THE UNITED REPUBLIC OF TANZANIA

MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGY

INFORMATION AND COMMUNICATION TECHNOLOGY COMPETENCY STANDARDS FOR TEACHERS IN TANZANIA

August 2025

Published by:

Ministry of Education, Science and Technology
Government City
Mtumba Area - Afya Street
P.O. Box 1040479
Dodoma, Tanzania.

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FOREWORD

The 2025 ICT Competency Standards for Teachers of Tanzania (ICT-CSTT) marks a significant milestone in our national efforts to transform the country's education. It aligns with the demands of a rapidly evolving digital era. This version builds upon the foundation laid by the 2015 ICT-CSTT. It 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, characterised by unprecedented technological advancement, the teaching force must be empowered with ICT skills that should also be integrated effectively into their day-to-day teaching and learning activities.

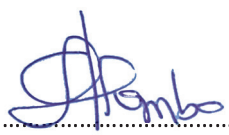
After all, ICT proficiency catalyses innovation and productivity, playing a crucial role in boosting the quality of education, improving learner outcomes, and enhancing national competitiveness in the global digital economy.

Subsequently, 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 of education. They emphasise 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 —attributes essential for national development and global citizenship.

As such, the Ministry of Education, Science and Technology (MoEST) acknowledges the strategic support and technical expertise provided by UNESCO in revising the 2015 ICT-CSTT. We also recognise the contributions of all stakeholders, including teacher training institutions, development partners, faith-based organisations, 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 champions the integration of ICT, 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 and align 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)

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
PO-RALG	President's 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 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), which create new or significantly improve processes, services, or business models. Digital innovations can also 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 refer to the ability to effectively and confidently use digital technologies and tools for various purposes. They encompass everything from basic computer literacy to advanced skills such as 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 non-traditional approaches to teaching and learning aimed at improving academic outcomes and addressing real problems by promoting equitable learning. They involve proactively introducing strategies and methods, such as 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, an acronym for the United Nations Educational, Scientific, and Cultural Organisation, is a specialised agency of the United Nations established in 1945. It aims to promote global 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.

A video diary is an application that facilitates and simplifies the recording of memories.

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.

ACKNOWLEDGMENT

The preparation of the 2025 ICT-CSTT was a collaborative effort of the Government, specifically involving the MoEST, the President's Office - Regional Administration and Local Government (PO-RALG) and the Ministry of Communication and Information Technology (MCIT), and UNESCO through the support of the UNESCO-Korea Funds-in-Trust Project on ICT Transforming Education in Africa Phase III, of whom I thank for their leadership, guidance and expertise throughout the development process. Their technical support and coordination in aligning these standards with national curriculum frameworks and teacher training programmes are highly appreciated. The collaboration shaped these standards in accordance with global best practices and the specific needs of Tanzania's education system.

Moreover, I acknowledge the valuable contributions of the related government institutions including the Tanzania Institute of Education (TIE), teacher training institutions notably the Dar es Salaam University College of Education (DUCE), a constituent college of the University of Dar es Salaam, and the Open University of Tanzania as well as development partners, the Tanzania Education Network/Mtandao wa Elimu Tanzania (TEN/MET), faith-based organisations (Tanzania Episcopal Conference, Christian Social Services Commission and the National Muslim Council of Tanzania), civil society organisations, 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 grounded in context.

Special appreciation goes to the national team for their technical expertise and tireless efforts in the development, review and refinement of this document as follows:

1	Lina Rujweka	Director of ICT	MoEST
2	Rajabu Kangalawe	Officer - Commissioner for Education	MoEST
3	Joseph Timothy Hilal	Principal Teacher Education Officer	MoEST
4	Melchiory Baltazary	Assistant Director of ICT	PO-RALG
5	Sophia Kibila	Engineer	MCIT
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7	Kwangu Zabrone Masalu	Head of Education Technology	TIE
8	Manyama Charles Kafira	Curriculum Developer	TIE
9	Dr. Faith Shayo	Head of Education Sector	UNESCO
10	Gabriela Lucas	Associate National Project Officer	UNESCO
11	Dr. Said Jafari	Expert	IFM
12	Andrew Moore	ICT and E-learning Expert	South Africa

Finally, I thank all individuals and institutions whose dedication and collaboration facilitated and enabled the development and concretisation of these standards as a key step toward building a digitally competent and inclusive teaching workforce in Tanzania.

