THE UNITED REPUBLIC OF TANZANIA
MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGY

NATIONAL DIGITAL EDUCATION GUIDELINES FOR UNIVERSITIES

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FOREWORD

The world is currently undergoing an unprecedented digital revolution that is reshaping all facets of society, including education. As universities around the globe adapt to this transformation, it is imperative that university institutions in Tanzania also embrace this change. Doing so will enable them to remain competitive and ensure that Tanzanian students are equipped with the skills necessary to thrive in the 21st century. To support this shift, the National Digital Education Guidelines Universities has been developed to drive the digital transformation of the higher education sector in Tanzania, aligning it with international standards and best practices.

These Guidelines mark a significant milestone in Tanzania's ongoing commitment to modernize its education system. It aligns closely with the objectives of the National Digital Education Strategy 2024/25–2029/30, which aims to leverage digital technologies to create a more responsive, innovative, and equitable education ecosystem. This is further justified by the Education and Training Policy 2014 Version 2023, which emphasizes the need for technology integration to improve education quality, expand access, and ensure the education system meets the demands of the digital era. By emphasizing the development of digital infrastructure, the integration of emerging technologies, and capacity building, the Guidelines aim to foster innovation, improve access to quality education, and enhance the overall learning experience.

In alignment with international initiatives such as the African Union's Agenda 2063 and UNESCO's Education 2030 Framework for Action, Guidelines highlight the importance of integrating digital technologies to improve learning outcomes, promote equity, and expand access to quality education. It provides a clear roadmap for university institutions in Tanzania to effectively harness digital technologies for teaching, learning, and administration, ensuring that students, educators, and administrators are well-prepared to utilize these resources to their fullest potential. The Guidelines are built upon key pillars of digital education, including Policy and Governance; Infrastructure and Access; Capacity Building; Curriculum and Content Development; Assessment and Evaluation; Security and Privacy; Learning Platforms; Quality Assurance and Standards; Research and Innovation; Collaboration and Partnerships; and Emerging Technologies.

Moreover, these Guidelines reaffirm the Government's commitment to establishing a robust digital education ecosystem in Tanzania. This includes promoting public-private partnerships, building digital human capacity, and fostering a culture of innovation. By adhering to both international best practices and national priorities, the Guidelines set the foundation for a sustainable, inclusive, and equitable digital education system across the country.

The development of these Guidelines was a collaborative effort involving university educators, policymakers, and development partners. The contributions of these partners have been instrumental in crafting a shared vision for the future of digital education in Tanzania. Together, we are laying the foundation for a brighter future—one in which digital education plays a key role in driving Tanzania's socio-economic development and empowering our students to become global leaders.

Ultimately, these Guidelines aim to serve as a catalyst for positive digital transformation within Tanzania's university education system, enabling us to harness the power of digital technologies and create a more inclusive, equitable, and prosperous future for all.

Prof. Carolyne I. Nombo
PERMANENT SECRETARY

Table of Contents

List of Acronyms

Acronym	Full Form
AI	Artificial Intelligence
ANFE	Adult and Non-Formal Education
BEST	Basic Education Statistics
GAI	Generative Artificial Intelligence
HEIs	Higher Education Institutions
ICT	Information and Communication Technology
IT	Information Technology
LMS	Learning Management System
MOOCs	Massive Open Online Courses
OER	Open Educational Resources
PO-RALG	President's Office – Regional Administration and Local Government
SDG	Sustainable Development Goal
SUA	Sokoine University of Agriculture
SUZA	The State University of Zanzibar
TCU	Tanzania Commission for Universities
TVET	Technical and Vocational Education and Training
UDOM	The University of Dodoma
UDSM	University of Dar es Salaam
UNESCO	United Nations Educational, Scientific, and Cultural Organization
VETA	Vocational Educational Training Authority

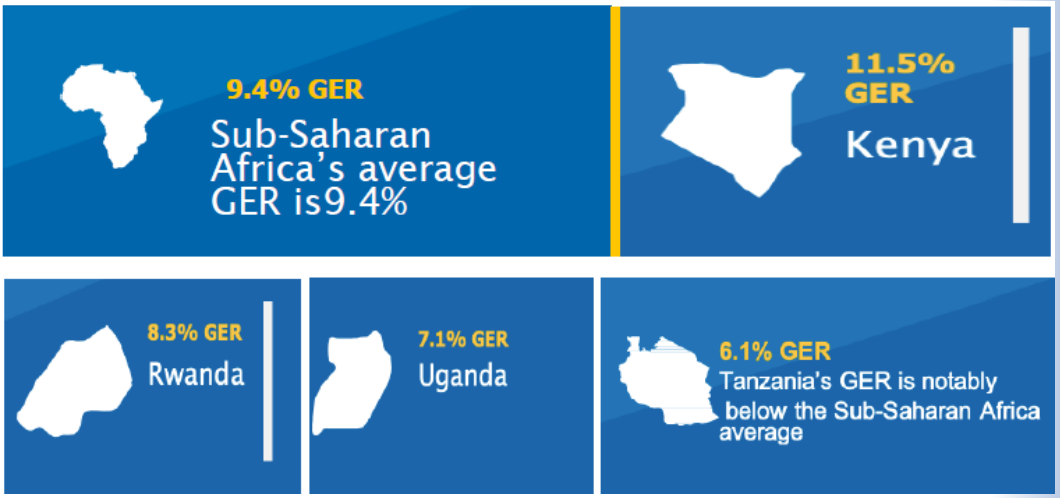
Definition of Key Terms

Key Term	Definition
Digital Education	The use of digital technologies to support and enhance teaching and learning processes, enabling more interactive, accessible, and flexible education experiences for students and educators.
Digital Tools	Resources used to prepare, support, or enrich teaching, learning, and administrative tasks in university institutions, including software, platforms, and devices that facilitate educational activities.
Massive Open Online Courses (MOOCs)	Online courses designed to offer unlimited participation and open access via the internet, typically free or low-cost, allowing learners from around the world to enrol without restrictions on geographic location or prior qualifications.
University	Both public and private approved full-fledged universities authorized to offer university education in Tanzania, providing accredited academic programs and services aligned with national and international standards.
Institutions Authentication Software	Software used to recognize a user's identity, often requiring credentials such as passwords
Blended/Hybrid Courses	Courses designed to combine both online and face-to-face teaching in various combinations.
Open Educational Resources (OER)	Teaching, learning and research materials offered freely for use without charge, with few or no restrictions on adaptation and reuse.

