

Digital Education Strategy and Implementation Plan for Ethiopia (2023-2028)



Ministry of Education

Acknowledgement

The Ministry of Education would like to thank the unreserved support of education partners who contributed significantly to the development of the Strategy and its Implementation Plan.

Last but not least the Ministry is also grateful to all stakeholders and participants of various workshops conducted to develop and validate the Strategy. The completion of the Strategy development would not have been possible without their participation and insights.

List of Abbreviations

AAU	Addis Ababa University
AI	Artificial Intelligence
AU	African Union
CTE	Colleges of Teachers' Education
DSCAP	Digital Skills Country Action Plan
D-TEST	Digital Technology for Education Sector Transformation
EdTech	Educational Technology
EMIS	Education Management Information System
ESDP	Education Sector Development Program
e-SHE	e-Learning for Strengthening Higher Education
ESIDS	Education Sector ID System
EthERNet	Ethiopian Education and Research Network
GER	Gross Enrollment Rate
HE	Higher Education
HEI	Higher Education Institute
HEMIS	Higher Education Management Information System
ICT	Information and Communication Technology
ITU	International Telecommunications Union
LMS	Learning Management System
MoE	Ministry of Education
MoSHE	Ministry of Science and Higher Education
MIInT	Ministry of Innovation and Technology
MoU	Memorandum of Understanding
NEAEA	National Educational Assessment and Examination Agency
NRADRE	National Research and Academic Digital Repository of Ethiopia
OER	Open Educational Resources
PPP	Public Private Partnership
PwDs	Persons with Disabilities
STEM	Science Technology Engineering and Mathematics
UDL	Universal Design for Learners
UNESCO	United Nations Education Scientific and Cultural Organization
UNICEF	United Nations Children's Fund

Table of Contents

Acknowledgement	I
List of Abbreviations	II
List of Tables	V
List of Figures	VII
Foreword	VIII
Executive Summary	IX
Part I - Digital Education Strategy	1
1. Introduction	2
Operational Definitions	3
2. Purpose and Approach	4
3. The Ministry of Education	5
3.1. Establishment and current status	5
3.2. Organizational Structure	6
3.3. Vision, Mission, and Core Values	6
4. Digital Education: Experiences from Other African Countries	7
5. Situation Analysis	7
5.1. General Education - Enrollment and Completion	8
5.1.1. Primary and Middle Education	8
5.1.2. Secondary Education	10
5.1.3. Adult (Non-formal) Education	11
5.2. Higher Education - Enrolment and Completion	11
5.2.1. Teacher Education	11
5.2.2. Universities and Colleges (HEI)	12
5.3. Policy Context for Digital Education	13
5.4. Digital Skills	14
5.5. Infrastructure and Connectivity	14
5.6. Platforms and Digital Content	18
5.7. Challenges and Opportunities	19
5.7.1. Challenges	19
5.7.2. Opportunities	22
5.8. Insights from the Situation Analysis (Issues)	24
6. Digital Education: Building Blocks for Ethiopia	25
7. Strategic Objectives	26
7.1. Strategic Issues	26
7.2. Strategic Objectives	27
7.2.1. Strategic Objective 1: Ensure an Enabling ICT for Education and e-Learning Policy	28

7.2.2.	Strategic Objective 2: Create an Enabling Infrastructure and Connectivity for Digital Education in Ethiopia	29
7.2.3.	Strategic Objective 3: Promote EdTech Innovation and Encourage PPP	29
7.2.4.	Strategic Objective 4: Promote the Development of Curriculum-aligned Digital Content	29
7.2.5.	Strategic Objective 5: Advance Digital Literacy and Skills for Teachers and Other Staff	30
7.2.6.	Strategic Objective 6: Advance Digital Literacy and Skills for Students and Adults	30
7.2.7.	Strategic Objective 7: Promote Effective Data Governance and Analytics for Education	30
7.2.8.	Strategic Objective 8: Facilitate Research, Cooperation, and Learning	31
7.2.9.	Strategic Objective 9: Provide Digitally Inclusive Education for All	31
Part II	– Implementation Plan	32
8.	Strategic Objective Implementation Plans	33
9.	Resource Mobilization and Monitoring	57
9.1.	Resource Mobilization	57
9.1.1.	Plan	58
9.1.2.	Act (action or implementation):	58
9.1.3.	Reflect	59
9.2.	Monitoring and Evaluation	59
10.	Strategy Governance	60
	References	61

List of Tables

Table 1: Net Enrolment Ratio in Primary and Middle Schools (MoE, 2021)	
9	
Table 2: Primary completion rate (MoE, 2021)	
10	
Table 3: Secondary Net Enrolment Ratio (NER) (Ministry of Education, 2021)	10
Table 4: Enrolment at Universities and TVET (DSCAP Ethiopia 2020-30)	12
Table 5: Rank according to accessible bandwidth	15
Table 6: Status of Current Connections at HEIs and TVETs	16
Table 7: Challenges / key issues	20
Table 8: Focus areas and opportunities	23
Table 9: Project 1.1 Activities and Timeline	33
Table 10: Project 1.1 Key Performance Indicators (KPI)	33
Table 11: Project 1.2 Activities and Timeline	34
Table 12: Project 1.2 Key Performance Indicator (KPI)	34
Table 13: Project 1.3 Activities and Timeline	34
Table 14: Project 1.3 Key Performance Indicator (KPI)	35
Table 15: Project 2.1 Activities and Timeline	35
Table 16: Project 2.1 Key Performance Indicators (KPI)	35
Table 17: Project 2.2 Activities and Timeline	36
Table 18: Project 2.2 Key Performance Indicators (KPI)	36
Table 19: Project 2.3 Activities and Timeline	37
Table 20: Project 2.3 Key Performance Indicators (KPI)	37
Table 21: Project 2.4 Activities and Timeline	38
Table 22: Project 2.5 Key Performance Indicators (KPI)	38
Table 23: Project 2.5 Activities and Timeline	38
Table 24: Project 2.5 Key Performance Indicators (KPI)	39
Table 25: Project 2.6 Activities and Timeline	39
Table 26: Project 2.7 Key Performance Indicators (KPI)	39
Table 27: Project 2.8 Activities and Timeline	40
Table 28: Project 2.9 Key Performance Indicators (KPI)	40
Table 29: Project 3.1 Activities and Timeline	40
Table 30: Project 3.1 Key Performance Indicators (KPI)	41
Table 31: Project 3.2 Activities and Timeline	41
Table 32: Project 3.2 Key Performance Indicators (KPI)	41
Table 33: Project 3.3 Activities and Timeline	42
Table 34: Project 3.3 Key Performance Indicators (KPI)	42
Table 35: Project 3.4 Activities and Timeline	42
Table 36: Project 3.4 Key Performance Indicators (KPI)	43
Table 37: Project 3.5 Activities and Timetable	43
Table 38: Project 3.5 Key Performance Indicators (KPI)	43
Table 39: Project 4.1 Activities and Timeline	44
Table 40: Project 4.1 Key Performance Indicators (KPI)	44
Table 41: Project 4.2 Activities and Timeline	45
Table 42: Project 4.2 Key Performance Indicators (KPI)	45
Table 43: Project 4.3 Activities and Timeline	45
Table 44: Project 4.3 Key Performance Indicators (KPI)	45

Table 45: Project 5.1 Activities and Timeline	46
Table 46: Project 5.1 Key Performance Indicators (KPI)	46
Table 47: Project 5.2 Activities and Timeline	47
Table 48: Project 5.2 Key Performance Indicators (KPI)	47
Table 49: Project 5.3 Activities and Timeline	47
Table 50: Project 5.3 Key Performance Indicators (KPI)	48
Table 51: Project 6.1 Activities and Timeline	48
Table 52: Project 6.1 Key Performance Indicators (KPI)	48
Table 53: Project 6.2 Activities and Timeline	49
Table 54: Project 6.2 Key Performance Indicators (KPI)	49
Table 55: Project 6.3 Activities and Timeline	49
Table 56: Project 6.3 Key Performance Indicators (KPI)	49
Table 57: Project 6.4 Activities and Timeline	50
Table 58: Project 6.4 Key Performance Indicators (KPI)	50
Table 59: Project 7.1 Activities and Timeline	50
Table 60: Project 7.1 Key Performance Indicators (KPI)	51
Table 61: Project 7.2 Activities and Timeline	51
Table 62: Project 7.2 Key Performance Indicators (KPI)	51
Table 63: Project 7.3 Activities and Timeline	51
Table 64: Project 7.3 Key Performance Indicators (KPI)	52
Table 65: Project 7.4 Activities and Timeline	52
Table 66: Project 7.4 Key Performance Indicators (KPI)	52
Table 67: Project 8.1 Activities and Timeline	53
Table 68: Project 8.1 Key Performance Indicators (KPI)	53
Table 69: Project 8.2 Activities and Timeline	53
Table 70: Project 8.2 Key Performance Indicators (KPI)	53
Table 71: Project 8.3 Activities and Timeline	54
Table 72: Project 8.3 Key Performance Indicators (KPI)	54
Table 73: Project 8.4 Activities and Timeline	54
Table 74: Project 8.4 Key Performance Indicators (KPI)	55
Table 75: Project 9.1 Activities and Timeline	55
Table 76: Project 9.1 Key Performance Indicators (KPI)	55
Table 77: Project 9.2 Activities and Timeline	56
Table 78: Project 9.2 Key Performance Indicators (KPI)	56
Table 79: Project 9.3 Activities and Timeline	56
Table 80: Project 9.2 Key Performance Indicators (KPI)	56
Table 81: Resource Mobilization Practical Steps	58

List of Figures

Figure 1: Organogram of Ministry of Education	6
Figure 2: Education and Training System in Ethiopia (Edu. Statistics Ann Abstract, 2020/21)	8
Figure 3: Building blocks of the digital education strategy	25
Figure 4: AU Framework for Digital Education	26
Figure 5: Mapping Strategic Objectives (SO) and building blocks of the digital education strategy ...	28
Figure 6: The resource mobilization process	57
Figure 7: Resource Mobilization Cycle	58
Figure 8: M&E Process Flow	60

Foreword

ICT is transforming the education sector globally as it addresses the multiple and overlapping challenges the sector is facing. The innovative application of ICT and digital technologies plays a key role in ensuring that Ethiopia's education system is aligned with and meets the well-accepted global education principles such as education relevance, quality, accessibility, affordability, and inclusiveness. This Digital Education Strategy and Implementation Plan presents insights into and guidance on how to utilize EdTech to achieve these globally accepted principles and the policy goals stated in the country's Education and Training Policy. It is also set to ensure that the EdTech interventions are on the right track to deliver the intended results and offers information on strategic focus areas and objectives, the timeframe for the implementation of the interventions, and the monitoring and evaluation mechanisms. As such, it serves as a crucial document to introduce state-of-the-art ICT and digital technologies into our education system.