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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, as well as emerging technologies like 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 the integration of 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 the potential of technology 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, including 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 19 focus areas, three of which guide the application of Information and Communication Technologies (ICT) in education.

Subsection 3.3 of the Policy encourages the use of ICT to facilitate teaching and learning, addressing the shortage of facilitators in subjects such as 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, recognising ICT as a key enabler for maintaining a knowledgeable society.

Subsection 3.6 advocates for raising the number of citizens educated in science and technology to improve their daily lives.

The Policy emphasises 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 utilising 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 standardised 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 utilise ICT to drive inclusive economic growth, improve social services, foster innovation, and ensure digital inclusion for all Tanzanians. It emphasises the development of ICT human capital and digital skills among Tanzanians to enable their participation in the digital economy, recognising that skilled ICT professionals are crucial for digital transformation. Additionally, this policy reflects Tanzania's commitment to modernising its ICT sector and aligning it with both national and international objectives. It also encourages the adoption of emerging technologies. It 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). Its 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 emphasises the development of human capital and the strengthening of ICT leadership to champion the creation of a knowledge society. The Policy reflects Tanzania's commitment to aligning its ICT sector with the National Development Vision 2025, addressing 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 and empower Tanzanians by providing them with advanced, supportive, and affordable digital technologies, solutions, and skills for socioeconomic activities.

Pillar three of the framework focuses on developing human capital, particularly digital literacy and skills. It underscores the value of cultivating a skilled and competent workforce to effectively utilise digital technologies and drive innovation within the digital economy. Citizens need to possess essential knowledge and skills to effectively engage with and leverage digital technologies. 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 aims to improve access to and the safe use of digital technology, while integrating it into educational and training programmes. 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, thereby supporting the integration of ICT in education. Therefore, revising the ICT competency standard for teachers is an implementation of this strategy.

1.2.6 Tanzania Vision 2050

The Tanzania Development Vision (TDV) 2050 aims 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. Target 12 of the Vision states that Tanzanians are competent and confident creators and users of digital products and services. Four key drivers identified for fuelling the practical realisation of the TDV 2025 are integrated logistics, science and technology, research and development, and digital transformation.

The Vision further suggests that digital transformation can significantly propel Tanzania towards its 2050 goals by enhancing economic growth, improving service delivery, and fostering innovation through the use of digital technologies. Thus, Tanzania envisions a digitally proficient society that embraces emerging technologies, including artificial intelligence, blockchain technologies and the 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 are strategic interventions aimed at strengthening teacher capacity and equipping them with the skills necessary 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 achieving the TDV 2050 goals. Moreover, since digital transformation is one of the four critical enablers of the Vision, embedding ICT competencies in teacher education is crucial for developing the human capital necessary to drive technological advancements, 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 that Africans become well-educated and skilled citizens, supported by science, technology, and innovation, in a knowledge-based society. This aspiration underscores the significance of science and technology in fostering well-educated and competent citizens. Additionally, the heads of state agreed to catalyse an education and skills revolution, actively promoting science, technology, research, and innovation to build knowledge, human capital, capabilities, and skills that drive innovation for Africa.

Globally, the 2030 Agenda for Sustainable Development Goals (SDGs) under the United Nations aims to transform lives through education, recognising 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 play a crucial role in ensuring

the quality of education. Therefore, they should be empowered, motivated, and equipped with appropriate skills and competencies.

UNESCO provides various ICT-based guidelines and frameworks to help countries interpret UN commitments on education, science, and technology, facilitating their 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 in revising the ICT-CSTT.

1.4 Document Organisation Overview

This revision of the 2015 ICT competency standard for teachers in Tanzania (ICT-CSTT) incorporates new developments as outlined in relevant policies and strategies. Significantly, the 2018 UNESCO ICT competency framework for teachers (ICT-CFT), emerging technological trends, and the revised ICT standard, also known as the 2025 ICT competency standard for teachers in Tanzania (2025 ICT-CSTT), have further informed the development of this revised policy.

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 the 2015 ICT-CSTT and other development trends.

Chapter 3 covers the central part of the 2025 ICT-CSTT. It begins by introducing the structure of the 2025 ICT-CSTT and its working principles. Then, the subsequent sections present the detailed competencies and their associated elements, organised into three progressive levels: Knowledge Acquisition (KA), Knowledge Deepening (KD), and Knowledge Creation (KC).