Key Term	Definition
Platform	Technology used for online course delivery, such as Google Classroom, Zoom, WebEx, Microsoft Teams, etc.
Proctoring Software	Software used to monitor online examinations to ensure academic integrity.

1.0 INTRODUCTION

The higher education sector in Tanzania faces significant challenges in both access and quality. The country's Gross Enrolment Ratio (GER) of 6.1% is notably below the sub-Saharan Africa average of 9.4%, indicating limited access to higher education opportunities. In comparison, Kenya's GER is 11.5%, Uganda's is 7.1%, and Rwanda's is 8.3%, highlighting the varying levels of higher education access across the region. Furthermore, the quality of education remains a pressing concern, as the underperformance of the higher education system threatens to hinder Tanzania's socio-economic progress. The nation's aspirations for industrialization and technological advancement are closely tied to the development of a highly skilled workforce, highlighting the need for a robust educational reform.



The effective adoption of digital technologies holds the potential to improve the quality of teaching and learning while expanding access to higher education. For example, countries such as India, South Africa, and the United States have successfully leveraged digital technologies in higher education to broaden access and enhance the quality of teaching and learning. In India, initiatives like the National Digital Library and SWAYAM platform have expanded access to quality higher education, enabling millions of students to access university-level courses online. South Africa has made significant progress in integrating digital technologies in universities, with projects like the University of South Africa's fully online programs that cater to students across the country, particularly those in remote areas. However, many university institutions in Tanzania face challenges such as limited broadband access and inadequate infrastructure to support high-quality digital learning experiences. In response to these issues, the Ministry of Education, Science, and Technology (MoEST) has emphasized the transformative power of digital education to address current gaps in the higher education system. The Ministry has initiated several efforts to integrate digital technologies across universities, including the Higher Education for Economic Transformation (HEET) project. The HEET project aims to improve learning environments, align curriculum with labour market demands, and strengthen institutional governance. A substantial portion of the HEET project's resources is dedicated to enhancing ICT infrastructure, implementing digital learning platforms, and modernizing administrative processes, ultimately building a more inclusive, responsive, and resilient higher education system.

Previous initiatives focusing on digital education include the Partnership for Skills in Applied Science, Engineering, and Technology (PASET), which primarily aimed at creating researchers, innovators, and scientists in priority sectors; the Science and Technology Higher Education Project (STHEP), which contributed to enhancing teaching and research in universities; and the Eastern and Southern African Higher Education Centre of Excellence, which aimed to establish centres of excellence in the region. Other recent initiatives by the Ministry include the Digital Learning for Universities Project, which focuses on providing blended learning tools and training to universities; the Tanzania Higher Education Management Information System (THEMIS), aimed at improving data management and decision-making in higher education institutions; and the University E-Library

Initiative, which seeks to expand access to digital academic resources for students and staff across all public universities. Building on these initiatives, the Ministry has introduced the National Digital Education Strategy (2024/25-2029/30), aligning it with the National ICT Policy 2016 and the National Education and Training Policy (2014 version, 2023).

As part of the implementation of this strategy, the National Digital Education Guidelines for Universities has been developed to provide a clear and structured framework for integrating digital technologies into teaching and learning activities. The primary goal of these Guidelines is to enhance student engagement, improve learning outcomes, and foster innovation in educational delivery through the effective use of digital tools and resources. The development of these Guidelines is strategic, aligning with both national and international frameworks. At the national level, it supports Tanzania's Vision 2025, which emphasizes the development of a knowledge-based society. Globally, the Guidelines contribute to the realization of Sustainable Development Goal 4 (SDG 4), which advocates for inclusive and equitable quality education for all. Furthermore, the Guidelines are consistent with UNESCO's global initiatives promoting the use of technology to create flexible, learner-centered educational environments and foster lifelong learning opportunities. These frameworks highlight the critical role of digital technologies in bridging educational gaps, particularly in underserved and low-resource areas.

The Guidelines serve as a strategic tool for ensuring that digital education is adopted in a sustainable, equitable, and inclusive manner. It is designed to empower universities to harness the full potential of digital technologies while addressing key challenges such as the digital divide, digital literacy gaps, technical and infrastructural limitations, data protection, cybersecurity threats, and ethical considerations, including intellectual property rights. By adhering to the Guidelines, universities will be better equipped to enhance student engagement, improve learning outcomes, and contribute to Tanzania's broader national development goals.

1.1 Objectives

1.1.1 The Main Objective

The main objective of the Guidelines is to provide a framework that enables university institutions to effectively integrate digital technologies into teaching and learning activities.

1.1.2 Specific Objectives

The specific objectives of the Guidelines are to:

i. Improve ICT infrastructure in university institutions, ensuring reliable access to digital learning tools and platforms across the country, including rural and underserved areas;

ii. Build the digital literacy and capacity of academic staff and students, equipping them with the necessary skills to leverage digital technologies for improved teaching and learning;

iii. Promote the creation, adoption, and distribution of high-quality digital educational content, including Open Educational Resources and Massive Open Online Courses, ensuring that learning materials are accessible and affordable;

iv. Support the adoption of technology enhanced delivery in form of online, blended and self-paced modes across university institutions;

v. Promote research and innovation in digital education technologies and pedagogical approaches that respond to the needs of Tanzanian students and align with global trends;

vi. Establish policies and best practices that safeguard data security, privacy, and integrity in the use of digital platforms in university institutions; and

vii. Implement robust monitoring and evaluation mechanisms to assess the effectiveness of digital

education initiatives and ensure continuous improvement.

1.2 Scope

The National Digital Education Guidelines for Universities apply to all university institutions, including public and private universities. It covers the integration of digital technologies in teaching and learning, including:

i. **Academic programs:** The use of digital tools in curriculum delivery, assessments, and learning environments.

ii. **Governance and policy-making:** Establishing governance structures and policies that support the long-term sustainability of digital education initiatives.

iii. **Capacity development:** Fostering continuous training and development for academic staff in digital literacy and pedagogy.

iv. **Inclusion and access:** Ensuring that digital education initiatives address issues of equity, accessibility, and inclusivity, particularly for marginalized and special-needs students.