So far, the Ethiopian Education system's effectiveness in producing a competent workforce has been below par, and alas, its resilience to external shock has been hugely tested during the recent COVID-19 pandemic. As a result, the Ministry of Education has recently ratified the FDRE Education and Training Policy that followed the principle of providing accessible, relevant, affordable, and quality education to all, including refugees. In the process, it has evidently recognized the role of ICT and digital education in producing a skilled workforce for the modern digital economy. The Digital Education Strategy and Implementation Plan guides the formation of a new generation of Ethiopian youth who are equipped with advanced skills that make them competent in the 21st century's digital environment. To drive our education system towards excellence and relevance, we must collaborate with our partners as a collective entity, working together to implement and diligently oversee this strategy. Several digital education initiatives and projects are developed to foster collaboration among various stakeholders and development partners.

This strategy, along with other initiatives, is evidence of our commitment to unlocking the potentials of ICT and digital technologies, empowering learners, educators, and researchers by overcoming their challenges and improving the teaching-learning experiences and outcomes. In turn, this approach allows our educational institutions to become dynamic innovation and knowledge centers. The strategy has the potential to offer a synchronized approach to the digitalization of education in Ethiopia. May it steer us towards a more prosperous tomorrow, where all individuals are prepared to welcome the possibilities and mitigate the obstacles of the digital era

Sincerely,



Berhanu Nega (Professor)
Minister, FDRE Ministry of Education
September 2023

Executive Summary

Education is one of the fundamental sectors of any country used to shape its citizens and the future of the country in every other sector. Having a well-designed Education policy and strategy is key to a country's future.

Ethiopia is in the process of transforming its education system to be digitally oriented and technology-supported. To this end, the Ministry of Education embarked on the development of its first Digital Education Strategy and Implementation Plan.

This Digital Education Strategy and Implementation Plan followed the framework developed by the African Union in 2022 to support its member states in the development of their Digital Education Strategy and implementation plan. The framework has two pillars, eight building blocks, and nine strategic objectives.

In the development of the Digital Education Strategy and Implementation Plan for Ethiopia, the following are considered:

- *The Digital Ethiopia 2025 is used as a high-level guide,*
- *The African Union Digital Education Strategy and Implementation Plan is used as a guiding framework,*
- *Literature review is conducted to see how digital education is changing the education sector in other countries,*
- *The current situation of the education sector in Ethiopia is assessed,*
- *Strategic issues are identified from the situation analysis, the framework, and the literature review,*
- *Four Building Blocks are identified for the digital education in Ethiopia,*
- *Nine Strategic objectives are developed,*
- *Projects are defined as a method of implementation plan for each strategic objective,*
- *Resource mobilization strategy is suggested*
- *Monitoring and evaluation strategy is developed, and*
- *A strategy governance is recommended*

The Four building blocks defined in this strategy are i) Digital foundations through required infrastructure and services, ii) Digital Capacity/Skill, iii) Enabling Environment, and iv) Digital content and platforms

Based on the building blocks and having the identified strategic issues in mind the following nine strategic objectives are developed.

- SO 1. Ensure an Enabling ICT for Education and e-Learning Policy*
- SO 2. Create an Enabling Infrastructure and Connectivity for Digital Education in Ethiopia*
- SO 3. Promote EdTech Innovation and Encourage PPP*
- SO 4. Promote the Development of Curriculum-Aligned Digital Content*
- SO 5. Advance Digital Literacy and Skills for Teachers and Other Staff*
- SO 6. Advance Digital Literacy and Skills for Students and Adults*
- SO 7. Promote Effective Data Governance and Analytics for Education*
- SO 8. Facilitate Research, Cooperation, and Learning*
- SO 9. Foster Digitally Inclusive Education for All*

Finally, thirty-five projects are defined to implement the nine strategic objectives and achieve the goals set out for each. The implementation of such a large-scale strategy requires a large amount of resources and appropriate monitoring and evaluation.

Resource mobilization is a management process that involves identifying people/organizations who share the same values, and taking steps to manage that relationship which includes a threefold process, involving Organizational Management and Development, Communicating and Prospecting as well as Relationship Building.

Monitoring and Evaluation (M&E) on the other hand is a continuous management function to the progress made in achieving expected results, to spot bottlenecks in implementation. and to highlight whether there are any unintended effects (positive or negative) during project execution. Monitoring and evaluation usually include information on the cost and performance of the strategy and project being monitored or evaluated. This allows assessing the performance and/or benefits of a project against time and budget.

Part I - Digital Education Strategy

1. Introduction

Not only is education important for its own purpose, but it also serves as a foundation for all other fields, including science, agriculture, the environment, food security, etc. A well-designed education system makes a significant contribution to national security and citizen well-being in all spheres of life. Despite its importance to all other sectors' performance, the education system in Ethiopia is challenged by multiple and overlapping factors. Given the variety and complicated nature of problems in the education system, the current mechanisms seem short of addressing the issues in the sector. Hence, cost-effective, and innovative mechanisms are required to reduce the extent of the problems and to put sustainable solutions in place.

The application of digital technologies is among the notable means to make the unimaginable possible and reduce the associated costs through the flexibility, editability, reprogram-ability, and other features it offers to a work system. Hence, the need to integrate *pedagogical knowledge, content knowledge, and ICT knowledge* (Chai, et al. 2013) becomes a much more needed solution than ever before.

In recognition of these benefits, the African Union (AU) has embarked on the development of a framework for Digital Education Strategy and Implementation Plan¹ for the African Union member states. Ethiopia is now planning to develop its own Digital Education Strategy and Implementation Plan that is in line with the regional strategy of the AU. The Ministry is developing this strategy based on the duties and responsibilities vested through Proclamation no 1263/2021² and the revised higher Education Proclamation no 1152/2019³ while aligning the new strategy to Digital Ethiopia 2025 and the African Union framework. This strategy helps the Ministry of Education of Ethiopia to transform education in Ethiopia through digital technologies. To this end, the ministry has prepared this *Digital Education Strategy and Implementation Plan 2023-2028*.

¹ [AU : Digital Education Strategy and implementation Plan](#)

² Proclamation no.1263/2021: A proclamation to provide for the definition of the powers and duties of the executive organs of the federal democratic republic of Ethiopia.

³ Revised HE Proclamation 1152-2019

Operational Definitions

Digital Education: *The innovative use of digital tools and technologies for teaching learning.*

Digital Content: *A digitalized teaching and learning resource in text, document, image, or video format that can be accessed using digital devices such as smartphones, tablets, or computers.*

Digital Literacy: *An individual's ability to access, manage, understand, integrate, communicate, evaluate, and create information safely and appropriately through digital technologies.⁴*

Digital Learning: *Digital learning is a 21st-century instructional practice using digital developments to offer more efficient and enriching learning experiences for students. The definition encompasses both e-learning and in-person instruction, relying on digital tools (computer, telephone, etc.)⁵*

Learning Management System: *A learning management system (LMS) is a software application for the administration, documentation, tracking, reporting, automation, and delivery of educational courses, training programs, materials or learning and development programs.⁶*

OER: *Open Educational Resources (OER) are learning, teaching, and research materials in any format and medium that reside in the public domain or are under copyright that has been released under an open license, that permits no-cost access, re-use, re-purpose, adaptation and redistribution by others.⁷*

Artificial Intelligence: *A branch of modern science and technology aiming at the exploration of the secrets of human intelligence on one hand and the transplantation of human intelligence to machines as much as possible on the other hand, so that machines would be able to perform functions as intelligently as they can (Zhong 2006).*

E-learning: *an umbrella term that refers to the use of any digital device or media (multi-media) for teaching and learning, especially for delivery or accessing of content.⁸*

Digital platforms: *A software-based online infrastructure that facilitates interactions and transactions between users.⁹*

Digital ecosystem: *The Digital Ecosystem is an open, loosely coupled, domain-clustered, self-organized, intelligent agent-based community, where each agent has dual roles. They can be client and server at the same time.¹⁰*

⁴ (UNESCO, A Global Framework of Reference on Digital Literacy Skills for Indicator 4.4.2 2018)

⁵ TechnoMars (TechnoMars 2023)

⁶ UNESCO (UNESCO, Learning Management System 2023)

⁷ UNESCO (UNESCO, Open Educational Resources 2023)

⁸ UNESCO (UNESCO, E-Learning 2023)

⁹ UNESCO (UNESCO, Digital Platform 2023)

¹⁰ (Chang and West 2006)

AI *AI refers to a variety of techniques that vary in complexity and share a common outcome: the imitation of human cognition or decision-making.*¹¹

Data governance: *The process and mechanism of promoting the availability, quality, and security of an organization's data through different policies and standards.*¹²

Data analytics: *Data analytics is the collection, transformation, and organization of data in order to draw conclusions, make predictions, and drive informed decision-making.*¹³

EdTech: *A broad term derived from a combination of two words: education and technology. It is the adoption of hardware and software solutions that have the goal of improving teacher pedagogy and student learning.*¹⁴

*It is the study and ethical practice of facilitating learning and improving performance by creating, using, and managing appropriate technological processes and resources.*¹⁵

EdTech innovation: *The adoption of modifications in delivery channels, educational tools, methodology, and content; or modifications made on the arrangement made with those elements that lead to changes in practice in educational strategy.*¹⁶

2. Purpose and Approach

The digital education strategy and implementation plan provides insights into how ICT can be leveraged in the education sector to enhance the quality, relevance, equity, and accessibility of education to all including refugees, and bring stakeholders together through digital ecosystems and platforms. This digital education strategy and implementation plan can help to achieve the national education policy and the goals set by the ministry, in achieving the country's digital transformation strategy, the goals of the AU's regional plan for the digitalization of the education sector, and the millennium development goal of education.

However, the digital education strategy and implementation should not be taken as a silver bullet to every problem related to education in the country. The document applies to all levels of education in the country, i.e., it takes primary school, junior secondary school, high school, and tertiary levels of education including technical and vocational education into account. Preparation of the document and development of the strategies also takes into consideration the national education sector plans, ICT strategies, such as the Digital Ethiopia 2025 document, and the AU's regional strategy on digital education.