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

CHAPTER TWO

TOWARDS A TANZANIAN ICT COMPETENCY STANDARD FOR TEACHERS

2.1 Why an ICT Competency Standard for Teachers?

The preceding chapter has evidenced how the national policy in Tanzania advocates for enhanced teacher competencies in the effective utilisation of ICT for teaching, learning, and school administration. However, ICT in Education is a vast 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, such as selling software or providing instruction on the use of their digital tools.

When prioritising specific competencies and standardising teacher ICT training curricula, Tanzania's ICT competency standards for teachers (CST) become central.

2.2 Value Proposition of an ICT Competency Standard for Teachers in Tanzania

There are six applications that the Value Proposition of an ICT Competency Standard for Teachers in Tanzania (ICT-CSTT) would support:

- **Teacher standards** - The ICT-CSTT should inform the content of any formal national teacher standards, specifically when describing teachers' ability to exploit technology
- **Performance indicator tools -** The framework would be invaluable when developing criteria for assessing national levels of teacher ICT competencies and analysing training initiatives. It would help identify what skills should be evaluated 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 offer similar training and cover the essential ICT skills.
- **Training materials** - The framework would be instrumental in facilitating teacher professional development courses for both in- and pre-service teachers. Such courses and materials would aim to elicit the skills or provide the knowledge sets that the framework identifies.

- **Evaluation of third-party training courses** - When the MoEST has to endorse third-party training courses, the framework can provide criteria for assessing 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 revised 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. Although there are noticeable differences between and among countries, there are also many similarities. Contextualising an existing ICT Competency Framework, therefore, makes a sensible starting point. Nevertheless, avoiding the unnecessary effort of creating something entirely new when existing solutions are already available is crucial. After all,, existing frameworks can be adapted and refined to ensure they are tailored to a specific national context.

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 encompasses competencies across three levels of sophistication, ranging from the basics required for teaching and learning to those necessary for school administration and professional development. It identifies 18 ICT competencies and subdivides 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 covers six areas: professional engagement, digital resources, teaching and learning, assessment, empowering learners, and facilitating learners' digital competency.

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 particular interest to Tanzania is the UNESCO ICT-CFT, as it has informed previous attempts to develop nation-attuned ICT-CFT.

2.4 The 2018 UNESCO ICT Competency Framework for Teachers

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 adaptable, supporting national and institutional objectives tailored to each country's specific needs.