1.3 Guiding Principles

i. **Equity, Accessibility and Inclusivity:** Digital technologies must be accessible to all learners, educators and administrators in university institutions regardless of their socio-economic background, geographical location, or physical disabilities.

ii. **Research and Innovation:** University institutions must encourage research into digital pedagogy, learning technologies, and student engagement to continuously innovate and refine digital education approaches.

iii. **Quality and Relevance:** Digital content in University institutions must adhere to academic and industry standards, promote critical thinking, creativity, and problem-solving while aligning well with the national education and training policies and strategies.

iv. **Integrity, Accountability and Transparency:** University institutions must demonstrate transparency, honesty, and accountability in all aspects of digital education integration, from planning and implementation to evaluation and continuous improvement.

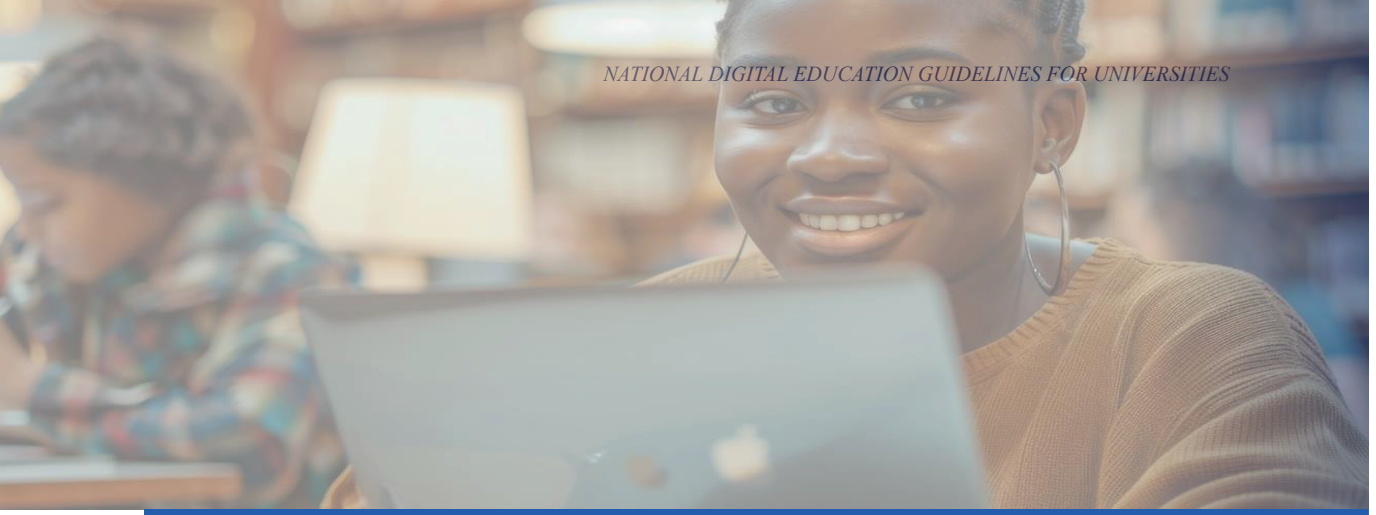
v. **Collaboration and Partnership:** University institutions must encourage collaboration between the government agencies/departments, educational institutions, local and international private sector partners.

vi. **Flexibility and Adaptability:** University institutions must promote flexible learning pathways that allow learners to learn at their own pace and accommodate different learning styles and preferences.

vii. **Professionalism:** University institutions must uphold the highest standards and ensure that all digital education and training practices are conducted with competence, integrity, and respect.

viii. **Sustainability and Resilience:** University institutions must develop a sustainable digital infrastructure that can support future growth in digital education preserving resources and advocating for continuous maintenance as well as upgrading of digital infrastructures and competencies to support long-term educational goals and ensure resilience against challenges.

ix. **Privacy and Security:** University institutions learner's personal data and information by ensuring that the usage of all digital platforms and systems comply with national data privacy laws and ethical guidelines.



2.0 GUIDELINES CONTEXT

The integration of digital technologies in higher education has emerged as a transformative force globally, revolutionizing teaching, learning, and administrative operations. Across different regions, higher education institutions have adopted digital tools to enhance instructional quality, increase educational access, and improve operational efficiency. For instance, in Kenya, universities such as Maseno University have implemented eCampus platforms to facilitate remote learning, while the University of Nairobi and Kenyatta University employ Learning Management Systems (LMS) to support blended and distance education. In South Africa, the University of Cape Town (UCT) has embraced online platforms to provide open-access courses, while Stellenbosch University leverages blended learning tools to enhance flexibility and engagement. Similarly, the University of Pretoria integrates LMS solutions to deliver interactive and self-paced learning experiences, improving accessibility and quality of education. In Uganda, Makerere University and Uganda Martyrs University have adopted digital platforms to enable blended, online, and self-paced learning, thereby expanding access and enriching educational resources. Regionally, frameworks such as the African Union's Agenda 2063 and the Southern African Development Community (SADC) prioritize the use of digital technology as a key driver for workforce development and improved educational quality. These regional efforts align with global initiatives by organizations like the United Nations (UN) and UNESCO, which emphasize the importance of digital integration for achieving inclusive and equitable education systems. Tanzania, as part of this broader movement, has made significant progress in digital education over the past two decades, driven

by both institutional efforts and supportive national policies.

Higher education institutions in Tanzania have taken considerable steps to integrate digital technologies to improve access, quality, and administrative efficiency. Learning Management Systems (LMS) have been adopted by some institutions including the Open University of Tanzania (OUT), Mzumbe University, the State University of Zanzibar (SUZA), and the University of Dar es Salaam (UDSM). These platforms enable students to access course materials, participate in quizzes, and engage in interactive online discussions. The adoption of LMS accelerated significantly during the COVID-19 pandemic, leading to the establishment of over 150 blended learning programs across the country.

Tanzania's progress is supported by robust policy frameworks that prioritize digital education. The National ICT Policy 2016 underscores the importance of reliable digital infrastructure and the integration of emerging technologies. Similarly, the Education and Training Policy 2014 (updated in 2023) promotes the use of digital tools for curriculum development and instructional delivery. The Tanzania Digital Economy Strategic Framework (DESF) 2024–2034 highlights digital literacy, skills development, and infrastructure as essential for fostering educational innovation. The Tanzania Commission for Universities (TCU) has also introduced guidelines to encourage the adoption of Open Educational Resources (OERs) and Massive Open Online Courses (MOOCs) to strengthen university curricula and expand learning opportunities.

