI systems can assess grade performance objectively, analyse physical movements through cameras, and tailor questions based on individual responses-capturing abilities that conventional examinations miss. The analysis also revealed a strong relation between AI-integrated instruction and improved learner performance, indicating that technology-driven teaching can accelerate skill development. Although awareness of AI is growing in various technical training institutions, its adoption remains limited due to unreliable internet connectivity, inadequate technical expertise, and weak institutional support. This paper proposes a framework for integrating AI into Technical and Vocational Education and Training (TVET) assessment, drawing on the "Integrated Symbiotic Model" developed by EI Hayani and Benamar. The study concludes that AI-based assessment requires not only technical capacity but also equitable policy frameworks and meaningful access.

Keywords: Artificial Intelligence, Competency-Based Assessment, Personalised Learning, Educational Technology.

302 Challenges and Prospects of Assessing Music Items Using Artificial Intelligence Among High-Stakes Examination Bodies in Nigeria: Perception of Item Writers

Esuola, Olayinka Adesola PhD

The integration of emerging technologies in educational measurement is a critical area of concern for high-stakes examination bodies. This study investigates the professional perspectives of those responsible for developing music assessment instruments for the West African Examination Council (WAEC), the National Examination Council (NECO), and the Joint Admissions and Matriculation Board (JAMB). Using a quantitative research methodology, the researcher deployed a structured questionnaire via Google Forms, disseminated through the dedicated WhatsApp communication platforms used by these examination bodies to reach their entire cadre of music item writers. From the data collected, 60 responses were randomly selected for detailed analysis, revealing a complex dichotomy in expert opinion. A significant majority (75%) of the respondents, identified substantial challenges regarding the quality and validity of AI-generated content. These experts noted that AI often produces items that lack cultural relevance, diminish the core values of creativity and

originality, and result in generic content that lacks the necessary depth and specificity for rigorous musicological assessment. Such findings suggest that, without rigorous human intervention, AI may compromise the construct-representation and overall validity of music examinations. Conversely, the study found that 60% of item writers acknowledged the transformative potential of Artificial Intelligence in the psychometric workflow. These participants strongly agreed that AI can significantly reduce the lead time required to develop high-quality items, provided appropriate prompts are utilized, and facilitates the rapid creation of extensive item pools. Furthermore, the respondents recognized that AI could enhance the overall consistency and standardization of high-stakes assessments, thereby improving the reliability of the measurement process across these major Nigerian testing bodies. Ultimately, this study emphasizes that while AI offers remarkable opportunities for efficiency and standardization, its application in music assessment requires a cautious and informed approach. The researcher recommends the immediate introduction of AI literacy and technical training programs for music item writers, the promotion of cross-disciplinary collaboration between AI developers and music educators, and the formal establishment of regulatory frameworks and ethical guidelines by examination bodies to ensure the integrity of the assessment process.

Keywords: Artificial Intelligence (AI), Music Assessment, Perception, Challenges and Prospects

303 Artificial Intelligence-Driven TVET Assessment and Skills Intelligence for Competency-Based Certification in Kenya

Oluoch George, Kananu Carolyne, Kisaka Sella and Wabwile Justus

Digital transformation is reshaping education systems worldwide by creating more efficient and responsive assessment frameworks. Although Kenya has made significant progress in implementing Competency-Based Education and Training (CBET), many assessment processes remain paper-based, limiting efficiency and responsiveness to labour market needs. This paper proposes an Artificial Intelligence (AI)-driven TVET Assessment and Skills Intelligence Framework to enhance assessment and certification within the Technical and Vocational Education and Training (TVET) sector. The study adopted a design science research approach grounded in Competency-Based Education Theory, Constructivist Learning Theory, and Human Capital Theory. Evidence was synthesized from peer-reviewed literature, policy documents, and reports from international organizations. Based on this evidence, the study developed an integrated framework that incorporates, among others, AI-powered tutoring and learning support, automated assessment generation, e-assessment delivery, and workforce intelligence within a unified digital ecosystem. The findings indicate that AI can strengthen the TVET assessment ecosystem by supporting improved assessment quality and security, automating routine assessment processes, and forecasting emerging workforce skills needs. These capabilities have the potential to enhance assessment efficiency and improve the credibility of certification. The proposed framework aligns with Kenya's digital transformation agenda and international best practices in AI-enabled educational assessment. The study contributes to the emerging body of knowledge on AI applications in TVET by providing a framework for integrating AI into competency-based assessment and certification systems in Kenya and other Sub-Saharan African countries.

Keywords: Artificial Intelligence, Competency-Based Education and Training, e-Assessment, Skills Intelligence and TVET

304 Artificial Intelligence and the Transformation of Technical and Vocational Education and Training (TVET) Modern Assessment Practices: Perspectives from Starehe Sub-County, Nairobi, Kenya

Collins O. Owino

The accelerating evolution of Artificial Intelligence is reshaping how educational assessment is conceived and practised, within Technical and Vocational Education and Training (TVET) systems. The integration of AI into assessment frameworks opens pathways to developing learner-oriented, competency-based systems. AI-enabled assessment tools such as immersive simulations, closely replicate real-world industrial operations. This allows learners to demonstrate competencies and creative problem-solving. The study was conducted taking into consideration massive TVET reforms in Kenya. With an emphasis on the transition from traditional-based assessment to Competency-Based Education and Training (CBET). This study investigates how AI-driven assessment tools can promote fairness, enhance their impact and ultimately the relevance of TVET assessment in Starehe Sub-County, Nairobi County, Kenya. It is an urban sub-county hosting nine (9) TVET Institutions with access to better digital infrastructure hence providing the context for investigating challenges of AI in TVET Assessment. Adopting a mixed-methods case study design, the research combines qualitative and quantitative data. This involved TVET trainers, trainees and administrators. Data were collected using questionnaires, document analysis and interviews. Descriptive statistics were used to analyse quantitative data; qualitative data were analysed thematically. Findings reveal that traditional summative assessment still is dominant in the TVET space. AI awareness in assessment is in progress, however adoption of AI based assessment is still significantly low. The players appreciated the role of AI, in terms of promoting efficiency, fairness and alignment with CBET principles. Adoption is hindered by a myriad of factors including but not limited to poor ICT infrastructure, expensive implementation costs, poor policy guidelines, weak laws on data privacy and inadequate preparedness on trainers. The paper recommends effective and ethical deployment of AI in assessment that requires transparent algorithmic processes, robust data protection measures, and sufficient training for educators to interpret AI-generated feedback. Embedding AI within TVET assessment represents a paradigm shift from static, episodic testing to dynamic, formative evaluation models that nurture creativity, adaptability, and lifelong learning.

Keywords: Artificial Intelligence; TVET; Competency-Based Education and Training; Assessment Quality; Kenya

305 Artificial Intelligence and TVET Assessment Standards in Tanzania: A Regulatory Perspective

Kokuberwa Katunzi & Obeid Mahenya

Artificial Intelligence (AI) is rapidly reshaping educational assessment worldwide, including within Technical, Vocational, and Education Training (TVET) systems. This paper examines the regulatory frameworks governing AI integration into TVET assessment standards in Tanzania, responding to the urgent need to align national assessment practices with the demands of a technology-driven labour market. Grounded in Sub-Theme *Leveraging Artificial Intelligence (AI) to Shape Technical, Vocational, and Education Training (TVET) Assessments* of the 42nd AEAA Annual Conference, the study analyses how existing policies, laws, and guidelines - particularly those administered by the National Council for Technical and Vocational Education and Training (NACTVET) address, or fail to address, the ethical use, fairness, standardization, and data privacy requirements of AI-enabled assessments. Using a qualitative exploratory design, the research draws on document analysis, comparative benchmarking against international frameworks such as the UNESCO recommendation on the Ethics of Artificial Intelligence and the EU AI Act, and semi-structured interviews with key stakeholders. Preliminary findings reveal significant regulatory gaps that undermine the consistent and credible deployment of AI-driven assessment tools in Tanzania's TVET sector. The paper proposes evidence-based policy recommendations to build a robust, ethical, and inclusive regulatory ecosystem that enables AI to enhance competency-based assessment, support skills certification, and align graduate profiles with current and emerging labour market needs. The study contributes to growing scholarship on responsible AI integration in African vocational education contexts and offers actionable insights for assessment bodies, regulators, and policymakers across the continent.

Keywords: Artificial Intelligence, TVET Assessment, Regulatory Frameworks, Competency-Based Assessment, Educational Policy, AI Ethics.

307 Leveraging Artificial Intelligence in TVET Assessment: Opportunities, Apprehensions, and Institutional Realities from TEVETA, Zambia

Justine Kimena

The integration of Artificial Intelligence (AI) into educational assessment is increasingly transforming the ways in which competencies are evaluated, particularly within TVET systems. This study examined the opportunities, concerns, and institutional realities associated with the use of AI in TVET assessment within the Technical Education, Vocational and Entrepreneurship Training Authority (TEVETA) in Zambia. A descriptive survey design was employed, utilising a questionnaire comprising both closed-ended questions for quantitative data collection and open-ended questions for qualitative insights. Data were collected from 48 staff members out of an establishment of 64 from assessment, quality assurance, and curriculum development departments of TEVETA. Quantitative data were analysed using descriptive statistics, while qualitative responses were analysed thematically. In addition, the researcher drew on daily professional interactions with staff to gain deeper insights into the fears, challenges, and struggles associated with embracing and effectively utilising AI in routine institutional functions. The study revealed that although TEVETA staff are widely exposed to AI tools, their understanding and institutional readiness for effective

integration remain limited due to inadequate capacity, policies, and training. While AI was viewed positively for improving efficiency, consistency, and assessment processes, concerns were raised about job displacement, bias, overreliance on technology, and its suitability for practical competency-based assessments requiring human judgment. The study concludes that while AI holds significant potential to enhance TVET assessment systems, its successful integration requires a balanced approach that prioritizes human-AI collaboration, capacity building, and robust governance frameworks. Strengthening institutional readiness through policy development, infrastructure investment, and continuous professional development is essential to ensure that AI adoption supports, rather than compromises the quality and integrity of assessment in TEVET.

Keywords: Artificial Intelligence (AI); TVET Assessment; Competency-Based Assessment; Assessment Integrity; Human-AI Collaboration

308 Perception of TVET Instructors and Learners on Artificial Intelligence (AI)-Driven Models

[1]Mohammed Mohammed Aminu
[2]Pius Osaigbovo Stephen
[3]Emmanuel Raymond
[4]Irene O. Iluobe Ph.D

National Business and Technical Examinations Board (NABTEB), Nigeria

Technical and Vocational Education and Training (TVET) institutions are increasingly tasked with producing graduates who possess demonstrable, industry-relevant competencies that respond to the dynamic needs of the labour market. However, conventional assessment approaches often struggle to accurately evaluate practical skills, provide timely constructive feedback, and support the diverse learning pathways of students. By leveraging technologies, AI-driven assessment models can enhance accuracy, support adaptive evaluation processes, and deliver real-time, personalized feedback. This study explored the potential of AI-driven assessment models in TVET institutions using a mixed-methods research design. It also explored the implementation, benefits, and challenges of these models from the participants' perspectives, while examining their influence on competency outcomes. The main participants were instructors and learners from TVET institutions across the six (6) geopolitical zones in Nigeria. A stratified random sampling technique was used to select 400 instructors and 600 learners, ensuring representation across various trades. Four research questions guided the study, and two hypotheses were tested at 0.05 level of significance. Data were collected using semi-structured interviews and the questionnaires. Reliability was assessed using Cronbach Alpha, which yielded coefficients of 0.93 and 0.95, indicating high internal consistency. Quantitative data were analysed using descriptive and inferential statistics, while qualitative data were thematically analysed. Findings revealed that both instructors and learners held strong perceptions of AI-driven assessment models, especially regarding their abilities to enhance feedback quality, monitor learning progress, and improve assessment efficiency. However, the measurable impact on competency outcomes was relatively small. Significant relationships were identified between AI usage and competency achievement, assessment effectiveness, and the timeliness of feedback. The

study recommends professional development in AI-driven assessment, curriculum integration, and human oversight.

Keywords: Artificial Intelligence, Assessment Models, Competency-Based Assessment, Employability Skills, and Technical and Vocational Education and Training.

309 Artificial Intelligence-Driven Recognition and Equivalence of Foreign Educational Qualifications: A Data-Driven Framework for Educational Policy Management

Mohammed Juma Semsue

The increasing internationalisation of education, labour mobility, and cross-border professional migration has significantly amplified the demand for effective, transparent, and reliable systems for recognising and equating foreign educational qualifications. Across many countries, recognition authorities are required to evaluate qualifications originating from diverse educational systems characterised by different qualification frameworks, grading structures, curriculum designs, learning outcomes, and quality assurance mechanisms. Despite the growing complexity of qualification recognition processes, many institutions continue to rely on manual and expert-driven approaches that are often associated with delays, inconsistencies, administrative inefficiencies, and heightened vulnerability to credential fraud (UNESCO, 2019; World Bank, 2023). These challenges have important implications for educational mobility, labour market integration, regional cooperation, and evidence-based educational policymaking. This study examines the potential of Artificial Intelligence (AI)-driven and data-informed approaches to transform the recognition and equivalence of foreign educational qualifications within the broader context of educational policy management. Guided by Socio-Technical Systems Theory and informed by contemporary scholarship on AI governance and digital transformation, the study adopted a design-based explanatory mixed-methods approach integrating qualitative document analysis with simulation-based machine-learning modelling. The qualitative phase involved a systematic review of 32-policy documents, qualification frameworks, international conventions, regulatory instruments, and institutional guidelines published between 2010 and 2025. Insights generated from the document analysis informed the development of an Artificial Intelligence-Driven Recognition and Equivalence Framework (AIREF), which subsequently guided quantitative model development. The quantitative phase utilised structured qualification datasets and supervised machine learning techniques to assess the feasibility of automating selected recognition and equivalence functions. The findings indicate that AI-enabled recognition systems possess significant potential to enhance consistency, transparency, scalability, and efficiency in qualification evaluation processes. The machine-learning models demonstrated strong predictive capabilities in analysing qualification levels, curriculum characteristics, grading systems, accreditation indicators, and historical recognition outcomes. The findings further suggest that, AI can support fraud detection, reduce processing time, generate real-time policy intelligence, and strengthen evidence-based decision-making within educational governance systems. The study contributes to the growing discourse on digital transformation in educational administration by proposing a context-sensitive framework that integrates qualification recognition policies, predictive analytics, governance safeguards, and human oversight mechanisms. It argues that AI should be viewed not merely as a technological innovation but as a strategic policy instrument capable of strengthening educational mobility, institutional effectiveness, and global comparability of

qualifications. The study recommends investment in digital infrastructure, data governance frameworks, institutional capacity building, regional interoperability, and human-centred AI implementation to support sustainable transformation of recognition and equivalence systems.

Keywords: Artificial Intelligence, Qualification Recognition, Equivalence of Foreign Qualifications, Educational Policy Management, Machine Learning, Educational Governance, Digital Transformation, Data-Driven Decision-Making

310 Integrating Examiner Feedback and Psychometric Evidence through AI: A Grounded Theory Framework for Assessment Governance in EGCSE Physical Science

Sibusiso Masuku & Nkululeko Dlamini

High-stakes educational assessment systems often separate qualitative examiner text observations from quantitative statistical performance metrics. This administrative division creates operational silos, making it difficult for subject officers to efficiently check examinations items. This study builds an AI-supported framework using Constructivist Grounded Theory to merge qualitative examiner feedback with Classical Test Theory (CTT) indices. The goal is to optimize national assessment governance for the Eswatini General Certificate of Secondary Education (EGCSE) Physical Science practical exams. Operating within a human-in-the-loop paradigm, data collection focused on the 2025 EGCSE Physical Science Practical Test (Paper 6888/03). Semi-structured interviews were held with 10 national subject officers from the Examinations Council of Eswatini. A specialized Natural Language Processing (NLP) script parsed qualitative reports to extract student errors, automatically matching them with quantitative facility and discrimination values. Results show that manual data analysis causes high cognitive workload and leaves critical connections hidden. The NLP script successfully resolved this fragmentation by linking statistical warnings directly to real-world classroom errors, such as misreading laboratory measurement units. The resulting framework shows that introducing AI tools into national testing bodies speeds up data-driven decisions and helps create fairer policies without removing human expert oversight.

Key words: language learning, traditional approach, AI-digital tools

400 Leveraging AI-powered, Data Driven Decisions for Educational Policy Management

401 A systematic review on Artificial intelligence augmentation of social skills and critical thinking in learners.

Okello Jimmy

Extant literature applauds opportunities created by Artificial Intelligence (AI) in many aspects of learning in educational institutions. This systematic review sought to establish the extent to which AI supports development of social and critical thinking skills in learners in formal education settings. Twenty-seven peer-reviewed journals published between 2018 and March, 2026 were systematically analyzed following the PRISMA procedure. The findings showed a mix of positive and negative relationships between learners' usage of AI tools and development of social and critical thinking skills. Contextual factors were critical in determining the relationships observed in the empirical studies reviewed. The study concludes that for AI to augment critical thinking and social skills in learners, contextual factors of learning environments and learners' characteristics needs appropriate inclusions in school curricula and learning experiences for improved education outcomes.

Keywords: Artificial intelligence, social skills, critical thinking.