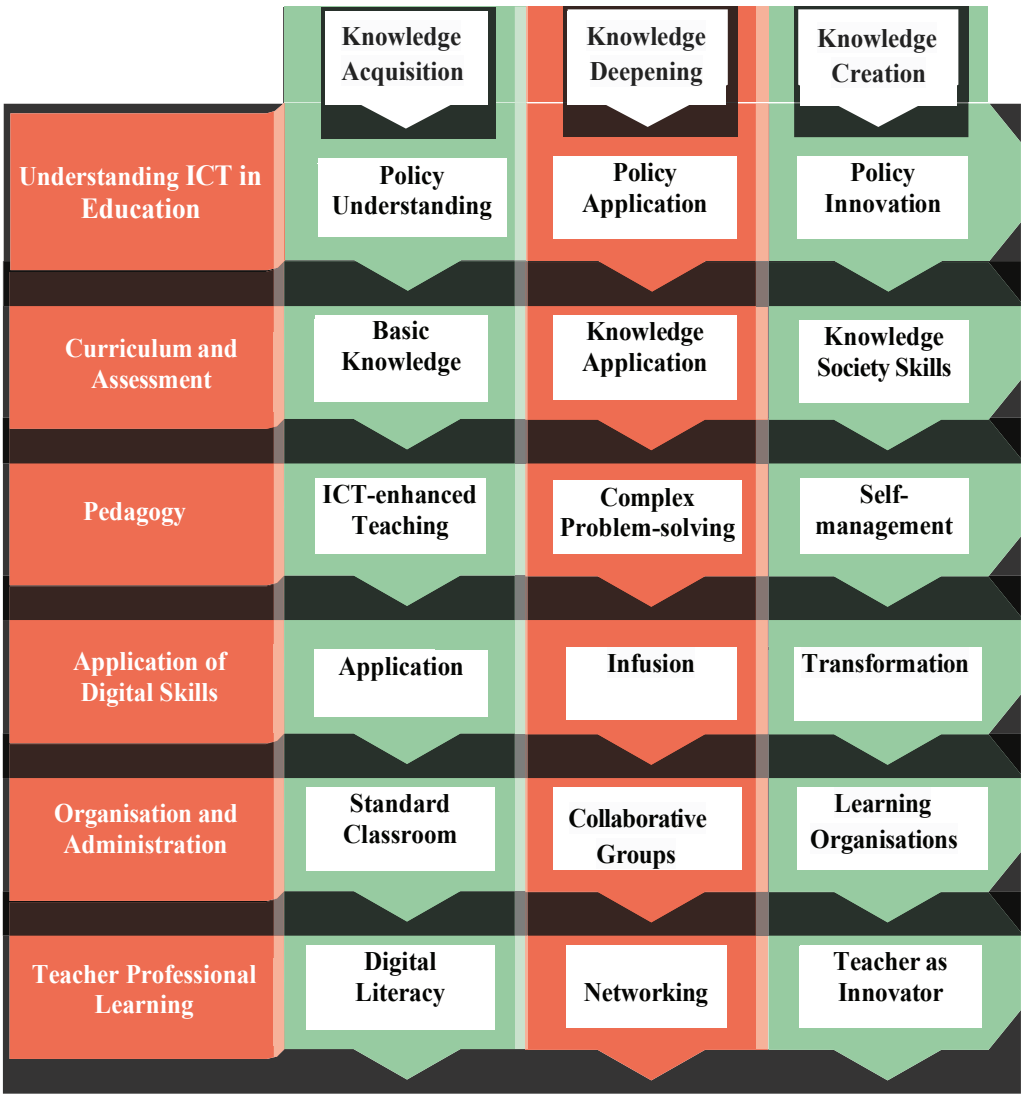
Version 3 incorporates the demand for skills arising from recent technological advancements and developments in pedagogy within the ICT and education sectors. It addresses the impact of these advancements on education and learning, including artificial intelligence (AI), mobile technologies, the Internet of Things, and Open Educational Resources (OER), with the goal of promoting the creation of inclusive knowledge societies.

The 2nd and 3rd frameworks categorise 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 characterised 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, as it allows both educators and learners to generate knowledge and devise innovative strategies collaboratively 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,
- organisation and administration, and
- teacher professional learning.



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 localised version, known as the ICT Competency Standard for Teachers in Tanzania (ICT-CSTT). Considering the country's level of ICT adoption at the time, the team reduced the scope of the original framework. The CT-CSTT covers two levels—Technology Literacy and Knowledge Deepening-while incorporating all six aspects identified in the 2011 UNESCO ICT-CFT.

Component: \ Approach:	Technology Literacy	Knowledge Deepening
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

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 underutilised. Its significant recent utilisation 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 apply it.

Since 2015, Tanzania has made substantial strides in adopting ICT and integrating it into the education sector. These advancements are evident in 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 undertaken transformations to enhance 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, as well as the 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 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, particularly in STEM subjects, is increasing. Additionally, the use of emerging technologies such as artificial intelligence (AI) in educational practices is gaining traction. In fact, numerous indicators reflect the maturity of ICT applications, demonstrating significant improvement compared to a decade ago.

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

Consequently, 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 localised ICT Competency Framework for Teachers (ICT-CFT) remains as strong as ever. 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 Teachers[1], Uganda's Contextualised ICT-CFT[2], and Zambia's Technology-Enabled Learning Competency Framework for Teachers[3]. Although these frameworks are based on the UNESCO ICT-CFT, they have been tailored to meet local needs and requirements.

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 Commons[4].

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

2.8 Situation Analysis: ICT in Tanzania's 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 the country's national policy and strategic documents. This framework 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 ***"in collaboration with stakeholders [to] ensure that Information and Communication Technology is used in the provision of education and training at all levels according to needs."*** This policy strategy covers 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 emphasises 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 enhance learning outcomes, focusing on the development of digital content, 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 indicates that the necessary political will and strategic direction for ICT integration are in place, creating a supportive environment for establishing a new competency standard.

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

The government, in collaboration with its 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 centres 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, decentralised programme that allows teachers to 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.