¹¹ *UNESCO (UNESCO 2023)*

¹² *IBM Data Governance (IBM 2023)*

¹³ *Coursera (Coursera 2023)*

¹⁴ *Global EdTech (EdTech 2023)*

¹⁵ *UNESCO (UNESCO, Educational Technology 2023)*

¹⁶ *global Dictionary (Dictionary 2023)*

- The following approach has been utilized in the development of the Digital Education Strategy and Implementation Plan (some of the plans are in progress and are open for further enrichment):

- Assessment of national, regional, and global strategies and policies on education and ICT-enabled education,
- Conducting a situation analysis of the education sector and the situation of ICT and its application for education,
- Alignment to existing regional and national digital education strategies and policies,
- Formulate the vision and mission of the digital education strategy and implementation plan,
- Develop the pillars of the digital education strategy and implementation plan,
- Develop the strategic objectives and actions of the digital education strategy and implementation plan,
- Collect feedback and make revisions, and
- Validating and launching the digital strategy and implementation plan.

3. The Ministry of Education

3.1. Establishment and current status

The Ministry of Education was first established during the reign of Emperor Haile Selassie in 1930. The First Secretary of the Ministry was *Ato* Kidina Mariam Aberra. The Ministry was then allotted 2% of the treasury's revenue, in addition to an income from a special education tax.

The current Ministry of Education is formed by the merger of two separate ministries; The former Ministry of Education which was responsible for General Education (Primary and Secondary education) and the former Ministry of Science and Higher Education which was responsible for Technical and Vocational Education and Training (TVET) and Higher Education Institutions (HEIs). The current Ministry is established by Proclamation No. 1263/2021 which defined the Powers and Duties of the Executive Organs of the Federal Democratic Republic of Ethiopia having the responsibility to oversee all education in the country. Through this proclamation, the Ministry is given several powers and duties that are necessary to execute its responsibilities. To mention a few:

- a) initiate policies, strategies, laws, and programs with respect to general and higher education; prepare detailed program compatible with the country's overall development plan; implement the same upon approval;
- b) formulate a general framework of education curricula of general and higher education; set education and educational institution standards; national qualification framework and ensure implementation of the same;
- c) devise, in collaboration with concerned organs, strategies that enhance higher education institutions capacity in study and research; implement the same; facilitate mechanism for implementation of study and research findings;
- d) ensure standards required of general and higher education are set; and quality and relevant education are delivered;
- e) cause the expansion of quality standard higher education; oversee same and,

- f) implement the powers and duties entrusted to the Higher Education Strategic Center under Higher Education Proclamation No. 1152/2019.

And many more.

3.2. Organizational Structure

The Ministry of Education of the Federal Democratic Republic of Ethiopia has the following organizational structure.

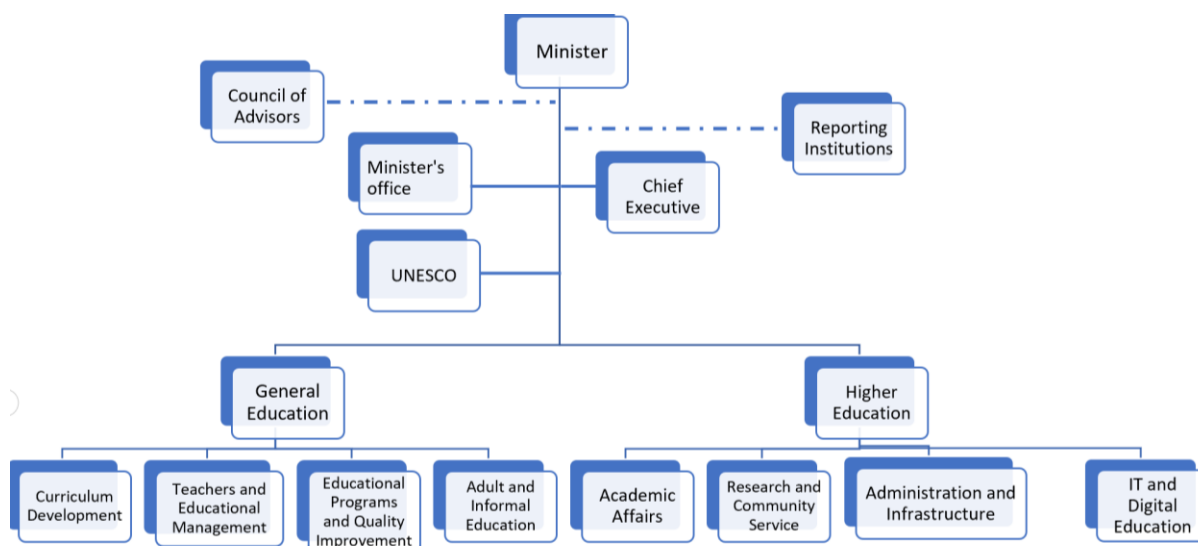


Figure 1: Organogram of Ministry of Education

3.3. Vision, Mission, and Core Values

The vision, mission, and values of the Ministry of Education are stated as follows:¹⁷

3.3.1. Vision

Sustainably building an education and training system that ensures quality and equitable education for all citizens and that continuously produces a competent and competitive workforce fueling the country's economic development.

3.3.2. Mission

Ensuring effective, quality, and equitable education and training system through building the implementation capacity of the education sector at all levels, designing and regulating standards of efficiency, expanding standardized education throughout the country, as well as complementing and leveraging education sector development interventions with strategic communications and public awareness.

3.3.3. Core Values

- Effectiveness and Efficiency
- Quality

¹⁷ Ministry of Education (MoE 2023) <https://moe.gov.et/VMV>

- Equity
- Participatory
- Exemplary
- Commitment
- Excellence

4. Digital Education: Experiences from Other African Countries

Digital education can contribute to the African Union (AU) Member States' efforts in bridging the low level of access to education. It will especially support those living in remote areas, girls, children, and persons with disabilities, and those on the move due to conflicts and natural disasters, enabling numerous out-of-school youth to learn. Providing access to education for all reduces the high adult illiteracy rate, increases participation in technical and vocational education, addresses the limited number of skilled teachers, low completion rates, and meagre learning outcomes, and closes the disconnect between education and the demand for relevant research and skills for the knowledge economy.

Digital technologies provide more outlets for creativity and learning at the early childhood and primary education levels. Africa is far behind in this regard due to several factors including, the high cost of devices, low-level integration of digital platforms, poor integration of digital technologies with early education, teachers' lack of skill, etc.

Experience within the AU Member States like Kenya, Mauritius, Morocco, Tunisia, and South Africa shows that, when planned well and implemented sustainably, digital technologies can improve children's access to quality education, engagement and learning in early childhood, and primary education. Secondary education seems to have better access to digital education than primary education in most African countries.¹⁸ However, the lack of frameworks for continuous professional development and competency measurement for teachers and students as well as the unavailability of digital skills well integrated into the curriculum has hampered the development of digital education.

Higher education in Africa is incorporating digital technologies in its curriculum and research gradually. Experience in this regard from online universities like the Virtual University of Tunis and the Virtual University of Senegal¹⁹ indicate that digital technologies allow out-of-school youth access to higher education. The Virtual University of Senegal, for example, comprises a headquarters in Dakar, and five additional Open Virtual Spaces (ENO) scattered across the country to allow men and women in the Dakar suburbs, Saint Louis, Thiès, Kaolack, and Ziguinchor access to quality online higher education. Ethiopia has started offering licenses for delivering online higher education to the private sector for a few years now.

5. Situation Analysis

This situation analysis presents the context of the education system in the country in terms of availability of policy and strategy frameworks, the enrolment and completion at various levels of education, processes and status of the application and use of digital technologies in the education sector in Ethiopia. It focuses on capturing existing facts related to infrastructure, platform and digital content, challenges, and opportunities in the sector. It also includes current

¹⁸ (African Union 2023)*Digital Education Strategy and Implementation Plan. July 2022*

¹⁹ (African Union 2023)*Digital Education Strategy and Implementation Plan. July 2022*

initiatives related to digital education. The levels of education and training system²⁰ in the country are organized into pre-primary education, primary education, middle education, secondary education, and tertiary education. Tertiary education includes higher level training and education at university, college as well as technical and vocational institute levels.

The education and training system in Ethiopia as shown in the Education Statistics Annual Abstract of 2020/21, is presented below (Figure 2). As can be seen from the diagram, there are three examinations as a transition from one level to another level. Students will identify their major areas as either natural or social sciences stream at the last two years from the secondary school level (Grade 11 and 12).

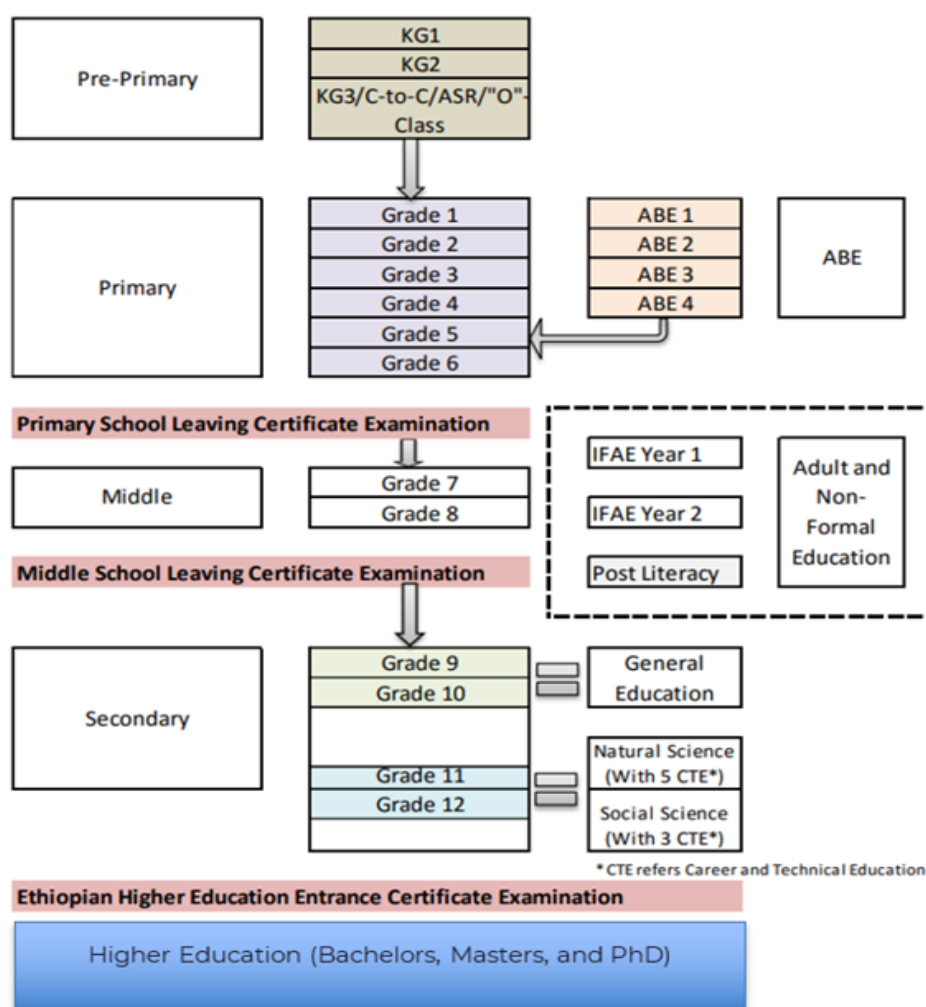


Figure 2: Education and Training System in Ethiopia (Edu. Statistics Ann Abstract, 2020/21)

5.1. General Education - Enrollment and Completion

5.1.1. Primary and Middle Education

The official age for Primary and Middle school is 7 to 14 years old. As outlined in the Education and Training Roadmap (2019) of Ethiopia: "... Primary education will be of six years' duration and Middle school with 2 years, offering basic and general primary education to prepare

²⁰ (MoE, FDRE Ministry of Education Statistics Annual Abstract ESAA (2014EC 2021/22 GC) 2023)

students for further general secondary education and training”.²¹ Though there are many other parameters, the two most relevant namely enrollment rate (net), and completion rate at the primary school level are presented below.