402 Artificial Intelligence-Driven Analytics for Enhanced Educational Policy Management: Evidence from the National Examinations Council of Tanzania

Mohammed Juma Semsue

Educational systems worldwide are increasingly embracing data-driven governance to improve educational planning, accountability, and learning outcomes. Despite significant progress in the digitisation of educational assessment systems, the utilisation of examination data for evidence-based policy formulation remains limited in many developing countries. This study examined the potential of Artificial Intelligence (AI)-driven analytics to enhance educational policy management using national examination data from Tanzania. A documentary and analytical research approach was employed using secondary data obtained from national examination reports, statistical bulletins, and policy documents published by the National Examinations Council of Tanzania (NECTA). Descriptive analytics, trend analysis, predictive analytics concepts, and AI-enabled data interpretation frameworks were applied to examine performance trends, identify disparities, and explore opportunities for evidence-based policymaking. The findings indicate that while examination data are extensively used for certification, monitoring, and reporting purposes, their utilisation for predictive policy intelligence remains limited. Analysis of national examination data revealed improvements in overall student performance between 2023 and 2025, alongside persistent regional and subject-specific disparities. The study demonstrates that AI-driven analytics can strengthen educational policy management by enabling early identification of performance risks, supporting predictive decision-making, improving resource targeting, and enhancing accountability mechanisms. However, challenges related to infrastructure, analytical capacity, data governance, and ethical considerations continue to constrain effective AI adoption. The study concludes that

institutionalising AI-enabled educational analytics within national examination systems can significantly strengthen evidence-based educational policymaking. It recommends the development of predictive early-warning systems, investment in digital infrastructure, capacity building for educational managers, and the establishment of comprehensive AI governance frameworks.

Keywords: Artificial Intelligence, Educational Policy Management, Educational Analytics, National Examination Data, Predictive Analytics, Evidence-Based Decision-Making.

403 AI-Driven Formative Assessment and Student Learning Outcomes in Tanzania's Competency-Based Secondary Education

Dr. Anagrolia Faustino Mahenge

Artificial Intelligence (AI) is transforming educational assessment by enabling timely, personalised and data-driven formative feedback. In Tanzania's secondary education system, the Competency-Based Curriculum (CBC) emphasizes continuous assessment to improve student-learning outcomes; however, formative feedback practices remain limited, often delayed, and insufficiently responsive to diverse learner needs. This study examines the role of AI-driven formative feedback in enhancing student learning outcomes within Tanzania's competency-based secondary education context. The study will adopt a mixed-methods research design using a convergent approach. The target population will include teachers and students from selected public secondary schools in urban and peri-urban Tanzania. A sample of 120 teachers and 240 students will be selected using stratified random sampling and purposive sampling techniques. Data will be collected through structured questionnaires, semi-structured interviews, and document analysis. AI tools such as ChatGPT and Grok will be explored as examples of technologies that support real-time formative feedback and assessment processes. The study is expected to show that AI-driven formative feedback enhances the quality, timeliness, and personalisation of feedback, leading to improved student engagement and better learning outcomes. It is also anticipated that teachers will benefit from increased efficiency in assessment practices. However, challenges such as limited digital infrastructure, inadequate teacher preparedness, and concerns about data privacy and the ethical use of AI are expected to influence implementation. The study recommends strengthening digital infrastructure, integrating AI training into teacher professional development, and developing clear policy frameworks to support the ethical and effective use of AI in formative assessment within Tanzania's secondary education system.

Keywords: Artificial Intelligence; Formative Assessment; AI-driven Feedback; Student Learning Outcomes; Competency-Based Education; Secondary Schools; Educational Assessment

406 Leveraging Artificial Intelligence for Sentimental Analysis of UTME and Registration Process via JAMB Social Media Platforms.

Abdulhameed, A.A, Adelakun, O.E., Kazeem. B, Sulaiman, N.O.

Despite digital advancements, the Joint Admissions and Matriculation Board (JAMB) continues to face recurring challenges in managing the Unified Tertiary Matriculation Examination (UTME) and registration processes. These issues often manifest as technical glitches and administrative bottlenecks, leading to widespread public dissatisfaction. The affected population primarily includes millions of Nigerian secondary school leavers and UTME candidates who utilize social media to voice grievances and seek real-time assistance. This study employs a descriptive-analytical research design that utilizes Natural Language Processing (NLP). The sampling technique employed is purposive non-probability sampling, specifically targeting textual data (comments, mentions, and posts) from JAMB's official X (formerly Twitter) and Facebook pages during the 2025/2026 registration cycle. Data collection was conducted using web-scraping APIs to harvest a dataset of candidate interactions. The analysis utilized a Support Vector Machine (SVM) and VADER sentiment analyser to categorize feedback. Preliminary results indicate a high volume of "negative" sentiment during the registration phase, primarily linked to profile code generation delays and biometric failures. However, "positive" sentiment spiked following JAMB's rapid- response social media interventions. The study concludes that AI-driven sentiment analysis provides a more accurate, real-time reflection of candidate experiences than traditional survey methods, revealing that social media is a critical barometer for institutional performance. It is recommended that JAMB integrate an automated AI sentiment-monitoring dashboard into its public relations workflow to address systemic issues pre-emptively. This research contributes to the field of Educational Informatics by providing a framework for using AI to bridge the communication gap between Nigerian public institutions and their tech-savvy stakeholders.

Keywords: Artificial Intelligence, Sentiment Analysis, JAMB, UTME, Social Media, Natural Language Processing, Nigerian Education.

407 Leveraging National Assessment Data to Address Gender and Regional Inequities in Nigerian Secondary Schools

Professor Dantani I. Wushishi, Dr. Benjamin S. Bargu, Dr. Tunde A. Oladokun, Dr. Ebenezer J. Etim

Educational inequity remains a major challenge in Nigeria's secondary school system, particularly along gender, school location and regional lines. Despite several reforms aimed at expanding access, improving quality and ensuring equity, disparities in access and learning outcomes persist across regions, between male and female students as well as school location. National assessment systems such as the one conducted by the National Examinations Council (NECO), and other standardized learning assessments bodies can provide a rich dataset that can be leveraged to identify patterns of inequity and inform policy interventions. This study examines how national assessment data can be utilized to address gender, school location and regional inequities in academic performance among secondary schools in Nigeria. Using Ex Post Facto/Retrospective Causal-Comparative research

design, independent t-test and ANOVA methods of data analysis, the study analyses NECO SSCE English language and mathematics results across 392 Nigerian secondary schools between 2023 and 2025. The study adopted multi-stage sampling technique, using stratified, cluster and random sampling techniques. The schools were selected randomly from twelve (12) States, two (2) States from each of the six (6) geopolitical zones of the country, ensuring equal representation of the Northern and Southern regions (3 zones each). Findings revealed significant (at 0.05 level of significance) regional inequities in candidates' performance and a shifting gender gap showing significant female advantage in core subjects, particularly in mathematics despite lower female enrolment in Northern zones. The study therefore recommended that systematic analysis of NECO SSCE result datasets can help policymakers identify inequity hotspots, design targeted interventions, and monitor progress toward equitable education outcomes. The paper concludes that strengthening data-driven educational planning, accountability mechanisms and deployment of Predictive AI Models and Machine Learning such as Risk prediction model, Geographic hot spot detection, Trend forecasting and Anomaly detection among others are essential and can move educational planning from simply describing inequalities to proactively identifying and addressing them before they worsen as well as reducing educational inequities in Nigeria's secondary education system.

Keywords: National Assessment Data, Gender, School location, Inequities, Educational Assessment, Large-scale Assessment, NECO SSCE, Data-driven Policy, Secondary Schools, Nigeria.

500 Aligning Scenario-based Simulations with Continuous Assessment and Competency-based Learning.

501 Artificial Intelligence in Competency-Based Assessment: Balancing Innovation with Security, Integrity, and Credibility in National Examination Systems - A Systematic Review

Tukamuhabwa Evaristo (PhD) & Mr. Mugizi Moses

The increasing adoption of Artificial Intelligence (AI) in education is transforming assessment systems globally, particularly within competency-based assessment frameworks. Competency-based assessment emphasizes learners' ability to apply knowledge, skills, and values in authentic contexts rather than relying solely on memorization and recall. National examination bodies are increasingly exploring AI technologies such as adaptive testing, automated scoring, remote proctoring, predictive analytics, and intelligent assessment systems to improve efficiency, scalability, and reliability in large-scale examinations. However, while AI presents significant opportunities for enhancing assessment processes, it also introduces concerns related to examination security, fairness, integrity, transparency, and public trust. This systematic review examines literature published between 2015 and 2024 on the use of AI in competency-based assessment within national and high-stakes examination systems. A total of 85 studies were identified through searches in Google Scholar, Scopus, ERIC, and institutional databases. Following the application of inclusion and exclusion criteria, 42 studies were retained for detailed analysis. The findings indicate that AI can improve assessment by enabling personalized testing, faster feedback, automated scoring of complex tasks, and enhanced monitoring of learner competencies. Nevertheless, the review identifies major risks including algorithmic bias, cyber-security vulnerabilities, AI-assisted malpractice, data privacy concerns, and difficulties in authenticating candidates in digital assessment environments. The successful integration of AI in competency -based assessment requires balanced implementation supported by strong governance frameworks, transparent AI systems, human oversight, ethical safeguards, and secure digital infrastructure. National examination bodies must adopt policies that protect examination credibility while harnessing AI's potential to improve learning outcomes and assessment quality.

Keywords: Artificial Intelligence, competency-based assessment, high-stakes examinations, examination security, assessment integrity, e-assessment.

502 Rethinking Educational Assessment in Zambia: A Study of Form 1 and Form 2 Teachers' Assessment Literacy in Competence-Based Assessment

Sakala Bathseba Sophia Charles

Zambia introduced a Competence-Based Education system which differed from the usual Outcome-Based Education system the country had used for years. This means that, with the shift from Outcome-Based to Competence-Based Education systems, assessments also needed to align with the education system at hand. This led to the introduction of Competence-Based Assessment, whose aim was to shift the focus from rote memorisation to the development of essential skills and competences that would help learners navigate life in the real world. The implementation of this competence-based education required teachers to have adequate competence-based assessment literacy to assess their learners effectively. This study sought to ascertain the assessment literacy levels in competence-based assessment among the Zambian teachers teaching Form 1 and Form 2 classes, identify challenges they encounter in implementing CBA and propose possible solutions to those challenges. It was informed by Stiggins (2001) Assessment Literacy Framework and Biggs' Constructive Alignment. The study sample included 26 Form 1 teachers who were also teaching Form 2 classes, 10 Heads of Departments, 7 Deputy Headteachers, and 7 Headteachers, purposively selected from the 7 provinces of Zambia. The study employed the descriptive and qualitative research designs. Data were collected using a questionnaire, interviews and document study, and data were analysed thematically. Findings revealed that, currently, the level of competence-based assessment literacy among the Zambian teachers teaching Form 1 and Form 2 classes oscillates between low and average. The findings also showed that teachers faced a number of challenges in assessing their learners' performance under a competence-based approach such as lack of adequate training in CBA. The possible solutions for addressing the challenges in order to enhance teachers' assessment literacy in competence-based assessment in Zambian schools were given.

Keywords: Competence-based education, competence-based assessment, assessment literacy

503 Beyond Tests: Reimagining continuous assessments through culturally responsive scenario-based simulations

Sarah Kasana

Culturally relevant assessment designs are increasingly recognised as critical for advancing equity and fairness in Competency-Based Education (CBE) systems. These approaches emphasise authentic assessments which incorporate scenarios reflecting learners' lived experiences. In Kenya's CBE context, classrooms are characterised by significant linguistic, socio-cultural and economic diversity. This multifaceted setting raises concerns over the validity and inclusiveness of conventional assessment approaches that rely on standardised formats. This study examined whether culturally relevant scenario-based assessment designs improve learner achievement and reduce performance disparities in Kenya's basic education. Grounded in culturally responsive pedagogy and sociocultural learning theory, the study adopted a quasi-experimental, mixed-methods design across 24 public primary schools in three counties. It explored how scenario-based assessment tasks, which

incorporate familiar contexts, local languages and community knowledge, function as continuous assessment tools that support competency development while influencing learner engagement, self-efficacy and academic performance. Over two academic terms, learners in 48 classrooms implementing culturally relevant assessment strategies were compared with other 48 learners using conventional assessment approaches (N = 2,184 learners, Grades 4–6). Quantitative measures included end-of-term examination scores, curriculum-based progress monitoring, and rubric-guided School-Based Assessment (SBA) tasks embedded in classroom activities. Multilevel modelling revealed statistically significant gains for learners in intervention classrooms ($\beta = 0.34$, $p < .01$), with the strongest effects observed among multilingual learners and those from lower socio-economic backgrounds. Achievement gaps linked to the language of assessment were reduced by 18%, indicating improved inclusivity and validity. Qualitative findings from classroom observations, teacher interviews, and learner focus groups revealed that scenario-based simulations enhanced learner engagement, task authenticity and opportunities for continuous feedback. Teachers reported stronger alignment between assessments and learners' experiences, while learners demonstrated increased adeptness in competencies. The findings suggest that integrating culturally relevant scenario-based simulations into assessment design yields more authentic, equitable and competency-aligned evidence of learning. The study provides practical principles for embedding culturally grounded assessments across learning areas and empirical guidance for teacher training, curriculum development, and national assessment frameworks.

Keywords: Culturally relevant assessment; authentic assessment; scenario-based simulations; inclusive assessment; multilingual education.

504 Classroom Assessment and the Acquisition of 21st Century Skills among learners in Primary schools in Kenya

Emmy M. Mugailwa

The goals of education have shifted toward equipping learners with 21st century skills such as critical thinking, creativity, communication, and collaboration. However, ensuring effective development and demonstration of these competencies remains challenging. Sustainable Development Goal 4.7 emphasises aligning curriculum, pedagogy, and assessment to promote global citizenship and sustainable development, yet assessment remains complex and underdeveloped. Classroom and formative assessment are central but often fail to capture these skills. Emerging technologies, particularly Artificial Intelligence (AI), enhance assessment by providing real-time feedback, automating processes, and generating insights into learners' cognitive development, supporting more dynamic evaluation and improving instructional decision-making and holistic learner outcomes. This paper examines how classroom assessment techniques utilised by teachers in primary schools in Kenya influence learners' development and acquisition of 21st-century skills, with a particular focus on the 4Cs. It further explores the potential of AI-supported assessment approaches to complement existing practices, enhance feedback mechanisms, and improve the overall quality of learning and decision-making in classroom contexts. A mixed-methods approach was adopted using primary data from 50 primary school teachers implementing Integrated Science at Grade 5 from 4 purposively sampled primary schools. Data were collected through a structured questionnaire and semi-structured

interviews to examine classroom assessment practices, use of scenario-based tasks, and integration of AI tools. Focus group discussions and Lesson observations were used to collect qualitative data. Findings from the study revealed that teachers used a variety of methods to assess acquisition of 4Cs skills during teaching and learning. Teachers teaching in private schools indicated that they used real life science and guided learners to design prototypes using locally available materials to allow effective assessment in 4Cs. Further, there was limited use of AI tools by teachers in assessment. Importance of teaching and assesssment of 21st century skills while integrating AI cannot be underscored and as such, there is need for institutions charged with preparation of teachers to ensure that they are adequately skilled to teach and assess these skills.

Keywords: Assessment, classroom assessment, artificial intelligence, 21st -century skills, continuous assessment.

505 Evaluating the effectiveness of Emma AI: A case of learning French in Maseru

Polo Lemphane

The learning of foreign languages plays an important role in expanding socio-cultural experiences and fostering global connections. Traditionally, language immersion programmes have provided learners with opportunities to practice languages in authentic contexts. However, the decline of funded language exchange programmes due to global economic challenges has reduced opportunities for immersion, making the acquisition of French as a foreign language increasingly difficult for Basotho learners. This study investigated the effectiveness of Emma AI, an artificial intelligence-powered conversational platform, in supporting the learning of French as a foreign language among learners in Maseru, Lesotho. The study examined how scenario-based simulations facilitated through everyday messaging applications contribute to learners' continuous assessment, competency development, and language practice. A qualitative case study approach was employed involving French language learners who actively used Emma AI as a supplementary learning tool. Data were collected through semi-structured interviews to explore learners' experiences and perceptions of the platform. The findings revealed that Emma AI provides a personalized, interactive, and accessible learning environment that enables learners to practice French anytime and anywhere. Participants highlighted the platform's ability to simulate real-life communication situations, provide immediate feedback, adapt learning activities to individual proficiency levels, and support preparation for language assessments such as the DELF examination. The findings further showed that Emma AI promotes learner confidence, autonomous learning, and continuous engagement with the language beyond the traditional classroom setting. In addition, teachers are able to assign learning tasks and monitor learner progress through the platform. The study concludes that AI-powered language learning platforms such as Emma AI have considerable potential to transform the teaching, learning, and assessment of French as a foreign language in Lesotho. By integrating meaningful, scenario-based interactions into everyday digital communication spaces, Emma AI enhances learners' linguistic competence and extends learning opportunities beyond formal instructional environments. However, challenges related to access to digital devices and internet connectivity remain important considerations for wider implementation. The study recommends the integration of AI-assisted

learning tools into foreign language education to complement traditional teaching approaches and improve learner outcomes.