– **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 remains a significant 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." As a result, there is a wide range of ICT skill levels among teachers, with many still focusing 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 establishing a national standard, provides an opportunity to create a more coordinated and sustainable approach to teacher training. By contextualising 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 initiatives such as 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 is a notable absence of dedicated technical support staff in most schools. In other words, when equipment fails, it often remains broken for extended periods, making it difficult for teachers to rely on ICT for their lessons.

- **E-Content –** Even though some digital learning materials are available, there is a general scarcity of localised, curriculum-aligned e-content, particularly in subjects beyond basic ICT skills.

– **Current Teacher Competency**

Documents consistently reveal 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 vary significantly. Younger, pre-service teachers often demonstrate greater readiness to use technology; however, their knowledge and skills are frequently limited by a lack of access and structured training. Older, in-service teachers, especially those in rural areas, on the other hand, usually 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 robust policy framework and a clear vision for ICT in education; however, implementation of this vision faces significant challenges:

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

– **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 significant 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 standardised skill assessment.
- **Limited Pedagogical Training -** Training programmes 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-recognised 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 localise training materials more affordably and efficiently.

2.9 Stakeholder engagement

The review of the 2015 ICT Competency Standards for Teachers (ICT-CSTT) in Tanzania employed an active and inclusive stakeholder engagement process to ensure the standards are not only relevant but also practical and aligned with national education goals, digital transformation strategies, and global best practices. The 2025 ICT CSTT aims to equip teachers with the requisite 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 Competency 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 organisations, TEN/MET, faith-based organisations, 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. Practising teachers played a critical role in this process, ensuring the standards are realistic, achievable, and aligned with real classroom needs.

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

CHAPTER THREE

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 categorised into three proficiency levels, each progressively more advanced. Some competencies are tailored for beginners in ICT, whereas others are designed for experienced users.

Moreover, these competencies span various teachers' 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. Thus, it is essential to recognise how the ICT-CSTT is most effective when you grasp the cross-cutting skills and values that should guide training in ICT competencies. These cross-cutting skills and values include:

3.2.1 Gender equity:

- **Access and Affordability** - Ensure that both genders—men and women—have equal access to ICT resources. This thrust includes making technology universally affordable and accessible, regardless of one's gender or socioeconomic background.
- **Relevant Content** - Develop and provide relevant content that is beneficial to both genders. This can help address 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, such as screen readers, text-to-speech software, and adjustable font sizes, to enhance accessibility.
- **Differentiated Instruction** - Use ICT to provide personalised 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, which can help bridge language barriers and ensure that all learners can participate fully in the learning process.
- **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 is a cross-cutting value within the newly revised ICT CSTT because it ensures that the benefits of digital transformation extend beyond the classroom to 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 necessary 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 essential to acknowledge that, although these values may not be explicitly stated in the following tables, they should be implicitly understood.

3.3 Structure and Key Focus Areas of 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, these 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 known as aspects in the 2018 UNESCO ICT-CFT. The country's ICT-CSTT has merged two of the six skill areas-curriculum and assessment, and pedagogy-into 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 skill areas:

- Understanding ICT in Education Policy,
- Curriculum, Pedagogy and Assessment,
- Application of Digital Skills,
- Organisation 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 any given moment, teachers may have different skill levels within each of the skill 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 acquiring 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.

Moreover, the framework does not explicitly outline progression criteria for reaching the next level. As such, individual training organisations need to develop this aspect, based on what they consider to e 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.

Notably, the ICT CSTT is a framework and does not mandate a minimum base level. Although the Ministry of Education, Science and Technology may 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 also 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 organises ICT competencies and related objectives by skill level. It also includes some example activities for each purpose. 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. Organise 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 exemplifies 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 into 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 standard 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 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 understanding of the potential benefits of incorporating a range of relevant ICT resources and productivity tools into various 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 applications support these standards.	• Identify specific curriculum standards, software packages, digital tools and resources that support the attainment of these standards.
			KA2.b. Search for and identify Open educational resources (OER) to support curriculum standards.	• Search for OER, using both specialised 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 oral assessments. • Explore dedicated e-assessment tools for both formative and summative assessment.

SKILLS AREAS	CURRICULAR GOAL FOR TEACHER TRAINING	TEACHER COMPETENCY (A teacher can…)	OBJECTIVE (A teacher should be able to…)	EXAMPLE ACTIVITIES
Application of Digital Skills	**Application.** Teachers apply ICT tools, such as computers, smartboards, 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, and video editing and create simple graphics and animations.	• Teachers familiarise themselves with ICT tools, features, and 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 (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 cybersecurity 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.