The Net Enrolment Ratio (NER) is a measure of students’ enrolment of those who are in the official age group for the given level of education, i.e., in Ethiopia context, it only looks at 7 to 14 years old that are enrolled in Primary and Middle education. This indicator also includes enrolment in Alternative Basic Education (ABE) in addition to the formal primary schools. As

Table 1: Net Enrolment Ratio in Primary and Middle Schools (MoE, 2021)

ESDP V Indicator	2018/19 Baseline	2020/21 Target	2020/21 Actual
Primary Grades 1-6, including ABE, NER Female	95	96	85.4
Primary Grades 1-6, including ABE, NER Male	105	104	93.9
Middle School Grades 7-8, NER Female	93	94	45.5
Middle School Grades 7-8, NER Male	102	101	46.7

indicated in the Education Statistics Annual Abstract, 2020/21, the national NER for 2020/21 is 86.4%, which shows a decrease of 8.9 percentage points from the previous year. A wide regional variation was also observed. Both the regional variations and a decrease in enrolment percentage are expected to be addressed through the envisaged strategy.

It is important to note that the report has indicated that a NER higher than 100% is technically impossible as it would mean there are more children in a range of 7 to 14 years old enrolled in schools than there are in the country, and it highlights the issue of population projections and/or inaccurate recording of students age when they start schooling. Children migrating across regions and enrolling in new schools can also affect this since they are not captured in the region’s population size.

The other parameter to understand the situation in primary and middle education is the Primary Completion Rate. Internationally the Primary Completion Rate (PCR) is an established measure of the outcomes of an education system. It is used as a way of comparing internationally the overall access and quality of the education system in a country.

²¹ (MoE, Ethiopian Education Development Roadmap 2018)

Table 2: Primary completion rate (MoE, 2021)

ESDP VI Indicator	2018/19 Baseline	2020/21 Target	2020/21 Actual
Completion rate to Grade 6 Female	79	81	63.8
Completion rate to Grade 6 Male	86	87	67.5
Completion rate to Grade 8 Female	60	63	67.8
Completion rate to Grade 8 Male	64	67	71.7

According to the Education Statistics Annual Abstract, 2020/21, completion rates are higher in Grade 8 than in Grade 6. The ESDP VI target of the year has been achieved for grade 8 in both sexes, while the completion rate for grade 6 failed to meet the ESDP VI target. Compared to ten years ago, the completion rate for Grade eight has increased from 52.1% to 69.8% (average of male and female completion rates) and since the grade 6 completion rate is one of the new indicators in ESDP VI and the new education road map, it will not be possible to talk on its trend. Digital education strategy and implementation should promote and help to increase the completion rate at both levels presented above.

5.1.2. Secondary Education

Secondary education covers from Grade 9 to 12. The official secondary school age is from 15 to 18 years old. Students take a national exam (Ethiopian General Secondary Education Certificate Examination) at the end of Grade 12, which certifies completion of secondary general education and selects students who qualify for university level of education. Enrollment rate and completion rate at the secondary school is presented below.

Table 3: Secondary Net Enrolment Ratio (NER) (Ministry of Education, 2021)

ESDP VI Indicator	2018/19 Baseline	2020/21 Target	2020/21 Actual
Grades 9-12, NER Female	25	30	29.3
Grades 9-12, NER Male	26	32	29.7

NER calculates the enrolment of children who are of the official school admission age for the given level of education. At secondary level, this calculates the proportion of 15 to 18 years old that are enrolled in secondary education. Nationally, NER for Grades 9-12 is 29.5%, which shows a very slight increment from last year. More interestingly, there is a very small difference, 0.4 percentage points, between males and females. Addis Ababa has the highest NER at 82.4%, showing that most students in this region enrolled at the official school age, and Afar with the lowest NER at 10.3%. Generally, Secondary School enrollment has expanded

rapidly in the past 20 years; and enrollment has increased with an average annual growth rate of 8.5% in the last five consecutive years. Though enrollment is increasing, the variations between regions should be addressed and the new digital education strategy is expected to narrow down the gap.

The other parameter to understand the situation in secondary education is the Ethiopian Higher Education Entrance Certificate Examination (EHEECE). Starting from 2012 E.C. (2019/20), there was only one national examination in the country. This examination is given at Grade 12. A total of 344,448 students were registered for the EHEECE in 2019/20 and 323,057 of them sat for the exam, of which 43.3% were females. Out of the total number of students who sat for the exam, 319,525 or 98.9%, scored over 200.

5.1.3. Adult (Non-formal) Education

Governments have used Adult and Non-Formal Education to assist development in other sectors of the country's economy. Adult and Non-Formal Education enable adult learners to develop problem-solving abilities and to change their mode of life. Moreover, Integrated Functional Adult Education/IFAE/enhances the participation of communities in the national development and poverty reduction struggle and makes adult learners more productive and self-reliant. In several countries of the world, including Ethiopia, Adult and Non-formal Education programs have been given for adults who are over 15 and under 60 years of age. IFAE is a two years program designed for illiterate adults in the age range mentioned above. In 2020/21, 2,873,769 adults participated in Integrated Functional Adult Education programs, which is less by around 400 thousand adults from the previous year. Nationally there are more males enrolled in IFAE, with 53.2% of the total share. The trend shows that since 2011/12, IFAE enrolment has been increasing, except in 2014/15, as the program has been rolled out across the country. However, it decreased significantly from 2015/16 onward. In general, male enrolment has remained consistently higher than female every year. In 2020/21, 200,339 adults graduated from the program, the figure declining since 2018/19. It is observed that many adults who start year two do not complete the course.

5.2. Higher Education - Enrolment and Completion

5.2.1. Teacher Education

Colleges of Teachers Education (CTEs) are basically aimed at equipping prospective teachers with the necessary knowledge, attitude, behaviors, and skills they require to perform their tasks effectively in the classroom/school and in the wider community at large. As of 2010/21, there are 39 CTEs throughout the country. CTEs provide three years' education and training in teaching and award a diploma through regular, summer, and extension (evening and weekend) programs. There are more than 20 different departments or streams in most CTEs that are categorized under two modalities; *New Modality* and *Linear Modality*.

The total enrolment in all programs (regular, extension, and summer) for 2020/21 was 94,242, which is 29% less than the previous year. There is a steady decline in enrollment starting from the year 2010 E.C. (2017/18) due to various reasons. The gender share in the total enrollment shows that 54.2% are male and 45.8% female, which is a better achievement with respect to equity.

Concerning the completion rate, the total number of graduates in 2020/21 from all programs is 43,392, which started decreasing from last year. The Extension program took the largest share of the graduates, with 38% of the total graduates. With respect to modality, more than 85% of the graduates are from “New Modality” and “Cluster Modality” has almost vanished. The number of female graduates in all programs in 2020/21 is 43.7%, which increases by 3 percentage points from last year. The statistics presented above indicate an urgent need for intervention through appropriate policy and strategy to increase enrollment as well as completion rate in teacher education.

5.2.2. Universities and Colleges (HEI)

Universities and colleges are tasked with higher-level education and training. Higher Education (HE) is recognized as a contributor to the social and economic development and Ethiopia's aspiration to become a middle-income country by 2025. According to the National ICT Strategy for HEIs and TVETs 2021-2030²² Ethiopia has seen a significant advance in its HE system over the past decade. The number of public universities jumped from eight in 2005 to fifty in 2020. The gross enrolment rate (GER) has also shown a significant increase. The annual average enrolment rate shows an increase of about 10%. The document asserts that in order to address the increase in the number of student population and cope with the 21st century's demands, digitally transformed academic and research personnel are crucial.

As indicated in Table 4 (source: DSCAP Ethiopia 2020-30)²³, a good number of students were enrolled during the academic year 2018/19 in all higher education and TVET institutions.

Table 4: Enrolment at Universities and TVET (DSCAP Ethiopia 2020-30)

Indicator Description	Indicator	Baseline	Year	Source of Data
Number of undergraduate students in Gov. / Public Universities (ISCED level 6)	STEM (Band 1-4)	511,189	2018-19	Higher Education Statistics Annual Abstract 2011 E.C. (2018/19), MoSHE
	G - Band 5	158,376	2018-19	Higher Education Statistics Annual Abstract 2011 E.C. (2018/19), MoSHE
	G - Band 6	183,180	2018-19	Higher Education Statistics Annual Abstract 2011 E.C. (2018/19), MoSHE
Number of undergraduate students in Non-Gov. Universities / Colleges (ISCED level 6)	All Private	138,335	2017/18	Education Statistics Annual Abstract, 2010 E.C. (2017/18), MoE

²² (MoSHE, National ICT Strategy for HEIs and TVETs 2021-2030 2020)

²³ (MoSHE, Digital Skills country Action Plan (DSCAP) 2020-2030 2020)

According to a report (source: DSCAP Ethiopia 2020-30), the Gross Enrolment Ratio (GER) for Higher Education undergraduate program is reported to be 9.4%. This could be taken as a significant achievement though it still needs more attention in terms of completion rate and maintaining quality of education. The new digital education strategy is expected to address these issues.

5.3. Policy Context for Digital Education

Digital education is underpinned by Digital Ethiopia 2025 and many other relevant policies and strategies mentioned below.

