



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

INFORMATION AND COMMUNICATION TECHNOLOGY COMPETENCY STANDARD FOR TEACHERS IN TANZANIA

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ABBREVIATIONS

AI	Artificial Intelligence
AR	Augmented Reality
ETP	Education and Training Policy.
HEET	Higher Education for Economic Transformation
ICT	Information Communication Technology.
ICT-CFT	Information Communication Technology – Competency Framework for Teachers.
ICT-CSTT	Information Communication Technology – Competency Standard for Teachers in Tanzania.
IoT	Internet of Things
ISTE	International Society for Technology in Education
KA	Knowledge Acquisition
KC	Knowledge Creation
KD	Knowledge Deepening
MoEST	Ministry of Education, Science and Technology
NACTVET	National Accreditation Council for Technical and Vocational Education
PORALG	President Office Regional Administration and Local Government
SDGs	Sustainable Development Goals
STEM	Science, Technology, Engineering, and Mathematics.
TCU	Tanzania Commission for Universities
TEU	Teacher Education Unit
TIE	Tanzania Institute of Education
UN	United Nations
VR	Virtual Reality

DEFINITION OF TERMS

A Digital Tool is a software, application, or online resource designed to perform a specific task or facilitate a process through digital technology, such as word processors, spreadsheets, or project management software.

A WebQuest is an inquiry-oriented activity in which some or all of the information that learners interact with comes from resources on the Internet.

Augmented reality (AR) is an interactive experience that combines the real world and computer-generated 3D content.

Digital innovations refer to significant improvements or new developments in digital technologies such as the Internet, computing, mobile devices, artificial intelligence (AI), blockchain, and the Internet of Things (IoT) to create new or significantly improved processes, services, or business models. Digital innovations can be leveraged to play a crucial role in shaping and driving the digital economy.

Digital Resources are information or media stored and transmitted digitally, such as text documents, images, audio, videos, or datasets, and accessible through computers or the Internet.

Digital Skills are the ability to effectively and confidently use digital technologies and tools for various purposes. They encompass everything from basic computer literacy to advanced skills like data analysis and digital marketing.

Infographics are graphic representations of information, data, or knowledge intended to present information quickly and clearly.

Innovative Pedagogies refer to new and nontraditional approaches to teaching and learning that aim to improve academic outcomes and address real problems by promoting equitable learning. They involve proactively introducing strategies and methods, like experiential learning and technology integration, to create engaging and compelling learning experiences.

Sociolinguistics is the study of the relationship between language and society. It examines how language use interacts with, or is influenced by, social factors such as gender, ethnicity, age, and social class.

UNESCO: The United Nations Educational, Scientific, and Cultural Organization (UNESCO) is a specialized agency of the United Nations established in 1945. Its aim is to promote world peace and security through international cooperation in education, the sciences, and culture. UNESCO works on various initiatives, including improving literacy, advancing science, protecting cultural heritage, and promoting cultural diversity.

Video diary is an app that facilitates the simplest way to record memory.

Virtual reality (VR) is a simulated experience that employs 3D near-eye displays and pose tracking to give the user an immersive feel of a virtual world.

FOREWORD

The 2025 ICT Competency Standards for Teachers of Tanzania (ICT-CSTT) marks a significant milestone in our national efforts to transform education. It aligns with the demands of a rapidly evolving digital era. This version builds upon the foundation laid by the 2015 ICT-CSTT and reflects the Government's continued commitment to ensuring that teachers are equipped with the competencies required to prepare learners for a knowledge based and technologically driven society. As we navigate the realities of the 21st century that is characterized by unprecedented technological advancement, it is imperative that the teaching force is empowered not only with ICT skills but also to integrate them effectively into day to day teaching and learning activities.

ICT proficiency is a catalyst for innovation and productivity, and it plays a critical role in enhancing quality education, improving learner outcomes, and increasing national competitiveness in the global digital economy.

The competencies outlined in this revised standard aim to guide the professional development of both pre-service and in-service teachers in Tanzania at all levels. They emphasize the integration of ICT in pedagogy, curriculum delivery, assessment and classroom management. These standards will enable teachers to foster critical thinking, creativity, collaboration, and lifelong learning among students which are attributes essential for national development and global citizenship.

The Ministry of Education, Science and Technology (MoEST) acknowledges the strategic support and technical expertise provided by UNESCO in the revision of the 20215 ICST CSTT. We also recognize the contributions of all stakeholders, including teacher training institutions, development partners, faith-based organizations, Tanzania Education Network (TEN/MET) and teachers, whose insights were instrumental in ensuring the contextual relevance and practicality of this framework.

As we move toward implementation, the Ministry of Education Science and Technology calls upon all education stakeholders to support the dissemination and integration of the revised ICT Competency Standards into teacher education and professional development programmes. Together, let us ensure that every Tanzanian teacher becomes a champion of ICT integration, and every learner is empowered with the skills and mindset necessary to thrive in the digital age.

We are confident that the implementation of these standards will contribute meaningfully to Tanzania's vision in alignment with Tanzania's Vision 2050, which envisions a prosperous, inclusive, and sustainable society, anchored in a strong knowledge economy, widespread technological advancement, and equitable access to opportunities for all citizens.

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Prof. Carolyne Nombo

Permanent Secretary

Ministry of Education, Science and Technology (MoEST)

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I acknowledge the valuable contributions of the related government institutions including Tanzania Institute of Education (TIE), teacher training institutions particularly the Dar es Salaam University College of Education (DUCE) and the Open University of Tanzania as well as development partners, the Tanzania Education Network (TEN/MET), faith-based organizations (Tanzania Episcopal Conference, Christian Social Services Commission and The National Muslim Council of Tanzania), civil society organizations, and dedicated teachers who actively participated in consultations, workshops, and validation sessions. Your insights, experience, and commitment ensured that these standards are relevant, practical, and contextually grounded.

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Joseph Timothy Hilal	Principal Teacher Education Officer	MoEST
Melchiory Baltazary	Assistant Director of ICT	PORALG
Sophia Kibila	Engineer	MCIT
David Nyangaka	Principal ICT Officer	MCIT
Dr. Kwangu Zabrone Masalu	Director of Research Information and Publication	TIE
Manyama Kafira	Curriculum Developer	TIE
Dr. Faith Shayo	Head of Education Sector	UNESCO
Gabriela Lucas	Associate National Project Officer	UNESO
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Andrew Moore	ICT and E-learning Expert	South Africa

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Commissioner for Education

Ministry of Education, Science and Technology

CHAPTER ONE

INTRODUCTION

1.1 Motivation for a teacher ICT competency standard

Tanzania's educational landscape is undergoing significant transformations to meet the demand for a skilled workforce and educated citizens, essential for sustainable development. These transformations also aim to leverage opportunities for unprecedented technological advancements and mitigate the impact of global challenges such as COVID-19 and emerging technologies such as Artificial Intelligence. Therefore, the education system must adapt to prepare a skilled workforce and educated citizens for current and future opportunities and challenges. This requires multifaceted initiatives, including integrating ICT in education to enhance quality, accessibility, equity, inclusivity, and lifelong learning.

To effectively integrate ICT in education, it is crucial to have skilled personnel who can use technology appropriately to enhance teaching and learning. Therefore, teachers at all levels must be equipped with relevant ICT skills and competencies to leverage technology's potential in transforming educational practices. These skills range from the basic use of ICT tools for teaching to creating adaptive learning environments that enable teachers to shift from traditional didactic methods to more progressive, learner-centred approaches.

To harmonise both pre-service and in-service teacher training, there is a need for national teacher standards that outline these ICT proficiencies. Tanzania's policy environment recognises this necessity. This ICT Standards for Teachers in Tanzania (ICT-CSTT) responds directly to specific education and training policies.

1.2 Guiding Instruments for ICT Integration in Education in Tanzania

The review and contextualization of the ICT-CSTT in Tanzania drew its mandates from several guiding instruments, such as the 2014 Education and Training Policy, 2023 edition, the National ICT Policy of 2016, the National Digital Education Strategy 2025 – 2030, and the Tanzania Digital Economy Strategic Framework 2024 – 2034.

1.2.1 The 2014 Education and Training Policy (2023 Edition)

The Policy envisions an educated Tanzanian population equipped with knowledge, skills, and a positive attitude to contribute to the nation's sustainable development. It identifies nineteen focus areas, three of which guide the application of Information and Communication Technologies (ICT) in education.

Sub-section 3.3 of the Policy calls for using ICT to facilitate teaching and learning, addressing the shortage of facilitators in subjects like science and mathematics by reaching multiple groups of learners simultaneously and promoting learning outside formal settings.

Sub-section 3.5 promotes adult and lifelong education through open and distance learning, recognizing ICT as a key enabler for maintaining a knowledgeable society.

Sub-section 3.6 advocates increasing the number of citizens educated in science and technology to improve their daily lives.

The Policy emphasizes the availability of competent human resources in the education sector, including teachers, tutors, and lecturers, to provide quality education. Despite acknowledging the challenges of using ICT due to a shortage of facilities and competent facilitators, the policy views ICT as a crucial driver for producing skilled human resources necessary for national development.

The Policy clearly articulates the Government's commitment to promoting and utilizing ICT to enhance various aspects of education and achieve its overarching goals. Therefore, preparing human resources, as outlined in the policy, necessitates dedicated efforts and commitment from all stakeholders. Developing standardized ICT skills for teachers is a crucial step towards fulfilling the policy's overall objectives.

1.2.2 The Draft National ICT Policy of 2023

The policy vision aims to create a digitally empowered Tanzania that leverages ICT to promote inclusive and sustainable social and economic development. The primary goal of this policy is to utilize ICT to drive inclusive economic growth, improve social services, foster innovation, and ensure digital inclusion for all Tanzanians. It emphasizes the development of ICT human capital and digital skills among Tanzanians to enable their participation in the digital economy, recognizing that skilled ICT professionals are crucial for digital transformation. Additionally, this policy reflects Tanzania's commitment to modernizing its ICT sector and aligning it with both national and international objectives. It also encourages the adoption of emerging technologies and prepares the industry for future advancements, including Artificial Intelligence (AI), Augmented Reality, Big Data, 3D technologies, the Internet of Things (IoT), and Blockchain.

1.2.3 The National ICT Policy of 2016

The policy's vision is to establish a knowledge-based society in Tanzania that is economically, socially, and culturally enriched through the application of Information and Communications Technology (ICT). The primary goal is to accelerate socio-economic development with the potential to transform Tanzania into an ICT-driven middle-income economy and society. The policy emphasizes developing human capital and strengthening ICT leadership to champion the creation of this knowledge society. It reflects Tanzania's commitment to aligning its ICT sector with the National Development Vision 2025 and addresses challenges posed by the emerging digital age, such as strengthening cybersecurity, promoting e-services and local content, and expanding broadband infrastructure to bridge the digital divide.