SKILLS AREAS	CURRICULAR GOAL FOR TEACHER TRAINING	TEACHER COMPETENCY (A teacher can…)	OBJECTIVE (A teacher should be able to…)	EXAMPLE ACTIVITIES
			KA.3.f. Identify various authoring tools for creating digital resources	• Identify and understand the suitability, functions, strengths 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. • 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. Utilise digital record-keeping tools to maintain 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, capabilities, scope and ethical issues. • Use the basic functions of AI tools identified.
			KA.3.k. Use social networks and collaboration tools to communicate and collaborate with the broader learning community.	• Identify, strategise and use various collaboration tools and social networking apps to incorporate teachers, learners, parents and other interested parties into a broad support group.
Organisation and Administration	**Standard Classroom.** Teachers rearrange the classroom or lab layout as needed to incorporate ICT into their lessons, thereby fostering an inclusive learning environment.	Organise the physical environment to ensure technology inclusively supports different learning methodologies.	KA.4.a. Organise 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 that any individualised technology needs to ensure that all can engage with the learning process
			KA.4.b. Support small groups that include learners with different abilities, ages, genders, and socio-cultural and linguistic backgrounds – to use digital devices in the classroom.	• Coordinate the learning process where not all learners have access to a digital device while working collaboratively to achieve learning objectives. • Teachers should be able to implement blended learning, flipped classrooms, station rotation and project-based learning models to achieve this.

SKILLS AREAS	CURRICULAR GOAL FOR TEACHER TRAINING	TEACHER COMPETENCY (A teacher can…)	OBJECTIVE (A teacher should be able to…)	EXAMPLE ACTIVITIES
			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.	• Instal 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.
Teacher Professional Learning	**Digital Literacy.** Teachers develop digital skills to support their professional growth and 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, recording, and timetabling. • Use digital channels to enhance communication with management, colleagues, parents, learners and other stakeholders.

SKILLS AREAS	CURRICULAR GOAL FOR TEACHER TRAINING	TEACHER COMPETENCY (A teacher can…)	OBJECTIVE (A teacher should be able to…)	EXAMPLE ACTIVITIES
			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 proper behaviour and actions when interacting with others online. Identify the origins and impact of viruses, scams, spam, cookies and pop-up adverts. Manage the 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'. • Utilise OER and social networks to locate 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. Utilise digital tools effectively to facilitate collaborative learning, manage learners and other learning partners, and streamline 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, as well as 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 utilising 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 promote learner manipulation of variables to appreciate impact.

SKILLS AREAS	CURRICULAR GOAL FOR TEACHER TRAINING	TEACHER COMPETENCY (A teacher can…)	OBJECTIVE (A teacher should be able to…)	EXAMPLE ACTIVITIES
			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 create a rubric that guides in assessing learner responses across at least four levels of sophistication.
			KD.2.d. Harness ICT to support alternative assessment strategies, including portfolios, graphic organisers, 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, peer assessment platforms and learning styles.

SKILLS AREAS	CURRICULAR GOAL FOR TEACHER TRAINING	TEACHER COMPETENCY (A teacher can…)	OBJECTIVE (A teacher should be able to…)	EXAMPLE ACTIVITIES
			KD.2.e. Customise 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. Examine how various teaching methods are effective in specific situations, taking into account the diverse characteristics of learners.	• Scrutinise innovative 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.

SKILLS AREAS	CURRICULAR GOAL FOR TEACHER TRAINING	TEACHER COMPETENCY (A teacher can…)	OBJECTIVE (A teacher should be able to…)	EXAMPLE ACTIVITIES
Application of Digital Skills	**Infusion**. Teachers utilise digital tools to comprehend and instruct 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 specialised packages that are appropriate to the subject matter and that support visualisation (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 whether 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 specialised applications.
			KD.4.d. Customise 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.

SKILLS AREAS	CURRICULAR GOAL FOR TEACHER TRAINING	TEACHER COMPETENCY (A teacher can…)	OBJECTIVE (A teacher should be able to…)	EXAMPLE ACTIVITIES
			KD.4.f. Connect digital devices to create a network that enables learners and teachers to share resources and collaborate 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, which links learners' mobile phones and tablets.
			KD.4.g. Evaluate digital tools to support learners with disabilities, sociolinguistic minorities, and ensure gender equality in the delivery of education.	• Identify and use technology 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, the 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 videos, graphics, such as 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.