- Digital Ethiopia 2025,²⁴ that aspires to transform Ethiopia to prosperity through job creation, foreign currency generation, and efficient services provision, indicates that digital skill is fundamental for the future of the economy and considers human resource development as an important ecosystem to realize the digital transformation in manufacturing, agriculture, IT enabled services and tourism;
- Education Sector Development Program VI (ESDP VI) 2013 – 2017 E.C. (2020/21 – 2024/25 G.C) emphasizes access to Education and Coverage, Education Quality, Equity, especially for students with special needs and those from pastoralist communities;
- National ICT Strategy for Higher Education and TVET (2021-2030) emphasizes improved use of new technologies and applications for teaching, learning, research, community service and administrative effectiveness of tertiary education to improve quality and efficiency of the systems, enhanced quality and transparency in administration of the institutions, advanced research and development and diversification and expanded financial resources base of Higher Education and TVETs;
- The Digital Skills Country Action Plan (2020) aligned with the 2019 Homegrown Economic Reform Agenda and the Ten-Year Development Plan (2020-2030) and Digital Ethiopia 2025 as well as with other international commitments is a worthy mention policy context for the sector. The DSCAP is developed to guide the actions and strategies needed to build digital skills across the higher education institutions (HEIs), College of Teacher Education (CTEs), and the Technical and Vocational Education and Training (TVET) in the country. The DSCAP plan focuses on five outcome areas: 1) establishing enabling policies, digital skills framework, and digital skills assessment; 2) reform of digital skills programs; 3) enhancing the use of technology in teaching-learning; 4) connecting Higher Education and TVET institutions to affordable high-speed broadband and improving campus network digital services, and 5) capacity building and process reengineering;
- Science Innovation and Technology Policy (2012) and National Information Security Policy (2011) were put in place and indicated that developing science and technology institutions that focus on producing highly qualified technicians, engineers and scientists;
- The National Broadband Strategy which was in place in 2016 indicates that the implementation ranges from 2016-2020/21 and made Education one of its target areas.

²⁴ (Office-of-the-Prime-Minister 2020) *Digital Ethiopia 2025*

- Education and Training Policy. March, 2023. (Federal Democratic Republic of Ethiopia, Ministry of Education)²⁵

The Technical and Vocational Education and Training (TVET) colleges are now organized under the Ministry of Labor and Skills and its regional bureaus. Although TVET is not under the Ministry of Education, it is still an educational institution focused on skills development that requires appropriate use of technology for its teaching and learning. Hence, the Ministry of Labor and Skills needs to work closely with the Ministry of Education in utilizing digital education for its TVET institutions.

5.4. Digital Skills

As it is indicated in the African Union Digital Education Strategy²⁶ document, there is variation in the digital skills at different levels of education. There is an improved digital skills level as we move from the lowest levels of education to the highest. This has insights into the execution of the proposed potential interventions or EdTech projects in the education sector in the country. For instance, digital skills development programs can start from tertiary education and be cascaded down to general education. The initiative by the Ministry of Education to start e-learning and associated digital literacy and skills development programs at higher education institutions by initiating the “*e-Learning for Strengthening Higher Education (e-SHE)*” project is in alignment with this assertion. The e-SHE project is critical in training instructors, students, and ICT staff in selected HEIs on digital literacy and skills development areas. The e-SHE project is also important to expand or cascade the training to TVETs, secondary, and primary schools. Moreover, it also contributes to learning lessons in other focus areas discussed below. According to the Ethiopian digital literacy maturity level survey²⁷ conducted using UNESCO’s digital literacy maturity level framework on 4000 households and a qualitative inquiry of sixteen federal-level stakeholder institutions, over 60% of the surveyed households who have access to digital technology are found to be on a competent and advanced beginner level. Moreover, out of the samples surveyed, about 60.27% can use a computer/ laptop/ tablet/ smartphone or any such device, 72.65% are currently using cell phones, and 53.71% use the internet.

5.5. Infrastructure and Connectivity

Infrastructure refers to the platform and connectivity necessary for a task at different levels (readiness at schools, learners, teachers, administrators, and household levels). There are initiatives to build state-of-the-art infrastructure to support the implementation of educational policies and strategies countrywide. Among these are the Ethiopian Education and Research Network (EthERNet) and the School Network (SchoolNet) projects.

The EthERNet initially started to enhance access to networks and the Internet for higher education institutions. The objective is to connect public universities to enhance resource sharing, research and project collaboration, and access to a common infrastructure. As such, the EthERNet has a vision to build a national educational cloud which could otherwise not be

²⁵ (MoE, *Policies and Strategies 2023*)

²⁶ (African Union 2023) *Digital Education Strategy and Implementation Plan. July 2022*

²⁷ (MInT 2022) *Ethiopian National Digital Literacy Maturity Survey*

possible at individual institution level. The national educational cloud provides services related to infrastructure, digital content production/management, scheduling and management, systems security, and Internet Protocol/IP management.

The SchoolNet is another infrastructure initiated to improve the quality of education at secondary levels and expand the reach of school connectivity in the country. It is initiated with the assumption that substantiating the face-to-face classroom teaching with content accessed over the internet or offline or broadcasted from VSAT links over television screens, commonly called plasma can broadly improve the quality, reach, and connectivity of education in the country. Initially, the Plasma broadcasting service started with a 12-channel broadcast television service run by a joint collaboration between the MoE and the Ethio-Telecom which later stepped down for some reason. But later the MoE initiated a broadcast that is accessible both at homes and schools, unlike the Plasma which is accessed from schools only. This new service was used for community learning as well and has a radio program to support the development of students and the community's English language skills.

Overall, a total of **1500 schools are connected** to the infrastructure from which **1200 schools** were connected through the government's SchoolNet expansion initiative and **300 schools** were addressed through support from the World Bank. These schools are enabled to get connected to the platform and access content pushed from the center or offline content stored offsite. The SchoolNet infrastructure involves three critical initiatives:

- i. an e-learning initiative that strives to connect schools to a national data center to enable them to get access to the national digital content;
- ii. a cloud computing solution project that enables schools to get both online and offline access to the centrally stored digital content; and
- iii. ICT infrastructure development for schools which targets enabling schools to get connected to the internet and associated skills development of staff in the schools connected.

Beyond the availability of digital skills, ownership and access to different digital devices, connectivity, etc. is critical to the success of the digital education and implementation plan. Data on devices that are widely accessed by the students, teachers, school and university admins, and parents; the diversity of digital technologies used as access devices, the type, diversity, and penetration of digital services available, etc. and aggregate level of ownership over those devices and services at a national level has implications to the success of the digital education strategy and implementation plan.

According to the Inclusive Internet Index²⁸ (2022), the status of Ethiopia on availability, affordability, relevance, and readiness of connectivity out of 100 countries in the world is presented in the figure below. The Inclusive Internet Index (2022) measures accessible bandwidth using four factors: availability (usage, quality, infrastructure, electricity), affordability (price and competitive environment), relevance (local content and relevant content), and readiness (literacy, trust & safety, and policy). Ethiopia ranks 26th in Africa and 92nd in the world.

²⁸ (Economist-impact 2022) *The Inclusive Internet Index 2022*

Table 5: Rank according to accessible bandwidth

Parameter	Country rank
Availability	88 th
Affordability	98 th
Relevance	77 th
Readiness	89 th

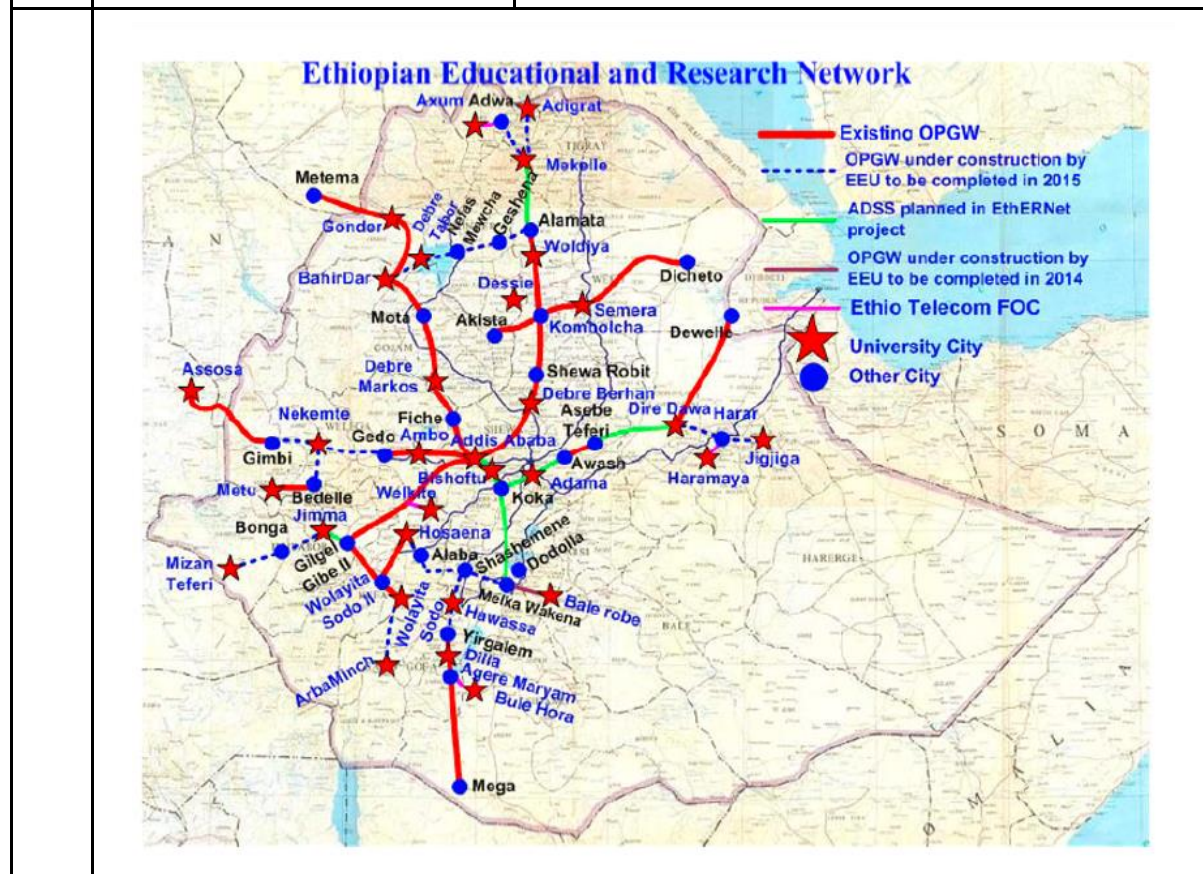
The current connectivity and infrastructure related to education as shown in the DSCAP 2030²⁹ is presented below.