1.2.4 The Tanzania Digital Economy Strategic Framework 2024 – 2034

The National Digital Economy Strategic Framework aims to transform Tanzanians by providing advanced, supportive, and affordable digital technologies, solutions, and skills for social and economic activities.

Pillar three of the framework focuses on developing human capital, particularly digital literacy and skills. It emphasizes the importance of cultivating a skilled and competent workforce to effectively

utilize digital technologies and drive innovation within the digital economy. Citizens need to possess essential knowledge and skills to engage with and leverage digital technologies effectively. One way to disseminate digital skills to the public is through digitally savvy teachers, who can cultivate skilled human capital and knowledgeable citizens through ICT.

1.2.5 The National Digital Education Strategy 2025 – 2030

The National Digital Education Strategy 2025–2030 aims to leverage digital technology in education to enhance learning outcomes. It seeks to improve access to and the safe use of digital technology while integrating it into education and training. The strategy covers seven focus areas. Five of these—ICT integration in the curriculum, digital content development, digital assessment, research innovation and entrepreneurship, and emerging technologies—require upskilling ICT competencies for teachers. The human resource and capacity-building aspect of the strategy guides the development of an ICT competency standard for teachers to support ICT integration in education. Therefore, revising the ICT competency standard for teachers is an implementation of this strategy.

1.2.6 Tanzania Vision 2050

Tanzania Development Vision (TDV) 2050 purpose is to create a prosperous, just, inclusive, and self-reliant Tanzania. Vision 2050 focuses on human development, underpinned by robust economic growth and wealth creation to raise living standards and eradicate poverty in all its forms. The target 12 of the Vision states that Tanzanians are competent, confident creators and users of digital products and services. Four drivers identified as key for fueling the effective realization of the TDV 2025 are integrated logistics, science and technology, research and development, and digital transformation.

The Vision indicates that that digital transformation can significantly propel Tanzania towards its 2050 goals by enhancing economic growth, improving service delivery, and fostering innovation through digital technologies. Thus, Tanzania envisions a digitally proficient society that embraces emerging technologies including artificial intelligence, block chain technologies and internet of things, ensures nationwide access to reliable communication and internet services, fosters innovation, promotes socio-economic development, supports data-driven decision-making, high-frequency data, and positions itself as a regional hub for technology development, app creation, and digital content.

In this context, the development and implementation of the 2025 ICT CSTT is a strategic intervention to strengthen teacher capacity and equip them with the skills needed to prepare learners for active participation in the digital economy. By enabling teachers to effectively use, teach, and model digital tools and practices, the ICT-CSTT directly contributes to the achievement of TDV 2050. Moreover, since digital transformation is one of the four critical enablers of the Vision, embedding ICT competencies in teacher education is essential for developing the human capital required to drive technological advancement, innovation, and inclusive development across all sectors of society.

1.3 Alignment with Regional and Global Frameworks

At the regional level, African heads of state have declared seven aspirations and made commitments to address various challenges, positioning Africa competitively by 2063. These aspirations are outlined in Agenda 2063 – The Africa We Want. Specifically, Aspiration One aims to ensure African people become well-educated and skilled citizens, supported by science, technology, and innovation

for a knowledge society. This aspiration highlights the importance of science and technology in preparing well-educated and skilled citizens. Additionally, the heads of state agreed to catalyze an education and skills revolution and actively promote science, technology, research, and innovation to build knowledge, human capital, capabilities, and skills to drive innovations for Africa.

Globally, the 2030 Agenda for Sustainable Development Goals (SDGs) under the United Nations aims to transform lives through education, recognizing it as a key driver of development and essential for achieving other SDGs. SDG4 calls for ensuring inclusive and equitable education and promoting lifelong learning opportunities for all. Specifically, target 4.c states:

By 2030, substantially increase the supply of qualified teachers, including through international cooperation for teacher training in developing countries, especially least developed countries and small island developing states.

The framework for action acknowledges teachers as central to achieving the SDG4-Education 2030 agenda. Both teachers and teacher educators are fundamental to ensuring quality education. Therefore, they should be empowered, motivated, and equipped with appropriate skills and competencies.

UNESCO provides various ICT-based guidelines and frameworks to interpret UN commitments on education, science, and technology and facilitate country adoption. These include the Open Education Resources Recommendations (2019), AI Competency Framework for Teachers (2024), and the ICT Competency Framework for Teachers (version 3, 2018), which guide the development of thematic policies and master plans for building teachers' capacities in using ICT pedagogically. This last document has been fundamental to the revision of the ICT-CSTT.

1.4 Overview of the document organisation

This is a revision of the 2015 ICT competency standard for teachers in Tanzania (ICT-CSTT), incorporating new developments as articulated in the policies and strategies. Also, the revision has been informed by the 2018 UNESCO's ICT competency framework for teachers (ICT-CFT), emerging technological trends, and the revised ICT standard is referred to as the 2025 ICT competency standard for teachers in Tanzania (2025 ICT-CSTT).

Chapter 2 presents the rationale and possible applications of the 2025 ICT-CSTT. Also, the Chapter highlights the existence of regional and international ICT frameworks for teachers. Furthermore, it illuminates the impact of 2015 ICT-CSTT and other development trends.

Chapter 3 covers the main part of the 2025 ICT-CSTT. The chapter begins by introducing the structure of the 2025 ICT-CSTT and the working of the standard. Then, the subsequent sections present the detailed competencies and their associated elements, organized into the three progressive levels - Knowledge Acquisition (KA), Knowledge Deepening (KD) and Knowledge Creation (KC).

Chapter 4 illustrates implementation arrangements of the 2025 ICT-CSTT. The chapter identifies various organs charged with different roles and responsibilities in implementing the ICT-CSTT for in-service teachers and pre-service teachers.

CHAPTER TWO

2 TOWARDS A TANZANIAN ICT COMPETENCY STANDARD FOR TEACHERS

2.1 Why an ICT Competency Standard for Teachers (CST)?

In the preceding chapter, it is evident that national policy in Tanzania advocates for enhanced teacher competencies in the effective utilization of ICT for teaching, learning, and school administration. However, ICT in Education is a wide field and the specific ICT skills teachers require may not be initially apparent. Without authoritative guidance, teacher education institutions often develop their own curricula, resulting in a patchwork of approaches and coverage. Vendors can also contribute to this confusion by offering training that advances their own agendas, to sell software or provide instruction on the use of their digital tools.

When prioritizing specific competencies and standardising teacher ICT training curricula, Tanzanian ICT competency standards for teachers become central.

2.2 The value proposition of an ICT Competency Standard for Teachers in Tanzania (ICT-CSTT)

There are six obvious applications the ICT-CSTT would support,

- **Teacher standards:** The ICT-CSTT should inform the content of any formal national teacher standards, specifically when describing teacher's ability to exploit technology.
- **Performance indicator tools:** The framework would be invaluable when developing criteria for assessing national levels of teacher ICT competencies and analyzing training initiatives. It would help identify what skills should be assessed and what these skills look like at varying levels of sophistication.
- **Teacher education curricula:** The ICT-CSTT might shape ICT in Education curricula at teacher training colleges, faculties of education, and other teacher education institutions. This would ensure that all service providers are offering similar training and covering the essential ICT skills.
- **Training materials:** The framework would be instrumental in the development of teacher professional development courses for both in- and pre-service teachers. Courses and materials would be developed to elicit the skills or provide the knowledge sets as identified in the framework.
- **Evaluation of third-party training courses:** When MoEST is faced with endorsing third party training courses the framework can provide criteria to assess the coverage or skills gaps that a course might offer.

- **ICT in Education policy:** The framework provides guidance when revising, updating or developing new national ICT in Education policies and any accompanying guidelines. The scope of the framework would inform policy developers what to include in new or updated policy documents, or what guidelines to develop.

2.3 Existing international teacher ICT competency frameworks

Many nations have already faced the challenge of integrating ICT in education and have devised solutions. While there are obvious differences between countries, there are also a lot of similarities. Contextualising an existing ICT Competency Framework makes a sensible starting point. The key is to avoid the unnecessary effort of creating something entirely new when existing solutions are already available. Existing frameworks can be tweaked and refined to ensure they speak to a specific national context.

Some of the existing frameworks that have informed the ICT-CSTT include:

1. UNESCO ICT Competency Framework for Teachers (ICT CFT):

This framework is designed to guide pre-and in-service teacher training on the use of digital technologies in education. It covers competencies across three levels of sophistication required for teaching and learning, school administration, and professional development. The framework identifies 18 ICT competencies and sub-divides them into 64 specific objectives, ranging from understanding national ICT priorities to applying digital skills in pedagogy and assessment.

2. European Framework for the Digital Competence of Educators (DigCompEdu):

Developed by the European Commission, DigCompEdu provides a comprehensive framework for educators to develop digital competencies. It includes six areas: professional engagement, digital resources, teaching and learning, assessment, empowering learners, and facilitating learners' digital competence.

3. ISTE Standards for Educators:

The International Society for Technology in Education (ISTE) offers standards that focus on empowering educators to harness technology for learning. The standards include competencies such as learner, leader, citizen, collaborator, designer, facilitator, and analyst.

Of specific interest for Tanzania is the UNESCO ICT CFT as it has already informed previous attempts to develop a national ICT CFT.

2.4 The 2018 UNESCO ICT Competency Framework for Teachers (CFT)

There have been three versions of the UNESCO ICT CFT over the years: 2008, 2011 and a third version in 2018.

In response to the United Nations Sustainable Development Goals, UNESCO has developed version 3 of the ICT CFT to guide pre-service and in-service teacher training in designing and using ICTs throughout the education system. The framework is intended to be adapted to support national and institutional objectives based on each country's specific needs.

Version 3 incorporates the demand for skills arising from recent technological advancements and developments in pedagogy within the ICT and education sectors. It addresses the impact of these

advancements on education and learning, including artificial intelligence (AI), mobile technologies, the Internet of Things, and Open Educational Resources (OER), aiming to promote the creation of inclusive knowledge societies.

The 2nd and 3rd frameworks categorize the 18 ICT in education-related competencies into three distinct levels, each encompassing six aspects (see Figure 1). Each level corresponds to the typical adoption of technology by teachers.

- The first level, **Knowledge Acquisition**, is characterized by teachers using technology to enhance existing classroom practices; the second level,
- **Knowledge Deepening** involves teachers beginning to harness technology's true potential, thereby transforming their teaching methods and enriching learner learning experiences.
- The third level, **Knowledge Creation**, is transformative, where both educators and learners collaboratively generate knowledge and devise innovative strategies to excel within the highest levels of Bloom's taxonomy.

The six aspects of the framework include,

- understanding ICT in education policy,
- curriculum and assessment,
- pedagogy,
- application of digital skills,
- organization and administration, and
- teacher professional learning.