Keywords: Artificial Intelligence, Emma AI, French as a Foreign Language, Scenario-Based Learning, DELF Preparation.

506 Redesigning Assessments for Holistic Learning: A Case of Kenya

Patricia Omunyang'oli

Assessment of learners is critical in education since it provides feedback, monitors learner progress, guides the overall teaching and learning, thus enhancing learning outcomes. Identifying assessment methods to objectively evaluate learners' progress within specific learning areas is as important as establishing curricular content and curriculum delivery methods. Traditional assessment methods often centred around standardised tests, limit the scope of learning and fails to capture the breadth of competencies required by learners in the 21st century. The purpose of this paper is to discuss approaches adopted by the Kenya National Examination Council (KNEC) in assessment of learners due to change of the curriculum from the Content Based Curriculum to the Competency Based Curriculum (CBC) aimed at fostering holistic learning. It also explores how Artificial Intelligence (AI)-enhanced assessment practices can support more personalised, adaptive, and continuous evaluation of learners. The assessment approaches used in formative assessment include project-based learning, portfolio assessment, peer and self-assessment, reflective journals, and collaborative learning among others. When integrated with AI tools, these approaches enable real-time feedback, data-driven insights, and more nuanced tracking of learner development. Holistic assessment provides a comprehensive understanding of learners' academic and non-academic abilities, while fostering essential competencies such as critical thinking, creativity, collaboration, and emotional intelligence. In shifting focus from summative to formative and diverse assessment approaches, educators can better support and nurture learners' diverse abilities and lifelong learning skills. Adopting the new methods of assessment coupled with integration of AI in assessment, comes with a myriad of challenges such as resource constraints, professional development, resistance to change, accountability measures, alignment to standards, concerns about data privacy and ethics, assessment literacy and technological integration which if not addressed may hinder optimal use of the new assessment approaches. There is therefore, need to ensure professional development of teachers, sensitisation of education stakeholders including parents as well as training of teachers in the use of the new assessment approaches, use of Artificial Intelligence, data ethics and data privacy, all these aiming at ending assessment literacy.

Keywords: Artificial Intelligence, Competency-Based Assessment, formative assessment, holistic learning, lifelong learning.

507 Reporting learners' competencies in Junior School, Kajiado North, Kenya

Elizabeth Obade

The Kenya National Examinations Council develops school-based assessment to provide feedback to all relevant stakeholders and for accountability purposes and to make informed decisions. This study examined the reporting learners' competencies in Junior School, Kajiado North, Kenya. More specifically, the study aim at gaining insights into the influence of socio demographic characteristics of teachers on reporting learners' competencies. It also explored how teachers use curriculum designs in both instructional and assessment process, and identified the challenges they face in reporting learners' competencies, along with the effect of these challenges as teaching professionals. A mixed methods research approach was adopted, using Howard Gardner's theory of multiple intelligence as the theoretical framework. A total of 80 teachers from 16 public Junior schools were purposively selected to take part in the study. Observation and interview schedule were used for data collection. The gathered data were descriptively analysed and presented in the tables and figures. Findings revealed that teachers possess limited knowledge and skills in designing classroom assessments and effectively reporting learners' competencies. High teachers'-learners' ratio significantly compromised the effective identification of learners' potential, which is essential for appropriate pathway selection. Continuous professional development for teachers would enhance their abilities to design effective classroom assessments and accurately report the competencies of diverse learners.

Keywords: Accountability, Assessment, Curriculum designs, Junior School, Learners' competencies

508 Strengthening Early Years Competency Acquisition through Scenario-Based Simulation Models: Insights from Kenya's Grade 3 Integrated Learning Assessment under the CBC

Rona Kerubo Kebati

Kenya's Competency Based Curriculum (CBC) and the accompanying Competency Based Assessment Framework (CBAF) position School-Based Assessments as the primary mechanism for monitoring learner progress during the Early Years Education cycle. The Kenya Early Years Assessment (KEYA) for Grade 3 provides nationally representative insights into learners' acquisition of foundational competencies, values, and Pertinent and Contemporary Issues integrated within the CBC. In 2025, KEYA was administered as a census involving all Grade 3 learners in public and private schools, enabling comprehensive national reporting and eliminating sampling error. Using a descriptive research design, the study analysed national performance across four assessment levels: Exceeding Expectation, Meeting Expectation, Approaching Expectation, and Below Expectation. Findings revealed strong performance in practical and context-based tasks such as drawing and colouring (47.17%), brushing teeth (45.67%), and singing and reciting (45.08%), demonstrating the effectiveness of experiential learning approaches. However, learners exhibited persistent gaps in writing, expressive communication, and higher-order thinking skills. This paper is guided by three objectives: to analyse learner performance patterns in KEYA 2025, to examine the limitations of current continuous assessment approaches in capturing complex competencies, and to propose a

structured framework for integrating scenario-based simulation models into Early Years assessment. The study argues that simulations, grounded in the Basic Education Curriculum Framework, provide authentic, inclusive, and developmentally appropriate opportunities for learners to demonstrate competencies in real-life contexts. It further posits that simulation-based approaches can enhance the validity, reliability, and responsiveness of assessment systems within the evolving digital and artificial intelligence landscape.

Keywords: Competency-Based Assessment, Scenario-Based Simulations, Early Years Education, Kenya Early Years Assessment, Educational Assessment in Africa, Experiential Learning

509 Teacher Questioning as Cognitive Scaffolding in Tanzania's 2023 Competence-Based Curriculum

Joyce Jonas Kahembe

This study examines how teacher questioning is enacted within Tanzania's 2023 Competence-Based Curriculum (CBC), with a particular focus on its role as a mechanism for cognitive scaffolding. Using a mixed-methods convergent design, the study draws on 310 classroom observations, 217 teacher interviews, and 550 teachers test scripts across six regions. The findings reveal that, although questioning is widely used across subjects, questions are predominantly objective and lower-order in cognitive demand, with minimal use of procedural, reasoning, and metacognitive questions. While Mathematics lessons show greater use of mid-level cognitive questioning and higher-order, which metacognitive support remain limited across subjects. These patterns may provide limited cognitive scaffolding, leading to constrained cognition and limited opportunities for learners to develop competencies. The study contributes by reconceptualising questioning as an assessment-embedded pedagogical practice and by highlighting a systemic misalignment between competence-based reform intentions and classroom enactment. Thus, the study emphasises the need for integrated support to enable questioning to function as a tool for support competence development.

Key words: Cognitive Scaffolding, Competence-Based Curriculum, Formative assessment Questioning practices.

510 The Missing Listening and Speaking Components in Chinese Language Assessment in Tanzania

Jivitius Ching'oro Sabatho

Tanzania's 2023 curriculum reform repositioned Chinese language education within a competency based framework that emphasizes communicative competence, practical language use, and broader learner development. The revised Chinese language syllabus for ordinary secondary education expects learners to develop core competences in listening, speaking, reading, and writing, as well as the ability to communicate orally and in writing across contexts and to translate and interpret simple information. However, evidence from national assessment documents suggests that the assessed

curriculum has not yet fully aligned with these intentions. This study examines the extent to which NECTA Chinese language assessment practices reflect the competences intended in Tanzania's reformed curriculum. The study adopts a qualitative documentary analysis design and draws on official curriculum and assessment documents, including the 2023 Chinese language documents, NECTA examination formats, and Chinese language school and candidates' item response analysis reports. The analysis focuses on the relationship between intended language competences and the skills actually represented in national assessment tasks. Findings indicate a clear imbalance between curriculum expectations and examination practice. While the curriculum documents foreground listening, oral communication, and interpretation alongside reading and writing, the examination formats and response analysis reports show heavy emphasis on written tasks such as comprehension, matching, sentence arrangement, grammar, vocabulary, summarizing, and composition. This gap is particularly significant because the Chinese language is a tonal language in which listening and speaking are central to meaning-making and effective communication. The continued dominance of written assessment may narrow classroom practice, weaken communicative learning outcomes, and limit the realization of competency-based language education. The paper argues for a more balanced Chinese language assessment model in Tanzania through the gradual integration of listening and speaking components into national and school-based assessments. It further suggests that digital and AI-supported assessment pathways may offer practical options for strengthening authenticity, feedback, and alignment in the assessment of Chinese language learning.

Keywords: Chinese language education; educational assessment; competency-based curriculum; curriculum–assessment alignment; listening and speaking; NECTA; Tanzania

511 Exploring Perspectives and Insights on the benefits of Competency-Based and Scenario-Based learning in the Mathematics Classrooms

Malepa-Qhobela, M. (PhD)

Despite its status as a compulsory subject in many countries, education systems across the globe, Mathematics persistently remains a challenge for most learners. Both Competency-Based Learning (CBL) and Scenario-Based Learning (SBL) aim for deep understanding of concepts and their application in real-world, thereby shift focus on mastery of mathematical skills and abilities which challenges the traditional rote-based and content-centered pedagogies in the mathematics classrooms. These emerging evolving modern strategies offer a potential pathway that can re-shape practices in Mathematics classrooms and align them with the 21st century era's demands. Although many studies have investigated implementation of competency-based curricula, there still exists gap in understanding how competency-based and scenario-based learning can be adapted to improve Mathematics classroom practices. Based on preferred reporting items for systematic review and meta-analysis (PRISMA) 2020 guidelines, the study utilized systematic literature review to explore perspectives and insights to understand how a blended use of CBL and SBL can benefit and/or challenge teaching and assessment practices in the Mathematics classrooms. A structured approach was employed to conduct a search on multiple sources using keywords as competency-based learning/assessment, scenario-based learning/assessment, teachers' perspectives, experiences, and Mathematics teaching/learning. The study revealed that the blended use of CBL and SBL is noble to

students' Mathematics learning. This blend encourages classroom practices that make learning more personalised and measurable, hence, boosting learners' motivation, enhance their participation and engagement, improve their problem-solving skills, and foster a deeper understanding of abstract concepts by relating them to concrete, real-world situations and contexts. These findings may not only be used to enhance classroom practices in Mathematics, but rather, may also serves as a model for other classroom subjects. It is recommended that blended CBL and SBL should be used in Mathematics classrooms.

Keywords: Mathematics, competency-based learning, scenario-based assessment, teachers' perspectives, teachers' experiences and classroom Mathematics

513 Bridging the Gap: Integrating Scenario-Based Simulations to Enhance Learner Competency in Grade 10 Business Studies: A Case of a School in Eswatini

Nolwazi Ntombela, & Lindiwe Sibandze,

As Eswatini transitions to a Competency-Based Curriculum (CBC), secondary schools face a critical gap between traditional rote memorization and the practical skill acquisition required for 2026 implementation. Current instructional and assessment methods for Business Studies often remain teacher-centred, failing to provide learners with "risk-free" opportunities to apply critical thinking and decision-making in real-world contexts. The study aimed to develop and evaluate a model that integrates scenario-based simulations to enhance learners' competencies. Specifically, it sought to determine how this approach improves competency gains and bridges the gap between theoretical knowledge and performance-based outcomes. The study is based on the conceptual framework which illustrates the relationship between Competency-Based Curriculum (CBC) requirements and Scenario-Based Simulations. It is grounded in the idea that learning is most effective when it moves from theory to performance-based outcomes. A Mixed-Methods, Design-Based Research (DBR) approach was used. This allows for the iterative development of the simulation model while capturing both measurable performance data and participant experiences. The study used purposive sampling to recruit the participants. Quantitative data was collected using pre-and post-tests to measure knowledge shift and analysis of scores from the simulation tasks was done. Semi-structured interviews were conducted with teachers and students. Data was analysed using descriptive statistics for quantitative data and thematic analysis for qualitative interviews. The study concluded that the model provides a reliable, formative framework for assessing critical competencies, bridging the gap between theoretical knowledge and required performance-based outcomes. It is recommended that the Ministry of Education and Training formalize simulation-based tasks within continuous assessment guidelines, support their implementation through targeted teacher training, and promote the use of localized, context-specific scenarios to enhance student engagement.

Key words: Competency-Based Curriculum (CBC), Continuous Assessment (CA), Simulations.

515 Enhancing teaching and learning through formative assessment: The case of Addis Ababa, Ethiopia

Ashenafi Tesfaye Bogale

The main purpose of this study was to determine the perceptions of teachers' and students' to enhancing teaching and learning in secondary school through formative assessment. The specific objectives of the study were: (a) To determine students' perceptions on formative assessment, (b) To determine teachers' perceptions on formative assessment, and (c) To determine whether there is significant difference in the perceptions of students towards formative assessment in different grade levels of secondary schools. To conduct this study, a descriptive survey research design was employed. A total of 160 secondary school teachers from eight secondary schools; four schools from Akaki Kality, two schools from Bole and two schools from Nifas silk lafto sub cities from Addis Ababa city administration education bureau were randomly selected and participated in this study. Additionally, 320 students from these eight secondary schools were part of the study. The data were gathered through a questionnaire. Data gathered through questionnaires were analyzed using percentage, frequency, mean, standard deviation and one -way analysis of variance (ANOVA). The data gathered through open ended questions were analyzed qualitatively through narration. The results of the study revealed that students and teachers had a more positive perceptions towards formative assessment. Overall, there were significant difference in the perceptions of students on formative assessment in different grade level. The conclusion shows that both teachers and students favored formative assessment as an effective method of classroom assessment. However, there is a need to enhance authenticity and transparency as a way of achieving the goal of formative assessment. Thus, it is recommended that school principals and teachers should clearly tell the students what is needed in all assessment tasks and the teachers assess their students to enable to apply their learning to real life situations.

Keywords: Assessment, Formative assessment, secondary schools, Perception

516 Project-Based Assessment as a Scenario-Based Approach for developing Competencies and Supporting learners' Transition : Kenyan Teachers' Perceptions on Students with Intellectual Disabilities

Joseph Gitonga Nyaga

Kenya's new Basic Education Curriculum Framework (BECF) emphasises developing and demonstrating competencies in real-life contexts. In this framework, the specialized Stage-Based Curriculum tailored for learners with Intellectual Disabilities (ID), focuses on developing functional, vocational, and independent living skills that facilitate an effective transition to productive adulthood. Project-Based Assessment (PBA)has been adopted as a continuous, scenario- driven approach enabling learners to engage in practical, task-oriented activities. This study examined how teachers implementing the Stage-Based Curriculum perceive the role of Project-Based Assessments in developing competencies and supporting the transition of learners with intellectual disabilities. A descriptive survey design was used and 280 respondents from special schools in ten counties across the eight Kenya's administrative regions were engaged in the study. Questionnaires, interviews, observations, and document analysis were used as data gathering instruments, and subsequently analysed using descriptive statistics. The findings of this indicate that Project-Based

Assessments are widely implemented, with 98% of institutions consistently using the standardized tools developed by Kenya National Examinations Council. Teachers generally consider or regard Project-Based Assessments as meaningful tools for supporting learners' transition, particularly in terms of nurturing functional and vocational skills, and promoting individual learner goals. When assessments were grounded on real-life situations, teachers noted improvements in learners' independence, communication and engagement. The study also revealed that the implementation of Project-Based Assessments with this group of learners is not without challenges. The identified challenges include learners' limited conceptual capacities, , difficulties in tasks adaptations, and inadequate resources. Nevertheless, teachers expressed strong confidence in the value of Project-Based Assessment in supporting both learning and transition of this disadvantaged group of learners. The study, therefore, highlights the importance of strengthening teacher capacity for effective use of Project-Based Assessments, enhancing available resources, and establishing robust support systems to ensure the effective implementation of scenario-based and competency-driven assessments for learners with intellectual disabilities.

Keywords: Stage-Based Curriculum, Scenario-Based Assessment, Competency-Based Learning, Intellectual Disabilities, Project-Based Assessment

514 Why Scenario-Based Questions Matter in Competence-Based Curricula in East and Southern African Schools: Understanding the Assessment Dilemmas in Practice

Dr. John Fungulupembe Kalolo

The importance of adopting Competence-Based Education (CBE) in East and Southern Africa has increased concerns over the continued focus on factual recall assessments over the application of knowledge in authentic contexts in the region. This study employed a systematic literature review of studies conducted in the last three and a half decades to date (1900s-2026) to examine how Scenario-Based Questions (SBQs) can solve this assessment dilemma. Using the PRISMA 2020 framework, the searches conducted in the electronic information databases resulted in 1251 records - 53 of which were studies that were included and synthesised using thematic analysis. The results indicate that SBQs have the potential of being used as a tool to assess applied competence as learners are required to analyse a real situation, make a decision, justify their decision, and apply knowledge, skills, and values in context. The findings also present evidence that SBQs foster authentic assessment, deep cognitive engagement, and learning transfer conditions. But their use is limited because of assessment inertia, teacher assessment literacy, resource inequities, inconsistent scoring, and inclusive assessment issues. The study concludes that scenario-based assessment can enhance competence-based assessment and reveal more evidence of students' ability to use knowledge in real-world situations, as long as assessment systems are aligned with the broader goals of competence-based learning.

Keywords: scenario-based questions, competence-based education, authentic assessment, learning transfer, competence assessment.