Table 6: Status of Current Connections at HEIs and TVETs

Current Status		Update
1	Number of institutions that are connected currently to NREN (EthERNET)	36 universities are connected to the EthERNET with 10Gbps. Internet is leased from telecom service provider. The rest of the universities have poor infrastructure.
2	Geographical coverage of EthERNET	4841 Km of fiber is used. As some institutions are not connected, more fiber connections are required. It is assumed more cities and towns should be connected to address the indicated connections for CTE.
3	State of manpower and skill of EthERNET	Relatively good structure but not filled with several positions (See sub-strategy 4.1)
4	Campus network in the HE	Most HEIs have campus networks and Internet Connections
5	Percentage of campus area has Wi-Fi coverage?	Quite a number of them have but not sufficient. Universities have 5 to 10 access points per campus on average.
6	Status of network connectivity of students and staff at home?	Almost none. If staffs/students are connected to the Internet from home, it is at their own cost.
7	How many students have access (i.e. broadband, laptop and devices, and broadband coverage) to connect from home?	Almost none.
8	How many universities have ERP?	Almost none. There are student management systems at some universities.

²⁹ (MoSHE, Digital Skills country Action Plan (DSCAP) 2020-2030 2020)

Current Status		Update
9	How many universities have access to the LMS platform (number of courses online)?	With the prevalence of COVID-19, a few institutions are attempting. Generally, none have exercised it.
10	How many students, teachers, and staff have university-provided campus identity?	Only a few of them.
11	Status of IT workforce in the campuses (number, skill, and training)?	There are structures for the HR, however, some positions are not filled and lack the required skills on the part of the existing experts
12	All College of Teachers (CTE) are considered for this work as universities. None of them have computing facilities including networks and Internet connection.	A significant number of CTEs have no ICT Office.



As can be seen from the details above, though there is encouraging connectivity among and within universities, there is still a need to improve coverage and access to newer universities.

5.6. Platforms and Digital Content

Platforms and the availability of digital content is another key element in digital education. The Ministry of Education, through its relevant units, is also engaged in educational content production and broadcasting. It performs activities related to educational content production for television broadcasts, interactive radio production (for grades from 1-8), and documentary television production (on HIV AIDS, road traffic, community education, agriculture, etc) as community services.

The Digital Technology for Education Sector Transformation (D-TEST)³⁰ is a digital portfolio initiated to transform the sector by introducing different ICT-enabled services in the education sector. The D-TEST is a portfolio of projects which includes:

- Educational Sector Identification System (ESIDS);
- Online Meeting and Teaching;
- Grade 12th Online Examination System;
- Data analytics service;
- Development of digital content for secondary schools;
- Implementation of the National Research and Academic Digital Repository of Ethiopia (NRADRE);
- Development of a National Academic Digital Library of Ethiopia;
- A data cost-free language learning/ content development (in partnership with the Ethio Telecom);
- Project on e-Learning for Strengthening Higher Education (e-SHE) project.

These projects are discussed briefly below.

The Educational Sector ID System (ESIDS) is another initiative motivated by uniquely identifying the community in the education sector to help manage personalized information about the entities. To organize such personalized data and information, the ESIDS targets to uniquely identify students, teachers, non-teaching professionals, and support staff through their digital IDs. Organizing such data/information is supposed to support decision-making at a specific stakeholder level than generating summative information.

The online meeting and teaching initiative involves multiple tech-supported processes such as teleconferencing to support meetings at different administrative levels; trainings and short-term courses for language courses, high school/elementary school short-term classes; online trainings for teachers focusing on year-long and massive teachers capacity building, subject-specific courses, and language courses for teachers.

The 12th Grade Online Examination is initiated as an intervention to the costs involved in printing exam papers and answer sheets, logistics, and the security needed in administering the examination in the country. The goal is to reduce the above limitations significantly and make exam leaks insignificant, distribute exam results in a very short time, and track exam pattern analysis to improve the quality of education in the future based on a one-time investment. The system is tested and runs on an android-based tablet built with different features and functions.

³⁰ (MoE, *Digital Technology For Education Sector Transformation (D-TEST) 2023*)

Digital content for Secondary Schools is an initiative to provide e-Text Books, e-Reference Books, e-Lectures and Tutorials, Simulated Laboratories National Academic Digital Library of Ethiopia³¹, e-Performance monitoring to the school community. There are also other related resources to this such as the National Research and Academic Digital Repository of Ethiopia (NRADRE) which provides researchers, students, and lecturers' access to all research works published by Ethiopian universities and research institutions. There is another source for digital content called the National Academic Digital Library of Ethiopia, offering a digital library service to the education sector community. This resource is a repository of digital content from pre-primary to grade 12 (secondary school). The other initiative is the cost-free language learning/development content. This is a website to be accessed freely where telecom data cost is waived for students to learn and develop their English language skills.³²

A more comprehensive intervention initiated recently is the e-Learning for Strengthening Higher Education (e-SHE). The e-SHE project has the objectives of enhancing quality, resource sharing, inclusion, and access to/reach of higher education. It is envisioned to scale the current education system at the tertiary level through five critical intervention areas: 1) design and implementation of universally accessible learning management system (LMS) and student information system (SIS) by public higher education institutions; 2) digital literacy and skills development of teachers, students, and ICT support staff; 2) digital content development of courses in higher education institutions, 3) building multimedia resource centers/studios in the institution to support the digital content development process; 4) development of model digital content for sample course to be used as a guidance and benchmark for institutions; 5) development of e-learning policy as a mechanism to institutionalize and sustain the project. Accordingly, the Ministry of Education encourages universities to scale-up and deliver their programs in a fully online mode.

5.7. Challenges and Opportunities

5.7.1. Challenges

The ever-increasing demand from learners, educators, and educational system management and administration presents challenges to inclusion, cost, and quality of education. These challenges can be summarized into quality, access, resilience, and affordability of education within the sector. Accordingly, the following are key challenges that the education sector is facing and that require attention.

- Lack of adequate funding for setting up affordable, resilient, and secured infrastructure for digital education
- Insufficient open digital content with an appropriate pedagogical approach guided by privacy, ethical, and security standards
- Limited educational data analytics engagement to measure access & learning outcome, equity, relevance, & affordability of education
- Though encouraging, insufficient competency-based digital literacy and skills of students and teachers.

³¹ (MoE, *E-Learning and D-Library 2023*)

³² (MoE, *Learn English 2023*)

- Limited regional platforms and centers of excellence to exchange research insights and innovation on digitizing education
- Resource constraints to build state of the art ICT ecosystem that meets the requirement of the sector
- Shortage and limited capability of ICT staff at schools and universities
- Lack of formal governance to make decisions on IT priorities, investments, and policies, impacting the openness, speed, coordination, and rigorous decisions
- The prevalence of plagiarism and in-breeding in research conducted within HEIs
- Economic challenges of teaching staffs at all levels, forcing them to work per dime instead of focusing on their academic and research activities
- Lack of reliable access to internet in almost all schools, and CTEs
- Lack of advanced IT laboratory at all levels
- The lack of consultation with the Ministry (in particular), resulting in many pilots not being able to expand to national roll-out levels
- Significance dependency on foreign or external funding which led to the early demise of programs and projects after initial funding had elapsed
- The absence of rich content that was fit-for-purpose as far as the national school curriculum was concerned
- Access and affordability of digital devices

For ease of presentation, the existing challenges are spread over the focus areas identified (Table 7) in line with the digital education strategy by the African Union:

Table 7: Challenges / key issues

Focus areas	Key issues/Challenges
Infrastructure	A relatively weak bandwidth/network coverage and access for schools/rural areas
	Higher cost of connectivity and devices
	Limited number of schools connected to SchoolNet/low campus network coverage
	Limited application of the EthERNet to support strategic issues in education
	Limited number of classrooms appropriated for digital learning
	Siloed and disintegrated information systems & infrastructure in institutions
	Access to energy sources especially in rural schools
Digital Content and Platforms	Alignment of digital content to existing curricula
	Localized and contextually appropriated LMS and SIS at all levels of education
	Ethical standards for content creation, distribution, and use

Focus areas	Key issues/Challenges
	Open educational resources and guidelines to its development
	Use of multiple languages as instructional medium for general education
	Pedagogical skills to pursue digital education
	Application of emerging EdTech (VR, AR, AI etc) to create, share and manage content
	Multimedia resource centers to develop digital content by institutions-
Digital Education Strategies, Policies, and Legislations	Online safety and cyber security guideline
	National digital education strategy applicable to all levels of education
	E-learning policy
	ICT in Education policy for the country
Data Governance and Analytics	Data governance framework for the education sector
	Standards and policy to collect, store, share, use of data to support decision making
	Educational data models that enable measurement of learning outcomes, equity, relevance, and affordability of education
	Data governance frameworks
EdTech Innovation and Effective PPP	Economic stimulus for the private EdTech sector
	Platforms to exchange and mobilize resources for digital education
	Limited support for EdTech start-up limiting the growth of the sector
	Public/private initiated learning content and platforms
	Coordination and experience sharing among partners in digital education
	Participation of the private sector in funding digital education programs
Research, Cooperation and Learning	Platform to the exchange of research and innovation efforts on EdTech
	Local innovation on digitalization of education
	Centers of excellence for digital technology integration in education
	Limited research in technology-based education regarding aspects of quality and inclusion
	National competency certification framework for staff

Focus areas	Key issues/Challenges
Digital Literacy and Skills Development - Teachers	Digital literacy and skills informed competency framework
	Adoption of teachers' digital competency frameworks
	Resources to provide digital literacy and skills for teachers
	Readiness of teachers to their new roles
	Availability of opportunities for teachers to advance and upgrade their digital skills
Digital Literacy and Skills - Students	National competency certification framework for students
	Competency framework for delivering digital literacy and skills at schools, TVETs, and colleges
	Number of teachers with hands-on experience to teach digital literacy and skills and mentor students
	Limited opportunities for coding at schools
	Limited opportunities for digital entrepreneurship skills development at university level
Inclusiveness	Development of equitable and inclusive digital pedagogies
	Technologies and platforms for promoting inclusiveness

5.7.2. Opportunities

The development of the EdTech sector and strong commitment from the Ethiopian government have also brought opportunities to the education system. The AU Digital Education Strategy proposes two pillars (Digital Technology for Education and Education for Digitally Empowered Citizens), and nine strategic objectives. The first pillar focuses and prioritizes the application of digital technologies for teaching, learning, research, and administration. The second pillar focuses on digital literacy and skills for digital education and employment. Two more pillars namely Data-driven Educational Decision-making & Administration and EdTech Research, Knowledge, and Innovation are added to the existing framework. Some of the key opportunities worth mentioning are;

- Strong government willingness to improve the state of both general and higher Education through a strategic roadmap
- Advances in technologies like LMS, virtual learning, AI, and Software as a Service
- Increased technology adoption/use of technology by faculty and students
- Improved fiber deployment, telecom coverage and mobile penetration at a national level
- Tested infrastructures like school net, EthERNet
- Potential support from matured research and education networks and universities

- The possibility to share electronic resources among schools, HEIs and TVETs within Ethiopia and elsewhere through OER
- Government commitment to address the Digital Ethiopia in 2025
- Encouraging attention given to Digital Skills development among the university and research community.