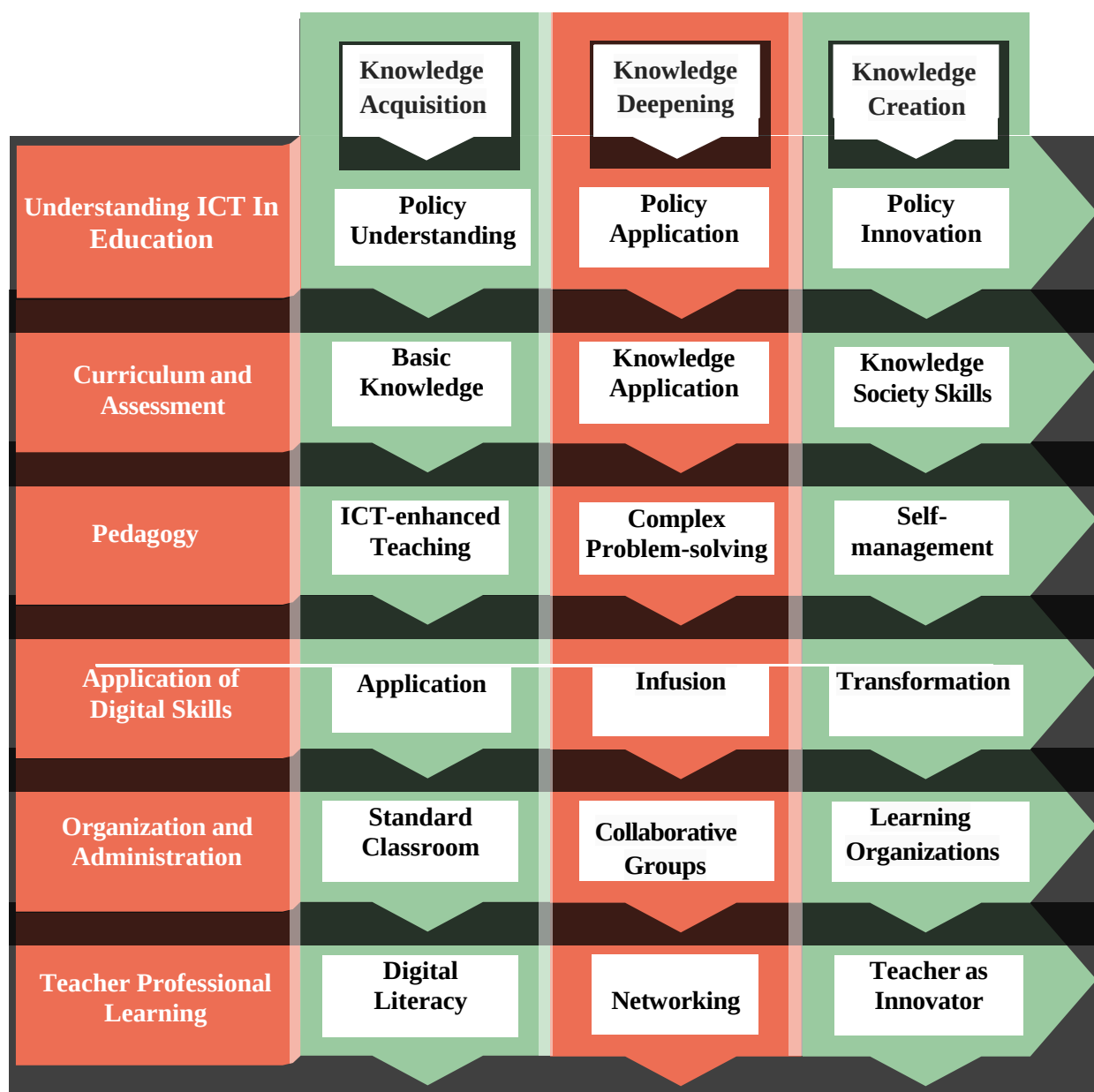


Figure 1: Structure of the UNESCO ICT CFT (2018).

2.5 The 2015 Tanzania ICT Competency Standard for Teachers

In 2015, Tanzanian education stakeholders adapted the UNESCO ICT Competency Framework for Teachers (ICT CFT) to create a localized version known as the ICT Competence Standard for Teachers in Tanzania (ICT-CSTT). Considering the country's ICT adoption level at the time, the team reduced

the scope of the original framework. The CT-CSTT includes two levels: Technology Literacy and Knowledge Deepening, while incorporating all six aspects identified in the 2011 UNESCO ICT-CFT.

<i>Component:</i> \ <i>Approach:</i>	<i>Technology Literacy</i>	<i>Knowledge Deepening</i>
UNDERSTANDING ICT IN THE CLASSROOM	Policy awareness	Policy awareness
CURRICULUM AND ASSESSMENT	Basic Knowledge	Knowledge application
PEDAGOGY	Integrate technology	Complex problem solving
ICT	Basic tools	Complex tools
ORGANISATION AND ADMINISTRATION	Standard classroom	Collaborative groups
TEACHER PROFESSIONAL DEVELOPMENT	Digital literacy	Manage and guide

Figure 2: illustrates the structure of the 2015 ICT-CSTT.

2.6 Impact of the ICT-CSTT and other development trends

Although the ICT-CSTT was progressive and well-intentioned, evidence indicates that the framework was underutilized. Its significant recent utilization is in ICT training for pre-primary and primary school teachers under the BOOST project, by the Ministry of Education, Science and Technology. Previously, the standard was seldom consulted. In 2015, the document was arguably ahead of its time, with many users unclear about its purpose. Consequently, course or programme designers lack encouragement to use it.

Since 2015, Tanzania has made substantial strides in adopting ICT and integrating it into the education sector. These advancements are evident in several areas, including the expansion of ICT infrastructure to connect remote regions, the enhancement of digital services across various sectors, the improvement of ICT facilities in all educational and training institutions, and the increased adoption of e-learning platforms, especially in tertiary institutions.

Recently, universities and institutions have embarked on transformations to improve the competence of graduates through the Higher Education for Economic Transformation (HEET) project. The HEET project addresses, among other aspects, the integration of digital technologies and the application of innovative pedagogical approaches and assessment methods in the teaching and learning process, and capacity building of academic staff. Consequently, these institutions have developed or reviewed their curricula to include innovative teaching and assessment pedagogies, 21st-century skills, and cross-cutting issues such as gender, inclusive education, and environmental and social safeguards.

Consequently, several universities and educational institutions have been proactive in integrating relevant ICT competencies into their courses, often surpassing the recommendations of the dated 2015 ICT-CSTT in terms of current knowledge and practices.

Similarly, the number of studies showcasing the integration of ICT in enhancing teaching and learning, especially in STEM subjects, is on the rise. Additionally, the use of emerging technologies such as artificial intelligence (AI) in educational practices is gaining traction. There are numerous indicators reflecting the maturity of ICT applications, demonstrating significant improvement compared to a decade ago.

Despite this remarkable progress, the current level of ICT integration in teaching and learning, particularly at basic education levels, remains insufficient.

There remains significant potential for the effective and efficient use of ICT to enhance learning outcomes, access, and lifelong learning. Consequently, the need for a localized ICT Competency Framework for Teachers (ICT CFT) is as strong as ever. However, due to recent advancements in educational technology, it is essential to revise the 2015 ICT-CSTT to align with the 2018 UNESCO ICT-CFT and incorporate the latest developments within the ICT in Education sphere.

2.7 Existing African ICT CFTs and supporting open content

Several national ICT CFTs exist across Africa. Three validated frameworks that have influenced the development of the ICT-CSTT include Rwanda's ICT Essentials for Teachers¹, Uganda's Contextualized ICT-CFT², and Zambia's Technology-Enabled Learning Competency Framework for Teachers³. These frameworks are based on the UNESCO ICT CFT but have been tailored to meet local needs.

Additionally, there is a repository of openly licensed course materials developed by UNESCO member nations, many of which are African. These materials are designed to develop the competencies outlined in both national and UNESCO ICT CFT frameworks. Due to their open licenses, these digital study units can be adapted to create course materials that meet the ICT competency requirements of Tanzanian teachers. They are resident of UNESCO's hub on OER Commons⁴.

What follows is the revised and updated ICT Competency Standard for Teachers in Tanzania (ICT CSTT) for 2025.

2.8 Situation Analysis: ICT in Tanzanian Teacher Education

The analysis outlines the current state of ICT infrastructure, teacher competency, policy environment, and existing challenges in Tanzania's education sector, serving as the foundation for the new ICT-CSTT.

– Policy and Institutional Framework

Tanzania's commitment to leveraging ICT in education is firmly rooted in national policy and strategic documents. This provides a strong foundation for the new ICT-CSTT.

- **Education and Training Policy (ETP) 2014, Edition 2023:** This policy is the cornerstone of the government's education agenda. It explicitly states the government's intention to "**The**

¹ The Rwandan *ICT Essentials for Teachers* framework can be viewed at https://elearning.reb.rw/pluginfile.php/14952/mod_folder/content/0/ICT%20CFT%20for%20Rwanda.pdf

² The Ugandan framework can be accessed at <https://unesdoc.unesco.org/ark:/48223/pf0000265422>

³ The Zambian framework can be found at <https://oasis.col.org/server/api/core/bitstreams/76fe52cb-bdec-41b5-8c28-cc56b7c96bcb/content>

⁴ Access the open content on OER Common's UNESCO ICT CFT Hub: <https://oercommons.org/hubs/unesco>

Government, in collaboration with stakeholders, will ensure that Information and Communication Technology is used in the provision of education and training at all levels according to needs." This includes strengthening the development of Science, Technology, and Innovation (STI) and integrating ICT into teaching and learning. The policy provides a mandate to develop a curriculum that supports online and distance learning, and it also emphasizes introducing ICT as a basic subject from primary school onwards.

- **National Digital Education Strategy (NDES) 2024-2030:** This is a key supplementary document that translates the ETP's vision into a detailed action plan. It aims to integrate ICT at all levels to improve learning outcomes, focusing on digital content development, teacher training, and research.
- **National ICT Policy of 2016:** These overarching policies set the national vision for ICT, with a strong focus on developing human capital and digital skills, which directly informs the education sector's strategies.

The existence of these high-level policies signals that the political will and strategic direction for ICT integration are in place, creating a supportive environment for a new competency standard.

– **Government-Led Training Initiatives and Their Impact**

The government, in collaboration with development partners, has launched several large-scale projects to address the ICT skills gap and infrastructure deficit. These projects represent the current state of on-the-ground implementation.