SKILLS AREAS	CURRICULAR GOAL FOR TEACHER TRAINING	TEACHER COMPETENCY (A teacher can…)	OBJECTIVE (A teacher should be able to…)	EXAMPLE ACTIVITIES
Organisation and Administration	**Collaborative Groups.** Teachers foster collaborative, interactive and inclusive learning environments. They facilitate learning that is dynamic and encourages collaboration using digital tools and resources	Utilise digital tools effectively to facilitate inclusive and collaborative learning, manage learners and other learning partners, and streamline the learning process.	KD.4.a. Access, evaluate and disseminate digital resources to support learner-centred learning activities and social interactions for all, including learners with disabilities.	• Organise technology so that it can best support learners' 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.	• Organise technology to support collaborative learner activities that also provide evidence of engagement. • Use technology, such as a learning management system (LMS), social media, 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 organise 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 organised to support teaching, learning and administration better. What are the technology gaps that are barriers to achieving the vision? What staff skills need to improve to achieve this?

SKILLS AREAS	CURRICULAR GOAL FOR TEACHER TRAINING	TEACHER COMPETENCY (A teacher can…)	OBJECTIVE (A teacher should be able to…)	EXAMPLE ACTIVITIES
			KD.4.e. Set up digital communication mechanisms so that the education and training institution can disseminate information to the broader school community.	• Canvass the wider education and training institution community to determine which digital tools are popular. • Communication tools could include bulk 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	Utilise technology to connect with professional networks and support your 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 participating in a network of local teachers who share interests, which could consist of 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, as well as accredited courses offered by local 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

The goal of the Knowledge Creation (KC) 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 harmonisation, 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. When establishing learning parameters, encourage learners to self-manage in learner-centred and collaborative learning environments.
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 organisation.
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 harmonisation, 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 a critical analysis of the ETP and other guidelines • Articulate in writing what needs to change 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 at the national level?
			KC.1.b. Design, implement, and modify reform programs tailored to the specific needs of school-level education and training institutions.	• 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.

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	**Knowledge Society Skills.** Simplify "Teachers use ICT to create curriculum-based learning activities that develop 21st-century skills. They employ innovative teaching methods and assessments, helping learners set their own learning goals and plans.	Determine the most effective ways to incorporate innovative pedagogies and assessments to achieve mastery of multidisciplinary curriculum standards and 21st-century skills. While determining learning parameters, encourage learner self-management in learner-centred and collaborative learning.	KC.2.a. Analyse the curriculum standards to identify opportunities where learners can master knowledge, social skills and complex cognitive skills, taking into account learning styles, abilities and sociolinguistic skills.	• Analyse the curriculum of allied subjects and determine which standards best support learner problem-solving, critical thinking, 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, analyse, evaluate and use information pertinent 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 synthesise their findings across disciplines. Consider a research project that encourages learner teams to investigate various aspects of a topic and then develop a graphic display, an app, or a web page that illustrates the intersection of their findings.
			KC.2.c. Design online materials and activities that engage learners in developing 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 (AR) exhibition. • Alternatively, learners can be required to create a series of infographics on curriculum topics.

SKILLS AREAS	CURRICULAR GOAL FOR TEACHER TRAINING	TEACHER COMPETENCY (A teacher can…)	OBJECTIVE (A teacher should be able to…)	EXAMPLE ACTIVITIES
			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 create mini-tutorials designed to teach 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, before a big project, to provide learners with organisational 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 skills.	• Devise a strategy to encourage learners to see the benefits of different assessment strategies. Introduce journaling, blogging, and peer assessment, and encourage learners 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 be helpful for their learning and interactions. Consider mobile apps for editing photographs and video, graphic design packages that support the creation of infographics, website builders, and alternative publishing options to reach a broad audience.

SKILLS AREAS	CURRICULAR GOAL FOR TEACHER TRAINING	TEACHER COMPETENCY (A teacher can…)	OBJECTIVE (A teacher should be able to…)	EXAMPLE ACTIVITIES
			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 using learner blogs or video diaries to record and share reflective experiences.
Application of Digital Skills	**Transformation.** Teachers and learners utilise connected digital tools, resources, and platforms to create knowledge and collaborate effectively.	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 foundation for online activities or identify social networks that can serve this purpose. Such as the TIE LMS, Google Classroom, Moodle Cloud and others, after '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 can be beneficial in achieving this objective.
			KC.3.c. Utilise digital tools to track and assess learner contributions to knowledge community learning.	• 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.