Despite these advancements, challenges persist that hinder the full realization of digital technologies in Tanzania's higher education sector. Limited ICT infrastructure remains a significant barrier, particularly due to the high cost and low speed of internet services. Many institutions struggle with inadequate connectivity, which directly affects the quality of digital learning. For students and educators, the prohibitive cost of internet services compounds the issue, with the price of 10GB of data ranging between USD 20 and USD 30 per month, exacerbated further by government taxes on telecommunications services.

Another pressing challenge is the lack of technical and pedagogical skills among educators. Many faculty members are not adequately trained to utilize digital tools effectively, which often results in LMS platforms being

underutilized as simple repositories for course materials rather than tools for dynamic and interactive learning. Addressing these challenges is essential for unlocking the full potential of digital technologies in higher education.

Given the current landscape, the development of a National Guideline for Digital Education is a critical step toward addressing these barriers. The guideline will provide a structured approach to promote strategic investments in reliable ICT infrastructure, improve internet affordability through collaborations with service providers, and enhance the technical and pedagogical competencies of educators through targeted capacity-building programs. By doing so, the guideline will support higher education institutions in effectively leveraging digital technologies to improve teaching, learning, and administrative outcomes.

The proposed guideline aligns with existing national policies and frameworks, including the Tanzania Digital Economy Strategic Framework (DESF) 2024–2034 and the Education and Training Policy 2023, which emphasize digital literacy, infrastructure development, and skills enhancement. At the global level, it supports initiatives such as the United Nations Sustainable Development Goal 4 (Quality Education) and UNESCO's emphasis on digital transformation as a means to achieve equitable and inclusive education.

By addressing gaps in ICT infrastructure, internet affordability, and educator training, Tanzania's higher education sector can align itself with international best practices. The integration of digital technologies will not only enhance the quality of education through blended and interactive learning environments but also expand access to underserved regions and improve administrative efficiency. Ultimately, the successful implementation of this national guideline will contribute to Tanzania's socio-economic development by fostering a skilled, innovative, and technologically adept workforce capable of meeting the demands of the global digital economy.

"Another key challenge is the lack of technical and pedagogical skills among educators, which limits the effective use of digital tools in teaching and learning. Many LMS platforms are underutilized, with institutions primarily using them as repositories for course content rather than for interactive learning"

3.0 DIMENSIONS AND GUIDELINES

The National Digital Education Guidelines for Universities in Tanzania are emanated from eleven (11) dimensions as depicted by Figure 1

Figure 1: Dimensions of the Guidelines

3.1. Policy and Governance

The successful implementation of digital education in universities hinges on strong leadership, well-defined policies, and governance structures. The National ICT Policy 2016 emphasizes the need for governance mechanisms to integrate ICT into education, aligning with national and institutional goals. Complementing this, the National Digital Education Strategy (2024/25-2029/30) advocates for centralized ICT coordination units within the Ministry to enhance decision-making and monitor digital initiatives. The Strategy also proposes establishing key bodies, such as the National Digital Education Steering Committee and the National Digital Education Operations Committee, to oversee digital education efforts. Universities must also develop their own policies and guidelines to effectively adopt and integrate digital technologies into teaching and learning. Therefore, university institutions shall:

3.1.1 Develop institutional policies and guidelines that are aligned with the National Digital Education Strategy to enable smooth integration of digital technologies into teaching and learning activities;

3.1.2 Establish governance bodies or committees that oversee, monitor, and guide the implementation of digital initiatives, ensuring representation from key stakeholders such as academic staff, students, ICT experts, and administrative staff;

3.1.3 Define clear roles and responsibilities for all stakeholders involved in digital education, including administrators, academic staff, ICT personnel, and government agencies in order to ensure accountability and smooth coordination in the execution of digital initiatives;

3.1.4 Ensure that governance frameworks include regular evaluations of digital education policies and practices, allowing universities to assess their progress and make necessary adjustments to improve the quality and effectiveness of digital learning;

3.1.5 Promote transparency and communication within

governance structures, ensuring that policies and decisions related to digital education are clearly communicated to all stakeholders;

3.1.6 Ensure that policies reflect the inclusion of all learners, particularly those from marginalized groups or underserved areas, by addressing issues such as accessibility, affordability, and support for special needs in digital education programs; and

3.1.7 Align institutional governance with international best practices in digital education, ensuring that university institutions are not only competitive nationally but also meet global standards in digital learning and management

3.2. Infrastructure and Access

The National Digital Education Strategy (2024/25 - 2029/30) and the National ICT Policy 2016 underscore the essential role of ICT infrastructure in driving digital transformation in education. The National ICT Policy 2016 particularly emphasizes the need for increased investment in digital infrastructure, focusing on rural and underserved areas to ensure equitable access to digital technologies. It aims to improve connectivity, establish regional ICT hubs, and enhance power reliability to support digital integration in education. Despite these efforts, challenges including inadequate connectivity and unreliable power persist in underserved areas. To address these issues, both the Strategy and Policy propose solutions such as solar energy, backup generators, and expanded connectivity. Resolving these infrastructure challenges is crucial to ensure all educational institutions can provide high-quality digital education and fully engage in the nation's digital transformation. Therefore, university institutions shall:

3.2.1 Provide affordable, high-speed, and reliable internet connectivity to all campuses to ensure equitable access to teaching and learning services;

3.2.2 Provide adequate hardware resources, including up-to-date computers, servers, and networking equipment, to support the growing demands of digital education platforms and ensure

reliable performance for both students and academic staff;

3.2.3 Guarantee a reliable and sustainable power supply, including the installation of backup systems such as generators and solar power solutions, to prevent interruptions during critical teaching, learning, and research activities;

3.2.4 Equip digital classrooms with modern teaching tools, such as smartboards, projectors, interactive displays, and sound systems, to enhance in-classroom learning and support blended learning approaches;

3.2.5 Promote campus-wide wireless internet that is accessible in all student and staff areas, including libraries, lecture halls, dormitories, and common areas, to support continuous learning and access to online resources;

3.2.6 Foster partnerships with Internet Service Providers (ISPs) and technology companies to improve access to affordable internet and hardware for students and staff;

3.2.7 Establish a central support system for technical assistance, ensuring that all stakeholders-students, and academic staff-have access to timely IT support, training, and troubleshooting skills to maximize the use of digital infrastructure; and

3.2.8 Conduct regular audits and updates of digital infrastructure to ensure continuous improvement and that all technological systems are meeting current educational demands, staying aligned with international standards and future-proofing for technological advancements.