- **Training of Primary School Teachers (BOOST Project):** The "BOOST Primary Student Learning Outcomes" project is a major initiative to enhance digital transformation in primary education. It has equipped numerous primary schools and teacher resource centers with ICT devices, including computers, laptops, projectors, and smart TVs. As part of this project, hundreds of teachers, headteachers, and education officers have received training. The project leverages the MEWAKA program for this training.
 - **Impact:** Teachers trained under BOOST report that pupils are now more engaged in lessons, using computers for tasks like writing and online research. The project has also helped to ease the textbook shortage by enabling teachers and students to access digital materials.
- **Training of Secondary School Teachers (SEQUIP Project):** The "Secondary Education Quality Improvement Project" (SEQUIP) is focused on improving access and quality in secondary education. A significant component of SEQUIP is dedicated to **"Digitally-Enabled Effective Teaching and Learning."** It includes the development of a basic ICT in education strategy, providing equipment, and delivering basic ICT training to tens of thousands of secondary school teachers.
 - **Impact:** The project has contributed to the adoption of new curriculum reforms and has been instrumental in the professional development of secondary teachers. It provides the necessary infrastructure and training to support a more digitally-enabled learning environment.

- **Training and Infrastructure in Teacher Education (TESP Project):** The "Teacher Education Support Project" (TESP) has been critical for improving the quality of pre-service teacher training. It has provided training to over 1,300 trainers and equipped all 35 public teacher colleges with ICT equipment, connecting them to the National ICT Broadband Backbone (NICTBB). TESP has also distributed tablets to teachers and students in these colleges, improving access to digital tools.
 - **Impact:** TESP has directly improved the capacity of teacher colleges to produce new teachers who are more prepared to integrate technology into their future classrooms.
- **In-Service Teacher Training:** The "Continuous Professional Development (CPDC) Program," known by its Swahili acronym **MEWAKA**, is a school-based program designed to address the fact that many in-service teachers previously received no training for years.
 - **Impact:** MEWAKA is a national, decentralized program where teachers meet in "Communities of Learning" (CoLs) to share best practices and improve their pedagogical skills. It uses a Learning Management System (LMS) developed by the Tanzania Institute of Education (TIE) to provide training modules and guides. This program is foundational for ensuring the ongoing professional development of teachers, including their ICT competencies.

– Existing Challenges and Opportunities

Despite these significant initiatives, several challenges persist, which the new ICT-CSTT must address.

- **The Digital Divide and Inadequate Infrastructure:** While projects like BOOST and SEQUIP have provided equipment, the distribution and reliability of ICT infrastructure remain inconsistent, especially in remote regions. A lack of reliable internet, power, and maintenance continues to be a major barrier.
- **Varying Skill Levels and Fragmented Training:** Without a unified national standard, training initiatives, while well-intentioned, can lead to a "patchwork of approaches and coverage." This has resulted in a wide range of ICT skill levels among teachers, with many still focused on basic computer literacy rather than advanced pedagogical integration.
- **Limited Pedagogical Training:** Current training often lacks the depth to move teachers from simply *using* technology to *integrating* it effectively into their lessons to enhance learning.
- **Sustainability and Scale:** Ensuring the sustainability of these projects is a challenge. The new ICT-CSTT, by providing a national standard, offers the opportunity to create a more coordinated and sustainable approach to teacher training. By contextualizing the UNESCO global framework, Tanzania can adopt a proven model and tailor it to its specific needs, ensuring all future efforts are aligned.

– ICT Infrastructure in Schools

The availability of ICT infrastructure remains a significant and uneven challenge. While the government has made progress, particularly with the **National ICT Broadband Backbone (NICTBB)**, and projects like BOOST, SEQUIP AND TESP, a stark divide persists between urban and rural schools.

- **Connectivity and Devices:** Many rural schools still lack reliable electricity and internet access. Even in connected schools, there is often a shortage of computers and other devices, with the few available being primarily used for administrative tasks rather than teaching and learning.
- **Maintenance and Technical Support:** There's a notable absence of dedicated technical support staff in most schools. This means that when equipment fails, it often remains broken for extended periods, making it difficult for teachers to rely on ICT for their lessons.
- **E-Content:** While some digital learning materials are available, there is a general scarcity of localized, curriculum-aligned e-content, particularly in subjects beyond basic ICT skills.

– **Current Teacher Competency**

Documents consistently shows a gap between the desired level of ICT competency and the reality among Tanzanian teachers. While there is a strong willingness to learn, several factors hinder their progress.

- **Varying Skill Levels:** The ICT skills of teachers are highly varied. Younger, pre-service teachers often show greater readiness to use technology, but even they are limited by a lack of access and structured training. Older, in-service teachers, especially those in rural areas, often have little to no experience with ICT in a pedagogical context.
- **Focus on Basic Literacy:** Most of the existing ICT training for teachers, when available, focuses on basic computer literacy and administrative tasks (e.g., using Microsoft Office). There is a lack of training on **pedagogical skills**—how to effectively integrate ICT into the teaching of specific subjects to improve learning outcomes.
- **Positive Attitude but Limited Application:** Many studies indicate that teachers have a positive attitude toward using ICT and understand its potential to enhance education. However, this positive perception does not always translate into classroom application due to the aforementioned infrastructure and training gaps.

– **Policy and Institutional Landscape**

The Tanzanian government has a strong policy framework and a clear vision for ICT in education, but implementation faces challenges.

- **Policy Support:** The **ICT Policy of 2016**, along with the **Education and Training Policy 2014 (version 2023)**, all emphasize the importance of integrating ICT into the curriculum and teacher training.
- **Institutional Efforts:** Institutions like the Tanzania Institute of Education (TIE) are involved in curriculum development to support ICT integration. Projects like the **BOOST, SEQUIP AND TESP** aim to improve graduate competencies, including digital skills. However, the lack of a current, authoritative national standard for teacher competencies has led to a fragmented approach.

– **Challenges and Opportunities**

The analysis reveals both significant challenges that need to be addressed and clear opportunities for the new ICT-CSTT.

- **Challenges:**
 - **The Digital Divide:** A major barrier is the ongoing disparity in ICT access and skills between urban and rural areas.
 - **Lack of Specific Guidance:** The absence of a current, detailed, and widely adopted national competency standard for teachers has resulted in uncoordinated training efforts and a lack of standardized skill assessment.
 - **Limited Pedagogical Training:** Training programs do not adequately focus on moving teachers from basic ICT use to advanced, pedagogical applications.
 - **Sustainability:** ICT projects often face sustainability issues due to inadequate funding for maintenance, upgrades, and ongoing professional development.
- **Opportunities:**
 - **New Policy Alignment:** The development of a new ICT-CSTT aligns perfectly with the updated national policies and ongoing projects.
 - **Contextualization from Global Frameworks:** By adapting the UNESCO ICT-CFT 2018, Tanzania can leverage a globally-recognized model while tailoring it to its specific needs and challenges, avoiding the effort of starting from scratch.
 - **Emerging Technologies:** The new standard can incorporate new and emerging technologies like AI, IoT, and mobile learning, preparing teachers and students for the future economy.
 - **Open Educational Resources (OER):** The existence of OER from other African nations presents an opportunity to develop and localize training materials more affordably and efficiently.

2.9 Stakeholder engagement

The review of the 2015 ICT Competence Standards for Teachers (ICT-CSTT) in Tanzania employed an active and inclusive stakeholder engagement process to ensure the standards are relevant, practical, and aligned with national education goals, digital transformation strategies, and global best practices. The 2025 ICT CSTT aims to equip teachers with the necessary digital skills to effectively integrate ICT into teaching, learning, and professional development. To achieve this, a wide range of stakeholders were involved.

The 2025 ICT Competence Standards for Teachers in Tanzania have been developed through a comprehensive consultative process, including national and local level consultations with stakeholders such as teachers, civil society organizations, TENMET, faith-based organizations, development partners, and government officials at both expert and senior levels.

The engagement process began with the formation of a national team of government experts and a needs assessment to identify existing gaps in teachers' ICT competencies and understand classroom realities. Consultations, workshops, and technical working sessions were conducted to gather feedback on the essential digital competencies required for teachers across different levels and contexts. Practicing teachers played a critical role in this process, ensuring the standards are realistic, achievable, and aligned with real classroom needs.

Comments and suggestions provided by stakeholders were incorporated into the revised document, which was formally endorsed by the government.

CHAPTER THREE

3 THE ICT COMPETENCY STANDARD FOR TEACHERS IN TANZANIA

3.1 Introduction

The 2025 ICT-CSTT outlines 15 key competencies that Tanzania teachers should adopt. These competencies are categorized into three proficiency levels, each progressively more advanced. Some competencies are tailored for beginners in ICT, while others are designed for experienced users.

Moreover, these competencies span various teacher responsibilities, including teaching and learning, administration, and ongoing professional development. To provide clarity, the high-level competencies have been further detailed into 82 specific objectives. These objectives offer concrete examples of how teachers might demonstrate each competency.

Additionally, there are recommendations for teacher educators and training developers on designing interventions to achieve each objective.

3.2 Cross-Cutting Values

The risk of having an extensive list of competencies is that we might overlook how ICT skills are embedded within a broader set of values. It's important to understand that the ICT-CSTT is most effective when you recognize the cross-cutting skills and values that should guide the implementation of ICT competencies training. These include:

3.2.1 Gender equity:

- **Access and Affordability:** Ensure that both men and women have equal access to ICT resources. This includes making technology affordable and accessible to all, regardless of gender.
- **Relevant Content:** Develop and provide content that is relevant and beneficial to both genders. This can help in addressing the specific needs and interests of women and men equally.
- **Safety and Security:** Create a safe online environment where women feel secure using ICT. This includes measures to protect against online harassment and cyberbullying.
- **Empowerment:** Use ICT to empower women by providing opportunities for education, employment, and entrepreneurship. This can help in promoting gender equality and economic growth.

3.2.2 Inclusivity:

- **Accessibility:** Ensure that digital tools and resources are accessible to all learners, including those with disabilities. This can involve using assistive technologies like screen readers, text-to-speech software, and adjustable font sizes.

- **Differentiated Instruction:** Use ICT to provide personalized learning experiences that cater to diverse learning needs. This helps in accommodating learners with varying abilities and learning styles.
- **Cultural Sensitivity:** Incorporate culturally relevant content and materials that reflect the diverse backgrounds of learners. This promotes a more inclusive learning environment.
- **Language Support:** Provide multilingual resources and tools to support learners who speak different languages. This can help in bridging language barriers and ensuring all learners can participate fully.
- **Collaborative Learning:** Use ICT to facilitate collaborative learning opportunities, allowing learners to work together and learn from each other, regardless of their individual challenges.

3.2.3 Community Engagement:

Community engagement should be recognised as a cross-cutting value within the newly revised ICT CSTT because it ensures that the benefits of digital transformation extend beyond the classroom and into the broader community. By leveraging ICT, schools can become hubs of interaction, knowledge sharing, and mutual support, fostering stronger relationships with parents, local organisations, and other stakeholders. This includes using technology to communicate effectively with the community, showcase student achievements, and invite local participation in school initiatives. Furthermore, schools can contribute to community upliftment by offering ICT-mediated services such as digital literacy workshops, online access to key resources, and targeted training opportunities that empower individuals with the skills needed for social and economic advancement. Embedding community engagement into teacher competencies not only strengthens trust and collaboration but also maximises the societal return on investment in ICT for education

It is important to recognize that while these values may not be explicitly mentioned in the following tables, they should always be implicitly understood.