SKILLS AREAS	CURRICULAR GOAL FOR TEACHER TRAINING	TEACHER COMPETENCY (A teacher can…)	OBJECTIVE (A teacher should be able to…)	EXAMPLE ACTIVITIES
			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.
			KC.3.e. Identify and use various data analytics tools to analyse learners' data	• Use data analytics tools to generate functional patterns and insights 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 their usefulness, such as AR/ VR, AI, and gamification.	• Determine the implications of using emerging technologies for supporting teaching and learning and propose an acceptable use policy.
Organisation and Administration	**Learning Organisations.** Teachers and administrators shape Education and Training Institutions into learning organisations where all stakeholders are engaged in the learning process.	Devise a technology strategy for their education and training institution to turn it into a learning organisation.	KC.4.a. Organise 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.

SKILLS AREAS	CURRICULAR GOAL FOR TEACHER TRAINING	TEACHER COMPETENCY (A teacher can…)	OBJECTIVE (A teacher should be able to…)	EXAMPLE ACTIVITIES
			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 the school. • Consider developing an ICT 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 produce new knowledge about learning and teaching practice through innovative and peer engagement	Continually develop, experiment, coach, innovate, and share best practices 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.

SKILLS AREAS	CURRICULAR GOAL FOR TEACHER TRAINING	TEACHER COMPETENCY (A teacher can…)	OBJECTIVE (A teacher should be able to…)	EXAMPLE ACTIVITIES
			KC.5.b. Foster research and innovation by promoting continuous professional development among colleagues.	• Devise and offer a series of professional development initiatives aimed at supporting colleagues in the acquisition of skills to exploit technology, to enhance 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.	• Organise 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 broader education community by releasing these resources with an open licence.

CHAPTER FOUR

IMPLEMENTATION ARRANGEMENTS

4.1 Custodianship 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 on the Mainland of Tanzania.

The 2025 ICT-CSTT employs a flexible implementation strategy to cater for 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 beneficial for training all in-service teachers. Since practising 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 harmonise various ICT-based capacity-building programmes and training provided to teachers, facilitating the assessment of their impact on teaching and learning practices.

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

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

Furthermore, the School Quality Assurance (SQA) Unit of the Ministry of Education, Science, and Technology will be responsible for monitoring and evaluating the implementation of ICT-CSTT. 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, overall coordination will be under the Teacher Education Unit (TEU). The Unit will collaborate with various implementing organs to facilitate the rollout of the competencies to all graduates from teacher colleges, as well as their respective institutions and universities.

The Tanzania Institute of Education (TIE) will be responsible for integrating the prescribed competencies into teacher college curricula. Thus, the institute will coordinate the operationalisation of the framework to ensure that all teacher college graduates acquire at least the 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 the knowledge acquisition level.

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

The implementation of the ICT-CSTT at universities and institutions will remain optional for some time. Nevertheless, 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)	Coordinate ICT-CSTT implementation Coordinate teacher training
		School Quality Assurance (SQA)	Monitoring and evaluation of the ICT-CSTT
		Tanzania Institute of Education (TIE)	Conducting research/feedback on the implementation of ICT-CSTT Training content development for ICT-CSTT teacher training Conduct teacher training
	PORALG	Department of Educational Administration.	Organisation of training and enforcement of the implementation of the framework at the 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 the curriculum
		TCU (Education Colleges/ School of Education)	Guide institutions to incorporate ICT CSTT competencies in the 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 conduct monitoring and evaluation (M&E) of the implementation of the ICT-CSTT within its jurisdiction. M&E for tertiary institutions will fall under the jurisdiction 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 the ICT-CSTT be reviewed and revised within 5-7 years of its publication date.

CONCLUSION

The 2025 ICT-CSTT provides a framework of teacher competencies to facilitate the integration of ICT 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 into five skill areas: understanding ICT in education policy, curriculum, pedagogy, and assessment; application of digital skills; organisation and administration; and teacher professional learning.

The 2025 ICT-CSTT has numerous application contexts, including training curricula for teachers, performance indicator tools for assessing levels of teacher ICT competencies, and 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.

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