600 Promoting Academia-industry Collaboration for Technological Literacy and Effective Practical Assessment

602 The African Blueprint: Recalibrating High-Stakes Assessment for Industrial Relevance through the JAMB's Model

Olumuyiwa Titus Oluwanishola

The global landscape of high-stakes assessment is currently navigating a profound paradigm shift occasioned by the rapid integration of Artificial Intelligence (AI) in educational assessment. Globally, a new standard has emerged between traditional psychometric testing models and the multifaceted requirements of the modern industrial workforce. The current industrial skillsets are in high demand among global employers in the real world is AI and technology-driven. It appears that we are testing for the past while the world is hiring for the future. This paper explores the modest but effective transformative model, pioneered by the Joint Admissions and Matriculation Board (JAMB) of Nigeria following its policy review on CBT implementation spanning over a decade. The model is an African blueprint strategically designed to enhance the Unified Tertiary Matriculation Examination (UTME) of the Board by harmonizing academic assessment with industrial necessity through an ethically governed AI framework. The JAMB model moved beyond the infrastructural, biometric verification and remote proctoring successes of Computer-Based Testing (CBT) to preparing candidates for the AI-driven industrial demands through item construction, difficulty scaling, and predictive validity. By recognizing the roles AI is playing in current educational assessment, JAMB has developed a system that ensures its e-testing content is not merely a measure of academic recall, but a groundwork that prepares candidates beyond certificates to align with real-world application. This study utilizes an *ex-post facto* research design, synthesizing longitudinal data from JAMB's testing cycles alongside comprehensive feedback obtained from critical stakeholders, which includes tertiary institutions, industry leaders, and policymakers. The findings detail a workable blueprint for national examination bodies to navigate the complexities of AI adoption particularly in the African context. The paper highlights how the JAMB model addresses the digital divide while ensuring that candidates and stakeholders brace up for the ethical AI challenge. In addition, it recommends the mechanisms used to ensure that the automation of assessment does not compromise psychometric accuracy but enhances it through data-driven insights. Finally, it proposes the JAMB model as a global benchmark where it will serve as a roadmap for any assessment body struggling to connect classroom success with career readiness.

Keywords: High-stakes Assessment, e-Testing, Emerging Economies

603 Rethinking Assessment in Higher Education in the Age of Artificial Intelligence: A Bibliometric Analysis of Global Research Trends

Dr. Mohamed S. Msoroka

The rapid growth of artificial intelligence has sparked discussions among educators about the legitimacy, integrity, and methods for assessing knowledge. Artificial Intelligence (AI) is amplifying these conversations, fundamentally altering how students produce their work, how it is evaluated, and how it is validated by upending assumptions about validity and integrity in assessment design. While responses at the institutional level are growing, a review of how global research on assessment practices informs our understanding of AI-supported assessment practices remains scarce. This paper presents a bibliometric analysis of empirical studies on AI in higher-education assessment from 2017 to March 2026. Data from the Dimensions Scientific Database were analysed using VOS viewer to explore publication trends, the top contributing institutions, and the collaboration network across countries. The preference for Dimensions stemmed from its extensive coverage of academic publications. In accordance with the PRISMA 2020 guidelines, our analysis included 15,278 peer-reviewed journal articles after applying inclusion and exclusion criteria. The results show a clear uptick in research output following 2022, an adoption of generative Artificial Intelligence technologies at scale. The geographical inequalities inherent in some of the available literature (mainly focused on North America, Europe, Australia, and parts of Asia) may lead to a lack of contextual relevance and inclusivity in AI assessment research in African and Latin American contexts. Highly cited papers are published mainly in educational technology and interdisciplinary journals, with a clear focus on assessment as technical or design work. In any case, the conclusions demonstrate that exploration of AI-empowered appraisal is developing rapidly, though erratically, across regions worldwide. This study provides data to ground assessment policy, research partnerships, and capacity-building as higher education grapples with the pedagogical and ethical challenges posed by AI.

Keywords: Artificial intelligence, higher education assessment, generative AI, bibliometric analysis, AI-supported assessment, global research trends

604 Inclusive Assessment for Inmates at the Nigerian Correctional Facilities

Dr. Adunola, Osoba, Ven. Ayobode Mayokun, Akinbuluma, Dr. Adenike Adedigba, Akinlua, and Oriyomi Olorunwa, Olubanwo

Educational assessment is evolving and this advancement must be all embracing, especially in meeting the expectations of numerous stakeholders. Assessment authorities are expected to be fair and unbiased to all categories of candidates by making adequate provision to accommodate different categories of learners. The West African Examinations Council (WAEC) has such accommodation in place for all categories of candidates including those in correctional centres. This study investigated the conduct of the West African Senior School Certificate Examination for candidates at the correctional centres in Nigeria. It evaluated the steps involved in the conduct of the examination in these facilities. The study is a census study and adopted

exploratory qualitative research design. All candidates and officials in Nigerian correctional centres where WASSCE for Private Candidates Series 2 (2023) was conducted were selected. In all, 390 candidates and 25 examination officials participated in the study. Open-ended questionnaire was developed, validated and used to elicit relevant information from inmates and examination officials at the correctional facilities. Data were analysed using thematic approach. Findings showed that the procedure involved in the conduct of WASSCE (PC2) at the correctional centres includes confirming the eligibility of inmates wishing to sit the examination and capturing their biometric. On stakeholders 'expectations, the study found that provision of necessary resources, timely completion of the syllabus, more sensitisation among inmate, flexible marking systems as prominent. Challenges include inmates' low mental capacity, psychological instability and lack of motivation, and inadequate preparations for examination. It was therefore, recommended that adequate resources and facilities, sensitisation of inmates, among others should be provided.

Keywords: Correctional Centres, Inmates, Nigeria, WASSCE(PC2)

605 Evaluating the Role of Academia–Industry Collaboration in Promoting Technological Literacy and Effective Practical Assessment: Insights from A Diploma-Level Food and Beverage Programme Assessed by The Kenya National Examinations Council

Seraphine Mukami

Collaboration between academia and industry plays a critical role in preparing graduates with the practical and technological competencies required in an evolving workforce. This study examined the role of academia–industry collaboration in promoting technological literacy and enhancing the effectiveness of practical assessment in Technical and Vocational Education and Training (TVET). It further explored how such collaboration supports alignment between training and workplace requirements within a competency-based framework. The study drew on insights from a 2025 investigation of a diploma-level Food and Beverage programme assessed by the Kenya National Examinations Council (KNEC). A descriptive case study design was adopted, employing mixed research methods to provide an in-depth understanding of the phenomenon. Participants included TVET tutors with experience in KNEC assessment processes and industry professionals from five-star hotels in Naivasha, Kenya. Their combined expertise provided a comprehensive perspective on both training delivery and industry practice. Data was collected using structured questionnaires and document analysis of curriculum and assessment materials to examine the extent of integration of collaboration in training and assessment processes. The findings indicated that collaboration is most impactful when integrated into practical training and assessment activities. Internships emerged as the most effective approach, demonstrating their value in bridging classroom learning with workplace practice and enhancing learner exposure to industry systems and tools. Practical and project-based assessments were also found to effectively support competency development, while traditional written assessments were less reflective of real-world application. Exposure to modern equipment, digital systems, and emerging industry technologies was shown to significantly enhance technological literacy and trainee readiness. However, opportunities remain to strengthen the integration of emerging technologies within training programmes. The study recommends

strengthening structured academia–industry partnerships, expanding industry involvement in curriculum implementation and assessment, and continuously integrating emerging technologies into training. These findings underscore the importance of sustained and purposeful collaboration in enhancing the relevance, responsiveness, and quality of TVET, while supporting continuous improvement in practical training and competency-based assessment.

Keywords: Collaboration, Technological literacy, Practical assessment, Co-assessment, Internships.

606 Promoting Academia–Industry Collaboration for Enhancing Technological Literacy and Competency-Based Practical Assessment in Tanzanian TVET Institutions"

Mariam Ally Tambwe

The persistent misalignment between TVET graduates' competencies and labour market requirements in Tanzania continues to undermine graduate employability and national economic transformation. This study investigated the role of academia-industry collaboration in enhancing technological literacy among TVET students and improving the quality of competency-based practical assessment. Guided by Human Capital Theory and Experiential Learning Theory, the study employed a pragmatic paradigm and a mixed-methods convergent parallel design. Data were collected from a sample of 1,250 participants (800 students, 250 instructors, 100 administrators, and 100 industry partners) from five major public TVET institutions (CBE, TIA, IFM, DIT, and NIT) using structured questionnaires and semi-structured interviews. Quantitative data were analysed using descriptive and inferential statistics (including regression analysis), while qualitative data underwent thematic content analysis. The study found moderate levels of academia-industry collaboration ($M = 3.41$, $SD = 0.87$), dominated by internships (68.4%) and guest lectures (51.7%). Collaboration intensity significantly predicted students' technological literacy ($\beta = 0.48$, $p < 0.001$), accounting for 41.3% of the variance. Industry involvement substantially improved the relevance of competency-based assessment to occupational standards (mean difference = 1.27, $p < 0.001$), though gains in validity and reliability were more modest. Qualitative findings highlighted enhanced authenticity and student confidence, alongside persistent barriers including inadequate resources, weak policy frameworks, insufficient incentives, and limited institutional capacity. The study concludes that while academia-industry partnerships offer a promising pathway for addressing skills gaps in Tanzanian TVET, their current moderate and informal nature limits greater impact. The findings provide evidence-based recommendations for policy reforms and structured collaboration frameworks to strengthen TVET-industry linkages.

Keywords: TVET, academia-industry collaboration, technological literacy, competency-based assessment, skills mismatch, Tanzania.

700 Digital Solutions for Assessment Feedback and Evaluation of Teaching and Learning

702 A Systematic Review of Digital Assessment Feedback Systems and Their Influence on Teaching Practices in Ethiopian Education, 2022/23-2026

Endale Getachew Atile

The introduction of digital assessment or Computer-Based Testing (CBT) systems, especially the National Graduate Admission Test (NGAT), the Grade 12 National Examination, and Exit Examination, has significantly changed teaching methods and feedback systems. This study aims at assessing the impact of digital assessment feedback technologies on teaching practices in Ethiopian educational environment between 2023 and 2026. The study uses a Systematic Literature Review (SLR) and document analysis design to synthesis existing information from policy papers, national assessment reports, and scientific and grey literature on digital assessment systems. Sources were located using structured search tactics and reviewed against predetermined inclusion and exclusion criteria to guarantee relevance, quality, and credibility. The findings show that digital feedback systems have improved the timeliness, accessibility, and data-driven nature of feedback. Teachers are increasingly using performance analytics to refine teaching tactics, identify learning gaps, and improve student results. However, the review identifies ongoing challenges, such as limited teacher capacity for data interpretation, insufficient feedback integration into classroom practices, infrastructural limitations, and concerns about the validity, reliability, and personalization of automated feedback. The study comes to the conclusion that while digital assessment feedback systems show great promise for increasing the efficacy of instruction, their application is still inconsistent because of deficiencies in professional development, technological readiness, and policy alignment. The study recommends enhancing teacher data literacy, enhancing the usability and design of feedback systems, and making sure that curriculum objectives and assessment feedback are in line. To enable evidence-based teaching and long-term educational improvement in Ethiopia, high-stakes digital examinations must be continuously evaluated.

Keywords: Digital assessment systems, feedback systems, teaching practices, systematic review, Ethiopian education

703 Integrating Digital Feedback Systems for Continuous Evaluation of Teaching and Learning in Lower Secondary Schools in Uganda

Namigadde Salimah

The introduction of the Competence Based Curriculum in Uganda in 2020, has led to the routine incorporation of digital tools such as laptops, software, and the internet to enhance teaching and learning, shifting from traditional, passive methods to interactive, student-centred experiences in lower Secondary schools in Uganda. The increasing integration of digital technologies in education presents new opportunities to improve assessment practices, feedback mechanisms, and the evaluation of teaching and learning. In Uganda, secondary schools continue to face challenges

related to delayed feedback, limited monitoring of learner progress, and inadequate mechanisms for evaluating teaching and learning. This study explores the integration of digital feedback systems as a strategy for enhancing continuous assessment and improving the quality of teaching and learning in secondary schools in Uganda. The study examines how digital platforms such as Google Classroom, Moodle, Microsoft Teams, Kahoot! Quizizz, Socrative, Kolibri, and school management systems such as Kupaa and the KAWA Digital Content Platform can facilitate timely, interactive, and data-driven feedback between teachers and students. These tools enable teachers to provide instant responses to assessments, monitor learner progress, and adjust instructional strategies, thereby supporting improved learning outcomes and more informed instructional practices. Using a mixed-methods approach, the research will involve surveys, interviews, and document analysis from selected lower secondary schools in Uganda, that have adopted or are piloting digital assessment tools. The study aims to evaluate the effectiveness, accessibility, and usability of digital feedback systems in supporting formative assessment and continuous evaluation of teaching and learning. It will also explore teachers' and students' perceptions of these technologies and identify challenges such as infrastructure limitations, digital literacy gaps, device availability, and internet connectivity in secondary schools in Uganda. The findings will provide insights into how digital feedback systems can strengthen assessment practices, enhance teacher accountability, and promote learner-centred approaches in Lower secondary education in Uganda. The study will further propose recommendations for policymakers, school administrators, and educators on how to effectively integrate digital solutions to support continuous improvement in teaching and learning.

Keywords: Digital feedback systems, continuous assessment, teaching evaluation, learning outcomes, educational technology, digital learning platforms.

704 Examining the Accuracy of the Electronic Marking System Compared to Traditional Manual Marking Processes in the Context of Standard Seven Examinations in Tanzania: A Case of the National Examinations Council of Tanzania

Kehongo Jacob Siyange

The study examined the accuracy of the electronic marking system compared to traditional manual marking processes in the realm of standard seven examinations in Tanzania: A Case of the National Examinations Council of Tanzania. A survey research design was employed for the study. The study adopted a quantitative research approach for data collection and analysis. Quantitative research approach enabled the researcher to gather numerical data from the respondents, while providing easier way of managing and analyzing data. Primary data was collected using the questionnaires from 118 respondents who were selected conveniently. Data from the questionnaires were analyzed in mean and standard deviation. The study found that, the adoption of electronic marking systems is significant as they consistently outperform manual processes in terms of accuracy, reliability, and efficiency. Notably, the electronic marking system demystifies error free zone architecture, enhances transparency, and promote equitable grading, thus addressing longstanding challenges associated with manual grading methods. Moreover, the system's ability to streamline the grading process and facilitate error identification underscores its potential to revolutionize the educational assessment landscape in Tanzania. These findings have significant implications for educational authorities,

suggesting a compelling need to transition to electronic marking systems to ensure fair, accurate, and efficient grading practices that benefit both students and the educational system as a whole. The study concluded that, the comparison between the electronic marking system and the traditional manual marking process reveals that the latter is not only time-consuming and inefficient but also challenging to monitor and audit. The study's results shed critical light on the deficiencies of the manual process, particularly in terms of its lack of the highly sophisticated advanced features and capabilities, which are readily available in electronic marking systems. It was recommended that in order to ensure the successful implementation of electronic marking systems, it is crucial to invest in comprehensive training programs for educators and administrative personnel involved in the grading process.

Keywords: Electronic Marking System, Traditional Manual Marking Processes, Standard Seven Examinations.

705 Transforming Teachers Through Artificial Intelligence in The Preparation of Teaching Aids: A Case of Secondary Schools in Geita District, Tanzania

Masatu Daudi Masatu & Rosemary Makiya

The rapid adoption of Artificial Intelligence (AI) in education worldwide has reshaped the educational landscape by transforming classroom practices in diverse ways. This study examined how AI empowered teachers to design, develop, and devise teaching aids that are effective for students' learning. The study employed a qualitative case study approach in an attempt to gain in-depth understanding of the participants' experiences and perspectives. Data were gathered through individual and focus group interviews. Thirty-six (36) teachers from secondary schools were purposively selected to participate in the study. Data were thematically analysed to identify patterns related to phenomena under exploration. Findings revealed that artificial intelligence tools support the development of visual, audio, and audiovisual teaching aids. While Canva AI and DALL·E facilitate the creation of visual materials, Eleven Labs provides AI-generated audio explanations. Platforms such as Synthesia and Kahoot enhance the development of interactive audiovisual learning resources. However, limited digital literacy and unequal access to technology remained challenging. This study suggests that AI has significant potential to enhance teachers' ability to improve the preparation of teaching aids for better student learning outcomes.

Keywords: Artificial Intelligence; Teaching Aids; Teacher Empowerment; Digital Technologies; Secondary Education.