3.3 The structure and key focus areas of the ICT-CSTT

3.3.1 Skill Levels

The 2025 ICT-CSTT adopts the three-level structure of the 2018 UNESCO ICT Competency Framework for Teachers. Similarly, the ICT-CSTT has maintained the names of each level;

1. Knowledge Acquisition (KA),
2. Knowledge Deepening (KD) and
3. Knowledge Creation (KC).

As outlined in the UNESCO ICT-CFT, the three knowledge levels represent a progression of skills, starting from basic awareness (KA), advancing to application (KD), and culminating in creation (KC), with each level increasing in sophistication.

3.3.2 Skill Areas

The ICT-CSTT adopts all six skill areas of the global framework, which are referred to as aspects in the 2018 UNESCO ICT-CFT. Two of the six skill areas, curriculum and assessment and pedagogy, are merged to create Curriculum, Pedagogy and Assessment.

The two skill areas are closely related and can be incorporated into the curriculum standard. Therefore, the 2025 ICT-CSTT has five skills areas:

- Understanding ICT in Education Policy,
- Curriculum, Pedagogy and Assessment,
- Application of Digital Skills,
- Organization and Administration, and
- Teacher Professional Learning.

Within the skills levels and skills areas, the 2025 ICT-CSTT places special emphasis on;

- General skills for ICT integration in teaching, learning and assessment
- Understanding of various innovative pedagogies
- Skills for authoring digital teaching and learning resources
- Skills for using multimedia content and teaching aids
- Skills for various emerging technologies such as AI and 3D models.

As mentioned above, the cross-cutting values should also inform the skills areas.

3.3.3 Skills Matrix – Mapping skills levels and skills areas

Teachers should ideally progress through the different skills levels as their ICT knowledge and skills improve. At a given moment, teachers might have different skill levels within each of the skills areas. For example, they might be operating at the Knowledge Deepening level for Curriculum, Pedagogy, and Assessment areas, but be at the Knowledge Acquisition level for Professional Development. When measuring teachers' skill levels, any instrument should create a matrix of levels and areas and be able to plot an individual's position within the grid.

Note that acquisition of all the objectives at the Knowledge Creation level for all Tanzanian teachers is highly unlikely. The framework matrix provides a landscape on which to plot existing skill sets and plan future training initiatives.

The framework doesn't specifically outline progression criteria for reaching the next level. This is something that individual training organizations would need to develop, based on what they consider an acceptable minimum base level. For instance, a teaching training college might decide that all pre-service teachers should be operating at the Knowledge Deepening level upon graduation.

It's worth noting that the ICT CSTT is a framework and does not mandate a minimum base level. While the Ministry of Education, Science and Technology might mandate a minimum level in the future, the framework itself provides a reference for desirable ICT skills in education. The ICT CSTT will inform the development of further policies, CPD curricula, training courses, materials, and ICT skill tests.

Individual teacher training colleges, Faculties of Education, and in-service teacher training entities will be able to differentiate themselves by how they interpret and implement the framework to train teachers in ICT for Education.

3.3.4 Example activities

The ICT CSTT organizes ICT competencies and related objectives by skills level. It also includes some example activities for each objective. These examples are intended to provide teacher trainers with suggestions for supporting the acquisition of the competency or objective. They are not mandatory and do not represent the only approach to achieving them. The examples are designed to spark ideas for incorporating into training interventions.

3.4 Knowledge Acquisition (KA)

The Knowledge Acquisition level aims to empower teachers to be effective and productive members of the school community and, in turn, to support learners in becoming engaged and productive members of society.

Teachers who have mastered the competencies in the Knowledge Acquisition level can:

1. Interpret the ICT requirements of the Education and Training Policy (ETP) environment and other related specific institutional guidelines and articulate how they can be translated into their classroom practices.
2. Analyse curriculum standards and identify how ICT can be used pedagogically to support attaining the standards.
3. Identify and use ICT tools for teaching, learning and management.
4. Organize the physical environment to ensure technology inclusively supports different learning methodologies.
5. Use ICT to support their professional development.

Table 1 presents goals, objectives, and example activities that clarify what each competency entails.

Knowledge Acquisition Table of Competencies

Table 1: Knowledge Acquisition Level

SKILLS AREAS	CURRICULAR GOAL FOR TEACHER TRAINING	TEACHER COMPETENCY (A teacher can...)	OBJECTIVE (A teacher should be able to...)	EXAMPLE ACTIVITIES
Understanding ICT in Education Policy	Policy Understanding. Teachers interpret and relate the ICT requirements of the ETP and other official guidelines to classroom practices.	Interpret the ICT requirements of the ETP and other official guidelines and articulate how they can be translated in their classroom practices.	KA.1.a. Identify, Interpret, and articulate how ETP and related policies/guidelines implementation on ICT is shaping classroom practice.	- Discuss the ICT requirements of the ETP and other official guidelines and match with common classroom practices. - Identify those practices that support ICT aspects of the ETP and related guidelines. - Teachers identify and analyse their own classroom practices in terms of how their teaching practices contribute to ETP and related guidelines implementation.
			KA.1.b. Identify the principles of using ICT in education in a safe, ethical and accessible manner.	- Investigate the benefits, and also drawbacks, of using ICT in education. - Identify appropriate ICT use to support and enhance their productivity, teaching methods, class administration and continuing professional development (CPD).

SKILLS AREAS	CURRICULAR GOAL FOR TEACHER TRAINING	TEACHER COMPETENCY (A teacher can...)	OBJECTIVE (A teacher should be able to...)	EXAMPLE ACTIVITIES
Curriculum, Pedagogy and Assessment	Basic Knowledge. Teachers have a basic knowledge of the potential benefits of incorporating a range of relevant ICT resources and productivity tools into any subjects to support teaching, learning and assessment.	Analyse curriculum standards, teaching methods and assessment strategies and identify how ICT can be used to support teaching and learning.	KA.2.a. Match specific curriculum standards to particular software packages and computer applications and describe how these standards are supported by these applications.	Identify specific curriculum standards, software packages, digital tools and resources that support the attainment of these standards.
			KA.2.b. Search for and identify Open educational resources (OER) to support curriculum standards.	Search for OER, using both specialized and common search engines, and select open resources to teach specific curriculum standards.
			KA.2.c. Identify various innovative pedagogies and their relevant application to the learning context.	Explore various teaching methods, including flipped classroom, project-based learning, game-based learning, blended learning and collaborative learning, tailored to the specific learning environment and the level of technological resources available.
			KA.2.d. Identify and select ICT tools to support assessment strategies.	Identify how ICT can support different ways to assess learners, such as summative, formative, diagnostic, authentic, portfolio, peer and

SKILLS AREAS	CURRICULAR GOAL FOR TEACHER TRAINING	TEACHER COMPETENCY (A teacher can...)	OBJECTIVE (A teacher should be able to...)	EXAMPLE ACTIVITIES
				oral assessments. Explore dedicated e-assessment tools for both formative and summative assessment.
Application of Digital Skills	Application. Teachers use ICT tools such as computers, smart boards, television, mobile devices, accessibility software, and networks for teaching, learning and-management purposes within a framework of 'safe and ethical use'.	Identify and use ICT tools for teaching, learning and management.	KA.3.a. Create simple presentations.	- Discuss the purpose of presentation software for education and demonstrate general features and functions. - Create a presentation on a topic of choice.
			KA.3.b. Demonstrate knowledge of ICT tools, functions, scope for graphics, audio, video editing and create simple graphics and animations.	Teachers familiarize themselves with ICT tools, features, scope and demonstrate proficiency by creating an infographic and/or animated video that can be used as a teaching aid.
			KA.3.c. Develop knowledge of the fundamentals of multimedia and simulations and develop basic multimedia tools that serve as effective teaching and learning aids.	- Develop basic simulations to illustrate specific elements of the curriculum content standard. - Explore different types of multimedia, including AR (Augmented Reality) and VR

SKILLS AREAS	CURRICULAR GOAL FOR TEACHER TRAINING	TEACHER COMPETENCY (A teacher can...)	OBJECTIVE (A teacher should be able to...)	EXAMPLE ACTIVITIES
				(Virtual Reality).
			KA.3.d. Demonstrate knowledge of the basic principles of cyber safety/security and media and information literacy.	• Demonstrate knowledge of good practices of cyber security and media and information literacy. • Ensure safe use of social media and mobile devices.
			KA.3.e. Use a search engine to find curriculum related resources.	• Demonstrate the use of a search engine using simple keyword searches to find subject-related resources. • Discuss and consider which keyword strategies elicit the best search results.
			KA.3.f. Identify various authoring tools for creating digital resources	• Identify and understand suitability, functions, strength and limitations of various authoring tools for creating digital resources
			KA.3.g. Use drill-and-practice software to support learning.	• Analyse the effectiveness of tutorial and drill-and-practice packages, in supporting the acquisition of specific subject matter knowledge.

SKILLS AREAS	CURRICULAR GOAL FOR TEACHER TRAINING	TEACHER COMPETENCY (A teacher can...)	OBJECTIVE (A teacher should be able to...)	EXAMPLE ACTIVITIES
				Analyse learner proficiency data as identified by the tutorial/drill and practice software
			KA.3.h. Evaluate educational software, online resources, and match them to curriculum standards and learners' needs.	- Search the Internet to identify appropriate digital resources and tools for specified learning objectives or standards, and analyse these packages for accuracy and curriculum alignment. - Discuss the criteria used for analysing and evaluating the digital tools and resources, and their suitability for different learning styles and abilities. - Discuss assistive technologies including AI for persons with disabilities
			KA.3.i. Use record keeping digital tools to keep learner records.	Discuss the purposes and advantages of a digital record-keeping system, and demonstrate the use of such a system to record, for example, marks, attendance, and merit points.