Beyond the above opportunities that the whole digital education strategy can bring to the sector, there are also other specific opportunities in the Ministry of Education and other ministerial offices that could enhance the success of the digital education strategy and implementation plan. Table 8, presents these opportunities against the envisaged focus areas of the digital education strategy.

Table 8: Focus areas and opportunities

Core Focus Areas	Opportunities
Infrastructure	<ul style="list-style-type: none"> • Current expansion of the EthERNet infrastructure • Telecom service coverage • Mobile penetration in the country • Expansion of SchoolNet system • Rural electrification program, expansion of existing power sources, potentials of solar and wind energy sources • Increasing access to devices • Opening the telecom sector for other competitors
Platforms and Digital Content	<ul style="list-style-type: none"> • The current experience on digital content development by the MoE • The digital content development experience gained from the e-SHE project • Existing multimedia studios at the MoE for digital content production
Digital Education Strategies, Policies, and Legislations	<ul style="list-style-type: none"> • ICT policy for Higher Education • The digital skills country action plan (DSCAP) • Digital Ethiopia 2025
Data Governance and Analytics	<ul style="list-style-type: none"> • The educational sector digital ID system • The HEMIS 1.0 project for Higher education • EMIS 1.0/2.0 for General education
EdTech Innovation and Effective PPP	<ul style="list-style-type: none"> • The newly emerging EdTech initiatives in the country • The user demand for EdTech services • Encouraging understanding by various stakeholders about the value and effectiveness of public-private partnership
Research Cooperation and Learning	<ul style="list-style-type: none"> • The multimedia resource centers to be built via the e-SHE project at the higher education institutions • The yearly national education assembly that brings most stakeholders together (Expanding its scope so it can also include post/pre conferences on digital education) • Availability of support from educational stakeholders

Core Focus Areas	Opportunities
Digital Literacy and Skills – Teachers	<ul style="list-style-type: none"> ● Local capacity developed to produce ToTs for digital literacy and skills development and the cascading plan ● The digital literacy skills development programs given at the higher education institutions from Arizona State University, ● Ongoing trainings to teachers, school leaders, and education experts on digital literacy, utilization of ICT and digital resources by UNESCO-Huawei Technology enabled Open School Systems
Digital Literacy and Skills – Students	<ul style="list-style-type: none"> ● The current mobile devices penetration in households ● Inclusion of ICT courses in the revised primary school curricula ● Ongoing student trainings on digital literacy, utilization of ICT and digital resources by UNESCO-Huawei Technology enabled Open School Systems
Inclusiveness	<ul style="list-style-type: none"> ● Promising attention at all levels by Ethiopian government to facilitate inclusiveness

5.8. Insights from the Situation Analysis (Issues)

In the last two decades, education across all levels, from early childhood to higher education, has expanded dramatically in the country, with variation across regional states. The following are key insights from the situation analysis to guide the development of the digital education strategy and its implementation.

- Overall, the enrollment and completion rate remained uneven and required improvement. Across the country, teachers and students' unequal access to digital technologies, limited infrastructure, including electricity, limited professional training for teachers to integrate digital tools into learning, assessment, and teaching, and high cost of devices and connectivity remain challenges.
- Beyond its limited capacity to absorb a growing number of secondary education graduates, higher education faces special challenges—including low quality, unpreparedness for the digital age, and poor linkage between education, research, innovation, and socio-economic development.
- Equity of access to digital education remains a critical issue across all levels of education. The equitable use of digital technologies by girls, women, marginalized people in rural areas and those on the move and students with disabilities, require concerted and multi-faceted regional efforts.
- Beyond connecting educational institutions, promoting open science-facilitating collaboration, enabling research communities, and sharing data on local as well as global challenges like climate change and epidemics needs attention.

As indicated in the AU digital education strategy, experience within the AU Member States like Kenya, Mauritius, Morocco, Tunisia, South Africa and worldwide shows that, when planned well and implemented sustainably, digital technologies can improve children's access, quality, engagement, and learning in early childhood, primary, and secondary education.³³

³³ (African Union 2023) *Digital Education Strategy and Implementation Plan*

6. Digital Education: Building Blocks for Ethiopia

Digital technologies are shaping not only education but also all sectors of society. The African Union Digital Education Strategy and Implementation Plan prepared in 2022³⁴ states that digitalization impacts education and employability. Since the current labor market requires a workforce who have received the highest quality education and excellent digital literacy and skills regardless of location, background, or ability, four pillars/building blocks are considered essential for the digitalization of education based on the AU pillars and building block for digital education and customized for the situation in Ethiopia: These pillars are:

- i. **Digital foundations through required infrastructure and services** - accelerating use of digital technology in education for teaching, learning, research, assessment, and administration by facilitating access to affordable devices including specialized devices for people with disabilities,
- ii. **Digital Capacity/skill** - Equip all educators and students with digital competencies
- iii. **Enabling Environment**- nurturing suitable environment and policy contexts for digitally empowered citizens/ for the digital economy and society.
- iv. **Digital content and platforms**: including locally developed online learning content, freely available Open Educational Resources (OER), public or private driven learning content, and platforms among others.

The diagrammatic representation of the major building blocks of the digital education strategy is presented in Figure 2.

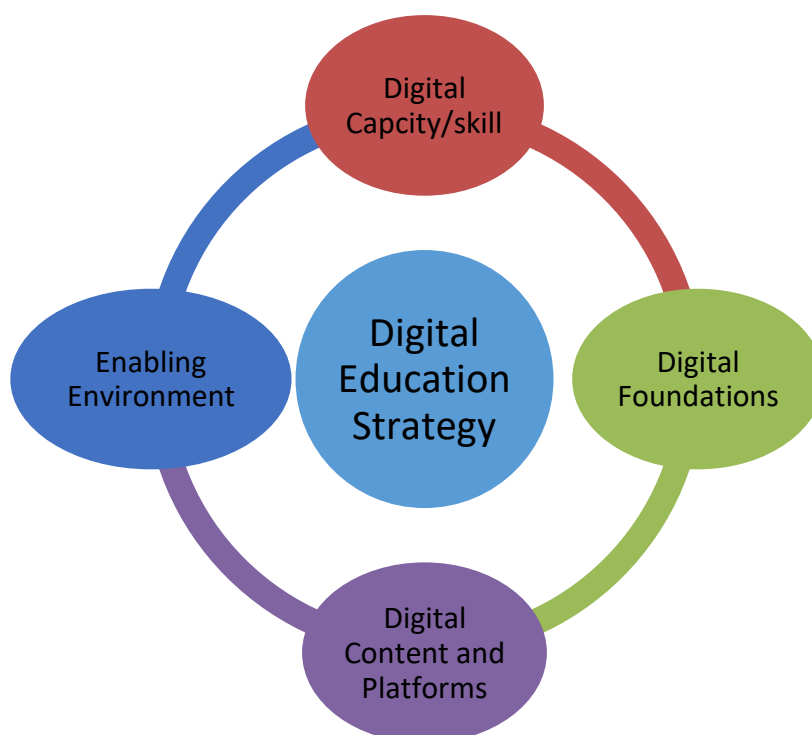


Figure 3: Building blocks of the digital education strategy

³⁴ (African Union 2023) *Digital Education Strategy and Implementation Plan*

7. Strategic Objectives

Digital technologies are significantly shaping the education sector. Using digital technologies for education is not a choice anymore but a necessity. To this end, the African Union Digital Education Strategy and Implementation Plan prepared in 2022³⁵ stated that digitalization impacts education and employability. As stated before, the current labor market requires a high-caliber workforce with high-quality education and knowledge of digital literacy skills regardless of location, background, or ability. Two issues are important for the digitalization of education in Africa: These are:

- i. **Digital technology in education** – accelerating the adoption of green digital technologies for teaching, learning, research, assessment, and administration, and
- ii. **Education for digitally empowered citizens/ for the digital economy and society** – strengthening digital literacy and skills for all, especially for teachers and students.

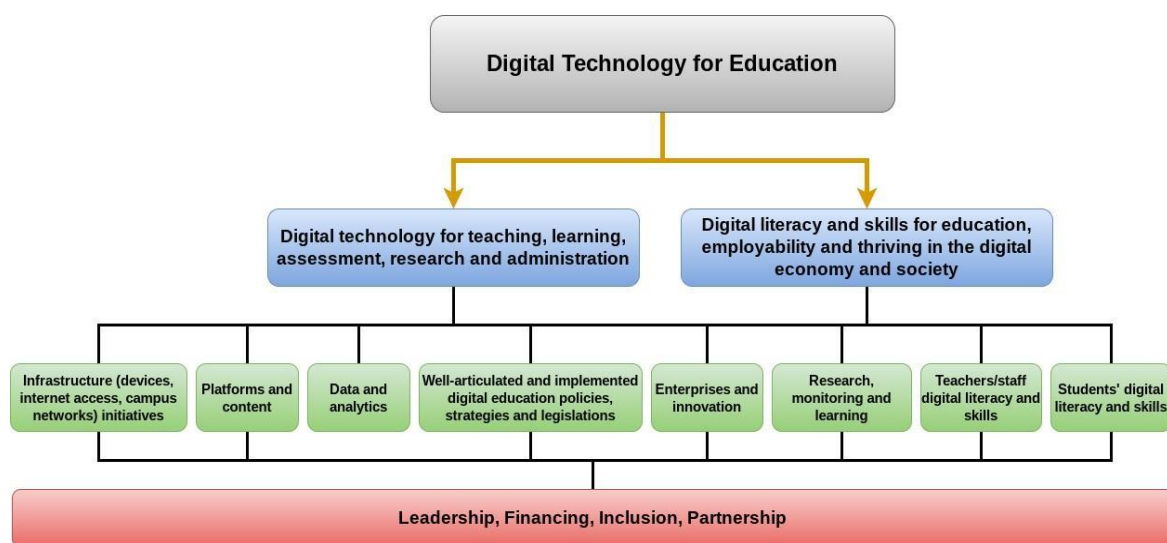


Figure 4: AU Framework for Digital Education

7.1. Strategic Issues

Considering the African Union framework and the Situation Analysis discussed above concerning the Ethiopian education system, the following nine Strategic issues are thought to be relevant to the digital education strategy and implementation plan of Ethiopia. Moreover, the identification of these strategic issues is in line with the Universal Design for Learners (UDL) framework which incorporates the three main principles: **engagement, representation, and action and expression**.