706 Digital Solutions for Assessment Feedback and Evaluation in Enhancing Competence-Based Learning in Tanzanian Secondary Schools

Paul Paschal Majengo

The transition to competence-based learning (CBL) in Tanzania reflects a broader global shift toward education systems that prioritize the development of transferable skills, critical thinking, and learner autonomy. Despite this reform, classroom practices in many secondary schools remain largely examination oriented, with limited integration of continuous assessment and student feedback mechanisms. This misalignment undermines the effective realization of competence-based outcomes. This study investigates the potential of digital solutions to transform assessment feedback and evaluation processes in support of CBL implementation in secondary schools across Sumbawanga District Council, Rukwa Region. Specifically, it examines how digital tools can enhance the quality, timeliness, and pedagogical relevance of feedback, thereby strengthening students' acquisition of core competences. The study is anchored in a mixed-methods design, combining quantitative and qualitative approaches to generate comprehensive insights. Data were collected from ten secondary schools (5 rural and 5 urban) through questionnaires administered to 95 teachers and 620 students, semi-structured interviews with 25 participants (teachers, administrators, and ICT coordinators), and classroom observations of 25 lessons. Selected digital platforms—such as Google Forms and learning management systems—were utilized to facilitate continuous assessment and real-time feedback. Quantitative data were analyzed using descriptive and inferential statistics (SPSS), while qualitative data underwent thematic analysis using NVivo software. The study is informed by constructivist learning theory and self-determination theory. Key findings indicate that digital assessment tools can significantly improve feedback timeliness (reducing response time from 5-7 days to same-day), increase assessment frequency (from 1.2 to 3.4 times weekly), and enhance student engagement when pedagogically integrated. However, effectiveness is mediated by teacher readiness, institutional support, and infrastructure adequacy. The study identifies distinct barriers in rural and urban contexts: rural schools face infrastructure constraints (92% report unreliable internet), while urban schools face primarily human capacity and institutional barriers (58% lack adequate training in competence-based assessment). Expected findings suggest digital solutions can improve alignment between assessment and competence based curricula and provide context-specific policy recommendations for education stakeholders in Tanzania including NECTA

708 Digital Solutions for Assessment Feedback in English Composition Writing: Lagos Senior Secondary School Students' Perspectives

Angela N. Obi, Efetobore I. Akpovwovwo, & Kolawole E. Orowole

The integration of learning management systems and AI-powered digital solutions for assessment feedback has tremendously transformed assessment practices, enhancing more efficient, timely and personalised feedback; especially in English composition writing. Hence, students in Lagos need to leverage these for improved academic performance. This study therefore assessed Lagos Senior Secondary School (SSS) students' perspectives on digital solutions for assessment feedback for English composition writing. Specifically, it investigated students' awareness, usage and perceived usefulness of digital solutions for assessment feedback for English composition writing in SSS in Lagos, Nigeria. Three research questions and two hypotheses guided the study: awareness of digital solutions, their usage and perceived usefulness; as well as gender and school type. Survey design was adopted. Population comprised all SSS3 students in Lagos. Multi-stage sampling technique was used in selecting respondents from both private and public schools. First, the state was already clustered into six education districts. Three districts were randomly selected. Only mixed schools were purposively selected to ensure that both males and females were represented. From each district, two public and two private schools were randomly selected. In each school, 15 students were randomly selected. A questionnaire was developed, validated and used for data collection. Data obtained were analysed using frequency counts, percentages and Chi-square. Results indicated, among others, that while some students (31%) were aware of the existence of few digital solutions for assessment feedback generally, majority of the students (79%) were not aware. Also, 85% of students who were aware, never knew that they could be used for assessment feedback and evaluation of English composition writing. 91% perceived the digital solutions as useful, but only less than 11% used them for English composition writing. Hence, it was recommended, among others, that English Language teachers in Lagos SSS should adopt the digital solutions for assessment feedback, teaching and learning of English composition writing to expose and encourage their students to embrace such digital solutions. Also, all education stakeholders should enlighten the students on the need to leverage digital solutions for assessment feedback and learning of English composition writing to make the process fascinating.

Keywords: Digital solutions, assessment feedback, English composition writing

711 Teacher Practices of Peer Learning and ICT Integration in Teaching and Assessment

Florence Kyaruzi

The move toward competence-based education requires teachers to adopt innovative practices, including peer learning and the integration of Information and Communication Technology (ICT) into teaching and assessment. This study investigates teachers' practices in implementing peer learning and integrating ICT in teaching and learning in Tanzanian primary schools. The study was conducted in 14 purposefully sampled primary schools across seven regions under the Strengthening Teacher Professional Development (STPDM) project in Tanzania. Data were collected using a four-

point balanced questionnaire scale and focus group discussions with 45 Tanzanian primary school teachers (26 female and 19 male). Data were analysed using descriptive and inferential statistics in SPSS version 26 and thematic procedures. The findings indicate a low level of ICT integration in teaching, learning, and assessment practices (M = 2.61) and a reasonable level of peer learning practices (M = 3.01). Specifically, teachers seldom use online resources in teaching and rarely apply ICT-based assessment tools to track student progress through formative feedback. Further, teachers provide limited support to students in developing digital literacy skills, including responsible use of internet information. Regarding peer learning, teachers moderately engage in collaborative practices such as inviting colleagues to learn from their best teaching practices or to give them feedback. Also, the findings indicate that teachers occasionally observe teaching practices used by colleagues in their class so as to improve their own teaching strategies. The findings imply that although peer learning and ICT integration offer valuable instructional opportunities, their integration remains limited. The study recommends enhancing teachers' competence in both peer learning and ICT integration in teaching and assessment.

Keywords: Assessment, ICT integration, peer learning, primary schools, teaching practices

712 Artificial Intelligence in Ugandan Secondary Schools: Adoption, Governance, and Equity.

Fabious Karls Ambama & Mary Kwajo Kwaka

The integration of Artificial Intelligence (AI) in education presents opportunities to enhance teaching quality, personalize learning, and streamline administrative processes. However, in Ugandan secondary schools, adoption remains uneven, with concerns regarding teacher preparedness, data governance, and equitable access. This study examined the influence of teachers' demographic factors, data privacy and protection measures, and equity of access on AI adoption. A cross-sectional survey was conducted with 101 secondary school teachers across government and private institutions. The sample was predominantly male (88.1%). Findings revealed a moderate level of AI adoption (AI Adoption Index M = 3.32, SD = 1.05). Multiple regression showed age (β = -0.41, p = .001) and teaching experience (β = -0.33, p = .003) negatively predicted AI adoption, whereas gender (β = 0.05, p = .62) and qualification (β = 0.12, p = .18) were not significant. Data privacy and protection measures were moderately established (Overall DPI M = 3.08, SD = 0.82), with adequacy (β = .29, p = .006) and implementation (β = .48, p < .001) significantly predicting AI adoption, while mere availability did not (β = .14, p = .186). Equity and access were moderate (Equity and Access Index M = 3.23, SD = 0.82), with private schools performing significantly better than government schools (F (1, 99) = 7.03, p = .009). Teachers reported moderate student awareness, limited access to devices, and variable fairness in AI-supported learning. Findings show that AI adoption depends on both human and institutional factors: robust data governance and targeted professional development—especially for older, experienced teachers—are critical. Equitable access to AI tools is necessary to prevent widening educational disparities. These findings advance theory and practice by showing how teacher demographics, institutional readiness, and equity jointly shape AI integration in education.

Keywords: Artificial Intelligence in Education, Teacher Demographics, Data Privacy and Protection, Equity and Access, Educational Technology

713 Digital Solutions for Assessment, Feedback and Evaluation of Teaching and Learning

Tito Paul Mende

The rapid advancement of digital technologies has transformed educational practices globally. One of the most significant developments is the adoption of digital solutions for assessment, feedback, and evaluation in teaching and learning. Traditional assessment systems based on manual grading and limited opportunities for continuous improvement which often delayed feedback that hinder the ability of teachers to monitor learning progress effectively. Digital technologies provide innovative ways to address these limitations by enabling automated grading, real-time feedback, learning analytics and collaborative evaluation methods. However, the advancement of educational technologies such as Learning Management Systems (LMS), online testing platforms and learning analytics tools has created opportunities for faster, more efficient and transparent processes of evaluating learning outcomes. Digital approaches not only simplify administrative tasks but also provide the quality of teaching and learning process. This paper investigates digital assessment technologies, useful tools for feedback and evaluation, the advantages and challenges associated with these systems and recommendations for effective implementation. Research shows that digital solutions enhance teaching effectiveness, improve student engagement, and provide data-driven insights for educational decision-making.

715 A Blueprint-Constrained, Human-Governed System for AI-Assisted Examination Paper Development at the Uganda National Examinations Board

Wanican Julian Okello & Opio Henry Joe

The Uganda National Examinations Board (UNEB) develops high-stakes national examinations for over 1,400,000 candidates annually. Uganda's transition to a Competency-Based Curriculum (CBC) has intensified demands on new skills on a test-development process that remains largely manual, placing pressure on the time, consistency, and curriculum coverage of examination papers. This paper presents the design of SAIGE-Paper, an AI-assisted examination paper development system built on three commitments: that artificial intelligence should propose rather than decide, that a machine-readable paper specification (a "blueprint") should constrain every generated paper, and that qualified human experts retain final approval over an auditable, secured artefact. We describe a seven-stage development lifecycle—paper specification, paper workspace, question allocation, authoring, readiness checking, packaging, and human governance—and the design rationale behind each stage. A distinguishing feature of the design is its local-first authoring engine, which can draw on manual authoring, an approved item bank, and a locally hosted large language model (served through Ollama) or a hybrid configuration, so that sensitive examination content need not leave the institution's infrastructure. Using Design Science Research, we report the completed problem-identification and design-and-development activities and set out a rigorous evaluation protocol covering item quality, curriculum coverage, blueprint conformance, governance integrity, and time

efficiency to be conducted in a subsequent phase. The contribution of this paper is therefore the artefact and its justificatory design knowledge rather than empirical performance claims, which we explicitly defer to the planned evaluation.

Keywords: AI-assisted assessment, blueprint-constrained generation, item banking, competency-based curriculum, human-in-the-loop, local large language models, examination security, design science research, Uganda National Examinations Board

716 Readiness for Digital Assessment in Tanzanian Secondary Schools in the Emerging Age of Artificial Intelligence: Evidence from Public and Private Secondary Schools

Yudatade D. Kessy & Glory G. Mphuru

Digital technologies and Artificial Intelligence (AI) have significantly simplified many aspects of human life. Their ability to provide timely feedback and efficiently manage large volumes of data makes them particularly valuable for addressing complex educational tasks such as teaching, learning, and assessment that previously relied heavily on human intellectual effort alone. The fast-growing integration of technology into educational assessment has transformed how learning outcomes are measured globally. However, readiness in many developing countries, such as Tanzania, to adopt digital assessment persists as insufficient. This qualitative multiple-case study explored the readiness of Tanzania's secondary schools for digital assessment, particularly amid the emerging age of artificial intelligence in public and private schools. The study was guided by the Digital Divide Theory, and data collection was primarily done through semi-structured in-depth interviews. The study involved 18 purposively recruited participants involving heads of schools, students, teachers, and ICT coordinators from selected schools in Dar es Salaam, Tanzania. Thematic analysis was employed in analysing the data. The study's findings revealed there is an uneven readiness for digital assessment between private and public schools. Public schools face challenges such as poor distribution of ICT infrastructure, internet connectivity, and insufficient digital competencies among teachers and students, which limit their readiness for digital assessment, while private schools show improved ICT infrastructure, internet connectivity, and digital competencies among teachers and students. Nevertheless, despite the limitations, particularly in public schools, participants demonstrated a positive attitude toward digital assessment. The study concluded that there are disparities in readiness for digital assessment across selected secondary schools in Dar es Salaam, Tanzania. Therefore, the study recommended that there should be a huge investment in ICT infrastructures, teacher training, and policy guidelines to increase readiness for the adoption of digital assessment in Tanzanian secondary schools.

Keywords: Digital assessment, Readiness, Digital Competencies, Artificial Intelligence.

717 Leveraging AI-Driven Scenario-Based Simulations to strengthen Continuous Assessment and Competence-Based Learning in Tanzania.

Crecencia V. Mwanilwa

Tanzania's Competency-Based Curriculum (CBC) seeks to shift schooling from rote memorization toward authentic demonstration of competencie: critical thinking, collaboration, creativity, communication, adaptability, and problem solving, especially among foundational learners. The reform intentionally targets early grades, so competencies become durable dispositions that underpin lifelong learning and national development goals under Tanzania Vision 2025. Despite clear policy articulation, implementation is limited by an authenticity deficit: assessment practices, routine classroom tasks, and over-reliance on summative examinations rarely reproduce decision-rich, contextual problems that make competencies visible. This desk-based qualitative study examines that gap by synthesizing national policy, regional literature, and international reviews to identify the problem's nature and to articulate theoretically grounded, practically feasible responses in the age of Artificial Intelligence (AI). Anchored in Kolb's Experiential Learning Theory, the paper proposes a human-in-the-loop model in which generative AI functions as an authoring and analytic engine to draft context-sensitive scenarios and trace learner decisions; teachers localize and curate scenarios, interpret AI analytics alongside qualitative evidence, and retain final evaluative authority; and interactive, immersive technologies explicitly augmented reality (AR) and virtual reality (VR), used selectively instantiate concrete experiences that yield observable evidence. The model foregrounds mobile and multimodal simulations as baseline options, reserves VR for targeted hubs, and emphasizes low-tech, scalable practices where infrastructure and access are limited. It situates the proposal within African debates on school-based continuous assessment, performance-based approaches, and culturally grounded assessment traditions, stressing complementarity with portfolios, community-engaged tasks, and formative practices rather than technological replacement. Because empirical evidence for GenAI-led assessment in low-resource foundational settings remains limited, the study prescribes an evidence-first trajectory: phased mixed-context pilots, mixed-methods evaluation, sustained teacher professional development, local content co-creation, and explicit equity metrics. Ethical and governance safeguards data minimization, local hosting where feasible, transparency, and teacher oversight are prerequisites. AI-scenario simulations therefore offer a promising, conditional instrument for enhancing authenticity if introduced through participatory design, rigorous evaluation, and policies that protect teacher agency and equitable access.

Keywords: Competency-Based Curriculum; Authentic Assessment; Continuous Assessment; Generative AI; Scenario-Based Simulations; Kolb's Experiential Learning; Teacher Agency; Tanzania; Augmented Reality; Virtual Reality

718 ICT Adoption and Quality of Competence Based Assessment in Tvet Institutions in Uganda

Innocent Karuhanga & Onesmus Oyesigye

The integration of Information and Communication Technology (ICT) into Technical and Vocational Education and Training (TVET) has become a critical strategy for improving the quality of competence-based assessment (CBA). This conceptual paper examines the relationship between ICT adoption and assessment quality in Uganda's TVET institutions. It focuses on three dimensions of ICT adoption digital technologies, internet connectivity, and electronic logbooks and evaluates their influence on reliability, validity, transparency, and efficiency of assessment processes. The paper also introduces teacher readiness as a mediating factor in ICT integration. Drawing on the Technology Acceptance Model and Constructivist Learning Theory, the study proposes a mixed-methods approach to investigate these relationships. Preliminary insights suggest that ICT adoption significantly enhances assessment accuracy, consistency, and transparency of assessment outcomes, although infrastructural and capacity constraints remain key barriers. The study contributes to policy, practice, and academic discourse on digital transformation in TVET assessment systems.

Keywords: ICT adoption, competence-based assessment, TVET, Uganda, assessment quality, digital learning

719 Head of Schools' Perspectives on the Implementation of the Revised School Curriculum in Tanzania: Evidence from Ruvuma and Dar es Salaam Regions

Dr. Godson Shendemuni Lema & Mr. Elineema Godson Moshi

In 2023, Tanzania introduced the Revised Secondary Education Curriculum which emphasizes competency-based, learner-centred, and skills-oriented approaches to teaching and learning. Despite its transformative intent, there is still limited empirical evidence on how school leaders experience and manage its early stages of implementation. This study examined school heads' perspectives regarding the rollout of the revised curriculum in the Ruvuma and Dar es Salaam regions. A descriptive analytical approach was used to explore trends and patterns to gain a better understanding of the study phenomena. The study utilized KoboToolbox as a digital platform for data collection and management, capturing responses from 177 heads of schools as part of a national monitoring exercise coordinated by the Tanzania Institute of Education. Findings reveal that most respondents acknowledge the relevance of the revised curriculum in promoting 21st-century skills, enhancing learner engagement, and fostering positive student attitudes. However, its implementation varies across schools and regions, reflecting broader or wider contextual disparities in resources and institutional capacity. Weak parental and community understanding of the revised curriculum was identified as a significant barrier to effective implementation. While most school heads indicated that teachers had undergone initial orientation and training, concerns persisted regarding the short duration, limited scope, and sustainability of these professional development initiatives. Thus, sustained investment in infrastructure, continuous and context-responsive professional development,

and stronger engagement with community stakeholders will enhance a successful implementation of the revised curriculum.

Keywords: Curriculum reform; curriculum implementation; school leadership; competency-based curriculum.

720 Use of Adaptive Learning Technologies for Personalised Feedback among Trainees with Special Needs in TVET Institutions in Uganda

Erina Nalunga

Adaptive Learning Technologies (ALT) have emerged as a promising approach for enhancing personalised learning and feedback for trainees with special needs in Technical and Vocational Education and Training (TVET). Despite Uganda's commitment to inclusive education, limited evidence exists regarding the availability, utilisation and institutional readiness for implementing adaptive learning technologies in TVET institutions. This study investigated the use of Adaptive Learning Technologies for personalised feedback among trainees with special needs in selected TVET institutions in Uganda. Specifically, it examined the availability and utilisation of adaptive learning and assistive technologies, identified institutional barriers and opportunities for their integration, and explored strategies for strengthening their adoption. A mixed-methods descriptive cross-sectional design was employed involving 261 participants, comprising trainees with special needs, vocational trainers and institutional administrators. Quantitative data were collected using structured questionnaires, while qualitative data were obtained through semi-structured interviews. Quantitative data were analysed using descriptive statistics, whereas qualitative data were analysed thematically.