SKILLS AREAS	CURRICULAR GOAL FOR TEACHER TRAINING	TEACHER COMPETENCY (A teacher can...)	OBJECTIVE (A teacher should be able to...)	EXAMPLE ACTIVITIES
			KA.3.j. Identify various AI tools and other AI powered tools suitable for education purposes	- Discuss various AI tools to understand their functions, capability, scope and ethical issues. - Use basic functions of AI tools identified.
			KA.3.k. Use social networks and collaboration tools to communicate and collaborate with the wider learning community.	Identify, strategize and use various collaboration tools and social networking apps to incorporate teachers, learners, parents and other interested parties into a wide support group.
Organization and Administration	Standard Classroom. Teachers rearrange the classroom or lab layout, as needed, to incorporate ICT into their lessons, fostering an inclusive learning environment.	Organize the physical environment to ensure technology supports different learning methodologies in an inclusive manner.	KA.4.a. Organize learners and ICT facilities in a learning environment to support teaching and learning.	Coordinate learning process where each learner has access to a computer or device (e.g. computer labs) and in contexts where learners share computers (e.g. clusters). Keep in mind any individualized technology needs to ensure all can engage with the learning process
			KA.4.b. Support small groups that include learners with different abilities, ages, genders, and socio-cultural	Coordinate learning process where not all learners have access to a digital device but work collaboratively to achieve learning

SKILLS AREAS	CURRICULAR GOAL FOR TEACHER TRAINING	TEACHER COMPETENCY (A teacher can...)	OBJECTIVE (A teacher should be able to...)	EXAMPLE ACTIVITIES
			and linguistic backgrounds – to use digital devices in the classroom.	objectives. Teachers should be able to implement blended learning, flipped classrooms, station rotation and project-based learning models to achieve this.
			KA.4.c. Identify appropriate technologies, including mobile devices, and pair with corresponding social arrangements to support learning goals.	Coordinate learners and technology to support learning outside of the classroom or school, such as in the community, homework activities or online learning environments.
			KA.4.d. Monitor and protect digital tools and resources in the school environment.	- Install and update anti-virus software and accessibility features, audit and track computer equipment, and monitor the security of classrooms, laboratories and other places where computer equipment is stored. - Investigate how the Internet of Things might allow tracking and monitoring of devices and entry access.

SKILLS AREAS	CURRICULAR GOAL FOR TEACHER TRAINING	TEACHER COMPETENCY (A teacher can...)	OBJECTIVE (A teacher should be able to...)	EXAMPLE ACTIVITIES
Teacher Professional Learning	Digital Literacy. Teachers develop digital skills to support professional improvement.	Use ICT to support their professional development.	KA.5.a. Identify basic ICT skills and develop professionally by acquiring ICT skills to improve productivity.	• Use digital tools to save time and ease administrative tasks such as reporting, record- keeping and timetabling. • Use digital channels to enhance communication with management, colleagues, parents, learners and other stakeholders.
			KA.5.b. Use ICT to acquire subject resources and discover new teaching strategies.	• Use ICT to identify up-to-date teaching and learning resources. • Interact with other teachers via online channels and social networks to consider alternative teaching strategies – in particular to ensure inclusion, diversity, participation and openness.
			KA.5.c. Identify and manage Internet conduct and safety issues.	• Discuss and develop appropriate strategies to deal with internet safety including cyberbullying. Ensure appropriate behaviour and actions when interacting with others online. Identify the origins and impact of viruses, scams, spam, cookies and pop-

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SKILLS AREAS	CURRICULAR GOAL FOR TEACHER TRAINING	TEACHER COMPETENCY (A teacher can...)	OBJECTIVE (A teacher should be able to...)	EXAMPLE ACTIVITIES
				up adverts. Manage confidentiality of personal data and know what to do when confronted with inappropriate content.
			KA.5.d. Model the principles of digital citizenship.	Model suitable practice when online, particularly in the areas of communication, etiquette, observing the law, protection of self and learners, ensuring health and wellness, and observing rights and responsibilities.
			KA.5.e. Evaluate digital teaching resources.	Evaluate the suitability of digital teaching and learning resources, particularly in terms of 'authority', 'purpose', 'coverage', 'currency', 'objectiveness' and 'accuracy'. Make use of OER and social networks to find resources.

3.5 Knowledge Deepening (KD)

The Knowledge Deepening level empowers teachers to apply ICT to enhance their effectiveness across all facets of their profession in their specific contexts. In the realm of teaching and learning, they will guide learners in leveraging knowledge to tackle complex, high-priority issues faced in real-world scenarios.

Teachers who have mastered the competencies in the Knowledge Deepening level can:

1. Design, modify and implement classroom practices that support ETP, institutional guidelines and/or national policies, and international commitments (e.g. UN Conventions),
2. Design ICT-supported project-based learning activities and integrate them across subject content, teaching and assessment processes to create a conducive ICT-enhanced learning environment where learners demonstrate mastery of curriculum standards.
3. Blend varied ICT tools and resources to create an integrated digital learning environment to support
4. learners' higher-order thinking and problem-solving skills. Use digital tools flexibly to facilitate collaborative learning, manage learners and other learning partners, and administer the learning process.
5. Use technology to interact with professional networks to support their own professional development

Table 2 presents goals, objectives, and example activities that clarify what each competency entails.

Knowledge Deepening Table of Competencies

Table 2: Knowledge Deepening Level

SKILLS AREAS	CURRICULAR GOAL FOR TEACHER TRAINING	TEACHER COMPETENCY (A teacher can...)	OBJECTIVE (A teacher should be able to...)	EXAMPLE ACTIVITIES
Understanding ICT in Education Policy	Policy Application. Teachers apply ETP, related guidelines and directives in designing classroom practices to address high-priority problems.	Design, modify and implement classroom practices that support ETP, institutional guidelines and/or national policies, international commitments (e.g. UN Conventions).	KD.1.a. Apply principles of ICT in Education as expressed in ETP and related guidelines in their own teaching	Analyse gaps and implications when attempting to implement ICT in relation to ETP and other related education guidelines.
			KD.1.b. Analyse issues that arise in implementing these principles and how these issues can be addressed.	Identify potential solutions to barriers for ICT implementation.
Curriculum, Pedagogy and Assessment	Knowledge Application. Teachers leverage appropriate ICT tools and resources to design curriculum-aligned lessons utilizing modern teaching methods, such as collaborative or project-based learning, coupled with authentic assessments.	Design ICT-supported learning activities across subject content, supporting different teaching and assessment methods, to create a conducive learning environment.	KD.2.a. Use ICT appropriately to achieve curriculum standards.	Apply appropriate digital tools to support curriculum standards, such as using a word processor's grammar checker to encourage learner reflection on language construction, accessibility checkers, translation tools, using Augmented Reality (AR), and simulations in science to encourage learner manipulation of variables to

				appreciate impact.
			KD.2.b. Design learning activities to engage learners in reasoning with, collaborating on, and solving real-world problems.	• Design learner activities that allow learners to collaborate to identify solutions to a real-world problem. • Identify technology that can support these activities, such as the use of mobile technologies and social networking groups to encourage discussion, and access to outside expertise. Use public spaces such as libraries and museums. • Alternatively, encourage learners to work together to write code to provide a solution to a specific community challenge, for example the need for more efficient traffic lights.
			KD.2.c. Develop and apply knowledge and performance-based rubrics to assess learners' understanding of subject matter concepts, skills and processes.	• Using a word processor, spreadsheet or online rubric tool to design and create a rubric that provides guidance in assessing learner responses across at least four levels of sophistication.

			KD.2.d. Harness ICT to support alternative assessment strategies, including portfolios, graphic organizers, review and reflection tools, and peer assessment.	Design and create an assessment strategy that uses alternative assessment methods (in addition to tests and examinations) and exploits digital tools and platforms; for example, e-portfolio storage, and peer assessment platforms and learning styles.
			KD.2.e. Customize and Adapt OER to support local contexts and curriculum standards.	Search on the Internet for OER, analyse the suitability of the resources for new contexts by applying quality criteria, and adapt them to support learning.
			KD.2.f. Structure lesson plans and learning activities that use progressive teaching and learning methods.	Select an appropriate teaching method for your context and content. In a lesson plan identify how the lesson will be launched, how learners will access the learning resources, how they will engage with activities, what the final output will be, and how learners will be assessed.
			KA2.h. Explore how different	Scrutinize innovative

			teaching methods work in specific situations, considering the diverse characteristics of learners.	pedagogies such as design thinking, enquiry-based, experimental-based, problem-based, game-based, and blended learning and design a lesson relevant to the context with respect to the learner's diversity attributes.
Application of Digital Skills	Infusion. Teachers employ digital tools to understand and teach key concepts.	Blend varied ICT tools and resources to create an integrated digital learning environment that encourages learners to use higher order thinking and problem-solving skills.	KD.4.a. Use digital tools and resources to encourage learners to use higher order thinking skills within their subjects.	Use specialized packages that are appropriate to the subject matter and that support visualization (charts and graphs), data analysis (spreadsheets), role-play (Tiktok, Reels, Video) and simulations (PhET).
			KD.4.b. Evaluate the accuracy and usefulness of online tools and resources in support of subject areas.	Evaluate the suitability of digital teaching and learning resources. Consider if the resources and digital tools are really useful in supporting the curriculum standards, or are acting as a distraction.
			KD.4.c. Use digital authoring tools to design curriculum materials.	Author teaching and learning resources using digital tools and resources from popular productivity suite programs to specialized applications.

			KD.4.d. Customize and use school management digital tools such as record-keeping tools to keep learner records.	• Capture marks, generate reports and keep attendance records using school or project management tools.
			KD.4.e. Leverage a variety of digital communication tools tailored to the diverse needs of learners to foster learner collaboration both inside and outside the classroom.	• Use technology to interact with learners when not in the classroom. Tools such as social networking groups, the school intranet and bulk texting can be used to support learning after school hours by sharing resources, alerting learners to assignment deadlines, and responding to requests for help on homework.
			KD.4.f. Connect digital devices to create a network for learners and teachers to share resources and work together on lesson activities.	• Use interactive smart boards that share their content and resources with learner devices and allow learners to volunteer information back to the white board. This can be achieved using 'clickers' and/or the board's built-in sharing functionality linking learner mobile phones and tablets.
			KD.4.g. Evaluate digital tools to support learners with	• Identify and use technology

			disabilities, sociolinguistic minorities, and ensure gender equality in the delivery of education.	tools that can support learners with disabilities. This includes assistive technologies such as text-to-speech utilities, open-source accessibility options and vibrating and flashing alerts.
			KD.3.h. Use AI tools and other emerging technologies to support the design, delivery and administration of education.	• Demonstrate application of emerging technologies and AI, to support learning and assessment such as the correction and enhancement of language, generation of media and fact checking.
			KD.3.i. Use digital authoring tools to create a lesson, course or programme	• Use digital authoring tools, such as PowerPoint, Captivate, LMS, iSpring, Google classroom, to integrate learning resources into a lesson, course or programme.
			KD.3.j. Create video, graphics, like 3D models, and other multimedia for use as teaching and learning aids.	• Develop or enhance presentations in PowerPoint, images with Paint or other graphics packages, audio podcasts using Audacity, videos using DaVinci Resolve, animations in PowerPoint and simulations in Anylogic.
Organization and	Collaborative Groups.	Use digital tools flexibly to facilitate,	KD.4.a. Access, evaluate and disseminate digital resources to	• Organize technology so that it can best support learners'