3.3. Curriculum and Content Development

Integrating digital technologies into content and curriculum development is crucial for improving the quality of higher education by making learning interactive, adaptable, and student-focused. Digital platforms, such as Learning Management Systems, Open Educational Resources, and MOOCs, provide a wide range of content that allows students to learn at their own pace while connecting theory to practice through virtual simulations and multimedia tools. This integration helps ensure that curricula stay relevant, prepare students with industry-ready skills, and support

innovative teaching approaches, ultimately enhancing the accessibility, quality, and competitiveness of higher education institutions. Therefore, university institutions shall:

3.3.1 Ensure the developed or reviewed curricula incorporate aspects of technology integration in teaching and learning;

3.3.2 Develop blended, online and self-paced courses that integrate digital platforms to offer flexible and accessible education;

3.3.3 Develop guidelines for creating multimedia-enhanced learning materials, ensuring academic staff are trained in best practices for producing engaging, multimedia- rich resources that accommodate diverse learning styles;

3.3.4 Adopt innovative teaching methodologies, such as flipped classrooms, project- based learning, gamification, and adaptive learning, that leverage digital tools to create a more interactive and personalized learning experience for students;

3.3.5 Ensure that developed programs align with national and international accreditation standards, guaranteeing that online and blended learning meets quality benchmarks, maintains academic integrity, and is recognized both locally and globally;

3.3.6 Integrate digital tools and resources into assessment and evaluation processes, ensuring that assessments are aligned with the digital curriculum, promote continuous student engagement, and support ongoing improvement and personalized feedback;

3.3.7 Encourage the use of OER and other learning resources in curriculum design to reduce costs, increase access to quality learning materials, and support the sharing of knowledge across institutions;

3.3.8 Encourage academic staff to develop digital content and integrate it in teaching, learning and delivery;

3.3.9 Facilitate the integration of virtual labs and simulations into the curriculum, providing students with hands-on, practical experience in fields such as science, engineering, and health, without the constraints of physical resources; and

3.3.10 Ensure that the digital curriculum addresses the needs of all learners, including those with special needs, by integrating accessibility features and offering multiple formats for content delivery.

3.4. Assessment and Evaluation

Integrating digital tools into assessment processes is crucial for enhancing the efficiency, flexibility, and fairness of university education in Tanzania. The National Digital Education Strategy (2024/25-2029/30) highlights that digital assessments streamline evaluation, provide real-time feedback, and offer self-assessment opportunities, ultimately improving student engagement and learning outcomes. These tools allow students to track their progress, while educators benefit from scalable solutions that reduce administrative burdens and ensure consistent grading standards. The TCU Guidelines for Online and Blended Delivery Modes 2022 recommend using Senate approved platforms such as Moodle, Zoom, or Google Classroom to conduct diverse assessments, supporting both formative and summative formats. Features including proctoring software and similarity checks uphold academic integrity, while timely, personalized feedback enhances the learning experience. This technology-driven assessment approach ensures a more adaptive and enriched learning environment, preparing students for a rapidly evolving digital landscape. Therefore, university institutions shall:

3.4.1 Implement digital formative and summative assessment methods, including online exams, quizzes, and assignments, to enable timely, flexible, and comprehensive evaluation of student performance while maintaining academic integrity and promoting continuous learning;

3.4.2 Establish digital feedback mechanisms that deliver continuous, constructive, and personalized feedback to students, facilitating ongoing assessment throughout the course and enabling them to track their progress, address weaknesses, and make real-time improvements for enhanced learning outcomes;

3.4.3 Utilize AI-powered systems for automated grading and

personalized feedback to enhance efficiency, consistency, and student learning;

3.4.4 Ensure the integrity of technology enhanced assessments by implementing proctoring technologies, plagiarism detection tools, and secure login systems to prevent academic dishonesty and protect the credibility of the assessment process;

3.4.5 Create accessible digital assessment platforms that accommodate students with special needs, ensuring that all learners can participate in assessments without facing technological or accessibility barriers; and

3.4.6 Utilize analytics from digital assessments to identify trends, improve curriculum design, and provide targeted interventions, ensuring data-driven decisions that enhance teaching and learning outcomes.

3.5. Learning Platforms

The effective use of learning platforms is essential for improving teaching and learning experiences at universities in Tanzania. The Guidelines for Online and Blended Delivery Modes 2022 and the National Digital Education Strategy (2024/25-2029/30) emphasize the growing adoption of platforms including Learning Management Systems, DSpace, and MOOC platforms to support flexible, engaging, and inclusive online and blended programs. These platforms enable students to access learning materials anytime, anywhere, accommodating diverse learning styles and improving accessibility, particularly for those in remote or underserved areas. However, successful implementation relies on proper utilization by both students and staff, highlighting the need for training to maximize their potential. University institutions that have yet to adopt these systems should prioritize doing so, as digital learning platforms are now a critical component of modern education. Therefore, university institutions shall:

3.5.1 Implement learning platforms such as LMS, DSpace, MOOC platforms, or locally developed platforms to provide a centralized, flexible, and accessible digital environment for

delivering courses, managing educational content, and facilitating student-teacher interactions across various learning modes, including online, blended, and self-paced programs;

3.5.2 Integrate multimedia resources such as videos, podcasts, interactive exercises, virtual labs, and simulations into learning platforms to enhance student engagement, provide practical hands-on experiences in fields like science and engineering, and cater to diverse learning styles;

3.5.3 Optimize learning platforms for mobile use to ensure that students can access educational content and participate in learning activities via mobile devices, given the widespread use of smartphones and tablets in Tanzania;

3.5.4 Support the integration of OER by encouraging institutions to adopt, adapt, and create OER, making them available on e-learning platforms to reduce costs, promote inclusive access to quality educational materials, and expand resource availability for both students and academic staff;

3.5.5 Develop a centralized digital repository for course materials, lecture recordings, and supplementary resources that is easily accessible to students and academic staff, ensuring that learning materials are organized, up-to-date, and available across different devices and platforms;

3.5.6 Promote the use of collaborative learning tools such as discussion forums, video conferencing, and group project management platforms to foster communication, teamwork, and engagement among students and academic staff in both in-person and remote learning settings;

3.5.7 Promote the use of collaborative learning tools such as discussion forums, video conferencing, and group project management platforms to foster communication, teamwork, and engagement among students and academic staff in both in-person and remote learning settings;

3.5.8 Ensure interoperability between learning platforms by allowing seamless integration with third-party tools such as plagiarism checkers, virtual reality (VR) technologies, or

online assessment software to create a holistic and comprehensive digital learning environment;

3.5.9 Monitor and evaluate e-learning platforms by conducting regular assessments of their effectiveness in enhancing learning outcomes and gathering feedback from students and academic staff to inform continuous improvements and updates in digital learning technologies; and.