The findings revealed that Adaptive Learning Technologies remain minimally utilised despite their potential to improve personalised feedback and learner engagement. Counselling services (45%) were the predominant support mechanism, while only 10% of the respondents reported using adaptive software or artificial intelligence-based learning technologies. Major implementation barriers included inadequate adapted practical equipment, insufficient ICT infrastructure, financial constraints, institutional stigma, rigid national assessment systems, unreliable internet connectivity and limited trainer competence. Respondents identified institutional capacity building, supportive policies, investment in digital infrastructure and subsidies for assistive technologies as the most important strategies for expanding the use of adaptive learning technologies.

The study concludes that Adaptive Learning Technologies have significant potential to improve personalised feedback, instructional accessibility and competency acquisition for trainees with special needs in Ugandan TVET institutions. Realising this potential requires coordinated investment in inclusive digital infrastructure, trainer capacity development, supportive policies and flexible assessment systems that promote learner-centred vocational education.

Keywords: Adaptive Learning Technologies; personalised feedback; special needs education; technical and vocational education and training; inclusive education; assistive technology; Uganda.

721 Beyond Efficiency: Mobile-Based Learning Management Systems and the Limits of Feedback Transformation in Tanzanian Teacher Education

[1]Enock Julius Kweka & [2]Nicholas Wachira.

The integration of digital technologies in teacher education is widely promoted as a pathway to improving assessment and learning outcomes in low and middle-income countries (LMICs). However, evidence on how such technologies transform pedagogical practices remains limited. This study examines how mobile-based Learning Management Systems (LMS) mediate assessment feedback practices in a Tanzanian Teachers' Colleges, with particular attention to the depth and nature of feedback processes. Drawing on a pragmatic mixed-methods case study involving 31 participants (student teachers, tutors, and institutional leaders), the study integrates survey data and semi-structured interviews to analyze patterns of LMS use. The findings show that while LMS platforms significantly enhance the *efficiency* of feedback particularly in terms of timeliness and accessibility they do not, in themselves, transform its pedagogical quality. Feedback practices remain predominantly corrective, non-iterative, and tutor-centred, reflecting a persistence of single-loop learning processes. The study further demonstrates that the pedagogical impact of LMS-mediated feedback is shaped by the interaction of tutor readiness, institutional capacity, infrastructural constraints, and socio-cultural norms governing teacher–student relationships. These factors limit the potential for dialogic and reflective (double-loop) feedback, even where technological affordances exist. By integrating TPACK, SAMR, Feedback Literacy, and organizational learning perspectives, the study contributes a socio-technical understanding of digital feedback in teacher education. It argues that digital transformation in LMICs contexts requires alignment between technological innovation, pedagogical practice, and contextual conditions. The paper offers policy-relevant insights for designing sustainable and context-sensitive digital assessment systems in sub-Saharan Africa.

Keywords: Mobile-based LMS, assessment feedback, teacher education, Tanzania, feedback literacy, digital learning

722 Influence of Multimedia Technology Systems on Students' Practical Skills Acquisition in Technical Colleges in Nigeria

Mohammed Aminu Mohammed, Pius Osaigbovo Stephen & Enojo Ukamaka Vivian, Irene Etarefe Ipogah, & Irene Ovekairi Iluobe

Technical education as a vital component of Nigeria's educational system equip students with the practical skills and knowledge required to meet the country's growing industrial and economic demands. The integration of multimedia technology into technical education has significantly improved teaching and learning processes by enhancing students' motivation, retention ability, creative and practical competence. Multimedia Technology has demonstrated significant potential in improving learning outcomes across various contexts, effectiveness in Nigerian technical colleges remains underexplored. The study adopted a mixed methods research design that integrates both quantitative and qualitative approaches. A stratified random sampling technique was used to select 600 students and 99 teachers from the six geo-political zones. One questionnaire on influence of

multimedia system on Students Practical Skills was used and Cronbach Alpha of 0.87 reliability coefficient was obtained. The data were analysed using mean and standard deviation. The findings revealed that the students who used multimedia technology demonstrated significantly greater improvement in practical skills compared to those who did not use the system. A greater number of students reported a better understanding of practical tasks, while instructors noted improved student engagement and reduced assessment time. The study underscores the importance of multimedia technology systems in improving students' confidence in performing practical tasks. Instructors' guidance complemented digital feedback, led to improved learning outcomes and increase students' interest in technical education. Based on the findings, the study recommends the integration of multimedia technology systems in all the technical colleges in Nigeria, increased government funding, steady power supply, training and re-training of instructors, etc to maximize the benefits of multimedia technology systems in technical colleges.

Keyword: Multimedia Technology, practical skills technical colleges, student engagement, and skilled workers

723 Investigating the Comparability of AC Grade in LGCSE Core and Extended Physical Science Using Performance at BSc Programme

Moeketsi Rakhosi

This study investigates the comparability of a grade C obtained in Core Physical Science and a grade C obtained in Extended Physical Science as entry qualifications for the Bachelor of Science (BSc) programme at a university in Lesotho. Admission into the BSc programme requires candidates to obtain at least a grade C in Physical Science. However, Physical Science is assessed through two different options: Core and Extended at LGCSE. While Core candidates can achieve a maximum grade of C, Extended candidates can achieve grades up to A*. This raises concerns about whether the same grade obtained from the two streams reflects equivalent academic preparedness for science-related university studies. The study aims to determine which group of candidates, Core or Extended, is better able to adapt to university science courses and which group is more likely to fail during their studies. A comparative follow-up approach was used to examine the academic performance of ten BSc students enrolled at a university in Lesotho, consisting of five students who obtained a C grade through the Core option and five students who obtained a C grade through the Extended option. Data were collected using students' university passing records and performance outcomes in science courses, this data was then analysed using Artificial Intelligence (AI). The findings of the study are expected to provide insight into the academic comparability of the two categories of Physical Science qualifications. The research further seeks to establish whether students from the Extended stream demonstrate stronger adaptation and performance in university science programmes than those from the Core stream. Since failure rates in science-related courses are generally high, the study also explores which category of students is more vulnerable to academic failure. The study may contribute to policy discussions on university admission requirements, assessment standards, and curriculum alignment between secondary and tertiary science education in Lesotho.

Keywords: comparability AI, core, extended, physical science, performance, BSc

724 Integration of Assessment Strategies and Academic Achievement at Advanced Secondary School Level in Wakiso District, Uganda

Josephine Mutonyi Othieno

Integration of assessment strategies in the teaching and learning process is crucial for excellent academic achievement of students at advanced secondary level in order to progress to High Education Institutions (HEIs). Lack of various strategies in the teaching and learning activities has hindered quality academic achievement at advanced level that has consequently led to poor assessment results, low completion and transition rates to HEIs. This study examined the relationship between integration of strategies by teachers and academic achievement of students at advanced level in secondary schools in Wakiso district. The study deployed the cross sectional research design that accommodated both quantitative and qualitative methodology. The study based on primary and secondary data through thematic and regression analysis. The results from the quantitative data indicated a significant positive correlation of $r = 0.456$, $p < 0.05$ between integration of strategies and academic achievement. Regression analysis further reflected substantial impact of 42.3% integration of strategies on academic achievement. The thematic analysis of qualitative data emphasized the importance of integration of strategies in improving student outcomes at the advanced level. However, some teachers exhibit minimal application of the assessment strategies in the teaching and learning process. Recommendations were made to the Ministry of Education and Sports to retool teachers in integration of assessment strategies skills in the teaching learning activities. The Directorate of Education Standards to include the integration of strategies in the frameworks on the inspection of schools and availability of digital assistive tools. School administrators should supervise teachers in the use of digital tools to integrate strategies of learner's involvement in assessment activities, quality assessment scoring and timely assessment feedback during the teaching learning activities to enhance academic achievement at advanced level.

Key words: Assessment Strategies, Teaching Learning activities, Learner's Involvement, Assessment Feedback, Academic Achievement, Advanced Level.

725 A Restorative Approach to Examination Integrity: The Unified Tertiary Matriculation Examination (UTME) and the Case for a Digital Remedy Model

Mukhtar Ozovehe SADIKU

The cancellation of examination results remains the default sanction for academic malpractice in high-stakes testing. However, this punitive approach fails to address systemic behavioral issues and imposes significant social costs on candidates. This paper aims to develop and validate a Restorative Examination Integrity Model (REIM) as an alternative accountability framework for bodies such as Nigeria's Joint Admissions and Matriculation Board (JAMB). Drawing on a case study analysis of JAMB's operational data and applying principles of restorative justice theory, this conceptual paper constructs a four-phase digital intervention framework powered by artificial intelligence. The analysis identifies four critical phases for an effective, AI-driven digital remedy: (1) **Diagnostic Breach Assessment:** Leveraging AI algorithms for automated categorisation of infractions based on severity, context and candidate history; (2) **Targeted Rehabilitation:** Deploying digital ethics remediation courses adapted to the candidate's specific breach profile; (3) **Remedial Competency Assessment:** Implementing secure digital testing protocols to verify that candidates have internalised the ethical standards and achieved the required academic benchmarks; and (4) **Systemic Feedback Integration:** Using AI-powered analytics to track reintegration outcomes and provide actionable data for continuous enhancement of examination policies and protocols; The paper critically examines the inherent security dilemma addressing how AI can both fortify and potentially introduce new vulnerabilities to e-assessment integrity. Key implementation challenges identified include legal constraints, institutional adaptability, and public perception. The study concludes that REIM does not alleviate consequences but makes them developmental rather than merely punitive, transforming a potential security dilemma into a restorative opportunity. It is recommended that examination bodies pilot the REIM framework to foster accountability and internalisation of ethical norms, offering a significant contribution to global assessment discourse.

Keywords: Restorative Assessment, Examination Integrity, Academic Integrity Breaches, High-Stakes Testing, Digital Remedy, Artificial Intelligence, Alternative Accountability

726 Advancing Secure e-Assessment in the Age of Artificial Intelligence: The Role of the Joint Admissions and Matriculation Board (JAMB), Nigeria

Aisha Muhammad

Artificial Intelligence (AI) is reshaping educational assessment at an unprecedented pace, redefining how high-stakes examinations are designed, delivered and secured. For national examination bodies managing large candidate populations, through this technological shift presents both opportunities for innovation and responsibilities for safeguarding examination integrity. In Nigeria, the Joint Admissions and Matriculation Board (JAMB) has institutionalised the Computer-Based Test (CBT) as the primary mechanism for tertiary admission assessment, significantly improving efficiency, transparency and public confidence in the examination process. As AI-driven technologies

increasingly influence digital assessment ecosystems, there is a growing need to examine how secure e-Assessment can be sustained within this evolving environment. This study explores the role of JAMB in advancing secure e-Assessment in the age of Artificial Intelligence. Using a qualitative case study approach, data were obtained through documentary analysis of JAMB operational guidelines, quality assurance frameworks, policy documents and relevant scholarly literature on AI, e-Assessment and examination security. The study examines existing institutional practices and explores how emerging AI applications can complement current security mechanisms to strengthen examination integrity. The findings indicate that the sustainability of secure e-Assessment depends not only on technological advancement but also on the effective integration of intelligent security systems, quality assurance mechanisms and institutional governance. The study identifies five strategic pillars for advancing examination integrity: intelligent candidate authentication, AI-enhanced examination monitoring, predictive security management, AI-supported quality assurance and ethical AI governance. These pillars form the basis of an AI-Driven Framework for Examination Integrity proposed by the study. The paper concludes that AI should be viewed not as a threat to examination systems but as a strategic tool for strengthening transparency, accountability and operational resilience. It recommends continuous investment in adaptive security architecture, responsible AI deployment, staff capacity development and collaborative knowledge sharing among examination bodies. By highlighting JAMB's experience and proposing a practical framework for future application, the study contributes to ongoing discussions on modernising educational assessment while preserving the credibility and integrity of high-stakes examinations across Africa.

Keywords: e-Assessment, Artificial Intelligence, Examination Security, Computer-Based Test, Quality Assurance, JAMB

CONFERENCE DELEGATES

No.	FULL NAME	EMAIL	PHONE NUMBER	COUNTRY
1.	Kemran Mestan	kemran.mestan@acer.org	61402582165	AUSTRALIA
2.	Stephanie Templeton	stephanie.templeton@acer.org	61431917755	AUSTRALIA
3.	Musa Saimon	bromusa40@gmail.com	067761719519	AUSTRIA
4.	Lina Ktaili	l.ktaili@unesco.org	15146536999	CANADA
5.	Yanhong Zhang	ya.zhang@unesco.org	14385438720	CANADA
6.	Jivitius Ching'oro Sabatho	jivitius.sabatho@yahoo.com	255767274172	CHINA
7.	Lindiwe Sibandze	sibandze@exmcouncil.org.sz		ESWATINI
8.	Matsebula Vuyisila L.	matsebula.v@examscouncil.co.sz		ESWATINI
9.	Mududzi Hlophe	hloph.m@examscouncil.org.sz		ESWATINI
10.	Sindi Nonduduzo Simelane	masuku.s@examscouncil.org.sz		ESWATINI
11.	Siphiwe Sibiya	sibiya.s@examscouncil.org.sz		ESWATINI
12.	Awol Nurhussein	Awol.nurhussein@savethechildren.org	251911608428	ETHIOPIA
13.	Effa Gurmu Bati	epha2u@gmail.com	251911174860	ETHIOPIA
14.	Endale Atile	end2get@gmail.com	0947407652	ETHIOPIA
15.	Yilikal Wondimeneh Demissie	yilikal.wondimeneh@eaes.et	251911514292	ETHIOPIA
16.	Aurélia Rabe	aurerabe@yahoo.fr	0033629112707	FRANCE
17.	Abdoulie Minteh	aminteh@waecintl.org		GAMBIA
18.	Alhagie Dampha	damphaalhagie76@gmail.com	2207231804	GAMBIA
19.	Famara Sanneh	fsanneh@waecintl.org	2203442788	GAMBIA
20.	Fatimata Hydara	ftmthydara1@gmail.com	2203455002	GAMBIA
21.	Gumbo K. Cham	gkcham@waecintl.org	2203926315	GAMBIA
22.	Musa B.B. Conteh	mbconteh@waecintl.org	2207595246	GAMBIA
23.	Sosseh Jagne Gillen	sjagne-gillen@waecintl.org	2207716190	GAMBIA
24.	Juliane Hencke	juliane.hencke@iea-hamburg.de	491777555465	GERMANY
25.	Oliver Neuschmidt	dana.kelly@iea-hamburg.de		GERMANY
26.	Alexander Sarpong	lexixx001@gmail.com	0240274091	GHANA
27.	Anita Frances Cordei Collison	cordei2012@gmail.com	0244386357	GHANA
28.	Billy Enos	bkenos@waecintl.org	233246199977	GHANA
29.	Boateng Owusu-Ansah	oaboateng@waecgh.org	0240274091	GHANA
30.	Ceracus Gbevillah	gbevillah@gmail.com	0240274091	GHANA
31.	Clement Osei Antwi	clementoseiantwi@gmail.com	233249527146	GHANA
32.	Cornelius Y. Azumah	cyazumah@waecintl.org	0240274091	GHANA

No.	FULL NAME	EMAIL	PHONE NUMBER	COUNTRY
33.	Cyril L. Cofie	clcofie@waecintl.org	0240274091	GHANA
34.	Demianus Ojijeogu	gdemian4u@yahoo.com	233507779196	GHANA
35.	Ebenezer Ankamah	eankamah@waecintl.org	0242074944	GHANA
36.	Emmanuel Nyarko	enyark2000@yahoo.com	0240274091	GHANA
37.	Ernest Agyapong	agyapos@yahoo.com	0240274091	GHANA
38.	Ferdinand A. Dongdem	fdongdem@yahoo.com	0240274091	GHANA
39.	Isaac Tetteh	itetteh@waecintl.org	233242902842	GHANA
40.	Jallow Sainey	jsainey@waecintl.org	233503645490	GHANA
41.	John Kapi	jkkapi@yahoo.com	0240274091	GHANA
42.	Joseph Ofori-Mensah	rhysofori@gmail.com	00233246745220	GHANA
43.	Kwaku Dankwa	kdankwa@waecintl.org	233243720986	GHANA
44.	Michael T. A. Donkor	mikelaid@yahoo.com	0240274091	GHANA
45.	Pateh Bah	pbahwaecintl.org	233503645490	GHANA
46.	Rosemond Wilson	rwilson@waecintl.org	0240274091	GHANA
47.	Salome Palm	spalm@waecintl.org	233243320335	GHANA
48.	Yayra Dzakadzie	yayra.dzakadzie@acer.org	233244883998	GHANA
49.	Rohit Gupta	rohit@fbp.co.in	00919319123429	INDIA
50.	Mario D'avino	dr.mariodavino@gmail.com	3338059609	ITALY
51.	Takashi Shirao	t.shirao@sekonic.co.jp	81339782375	JAPAN
52.	Toshiya Eguchi	toshiya.eguchi@sekonic.co.jp	81339782375	JAPAN
53.	Alex Njiiri	alex.njiiri@cambridge.org	254722251638	KENYA
54.	Andrew Otieno	andrewotieno@knec.ac.ke	0725610009	KENYA
55.	Ben Maisiba Nyangwara	info@nynp.ac.ke, hod-business@nynp.ac.ke cc benmaisiba32@gmail.com		**KENYA**
56.	Benjamin Cheptiony	bcheptiony7@gmail.com	0799801955	KENYA
57.	Carolyne Kananu	George.caas@gmail.com		KENYA
58.	Catherine Masila	cmasila@knec.ac.ke	0725610009	KENYA
59.	Charles Makokha	cmakokha@knec.ac.ke	0725610009	KENYA
60.	Christopher Cheboiboch	cheboibochchris@gmail.com	0799801955	KENYA
61.	Collins Owino	owinoc@nita.go.ke	254722428333	KENYA
62.	David Gikobo	dgikobo@knec.ac.ke	0725610009	KENYA
63.	David Muiruri	dmuiruri@knec.ac.ke	0725610009	KENYA
64.	David Njengere	ceo@knec.ac.ke	0725610009	KENYA
65.	Diana Kalali-Makau	dmakau@knec.ac.ke	0725610009	KENYA
66.	Dianah Kaloki	dkaloki@usiu.ac.ke	254722862155	KENYA
67.	Disha Rana Jaswal	disha.rana@upgradenterprise.in	254750237417	KENYA
68.	Elizabeth Obade	eobade@knec.ac.ke	0725610009	KENYA