Administration	Teachers foster collaborative, interactive and inclusive learning environments, they facilitate learning that is dynamic and encourages collaboration using digital tools and resources	inclusive, collaborative learning, manage learners and other learning partners, and administer the learning process.	support learner-centred learning activities and social interactions to all including learners with disabilities.	needs – including those with different abilities, ages, genders, socio-cultural and linguistic backgrounds – when they are working on activities that require them to research, debate, collaborate and create. Consider whether all the learners in a group need access to technology or if one or two devices would suffice. Also consider if learners will need technology when they are on the move.
			KD.4.b. Manage learner activities in a technology-enhanced environment.	• Organize technology to support collaborative learner activities that also provide evidence of engagement. • Use technology, such as a learning management system (LMS), social media or blogging, and others, to provide learners with a platform for interaction.
			KD.4.c. Manage assistive technologies/tools to support learners with diverse needs.	• Determine how to organize assistive technologies and tools in different learning environments so that

				learners with disabilities will have access to them. • Apply the use of screen readers, speech recognition software, screen magnifiers, braille displays, eye tracking devices and other assistive technologies to support learners with special needs.
			KD.4.d. Devise an ICT integration strategy for their subject/department.	• Reflect on a subject/department vision and develop an implementation strategy for how technology might be better used. • Consider how technology can be organized to better support teaching, learning and administration. What are the technology gaps that are barriers to achieving the vision? What staff skills need to improve to achieve this?
			KD.4.e. Set up digital communication mechanisms so that the education and training institution can disseminate information to the wider school	• Canvass the wider education and training institution community to determine which digital tools are popular. Communication tools could include bulk

			community.	texting, group e-mails and the use of social media. • Create and maintain such a channel.
Teacher Professional Learning	Networking. Teachers use ICT to access resources and professional development networks	Use technology to interact with professional networks to support their own professional development.	KD.5.a. Use ICT networks to access and share resources that support professional development goals.	• Search for and engage with dedicated national, regional and global teacher professional development networks that connect teachers and encourage sharing of expertise and resources.
			KD.5.b. Use ICT networks to access education experts and learning communities to support professional development goals.	• Develop a personal learning network that includes following education experts on popular social networks, as well as participate in a network of local teachers who share interests, this could include local TRCs.
			KD.5.c. Use professional networks to access, analyse and evaluate professional learning opportunities.	• Search for and participate in online training courses and communities that offer professional development opportunities. Consider podcasts, webinars, portals, blogs, and massive open online courses (MOOCs) that offer teacher education courses, and accredited courses offered by local

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				higher education institutions.
			KD.5.d. Identify and use digital repositories to access digital content hosted nationally, regionally and internationally.	• Search and use national, regional and international digital repositories to access digital content for teaching, learning, and professional growth.

3.6 Knowledge Creation (KC)

The goal of the Knowledge Creation level is to capacitate teachers to create Knowledge Societies for learners, school colleagues and the community.

Teachers who have mastered the competencies in the Knowledge Creation level can:

1. Critique the ETP on ICT in education and related National/institutional policies/guidelines and international commitments (e.g., UN Conventions). Suggest harmonization, revisions, and design improvements, and speculate on the impact of these changes.
2. Determine the best ways to incorporate innovative pedagogies and assessments to achieve mastery of multidisciplinary curriculum standards and 21st-century skills. While establishing learning parameters, encourage learners to self-manage in learner-centred and collaborative learning.
3. Design knowledge communities and use digital tools to support pervasive learning.
4. Devise a technology mechanism for their school education and training institution to turn it into a learning organization.
5. Continually develop, experiment, coach, innovate, and share best practices to determine how the education and training institution can best be served by technology.

Table 3 presents goals, objectives, and example activities that clarify what each competency entails.

Knowledge Creation Table of Competencies

Table 3: Knowledge Creation Level

SKILLS AREAS	CURRICULAR GOAL FOR TEACHER TRAINING	TEACHER COMPETENCY (A teacher can...)	OBJECTIVE (A teacher should be able to...)	EXAMPLE ACTIVITIES
Understanding ICT in Education Policy	Policy Innovation. Teachers innovate implementable policy reforms on ICT integration in education.	Critique ETP on ICT in education, related National/institutional policies/guidelines and/or international commitments (e.g. UN Conventions),-suggest harmonization, revisions, design improvements and speculate on the impact of these changes.	KC.1.a. Conduct a critical analysis of the ETP on ICT in education, along with related national and institutional policies, guidelines, and international commitments (e.g., UN conventions).	- In collaboration with other staff members, conduct critical analysis on the ETP and other guidelines - Articulate in writing what needs to change in order for ICT and education policy directives to be carried out. What needs to happen to ensure compliance? What are the implications of doing this at education and training institutions and national levels?
			KC.1.b. Design, implement, and modify reform programs for school-level education and training institutions accordingly.	In collaboration with other staff members, design and implement a series of initiatives designed to bring the education and training institution in line with the national vision as articulated in ICT and all related education policies/guidelines.
Curriculum, Pedagogy and Assessment	Knowledge Society Skills. Simplify “Teachers use ICT to create curriculum-based	Determine how best to incorporate innovative pedagogies and assessment to	KC.2.a. Analyze the curriculum standards to identify opportunities where learners can master	Analyze the curriculum of allied subjects and determine which standards best support learner problem-solving, critical thinking,

SKILLS AREAS	CURRICULAR GOAL FOR TEACHER TRAINING	TEACHER COMPETENCY (A teacher can...)	OBJECTIVE (A teacher should be able to...)	EXAMPLE ACTIVITIES
	learning activities that develop 21st-century skills. They employ innovative teaching methods and assessments and help learners set their own learning goals and plans.	achieve mastery of multidisciplinary curriculum standards and 21 st century skills. While determining learning parameters, encourage learner self-management in learner-centred and collaborative learning.	knowledge, society skills and complex cognitive skills, taking into account learning styles, abilities and sociolinguistic skills.	collaboration, information management and creativity, and how they could be combined across subjects.
			KC.2.b. Guide learners to make sound ICT choices relevant to teaching/learning methodology to acquire the appropriate skills to search for, manage, analyze, evaluate and use information relevant to the curriculum.	- Ensure learners have media and information literacy skills and appropriate digital tools to process information to support study across subjects. - Learners need to be able to synthesize their findings across disciplines. Consider a research project that encourages learner teams to research different elements of a topic and then develop a graphic display, an app or a web page showing the intersection of their findings.
			KC.2.c. Design online materials and activities that engage learners in 21st Century Skills.	- Devise a set of activities that task learners to work together to produce a digital product or artefact or develop a virtual environment. - Support teams of learner research and curate a web-based, virtual reality (VR) or Augmented reality

SKILLS AREAS	CURRICULAR GOAL FOR TEACHER TRAINING	TEACHER COMPETENCY (A teacher can...)	OBJECTIVE (A teacher should be able to...)	EXAMPLE ACTIVITIES
				(AR) exhibition. Alternatively, learners can be required to create a series of infographics on curriculum topics.
			KC.2.d. Guide learners to make appropriate ICT choices to achieve curriculum standards that support 21st century skills	Analyse the curriculum and determine which standards best support learner reasoning, planning, reflection and knowledge building. Consider webquests or opportunities for learners to research and build mini tutorials aimed at teaching their peers.
			KC.2.e. Help learners design project plans and activities that engage them in collaborative, problem-solving research or artistic creation.	- Plan a lesson, prior to a big project, to provide learners with organizational skills. - Encourage learners to develop project plans with activities, timelines, milestones and allocation of responsibilities for each project team member.
			KC.2.f. Help learners develop innovative assessment strategies to test their own understanding of key subject matter and ICT	Devise a strategy to encourage learners to see the benefits of different assessment strategies. Introduce journaling, blogging, peer assessment and encourage learners

SKILLS AREAS	CURRICULAR GOAL FOR TEACHER TRAINING	TEACHER COMPETENCY (A teacher can...)	OBJECTIVE (A teacher should be able to...)	EXAMPLE ACTIVITIES
			skills.	to probe and comment on one another's entries.
			KC.2.g. Help learners create digital media resources that support their learning and interaction with other audiences.	Identify and alert learners to media tools that might prove useful for their learning and interactions. Consider mobile apps to edit photographs and video, graphics packages that support the design of infographics, website builders, and alternative publishing options to reach a wide audience.
			KC.2.e. Help learners reflect on their own learning.	Devise a set of milestone activities within a project that encourage learners to reflect on their learning processes. Consider learner blogs or video diaries for recording and sharing reflective experiences.
Application of Digital Skills	Transformation. Teachers and learners use connected digital tools, resources and platforms to produce knowledge and work collaboratively.	Design knowledge communities and use digital tools to support widespread, integrated and accessible learning.	KC.3.a. Create an online learning environment to support learning beyond classroom boundaries.	Assemble and integrate a set of technologies to support learner learning that can function outside the classroom. Consider using an LMS to create a basis for online activities, or identify social networks to perform this function. Such as the TIE LMS, Google Classroom or Moodle Cloud and others' after

SKILLS AREAS	CURRICULAR GOAL FOR TEACHER TRAINING	TEACHER COMPETENCY (A teacher can...)	OBJECTIVE (A teacher should be able to...)	EXAMPLE ACTIVITIES
				'using an LMS'
			KC.3.b. Use digital tools to support online collaboration between learners and members of the knowledge community.	Set up digital tools that encourage collaboration. Consider incorporating online word processors, interactive boards, live video feeds, presentation packages and spreadsheets that allow multiple developers to work on the same document, or find a free wiki platform that allows multiple users to create collaborative products. Mobile technologies could be especially useful to achieve this objective.
			KC.3.c. Use digital tools to track and evaluate learner contributions to learning in the knowledge community.	- Identify and use online tools to monitor learner contributions to learning. - Consider using platforms that offer AI-enabled diagnostic tools, such as LMS, to provide statistics measuring learner engagement.
			KC.3.d. Encourage learners to develop their own digital tools to support learning.	Encourage learners to use digital tools to find or create new solutions. Learners might use productivity tools or code their own solutions.