3.5.10 Ensure data security and privacy on learning platforms by implementing robust cybersecurity measures that protect sensitive student and institutional data, ensuring compliance with national and international data protection regulations, nationally Personal Data Protection Act 2022 and internationally General Data Protection Regulation (GDPR).

3.6. Capacity Building

Integrating digital technologies into teaching and learning requires building digital proficiency among both staff and students. The National ICT Policy 2016 and the National Digital Education Strategy (2024/25-2029/30) highlight the importance of equipping everyone involved with the necessary digital skills to enhance learning experiences and stay aligned with the rapidly evolving global education landscape. The Guidelines for Online and Blended Delivery Modes 2022 further emphasize the need to train academic and administrative staff in using learning platforms and applying relevant Pedagogies. These policies call for continuous investment in digital skills development to ensure staff can effectively manage digital tools and students are prepared for technology-enhanced learning. Therefore, university institutions shall:

3.6.1 Promote staff development programs focused on digital pedagogy and instructional design, providing training and resources to help academic staff effectively integrate technology into their teaching practices;

3.6.2 Promote staff development programs focused on multimedia development and instructional design, providing training and resources to help technical staff effectively integrate technology into their teaching practices;

3.6.3 Implement mandatory Digital Literacy Courses that focus on building students' competencies in using digital technologies in learning activities;

3.6.4 Establish a continuous professional development framework for staff in digital education, providing access to ongoing workshops, seminars, and certifications on emerging digital trends in teaching, and learning;

3.6.5 Encourage academic staff to explore and integrate innovative digital technologies in teaching and research by offering incentives such as research grants and recognition for pioneering efforts in classroom technology use;

3.6.6 Promote peer-learning platforms for academic staff and students to share best practices in digital technology use, while mentorship programs pair less experienced staff with digital-savvy peers to enhance collaborative learning; and

3.6.7 Conduct regular assessments of digital skills among staff and students to identify gaps, and integrate digital competency certifications into professional development and learning programs to maintain competitiveness in the digital education sector.

3.7. Security and Privacy

As Tanzanian universities increasingly adopt digital platforms for teaching, learning, and administration, ensuring data security and privacy has become crucial. The National Digital Education Strategy (2024/25-2029/30) emphasizes protecting sensitive information, such as personal data, academic records, and financial details, given the growing reliance on ICT in education.

The Personal Data Protection Act of 2022, along with GDPR, provides a legal framework mandating compliance with privacy laws and ensuring institutions implement strict data protection measure

The Personal Data Protection Act of 2022, along with GDPR, provides a legal framework mandating compliance with privacy laws and ensuring institutions implement strict data protection measures. In line with these principles, the Guidelines for Online and Blended Delivery Modes require universities to integrate secure systems for managing student data, such as registration, plagiarism checks, and examinations. By adhering to best practices in data protection, institutions foster trust and accountability while supporting the broader goals of Tanzania Development Vision 2025, reinforcing the credibility of their digital education initiatives. Therefore, university institutions shall:

3.7.1 Ensure compliance with national data protection laws, such as the Personal Data Protection Act 2022, and adhere to international standards like GDPR, to safeguard sensitive data, uphold ethical data management practices, and enhance trust and accountability in digital education systems;

3.7.2 Develop data privacy policies that govern the collection, storage, sharing, and protection of personal data belonging to students, staff, and other stakeholders;

3.7.3 Implement secure authentication protocols, such as Multi-Factor Authentication (MFA), and data encryption techniques to protect digital platforms from unauthorized access and ensure data integrity;

3.7.4 Conduct regular cybersecurity audits and risk Assessments to identify potential vulnerabilities in digital systems and ensure that any gaps in security are addressed promptly;

3.7.5 Provide continuous training programs for students, academic staff, and administrative staff on data security best practices, cybersecurity awareness, and privacy concerns to reduce the risk of data breaches; and

3.7.6 Monitor and update security protocols regularly for all digital platforms to keep pace with emerging threats and technological advancements, ensuring the ongoing protection of sensitive data.

3.8. Quality Assurance and Standards

Establishing rigorous quality assurance is crucial for maintaining high academic standards in digital education at universities. According to the "Guidelines for Online and Blended Delivery Modes of Courses for University Institutions in Tanzania," universities must incorporate internal quality assurance processes tailored for online and blended programs to ensure reliability, effectiveness, and alignment with both national and international standards. The National Digital Education Strategy (2024/25-2029/30) further emphasizes that quality assurance is necessary to enhance academic standards in digital programs, ensuring they meet the evolving needs of learners and the workforce. Continuous monitoring and evaluation processes, as recommended, include tracking student engagement and the effective use of digital platforms. These actions help refine digital content, improve teaching methodologies, and optimize technology tools for instruction. By adhering to these quality assurance practices, universities can enhance credibility, build trust among stakeholders, and ensure that digital education contributes meaningfully to Tanzania's broader educational development goals. Therefore, university institutions shall:

3.8.1 Establish accreditation processes for online and digital programs to ensure they meet national and international educational standards, with specific guidelines for program design, course delivery, and assessment tailored for digital platforms to maintain quality, credibility, and consistency in digital learning offerings;

3.8.2 Establish internal quality assurance units to regularly assess and evaluate digital content and teaching methods, ensuring they meet quality benchmarks and align with the evolving needs of students and academic staff;

3.8.3 Implement structured feedback mechanisms that allow students and staff to provide input on digital education initiatives, using this feedback to continuously improve digital content, instructional strategies, and technology infrastructure;

3.8.4 Develop quality assurance frameworks tailored to the unique

challenges of online and blended learning, with clearly defined key performance indicators (KPIs) for evaluating the effectiveness of digital education programs;

3.8.5 Ensure that digital platforms and tools used for teaching meet quality and accessibility standards, providing equitable access for all students, including those with disabilities, through regular audits of digital infrastructure;

3.8.6 Conduct regular audits of digital teaching staff competencies, ensuring that educators are trained in best practices of digital pedagogy and mandated to participate in ongoing professional development for effective online course delivery; and

3.8.7 Encourage continuous innovation and adaptation in quality assurance practices, allowing flexibility to update standards as new technologies and teaching methodologies in digital education evolve.