No.	FULL NAME	EMAIL	PHONE NUMBER	COUNTRY
69.	Emmy Mugailwa	emugailwa@knec.ac.ke	0725610009	KENYA
70.	Enock Wanyama	ewanyama@knec.ac.ke	0725610009	KENYA
71.	Evans Kosgei	kosgeievans@gmail.com	0799801955	KENYA
72.	George Oluoch	george.caas@gmail.com	0706048874	KENYA
73.	Gilbert Ng'etich	ngetichgilbert303@gmail.com	0799801955	KENYA
74.	Ibrahim Otieno	iotieno@knec.ac.ke	0725610009	KENYA
75.	John Mwende	jmwende@knec.ac.ke	0725610009	KENYA
76.	Johnpaul Maswayi	jmaswayi@knec.ac.ke	0725610009	KENYA
77.	Jonah Tanui	jjkipkorir@gmail.com	0799801955	KENYA
78.	Joseph Githinji	josephgithinji@knec.ac.ke	0725610009	KENYA
79.	Joseph Migwi	jmigwi@knec.ac.ke	0725610009	KENYA
80.	Joseph Nyaga	jnyaga@knec.ac.ke	0725610009	KENYA
81.	Justus Wabwile	juswabwile@gmail.com	2540721446371	KENYA
82.	Kisilu Mashtakh Kitainge	kisilukitainge@gmail.com	0724390313	KENYA
83.	Lindah Mukono	lindahwanyaga@gmail.com	254707045166	KENYA
84.	Marcellus Owuor Otieno	marcellus.otieno78@gmail.com	254721997245	KENYA
85.	Margaret Nguu	margaret.nguu@hrmpeb.or.ke	0717604582	KENYA
86.	Martine Busolo	mbusolo@strathmore.edu	254724887440	KENYA
87.	Millicent Korir	milliejebsang@gmail.com	0799801955	KENYA
88.	Moses Kitony	moseskips100@gmail.com	0799801955	KENYA
89.	Nicholas Mang'ata	nmangata@knec.ac.ke	0725610009	KENYA
90.	Patricia Omunyang'oli	pomunyangoli@knec.ac.ke	0725610009	KENYA
91.	Peris Kiptoo	jelagatperis07@gmail.com	0799801955	KENYA
92.	Peter Chirchir	pkipyegon@cle.or.ke	254728526003	KENYA
93.	Peter Kigwilu	pkigwilu@usiu.ac.ke	254722371839	KENYA
94.	Philip Cheon	cheonphilip42@gmail.com	0799801955	KENYA
95.	Phillip Kimanthi	pkimanthi@knec.ac.ke	0725610009	KENYA
96.	Priscilla Kurgat	priscillakurgat@gmail.com	0799801955	KENYA
97.	Rona Kerubo Kebati	rkebati@knec.ac.ke	0725610009	KENYA
98.	Samson Soshyo	samsonsoshyo@gmail.com	0720988568	KENYA
99.	Samuel Mwambura	smwambura@knec.ac.ke	0725610009	KENYA
100.	Sarah Kasana	skasana@knec.ac.ke	0725610009	KENYA
101.	Sella Terrie Kisaka	sellaterrie01@gmail.com	0722644387	KENYA
102.	Seraphine Mukami	smukami@knec.ac.ke	0725610009	KENYA
103.	Tobias O. Owiti	towiti@knec.ac.ke		KENYA
104.	Wilson Chelimo	wchelimo@knec.ac.ke	0725610009	KENYA
105.	Zipporah Ndung'u	zndungu@knec.ac.ke	0725610009	KENYA

No.	FULL NAME	EMAIL	PHONE NUMBER	COUNTRY
106.	Allwell Sunny Njigwum	allwellsn@gmail.com	63147484	LESOTHO
107.	Kananelo Mohasi	mohasik@examscouncil.org.ls	26663921010	LESOTHO
108.	Lisema Ntsasa	ntsasal@examscouncil.org.ls	26658037835	LESOTHO
109.	Malepa-Qhobela, M.(Phd)	malepa.qhobela@examscouncil.org .ls		LESOTHO
110.	Moeketsi Rakhosi	rakhosim@examscouncil.org.ls	26658494355	LESOTHO
111.	Mokhitli Khoabane	khoabanem@examscouncil.org.ls	26658855321	LESOTHO
112.	Polo Lemphane	lemphanep@examscouncil.org.ls	26662844909	LESOTHO
113.	Thabo Khoboko	khobokot@examscouncil.org.ls	26658845155	LESOTHO
114.	Tumelo Motai	motait@examscouncil.org.ls	57584532	LESOTHO
115.	Phenyane Tlali	tlalip@examscouncil.org.ls		LETHOTO
116.	Boss Chikamba Kamanga	bkamanga@gmail.com	265888706604	MALAWI
117.	Dorothy Nampota	dnampota@maneb.edu.mw	265888709159	MALAWI
118.	Shadreck Mhango	shadmhango@gmail.cm	265884391800	MALAWI
119.	Wills Khama	bkamanga@maneb.edu.mw	265999368078	MALAWI
120.	Yohane Steven Dewa	ysdewa90@gmail.com	265994120440	MALAWI
121.	Clemmentine Garises	clemmentine.tsumis@gmail.com	264811461640	NAMIBIA
122.	Dalia Mwiya	Dalia.Mwiya@meiysac.gov.na	264811484887	NAMIBIA
123.	Arnold Brouwer	a.j.brouwer@rcec.nl	0031623177877	NETHERLANDS
124.	Dana Kelly Springer	dana.kelly@iea-hamburg.de	12024864648	NETHERLANDS
125.	Julian Fraillon	dana.kelly@iea-hamburg.de		NETHERLANDS
126.	Adam Abdulhameed	sheikhadamabdulhameed@gmail.com	08131393016	NIGERIA
127.	Adenike Adedigba, Akinlua,	aaakinlua@waecintl.org		NIGERIA
128.	Adeosun Oluwatosin. Adebowale,	oaadeosun@waec.org.ng		NIGERIA
129.	Adesola Esuola	adesolaesuola@gmail.com	08035253219	NIGERIA
130.	Adesola Kudehinbu	adesolakud@gmail.com	2348032444281	NIGERIA
131.	Adeyemi Ayodele Adebisi	aaadebisi@waec.org.ng	08055277113	NIGERIA
132.	Adunola, Osoba	aosoba@waecintl.org		NIGERIA
133.	Aisha Muhammad	aeeshabarry@gmail.com	07036972000	NIGERIA
134.	Ajayi Gabriel Olatubosun	tunbosungabriel@yahoo.com	08060263450	NIGERIA
135.	Alex Onyia	winexviv@gmail.com	08057081497	NIGERIA
136.	Ambrose Akporobaro Okelezo	aaokelezo@waec.org.ng	08033867991	NIGERIA
137.	Ambrose Okelezo	aaokelezo@waecorg.ng	08033867991	NIGERIA

No.	FULL NAME	EMAIL	PHONE NUMBER	COUNTRY
138.	Amos Josiah Dangut	ajdangut@waec.org.ng	08032737393	NIGERIA
139.	Benjamin Bargu	drbenjaminbs@gmail.com	+23408034105403	NIGERIA
140.	Busari Atinuke.Rashidat	arbusari@waec.org.ng .o		NIGERIA
141.	Chigoziem Susan Metu	chigoziem2@yahoo.com	08033819856	NIGERIA
142.	Dauda Adeniyi Lawal	dalawal@waec.org.ng	08037148494	NIGERIA
143.	David Oluyemi Fatunmbi	dofatunmibi@waec.org.ng	8063690804	NIGERIA
144.	David Oluyemi Fatunmibi	hnosecretariatlagos@waecintl.org	8063690819	NIGERIA
145.	Deborah Alonge	debeelab@gmail.com	08143144314	NIGERIA
146.	Dung Fom Fulus	fulusdung11@gmail.com	08062594745	NIGERIA
147.	Ebenezer J. Etim	drebenezerjetim@gmail.com		NIGERIA
148.	Edmund Osayuki Iyawe	iyawe.edmund@gmail.com	08063743550	NIGERIA
149.	Edmund Osayuki Iyawe	eoiyawe@waecintl.org	09071736989	NIGERIA
150.	Edwin Bassey	EBASSEY@NOUN.EDU.NG	0803670098	NIGERIA
151.	Emmanuel Adelakun	emmanuel.olalekan@gmail.com	08037489414	NIGERIA
152.	Emmanuel Raymond	emmanuelraymond2@gmail.com	08037555045	NIGERIA
153.	Emmanuel Raymond	emmanuelraymond2@gmail.com ,		NIGERIA
154.	Enatomen M. A	priscilla.atte@gmail.com,		NIGERIA
155.	Enojo Ukamaka Vivian	vivianenojo@gmail.com,		NIGERIA
156.	Fanimokun Adebayo Ayo	aafanimokun@waec.org.ng		NIGERIA
157.	Feyike Funmilayo Adeleye	ffadeleye@waec.org.ng	08023461176	NIGERIA
158.	Folake Bosede Eweje	ewejefolake@gmail.com	2348034516889	NIGERIA
159.	Grace Onoja	geeonoja@gmail.com	08067832283	NIGERIA
160.	Gregory Obawharevwo Okagbare	ookagbare@noun.edu.ng	08036661007	NIGERIA
161.	Haruna Aminu	harunaaminu20@gmail.com	08034534666	NIGERIA
162.	Haruna Ojoanyonu Abdullahi	haruspicee@yahoo.com	2347035104609	NIGERIA
163.	Hiradi Solomon	KHVincent@waec.org.ng	08035914169	NIGERIA
164.	Ibrahim Adeyemi Abeeb	hibee619@gmail.com	08066444119	NIGERIA
165.	Ibrahim Ayobami Falola	ayofalola240@gmail.com	09116006006	NIGERIA
166.	Ihedoro C. B.	priscilla.atte@gmail.com,		NIGERIA
167.	Ijeoma Chikezie	drijeomajchikezie@gmail.com	08030975128	NIGERIA
168.	Innocent Ezenwanne	ucheezen@yahoo.com	23408035063496	NIGERIA
169.	Irene Etarefe Ipogah	ipogahirene@gmail.com,		NIGERIA

No.	FULL NAME	EMAIL	PHONE NUMBER	COUNTRY
170.	Irene Ovekairi Iluobe	ireneovekairi@gmail.com		NIGERIA
171.	Isaac Olabanji	isaac.olabanji@yahoo.com	08066768623	NIGERIA
172.	Jegede M.	priscilla.atte@gmail.com,		NIGERIA
173.	Jeremiah Magaji	jeremiah.magaji@microbridge.com.ng	2348034528306	NIGERIA
174.	Johnson Adebiyi	johnsonadebiyi8@gmail.com	08033070759	NIGERIA
175.	Julius Mapis Daniel	jmdaniel@waec.org.ng	07038163782	NIGERIA
176.	Kabir Mohammed	admin@microbridge.com.ng	2348064758255	NIGERIA
177.	Kawu I. O.	ibkawu@gmail.com, priscilla.atte@gmail.com,		NIGERIA
178.	Kazeem. B	Kazeembalogun@gmail.com		NIGERIA
179.	Lucky Egho Adamu	leadamu07@yahoo.com	08028412738	NIGERIA
180.	Mohammed Aminu Mohammed	mammf2005@yahoo.com, 2		NIGERIA
181.	Muhyideen Jumobi	jumobim@gmail.com	2348123770177	NIGERIA
182.	Mukhtar Sadiku	sadikumukhtarozovehe@gmail.com	08160027269	NIGERIA
183.	Nasiru Ibrahim	yaronasiru31@gmail.com	08061264658	NIGERIA
184.	Nathaniel Ethe	nathaniel.ethe@descoem.ng.edu	-2348035014379	NIGERIA
185.	Nnenna Nancy Okafor-Chukwuma	nnchukwuma@noun.edu.ng	08036661007	NIGERIA
186.	Ogundele Isioma.Benedicta.	ibogundele@waec.org.ng		NIGERIA
187.	Olalekan Salami Ojuko	ola.ojuko@morgengreen.com	09116006006	NIGERIA
188.	Olumuyiwa Oluwanishola	olutitusolu@gmail.com	08069123600	NIGERIA
189.	Oluwatosin Adeosun	oaadeosun@waec.org.ng	08030661249	NIGERIA
190.	Oluwatoyin Adeyinka-Akintayo	oadeyinka-akintayo@waecintl.org	2348166553647	NIGERIA
191.	Oluwatoyosi Aduloju	oaaduloju@waec.org.ng	2348051017909	NIGERIA
192.	Oriyomi Olorunwa, Olubanwo	ooolubanwon@waecintl.org		NIGERIA
193.	Oriyomi Olubanwo	ooolubanwo@waec.org.ng	2347055862982	NIGERIA
194.	Oyinlola Famosa	ola@mindwalks.org	08091835318	NIGERIA
195.	Peter Oyewole	peteroyewole64@gmail.com	08067765868	NIGERIA
196.	Pius Osaigbovo Stephen	osaigbovopius70@gmail.com,		NIGERIA
197.	Priscilla Atte	priscilla.atte@gmail.com	07033963252	NIGERIA
198.	Prof. Yahuza Sulaiman Imam	yahuzas@yahoo.com	07037058765	NIGERIA
199.	Professor Dantani I. Wushishi	deewushishi2000@gmail.com		NIGERIA
200.	Rafiu Atoyebi	roatoyebi@waecintl.org	2348062492889	NIGERIA

No.	FULL NAME	EMAIL	PHONE NUMBER	COUNTRY
201.	Rasheed A.	priscilla.atte@gmail.com,		NIGERIA
202.	Samuel Adedeji	samdoannex@gmail.com	07069631931	NIGERIA
203.	Segun Aina	ejayamoreus@gmail.com	08130565522	NIGERIA
204.	Shehu Tijanni Babajide	stbabajide@waec.org.ng		NIGERIA
205.	Sulaiman, N.O	nabeelolosun@gmail.com		NIGERIA
206.	Suleiman Danlami Kum	sdkum@waec.org.ng	08036155669	NIGERIA
207.	Tunde A. Oladokun,	abramtunde2@gmail.com		NIGERIA
208.	Uchenna Sydney Ajunwa Osuji	uosuji@noun.edu.ng	08036661007	NIGERIA
209.	Uduma Oji Uduma	Uuduma@noun.edu.ng	08036661007	NIGERIA
210.	Uzonwanne J.N	priscilla.atte@gmail.com,		NIGERIA
211.	Ven. Ayobode Mayokun, Akinbuluma,	amakinbuluma@waecintl.org		NIGERIA
212.	Vincent Anosike Asuru	asuruv@gmail.com	08037944039	NIGERIA
213.	Yahaya Abdullahi	yahayaabdullahi@abu.edu.ng	08034699664	NIGERIA
214.	Ahmed Warsame	asaahid@gmail.com	252907794506	SOMALIA
215.	Maria Ahmed	qualityassurancedep@moe.gov.so	252616798544	SOMALIA
216.	Andy Thulo	andy.thulo@umalusi.org.za	0844014482	SOUTH AFRICA
217.	Anil Kanjee	KanjeeA@tut.ac.za	27833259705	SOUTH AFRICA
218.	Brenda Zanele Mbatha	brenda@natu.org.za	0636881734	SOUTH AFRICA
219.	Bridget Mthembu	Mthembu.b@dbe.gov.za	0027781479670	SOUTH AFRICA
220.	Confidence Dikgole	Thatheu@ieb.co.za	0828212717	SOUTH AFRICA
221.	Dumela Ntombikayise Mohlaba	MohlabaDN@edu.limpopo.gov.za	0798717959	SOUTH AFRICA
222.	Eva Sujee	eva.sujee@umalusi.org.za	0835562724	SOUTH AFRICA
223.	Evan Papier	evan.papier@westerncape.gov.za	0766766141	SOUTH AFRICA
224.	Hellen Ntombifuthi Mkhwanazi	hellenmkhwanazi793@gmail.com	0827675792	SOUTH AFRICA
225.	Hilton Visagie	visagie.h@dbe.gov.za	27817932182	SOUTH AFRICA
226.	Jaco Roos	jaco@coltech.co.za	27823794579	SOUTH AFRICA
227.	Kamogelo Matenchi	kamogelo.matenchi@gmail.com	0790383940	SOUTH AFRICA
228.	Lucia Bredenkamp	lucia.bredenkamp@westerncape.gov.za	0726504090	SOUTH AFRICA