SKILLS AREAS	CURRICULAR GOAL FOR TEACHER TRAINING	TEACHER COMPETENCY (A teacher can...)	OBJECTIVE (A teacher should be able to...)	EXAMPLE ACTIVITIES
			KC.3.e. Identify and use various data analytics tools to analyze learners data	• Use data analytic tools to generate useful patterns and insight from various learner data sets. • Generate, or identify, and analyse learner performance data sets. Data sets might include spreadsheet data, LMS statistics or school management system datasets.
			KC.3.f. Evaluate emerging technologies to determine usefulness, such as AR/VR, AI, Gamification etc.	• Determine the implications of using emerging technologies for supporting teaching and learning and propose acceptable use policy.
Organization and Administration	Learning Organizations. Teachers and administrators mold Education and Training Institutions as learning organizations in which all actors are involved in the learning process.	Devise technology strategy for their education and training institution to turn it into a learning organization.	KC.4.a. Organize digital knowledge-building environments to enhance teaching and learning.	• Experiment with and evaluate different knowledge-building technology options and determine the implications for the school in adopting each. • Evaluate tools and platforms such as LMS, social networking groups and collaborative writing platforms.
			KC.4.b. Devise a strategy to implement an educational institution wide technology integration plan.	• Lead management in the development of a strategy to manage ICT in school. • Consider developing an ICT

SKILLS AREAS	CURRICULAR GOAL FOR TEACHER TRAINING	TEACHER COMPETENCY (A teacher can...)	OBJECTIVE (A teacher should be able to...)	EXAMPLE ACTIVITIES
				budget, auditing existing ICT equipment, projecting future ICT needs, creating a maintenance strategy, and determining staff training requirements and what support the wider community could provide.
			KC.4.c. Create a two-way flow of information among all institutional stakeholders through varied communication channels.	Create school communication channels between stakeholders and enhance the mechanisms to ensure information flows both to and from the school.
Teacher Professional Learning	Teacher as Innovator. Teachers produces new knowledge about learning and teaching practice through innovative and peer engagement	Continually develop, experiment, coach, innovate, and share best practice to determine how the education and training institution can best be served by technology.	KC.5.a. Support the process of implementing the National vision in alignment with ETP, related guidelines and directives.	- Identify and support the implementation of the school ICT strategy. - Collect and analyse data to develop an ICT strategy. Showcase to peers and management the benefits of collecting and interpreting data using a school management system or other database.
			KC.5.b. Foster research and innovation by promoting continuous professional	Devise and offer a series of professional development initiatives aimed at supporting colleagues in the acquisition of skills to exploit

SKILLS AREAS	CURRICULAR GOAL FOR TEACHER TRAINING	TEACHER COMPETENCY (A teacher can...)	OBJECTIVE (A teacher should be able to...)	EXAMPLE ACTIVITIES
			development among colleagues.	technology, with the aim of enhancing teaching and learning. Alternatively, recruit groups of staff members to work together through online professional development courses.
			KC.5.c. Continually evaluate and reflect on professional practice to promote innovation and improvement.	Organize staff development initiatives where colleagues present innovative teaching strategies that use ICT. They either intend to implement or have implemented, and encourage discussion and reflection.
			KC.5.d. Share and discuss best practices in teaching via professional communities, and peer mentorships.	- Showcase innovative school practice to groups outside the school through online professional groups or through national, and international, teacher competitions. - Coordinate and lead CPD social platforms
			KC.5e. License and distribute their original teaching resources as OER.	Share exemplary teaching and learning resources – such as lesson plans, worksheets, lab notes and tests – with the wider education community by releasing these

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SKILLS AREAS	CURRICULAR GOAL FOR TEACHER TRAINING	TEACHER COMPETENCY (A teacher can...)	OBJECTIVE (A teacher should be able to...)	EXAMPLE ACTIVITIES
				resources with an open licence.

CHAPTER FOUR

4 IMPLEMENTATION ARRANGEMENTS

4.1 Custodian of the ICT-CSTT

The Ministry of Education, Science and Technology (MoEST), through the Teacher Education Unit (TEU), is responsible for overseeing and coordinating the implementation of the ICT-CSTT in mainland Tanzania.

The 2025 ICT-CSTT employs a flexible implementation strategy to cater to the diverse groups of teachers and stakeholders involved in teacher training. This diversity includes varying levels of ICT integration maturity among teachers, differences in contextual practices across pre-primary, primary, secondary schools, teacher colleges, tertiary colleges, and universities, as well as distinctions between in-service and pre-service teachers. The ICT-CSTT covers all categories of teachers in Tanzania.

4.2 Coordination of in-service teacher training

The framework and its learning content are very useful for training all in-service teachers. Since practicing teachers are in-service teachers and represent the future roles of pre-service teachers, using the framework in regular on-the-job training helps all teachers in Tanzania develop the necessary skills.

The TEU will oversee the implementation of the ICT-CSTT for in-service teacher training by coordinating all relevant bodies. The Unit will ensure that all ICT-related capacity-building programs or training for in-service teachers align with the ICT-CSTT competencies. This alignment will harmonize various ICT-based capacity-building programs and training provided to teachers, facilitating the assessment of their impact on teaching and learning practices.

The Tanzania Institute of Education (TIE) will be responsible for module content development of the ICT-CFT, hosting of module content, and conducting training to in-service teachers.

The Department of Teacher Educational Administration at the President's Office – Regional Administration and Local Government (PO-RALG) will be responsible for organizing training and enforcing the implementation of the framework at the school level.

The School Quality Assurance (SQA) Unit of the Ministry of Education, Science and Technology will be responsible for monitoring and evaluation of the ICT-CSTT implementation. Table 4 outlines the roles and responsibilities of key ICT-CSTT implementing bodies.

4.3 Coordination of pre-service teacher training

For pre-service teacher training, the overall coordination of the training will be under the Teacher Education Unit (TEU). The Unit will collaborate with various implementing organs to facilitate rollout of the competencies to all graduates from teacher colleges, respective institutions and universities.

The Tanzania Institute of Education (TIE) will be responsible for integration of the prescribed competencies into teacher college curricula. Thus, the institute will coordinate operationalization of the framework to ensure all teacher college graduates acquire at least Knowledge Acquisition ICT competencies.

The National Council for Technical and Vocational Education (NACTVET) will be responsible for guiding relevant institutions under its jurisdiction to map and or adopt the competencies into their curriculum. The Council will devise means to ensure graduating teachers from its institutions attain competencies at least at knowledge acquisition level.

Similarly, the Tanzania Commission for Universities (TCU) will guide relevant universities to ensure teacher graduates possess at least Knowledge Deepening level of the prescribed ICT competencies.

The implementation of the ICT-CSTT at universities and institutions will remain optional for some. Universities and institutions participating in programmes such as the Higher Education for Economic Transformation (HEET) project are already integrating ICT competencies into their curricula, encompassing innovative teaching methods, 21st-century skills, and cross-disciplinary capabilities. Universities dedicated to advancing and enhancing ICT competencies in their teacher graduates beyond the framework's stipulations should be actively encouraged to pursue such efforts.

Table 4: ICT-CFT Implementing Arrangements

Level	Responsible Institution	Department/Agency	Responsibility
In-service Teacher training	MoEST	Teacher Education Unit (TEU)	1. Coordinate ICT-CSTT implementation 2. Coordinate teacher training
		School Quality Assurance (SQA)	Monitoring and evaluation of the ICT-CSTT
		Tanzania Institute of Education (TIE)	1. Conducting research/feedback on the implementation on ICT-CSTT 2. Training content development for ICT-CSTT teacher training. 3. Conduct teacher training
	PORALG	Department of Educational Administration.	Organization of training and enforce implementation of the framework at school level
Pre-service Teacher training	MoEST	TEU	Coordinate ICT-CSTT implementation
		TIE	Incorporation of ICT-CSTT competencies in teacher education curriculum
		Teacher colleges	ICT-CSTT teacher training in alignment with ICT-CSTT competencies
		NACTVET	Guide institutions to incorporate ICT-CSTT competencies in curriculum
		TCU (Education Colleges/School of Education)	Guide institutions to incorporate ICT CSTT competencies in curriculum

4.4 Monitoring and Evaluation

The monitoring and evaluation (M&E) aspects of the ICT-CSTT for in-service training will be conducted by the School Quality Assurance (SQA) department. The SQA shall carry out M&E on the implementation of the ICT-CSTT within its jurisdictions. M&E for tertiary institutions will fall under the jurisdictions of NACTVET and TCU.

4.5 Review of the ICT-CFT

However, the field of ICT in Education is constantly evolving, with new and emerging technologies shifting skills priorities. It is anticipated that the framework will date relatively quickly. It is

recommended that a revision of the ICT-CSTT is reviewed and revised within 5-7 years of its publication date.

5 CONCLUSION

The 2025 ICT-CSTT provides a framework of teacher competencies to facilitate ICT integration in education.

The ICT-CSTT aligns with various guiding documents, including the 2014 Education and Training Policy (ETP) 2023 edition, the 2024 National ICT Policy, and the National Digital Education Strategy 2024-30. Through teacher empowerment, the vision of achieving a population equipped with knowledge, skills, and a positive attitude to contribute to the nation's sustainable development could become a reality.

The revised standard updates the 2015 ICT-CSTT by incorporating new technological trends and realities, allowing for the development of a set of competencies for contemporary teachers in Tanzania.

These competencies are categorized into three progressive levels: Knowledge Acquisition (KA), Knowledge Deepening (KD), and Knowledge Creation (KC). At each level, competencies are grouped to encompass five skill areas: understanding ICT in education policy; curriculum, pedagogy, and assessment; application of digital skills; organization and administration; and teacher professional learning.

The 2025 ICT-CSTT has many application contexts, such as training curricula for teachers, performance indicator tools for assessing levels of teacher ICT competencies, or evaluation of third-party training courses. Thus, the standard is suitable for in-service teacher training and could be adopted and integrated into the curriculum of pre-service teacher training across all levels of education.

4.

6 BIBLIOGRAPHY

AU, (2013). *Agenda 2063: The Africa We Want: African Union*. Available online at <https://au.int/agenda-2063/aspirations>

EU, (2017). Digital Competence Framework for Educators: EU Science Hub. Available online at https://joint-research-centre.ec.europa.eu/digcompedu_en

UN, (2015). *Transforming our world: the 2030 Agenda for Sustainable Development*. Available online at <https://sdgs.un.org/2030agenda>

UNESCO. (2018). *ICT Competency Framework for Teachers*. Available online at <https://www.unesco.org/en/digital-competencies-skills/ict-cft>

UNESCO. (2019). AI Competency Framework for Teachers. Available online at <https://www.unesco.org/en/articles/ai-competency-framework-teachers>

UNESCO. (2019). *Recommendation on Open Educational Resources (OER)*. Available online at <https://www.unesco.org/en/legal-affairs/recommendation-open-educational-resources-oer>

URT, (2023). *Education and Training Policy 2014 – Ed 2023*: Ministry of Education and Vocational Training. Available online at <https://www.moe.go.tz/sw/miongozo-nyaraka/rasimu-sera-mitaala>.

URT, (2023). *National ICT Policy*: Ministry of Information, Communication and Information Technology. Available online at <https://www.mawasiliano.go.tz/uploads/documents/sw-1693455522-DOCUMENT%20TO%20UPLOAD%20DRAFT%20AUGUST%20NICTP.pdf>

URT, (2024). *National Digital Education Strategy*: Ministry of Education and Vocational Training. Available online at https://www.moe.go.tz/sites/default/files/Draft_National_Digital_Education_Strategy%202024-2030-2.pdf

URT, (2024). *Tanzania Digital Economy Strategic Framework*: Ministry of Information, Communication and Information Technology. Available online at <https://www.mawasiliano.go.tz/document-groups/strategies>