3.9. Research and Innovation

Based on the National ICT Policy 2016, the pillar of Research and Innovation is crucial for advancing digital education in Tanzanian universities. The National Digital Education Strategy (2024/25-2029/30) emphasizes fostering research to develop innovative teaching methods and digital tools that address local educational needs, creating an inclusive research ecosystem involving institutions, researchers, industries, and government agencies. This collaboration ensures that digital solutions are relevant, accessible, and technologically advanced for all learners, addressing the unique challenges within Tanzania's education system. Moreover, promoting research on the impact of digital tools allows Tanzanian universities to contribute to global advancements in digital education. The National ICT Policy 2016 strengthens this pillar by promoting the establishment of innovation hubs, public-private partnerships, and increased research and development (R&D) capacity to support technological solutions in education. These initiatives position Tanzania's higher education system to adapt to global trends, drive academic excellence, and contribute to broader national development goals. Therefore, university institutions shall;

3.9.1 Promote research initiatives that explore the impact of digital technologies on teaching, learning, and administration, with a specific focus on improving student outcomes, addressing local challenges, and enhancing institutional efficiency;

3.9.2 Create environments that foster innovation, encouraging the development, testing, and implementation of scalable digital teaching tools and learning methodologies that enhance learning experiences and support the National Digital Education Strategy;

3.9.3 Support collaborative research in emerging fields, particularly in areas such as artificial intelligence (AI), data analytics, and educational technology, to advance knowledge and develop practical solutions that drive digital education forward;

3.9.4 Establish research grants for academic staff and students to investigate new digital learning technologies, methodologies, and their effectiveness, promoting a culture of experimentation and innovation in university education;

3.9.5 Facilitate cross-institutional and international research collaborations, enabling partnerships with other universities, research organizations, and industry experts to share resources, knowledge, and innovations in digital education on both national and global scales;

3.9.6 Publish and share research findings on digital education through academic journals, conferences, and open-access platforms to ensure that innovations in digital education are widely accessible and contribute to the broader academic community; and

3.9.7 Promote the creation of innovation hubs and public-private partnerships, as outlined in the National ICT Policy 2016, to support the development of cutting- edge digital education solutions and strengthen the link between research and practical implementation.

3.10. Collaboration and Partnerships

Collaboration between the government, educational institutions, and technology companies is vital for advancing digital education

in Tanzanian universities. The National Digital Education Strategy (2024/25-2029/30) emphasizes the importance of partnerships to ensure equitable ICT integration across institutions. These collaborations help develop cost-effective digital products, mobilize resources, and scale successful initiatives, making technology accessible to more universities and students. By integrating industry expertise, these partnerships foster innovation in educational technologies and enable knowledge transfer, keeping students and staff updated with the latest advancements. They also ensure that university programs align with digital economy needs, equipping graduates with essential skills. Sharing the financial burden further enhances the sustainability of digital education initiatives, ensuring their long-term success and maximizing their impact on teaching and learning. Therefore, university institutions shall:

3.10.1 Establish partnerships with technology companies to secure access to cutting-edge tools, platforms, and technical support, focusing on acquiring affordable or donated educational technologies, as well as providing ongoing training for both staff and students to enhance digital literacy;

3.10.2 Collaborate with other higher education institutions to promote knowledge sharing and develop joint initiatives in digital education, including shared digital resources, joint research projects, and staff exchanges to strengthen capacity and innovation;

3.10.3 Engage with government agencies and NGOs to align digital education initiatives with national policies, secure funding and technical assistance, and address issues such as digital equity, especially in underserved areas, ensuring inclusive access to digital learning;

3.10.4 Pursue international partnerships to adopt global best practices in digital education, participate in international networks, and ensure that digital learning programs meet globally recognized standards for digital learning, assessment, and accreditation;

3.10.5 Partner with local industries and businesses to align digital education programs with market demands, and support the

development of industry-relevant digital skills through internships, apprenticeships, and collaborative projects that prepare students for the workforce;

3.10.6 Monitor and evaluate partnerships regularly to ensure that collaborations deliver measurable outcomes, such as improved access to technologies, enhanced learning experiences, and alignment with institutional goals, while continuously assessing their relevance and effectiveness; and

3.10.7 Encourage multi-stakeholder involvement, bringing together academia, industry, government, and civil society to co-create inclusive, scalable, and sustainable digital education initiatives that address the challenges of digital transformation and drive long-term impact.

3.11. Emerging Technologies

The adoption of emerging technologies has significant potential to enhance digital education in Tanzanian universities, as highlighted in the National Digital Education Strategy (2024/25-2029/30). Technologies like artificial intelligence (AI), virtual and augmented reality (VR/AR), and blockchain are key tools for transforming teaching and learning, aligning with the National ICT Policy 2016, which advocates investment in and capacity building for these technologies. These tools foster engaging, student-centered learning environments, improve accessibility, and bridge the gap between theoretical knowledge and real-world application. By equipping students with future-ready skills, emerging technologies help Tanzanian institutions remain globally competitive and drive educational innovation. Incorporating these technologies is essential for ensuring that the university education system adapts to global advancements and prepares students to thrive in a technology-driven world. For a comprehensive Guidelines for the use of AI in Education, refer the National Guidelines for AI in Education 2025. Therefore, university institutions shall:

3.11.1 Promote the adoption of emerging technologies to enhance teaching and learning practices and create engaging,

student-centered learning environments that foster innovation and creativity;

3.11.2 Invest in capacity building for academic staff and students, providing training on the development and use of emerging technologies to ensure effective integration into curricula and equipping students with future-ready skills;

3.11.3 Ensure equitable access to emerging technologies by integrating mobile-friendly and affordable solutions that support inclusive and accessible digital learning;

3.11.4 Integrate real-world applications of emerging technologies into curricula, bridging the gap between theoretical knowledge and practical skills, and preparing students for the demands of the global job market;

3.11.5 Align the use of emerging technologies with national and international standards, ensuring that digital education initiatives meet global benchmarks for quality, security, and effectiveness;

3.11.6 Monitor and evaluate the impact of emerging technologies on teaching, learning, and student outcomes, using data-driven insights to continuously improve digital education strategies; and

3.11.7 Foster public-private partnerships to support the development, deployment, and scaling of emerging technologies, ensuring sustainable growth and innovation in digital education.