No.	FULL NAME	EMAIL	PHONE NUMBER	COUNTRY
229.	Mafu Solomon Rakometsi	Lesego.Ndala@umalusi.org.za	0727140874	SOUTH AFRICA
230.	Mamphokhu Esabel Seakamela	SeakamelaME@edu.limpopo.gov.za	0825504962	SOUTH AFRICA
231.	Mark Chetty	mmichetty@gmail.com	0825495793	SOUTH AFRICA
232.	Mashudu Paul Netshandama	MabonaRR@edu.limpopo.gov.za	0815125634	SOUTH AFRICA
233.	Matome Petrus Masetla	pedromasetla8@gmail.com	0829063801	SOUTH AFRICA
234.	Matsie Agnes	matsie.mohale@umalusi.org.za	0724026967	SOUTH AFRICA
235.	Mia Andersen	mandersen@sun.ac.za	0842623813	SOUTH AFRICA
236.	Monde Sibhayi	monde@coltech.co.za	0723014546	SOUTH AFRICA
237.	Moses Basitere	moses.basitere@uct.ac.za	0738706901	SOUTH AFRICA
238.	Peter Ruddock	ruddockp@ieb.co.za	27837871489	SOUTH AFRICA
239.	Pieter Prinsloo	pieter@sacai.org.za	0835564028	SOUTH AFRICA
240.	Princess Moeng	princess@sacai.org.za	0845146495	SOUTH AFRICA
241.	Sewela Peggy Mabote	MaboteSP@edu.limpopo.gov.za	0827762892	SOUTH AFRICA
242.	Sibusiso Malinga	nmalusi@natu.org.za	0608126070	SOUTH AFRICA
243.	Sitwala Namwiji Imenda	ndlovusibo250@gmail.com	0826557915	SOUTH AFRICA
244.	Stephan Mchunu	stephan.mchunu@umalusi.org.za	0826609270	SOUTH AFRICA
245.	Tatiana Sango	tatiana.sango@uct.ac.za	27216507301	SOUTH AFRICA
246.	Theodora Andile Mashazi	theo@sacai.org.za	0813212390	SOUTH AFRICA
247.	Angelo Loye	angelo.loye68@gmail.com	211925107282	SOUTH SUDAN
248.	Athian Madut	athian2015@gmail.com	211929878768	SOUTH SUDAN
249.	Benjamin Mapukor	maturmadit2@gmail.com	211926593060	SOUTH SUDAN
250.	John Abit Mayen Manyang	abitmayendit@gmail.com	211926128052	SOUTH SUDAN
251.	John Dor Gone Kerker	gonedor61@gmail.com	211917179126	SOUTH SUDAN
252.	Quriko Gore Tombe Mojong	qtombemojong@gmail.com	211927578340	SOUTH SUDAN
253.	Mandlenkkhosi Dlamini	registrar@examscouncil.org.sz	78089571	SWAZILAND
254.	Gifted Sabelo Maziya	sd393xm@yahoo.co.uk	26876065938	SWAZILAND

No.	FULL NAME	EMAIL	PHONE NUMBER	COUNTRY
255.	Mandla Ngwenya	ngwenya.m@examscouncil.org.sz	26876059219	SWAZILAND
256.	Mzenzi Masuku	mzenzi316@gmail.com	79056875	SWAZILAND
257.	Nkululeko Dlamini	dlamini.n@examscouncil.org.sz	26876752251	SWAZILAND
258.	Nolwazi Ntombela	ntombela.n@examscouncil.org.sz	76136447	SWAZILAND
259.	Sibusiso Vilakati	presiose@gmail.com	76068063	SWAZILAND
260.	Sifiso Sipho Hlandze	hlanzesifiso2@gmail.com	026876450828	SWAZILAND
261.	Abbas Francis Lugaenda	abbasfmlugaenda@gmail.com	0677411470	TANZANIA
262.	Abtwalibu Salimu	abou1978@yahoo.co.uk	0657849135	TANZANIA
263.	Abubakar Umbe	aumbe@necta.go.tz	0764264851	TANZANIA
264.	Alex Kalolo	kalolojr07@gmail.com	0655173669	TANZANIA
265.	Alfrrd Mdima	amdima@necta.go.tz	0713495078	TANZANIA
266.	Ambwene Kilungeja	kilungejaambwene@gmail.com	0754257522	TANZANIA
267.	Asia Rubeba	rubeba2016@gmail.com	0752637398	TANZANIA
268.	August Olomy	augustolomy01@gmail.com	0759080614	TANZANIA
269.	Cosmas Mnyanyi, PhD	marystellabaynit@gmail.com		TANZANIA
270.	Crecencia Vallentine	vallentinecencia@gmail.com	0659487604	TANZANIA
271.	Didas Malekia	dmalekia@gmail.com	0655833659	TANZANIA
272.	John Fungulupembe Kalolo	john.kalolo@muce.ac.tz		TANZANIA
273.	Elineema Godson Moshi	egm4385@gmail.com		TANZANIA
274.	Emmanuel Kahise	kahise22@gmail.com	0753090419	TANZANIA
275.	Enock Kweka	enockjukweka@gmail.com	0784446601	TANZANIA
276.	Erick Kashonda	ekashonda7@gmail.com	0717582368	TANZANIA
277.	Ernest Massawe	arrymasawe@gmail.com	0659239150	TANZANIA
278.	Evance Kijallo	ekijallo@necta.go.tz	255762237221	TANZANIA
279.	Florence Kyaruzi	sakyaruzi@gmail.com	0755566335	TANZANIA
280.	Francis Tarimo	ftarimo96@gmail.com	0688766138	TANZANIA
281.	Frida Mbwafu	mbwafufrida@gmail.com	0718177111	TANZANIA
282.	Gilliard Jeremiah	giezekias@gmail.com		TANZANIA
283.	Glory G. Mphuru	gmphuru@gmail.com		TANZANIA
284.	Godson Shendemuni Lema	nsindo.usiri@gmail.com		TANZANIA
285.	Gordian Bwemelo	gordian.bwemelo@cbe.ac.tz	0766125405	TANZANIA
286.	Haji Ligalawa	ligalawa33@gmail.com	0717343334	TANZANIA
287.	Hamis Juma	Hamis@tusome.ac.tz	0673815018	TANZANIA
288.	James Kalulu	zaidimaarifa@gmail.com	255364320	TANZANIA

No.	FULL NAME	EMAIL	PHONE NUMBER	COUNTRY
289.	Joyce Kahembe	*jckahembe@yahoo.com*		TANZANIA
290.	Kehongo Siyange	ksiyange@necta.go.tz	0713790175	TANZANIA
291.	Khatib Pandu Buyu	khatib.buyu@bmz.go.tz	255777412828	TANZANIA
292.	Kokuberwa Mollel	kmollel@nacte.go.tz	255763000166	TANZANIA
293.	Lossaru Ngira	lossarungira15@gmail.com	255755264770	TANZANIA
294.	Margareth Mapunda	margareth.mapunda@cbe.ac.tz	0759948159	TANZANIA
295.	Mariam Tambwe	tambwemariam2015@gmail.com	0754279433	TANZANIA
296.	Marystella Baynit PhD	marystellabaynit@gmail.com		TANZANIA
297.	Matata Mbegalo	mbegalomatata@gmail.com	0756403545	TANZANIA
298.	Maziko · Kamabaya	giezekias@gmail.com		TANZANIA
299.	Mgova Maleko	giezekias@gmail.com		TANZANIA
300.	Michael Nicodemus	michaelwnicodemus@gmail.com	0759720285	TANZANIA
301.	Millenia Angel Kimogelo	Nglsankey@gmail.com	0682765226	TANZANIA
302.	Miriam Laiser	miriam.elisha2010@gmail.com	255754861721	TANZANIA
303.	Mohamed S. Msoroka	mohamed.msoroka@out.ac.tz		TANZANIA
304.	Mohammed Semsue	mohammedsemsue@yahoo.com	255737690871	TANZANIA
305.	Mtaki Shanyangi	mtakishanyangi@gmail.com	0753606280	TANZANIA
306.	Mwanamrisho Gora	mwanamrisho.haji@suza.ac.tz		TANZANIA
307.	Nelson Chachage	nelson.chachage1308@gmail.com	255762888672	TANZANIA
308.	Obeid Mahenya	kmolel@nacte.go.tz		TANZANIA
309.	Oliver Kimathi	oliverkimathi77@gmail.com	0683205997	TANZANIA
310.	Paul Paschal Majengo	mjcolmtd@gmail.com		TANZANIA
311.	Renatus Makolo	yjmakolo@gmail.com	0759748901	TANZANIA
312.	Riziki Moh'd	mamyrimohd10@gmail.com	255623385186	TANZANIA
313.	Rosemary Makiya	masatudaudi471@gmail.com		TANZANIA
314.	Said Moshi	smoshi@necta.go.tz	255755414596	TANZANIA
315.	Samson Massawe	samsonmassawe@gmail.com	0780807713	TANZANIA
316.	Sarah Mbise	sarambiser@gmail.com	255759090263	TANZANIA
317.	Seleman Marufu	smafuru@necta.go.tz	255653472470	TANZANIA
318.	Stephen Cleophace	stephencleophace@gmail.com	0786262681	TANZANIA
319.	Syakaa William	syakaa.william@axum.earth	0757335179	TANZANIA
320.	Sylvery Hussein	sylverhussein@gmail.com	0748741282	TANZANIA
321.	Talemwa Johansen	johansent@nm-aist.ac.tz	0752861997	TANZANIA
322.	Tobias Mulupi	t.mulupi@gmail.com	255752098723	TANZANIA

No.	FULL NAME	EMAIL	PHONE NUMBER	COUNTRY
323.	Valence Beatus Kazaward	beatusvalence6@gmail.com	0625915561	TANZANIA
324.	Veronica Hipolity	vhipolity@necta.go.tz	255764264161	TANZANIA
325.	Yudatade Daniel Kessy	ydaniel.necta.go.tz	255788494649	TANZANIA
326.	Zedi Abdalla Khamis	zedi.abdalla@suza.ac.tz	0713233007	TANZANIA
327.	Ann Move Oguti	amoguti@sun.ac.ug	0766039814	UGANDA
328.	Balinda Roland Mujungu,	rbmujungu@sun.ac.ug		UGANDA
329.	Benjamin Joshua Ssentongo	2401600236@sun.ac.ug		UGANDA
330.	Bernadette Akol	bernadetteakol@gmail.com	0702934510	UGANDA
331.	Bernard Mugeni Balyejusa	bimugeni@yahoo.com	2567534897672	UGANDA
332.	Dhirenkumar Dave	dave@picfare.com	256757726553	UGANDA
333.	Erina Nalunga	maamatimo9@gmail.com	0772897559	UGANDA
334.	Eriot Kadubira	eriotkadubira@gmail.com	0705905853	UGANDA
335.	Evaristo Tukamuhabwa	evaratukamuhabwa@gmail.com	0782304091	UGANDA
336.	Excellence Favor	efavor@sun.ac.ug		UGANDA
337.	Fabious Karls Ambama	ambamaf@yahoo.com		UGANDA
338.	Frederick Oloya	frederickoloya497@gmail.com	0785110443	UGANDA
339.	Henry Joe Opio	ohenryjoe@gmail.com	0775639792	UGANDA
340.	Innocent Karuhanga	innocentkaruhanga@gmail.com		UGANDA
341.	Joseph Walusimbi	mrjosephwalusimbi100@gmail.com		UGANDA
342.	Josephine Mutonyi Othieno	josemutonyi@gmail.com, Josephine.Mutonyi @uneb.ac.ug		UGANDA
343.	Julian Wanican	julian.okello@gmail.com	256701077145	UGANDA
344.	Juliet Kobusingye Bakeine	bakeinej@yahoo.com	256772500733	UGANDA
345.	Kanyesigye Monicah	mrkanyesigye@kab.ac.ug	256778006264	UGANDA
346.	Karukuza Wilfred Nahamya	wnahamya@yahoo.com	0702588133	UGANDA
347.	Keith Ainebyona	keithainebyona14@gmail.com		UGANDA
348.	Kiyai Sophie Okolong ,	2401600082@sun.ac.ug		UGANDA
349.	Mary Kwajo Kwaka	ambamaf@yahoo.com		UGANDA
350.	Matthias Miti	matthiasmiti@gmail.com	256789435643	UGANDA
351.	Mugizi Mose	mugizi@uneb.ac.ug		UGANDA
352.	Namigadde Salimah	3520023@gmail.com		UGANDA
353.	Okello Jimmy	jimmyokello@yahoo.com		UGANDA
354.	Onesmus Oyesigye	es@uvtab.go.ug	256772382328	UGANDA

No.	FULL NAME	EMAIL	PHONE NUMBER	COUNTRY
355.	Safina Tukashaba Beine	esuvtab@gmail.com	256772382328	UGANDA
356.	Andrew Pedley	apedley@stephenaustin.co.uk	07375920143	UNITED KINGDOM
357.	Bunmi Balogun	bub@zunoma.com	07436036241	UNITED KINGDOM
358.	Elizabeth Rachel Stubbs	elizabeth.stubbs@acer.org	00447789871945	UNITED KINGDOM
359.	Peter Ashton	peter.ashton@cambridge.org	447834601469	UNITED KINGDOM
360.	Sam Jones	sam.jones@rm.com	07387086298	UNITED KINGDOM
361.	Theodora Ntoka	Theodora.ntoka@acer.org	00447588964758	UNITED KINGDOM
362.	Waleed Bagadi	waleed.bagadi@cambridge.org	447701293735	UNITED KINGDOM
363.	Warren Sanders	warrensanders@kalamazoodirect.com	447741192148	UNITED KINGDOM
364.	Chris Hoffman	Choffman@ngs.org	9144628798	UNITED STATES
365.	Clio Dintilhac	clio.dintilhac@gatesfoundation.org	6179558863	UNITED STATES
366.	Hetal Thukral	hetal@sustain-education.com	1202262764	UNITED STATES
367.	Jon Kapp	jkapp@communitysystemsfoundation.org	12125001335	UNITED STATES
368.	Luis Crouch	luis.crouch@gmail.com	7036067293	UNITED STATES
369.	Katherine Reynolds	dana.kelly@iea-hamburg.de		USA
370.	Akakulubelwa Kufamuyeke Nalishuwa	Analishuwa@exams-council.org.zm	0260973637892	ZAMBIA
371.	Akakulubelwa Kufamuyeke Nalishuwa	nalishuwaakakulubelwa@gmail.com	0973637892	ZAMBIA
372.	Cornelia Chisanga Muwezwa	cmuwezwa@yahoo.com	0975804732	ZAMBIA
373.	Ernest Mubita	ernestmubita@gmail.com	0977759307	ZAMBIA
374.	Elina Hara	elinahr@gmail.com	260977590220	ZAMBIA
375.	Elina Hara	elinahara143@gmail.com	260977590220	ZAMBIA
376.	Gwenny Malama	kanekwabwalyamalama@gmail.com	0776574555	ZAMBIA
377.	Ireen Mwansa Chitesha	ichitesha@exams-council.org.zm	0973637892	ZAMBIA
378.	Jackson Beene	engebenezerlyambai@gmail.com	260975841482	ZAMBIA
379.	Justine Kimena	jkimena@gmail.com	260977255210	ZAMBIA
380.	Kennedy Bowa	bowakennedy2005@gmail.com	260977199539	ZAMBIA
381.	Linda Pande	lpande@exams-council.org.zm	0779884991	ZAMBIA
382.	Michael Mayumbwayila Chilala	mchilala@exams-council.org.zm	0973637892	ZAMBIA

No.	FULL NAME	EMAIL	PHONE NUMBER	COUNTRY
383.	Moonga Hakalyamba	mhakalyamba@exams-council.org.zm	0973637892	ZAMBIA
384.	Mulenga Linda Mumbe Moono	lindamoono1010@gmail.com	0970869255	ZAMBIA
385.	Njekwa Shula Mamunye Simwanza	nmamunye@exams-council.org.zm	0973637892	ZAMBIA
386.	Ocean Matimba	Omatimba@teveta.org.zm	260955867927	ZAMBIA
387.	Phyllis Chibuye Lubeya Kasonkomona	PKASONKOMONA@TEVETA.ORG.ZM	0978325700	ZAMBIA
388.	Sakala Bathseba Sophia Charles	bsakala@exams-council.org.zm		ZAMBIA
389.	Samuel Makumba Phiri	samphiri08@gmail.com	260978196969	ZAMBIA
390.	Samuel Phiri Makumba	makumba841@gmail.com	260954138834	ZAMBIA
391.	Sarah Ndume	sarahndume@gmail.com	260976066356	ZAMBIA
392.	Shadreck Nkoya	snkoya@exams-council.org.zm	0973637892	ZAMBIA
393.	Twambo Hachibamba	twambohachibamba@gmail.com	260966654134	ZAMBIA
394.	Chiedza Zanza	czanza@iizim.co.zw	263784905983	ZIMBABWE
395.	Ebba Masiri	emasiri@zimsec.co.zw	263776002853	ZIMBABWE