4.0 THE ROLE OF STAKEHOLDERS

This section highlights the stakeholders engaged in implementing the National Digital Education Guidelines for Universities and specifies their roles and responsibilities.

4.1 Responsible for Education, Science and Technology

To support the implementation of these Guidelines, this Ministry will:

4.1.1 Oversee the development of digital skills for educators and administrative staff through training and professional development programs, empowering them to effectively implement digital education strategies.

4.1.2 Facilitate accessibility of digital devices for teaching and learning to instructors and learners in university institutions.

4.1.3 Follow-up the progress of digital education initiatives in universities, assessing their impact, and making necessary adjustments to improve implementation of the Guidelines.

4.1.4 Oversee the development of digital skills for educators through training and professional development programs, empowering them to effectively implement digital education strategies.

4.2 Ministry Responsible for Communication, and Information Technology

To support the implementation of these Guidelines, this Ministry will:

4.2.1 Promote initiatives aimed to support availability and expansion of reliable digital infrastructure in university institutions, such as internet connectivity, data centres, and communication networks, to support digital education initiatives in university institutions.

4.2.2 Foster collaboration with private sector companies, technology providers, and international organizations to promote innovation, resource mobilization, and the sharing of best practices in digital education in university institutions.

4.3 Tanzania Commission for Universities

To support the implementation of these Guidelines, TCU will act in the following functions:

4.3.1 TCU will ensure that universities offering digital education programmes meet the required standards by recognizing, approving, registering, and accrediting them.

4.3.2 TCU will regularly evaluate universities' digital education systems to ensure they comply with the National Guidelines.

4.3.3 TCU will create awareness among stakeholders, including universities and the public, about the importance of digital education, its opportunities, and the ways to address challenges such as digital infrastructure gaps or digital literacy.

4.3.4 TCU will advise on international trends and issues related to digital education, fostering collaboration with global educational institutions and organization/s to improve digital education in Tanzania.

4.3.5 TCU will support universities in developing the capacity to offer digital education by providing training to university staff and management.

4.3.6 TCU will coordinate the admission of students into digital learning programmes, ensuring that the process aligns with national standards and that all students have equitable access to digital education.

4.4 Research and Innovation Institutions

To support the implementation of these Guidelines, Research and Innovation Institutions will:

4.4.1 Develop new technologies and tools, such as Learning Management Systems (LMS), AI-based educational software, and virtual labs, tailored to the needs of higher education institutions in Tanzania.

4.4.2 Conduct research on effective digital teaching methodologies, identifying best practices for online education, blended learning, and e-learning content delivery.

4.4.3 Collaborate with universities to develop and evaluate digital curriculum materials, ensuring they align with national academic standards and effectively utilize digital platforms.

4.4.4 Engage in partnerships with global research institutions and technology companies to bring cutting-edge digital education innovations to Tanzania, enhancing the overall digital education landscape.

5.0 MONITORING, EVALUATION AND LEARNING

Monitoring, evaluation and learning (ME&L) are essential components for assessing the impact of digital education initiatives and ensuring continuous improvement in Tanzania's higher education system. The National Digital Education Strategy (2024/25–2029/30) underscores the need for a structured ME&L framework that enables the systematic tracking of progress, refinement of initiatives, and accountability in the implementation of the National Digital Education Guidelines for Universities. This framework will be critical in driving data-informed decision-making and ensuring that digital transformation objectives are met across all universities.

The ME&L framework is designed to facilitate the collection, analysis, and synthesis of data, enabling stakeholders to compare baseline data with actual outcomes. This process will highlight gaps in implementation and provide actionable insights for improving digital education systems. Key Performance Indicators (KPIs) will be used to evaluate a wide range of elements within the digital education ecosystem, including the effectiveness of digital tools, e-learning platforms, and pedagogical practices. These KPIs will be regularly assessed to ensure that digital initiatives are aligned with educational goals and are contributing to enhanced student engagement, learning outcomes, and overall institutional efficiency.

To ensure adaptability and responsiveness, regular feedback loops will be established as part of the evaluation process. This will enable institutions to promptly address challenges, respond to emerging trends, and capitalize on new opportunities. The continuous flow of feedback will be vital for optimizing digital learning experiences,

supporting staff development, and refining digital infrastructure. Moreover, periodic reviews and adjustments based on these evaluations will promote the long-term sustainability and scalability of successful digital education initiatives.

The ME&L framework also emphasizes the scalability of best practices across institutions. By identifying and sharing successful digital education models, the framework encourages a collaborative approach to learning and innovation, ensuring that all institutions benefit from proven strategies. This collective effort will contribute to the development of a more unified and efficient digital education ecosystem in Tanzania, where digital education initiatives can be replicated and adapted to fit the needs of various universities. Universities should:

5.1 Establish a structured monitoring and evaluation framework to systematically track the progress of digital education initiatives, ensuring alignment with the objectives of the National Digital Education Strategy (2024/25–2029/30).

5.2 Utilize data-driven decision making by collecting, analysing, and synthesizing relevant data to compare baseline metrics with actual outcomes, enabling continuous improvements.

5.3 Monitor key performance indicators (KPIs) regularly to assess the effectiveness of digital tools, platforms, and pedagogical practices, ensuring alignment with institutional and national educational goals.

5.4 Implement regular feedback loops to promptly address challenges, optimize learning outcomes, and enhance the overall quality of digital education.

5.5 Ensure scalability of best practices by identifying, documenting, and sharing successful digital education models across universities to promote a unified digital education ecosystem.

5.6 Promote continuous improvement by regularly updating and refining digital education strategies based on ME&L findings to meet evolving needs. Align their digital education programs with both national educational goals and global standards through effective monitoring and evaluation processes.

5.7 Report progress periodically on the implementation and impact of digital education initiatives to ensure accountability and guide policy adjustments.

5.8 Leverage ME&L insights to inform strategic decision-making, ensuring the relevance and effectiveness of digital education initiatives in adapting to new trends and challenges.

6.0 BIBLIOGRAPHY

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