1. Enabling policy and strategy
2. Infrastructure development, connectivity, and access to devices including assistive technologies for special needs
3. EdTech innovation and effective PPP

³⁵ (African Union 2023) [Digital Education Strategy and Implementation Plan](#)

4. Curriculum-aligned digital content in line with UDL
5. Digital Skills of educators and other staff
6. Digital skills of students
7. Data governance and analytics
8. Research, cooperation, and learning
9. Inclusiveness

7.2. Strategic Objectives

Strategic objectives are purpose statements that help create an overall vision and set goals and measurable steps for an organization to help achieve the desired outcome. The following strategic objectives are set out in line with the strategic issues defined earlier. These strategies are:

- SO 1. **Ensure an Enabling ICT for Education and e-Learning Policy**
- SO 2. **Create an Enabling Infrastructure and Connectivity for Digital Education in Ethiopia**
- SO 3. **Promote EdTech Innovation and Encourage PPP**
- SO 4. **Promote the Development of Curriculum-Aligned Digital Content**
- SO 5. **Advance Digital Literacy and Skills for Teachers and Other Staff**
- SO 6. **Advance Digital Literacy and Skills for Students and Adults**
- SO 7. **Promote Effective Data Governance and Analytics for Education**
- SO 8. **Facilitate Research, Cooperation, and Learning**
- SO 9. **Foster Digitally Inclusive Education for All**

Diagrammatic representation of the digital education strategy building blocks and strategic objectives is presented below (Figure 5), while a brief description of each one of them follows right after the figure.

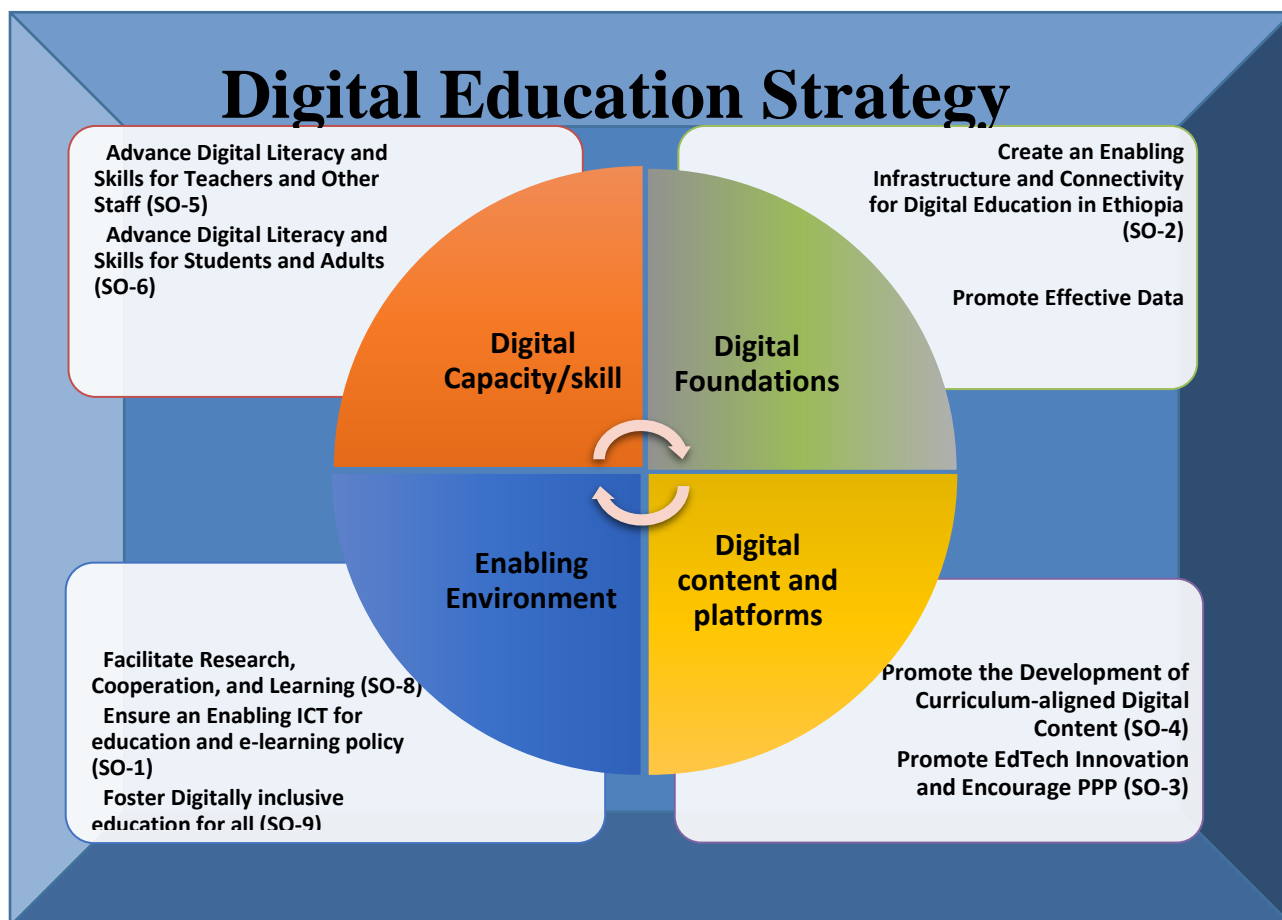


Figure 5: Mapping Strategic Objectives (SO) and building blocks of the digital education strategy

7.2.1. Strategic Objective 1: Ensure an Enabling ICT for Education and e-Learning Policy

Goal

The goal of this strategic objective is to assert the need for ICT for Education policy which identifies how ICT infrastructure and systems are to be used within the education sector as well as the need for an e-learning policy which establishes how LMS and other online services are to be used within the general education system, the higher education system, and for capacity building of teachers, students, and other staffs.

Description

An ICT for Education Policy is a policy to be put into place by the Ministry of Education to bring digital technology to all individuals (teachers, students, officers, managers, etc.) so that they can have defined access to the right information at the right time using appropriate technology. Developing an ICT policy for the education sector will provide professionals, content developers, teachers, students, administrators, and the like with what to do and what to expect from digital technology.

7.2.2. Strategic Objective 2: Create an Enabling Infrastructure and Connectivity for Digital Education in Ethiopia

Goal

The goal of this strategic objective is to improve and fulfill the required infrastructure facilities for digital education such as connectivity to, between, and within universities and schools, teacher training institutes, as well as MoE and regional education bureaus. It also aims to promote the use of cloud services such as PaaS, IaaS, and XaaS to increase accessibility for platforms, systems, and services from any location. This will enable the education system to use IT-assisted teaching-learning, access to online education and digital libraries, and access to digital administration and student services.

Description

Infrastructure development and connectivity is one of the strategic issues that could hinder the achievement of digital education strategy if not properly addressed. The development of infrastructure includes improving SchoolNet to connect all schools in the general education sector, improving EthERNET to give access to all CTEs and HEIs, and creating an appropriate network within schools and campuses for easy access to online education, online exams, LMS, digital libraries, and digital administration services in the education sector through the use of national education cloud services. Teachers and students need to have access to devices through subsidized loans or other mechanisms to be able to benefit from digital technology-supported education, training, and other administrative services.

7.2.3. Strategic Objective 3: Promote EdTech Innovation and Encourage PPP

Goal

The goal of this strategic objective is for the MoE to work together with private EdTech companies and public institutions in PPP modality to create innovative ideas and develop digital technology in support of the general and higher education sector.

Description

The need for resources to achieve the overall digital education strategy requires collaboration between the government and the private sector. This collaboration with the appropriate PPP arrangement will engage the private sector to innovate, research, and develop digital technology that will help the country achieve its digital education strategic objectives.

7.2.4. Strategic Objective 4: Promote the Development of Curriculum-aligned Digital Content

Goal

The goal of this strategic objective is to develop a revised version of the existing curriculum in general education as well as in HEIs to align for a digitally enabled education system. It also aims to populate the LMS with quality and standardized content and appropriate curriculum so that quality education and training can be delivered to students, teachers, as well as non-teaching staffs at all levels.

Description

Properly designed and timely revised curriculums are the cornerstones of the country's education system. The current curricula in general education as well as in higher education need to be revised to incorporate digital skills at all levels and need to be convenient for technology-supported education.

7.2.5. Strategic Objective 5: Advance Digital Literacy and Skills for Teachers and Other Staff

Goal

The goal of this strategic objective is to advance the digital literacy level of the teaching staff and non-teaching/administrative staff at all levels so that they will be able to benefit the most out of the digital technology for education.

Description

Teachers and administrators in general education as well as higher education institutions are required to have different levels of knowledge in digital skills to be able to use the digital technology that will be made available for teaching learning and administrative activities. Teachers need digital skills to administer their students and provide education using LMS and other technology-supported academic facilities. Administrators also require digital skills to manage human resources, school facilities, as well as data governance and analytics.

7.2.6. Strategic Objective 6: Advance Digital Literacy and Skills for Students and Adults

Goal

The goal of this strategic objective is to advance the digital literacy level of students at all levels so that they will be able to benefit the most from digital technology for education.

Description

Students at all levels (from childhood to tertiary education) require different levels of digital skills and knowledge to take full advantage of technology to support their learning. Access to learning materials, quizzes and examinations, and other academic resources can be easily made possible through the use of digital technologies, provided that students have the necessary digital skills.

7.2.7. Strategic Objective 7: Promote Effective Data Governance and Analytics for Education

Goal

The goal of this strategy is to develop integrated systems whereby data about infrastructure, human resources, students, schools, etc. is properly and centrally stored and analyzed using appropriate tools.

Description

The Ministry of Education is administering thousands of schools, hundreds of thousands of teachers, and millions of students throughout the country. Managing these data and analyzing them in real time requires appropriate centralized databases for storage and tools for analysis. Enterprise Resource Planning (ERP) system is a software that streamlines all operations of an institution such as staff management, payroll, finance, and budget administration, student information management (record and manage student-related information), digital library, procurement and inventory management, web portals, etc. Development or adoption of such an integrated ERP system in the education sector will help the different regional and local education offices, schools, universities, CTEs, etc. in general and the Ministry of Education, in particular, to properly administer its critically important resources.

7.2.8. Strategic Objective 8: Facilitate Research, Cooperation, and Learning

Goal

The goal of this strategic objective is to create an enabling technology-supported environment where academicians are encouraged to collaborate, innovate, publish, and work together in areas identified as priorities for the country's development.

Description

Access to technology will increase the ability of academicians and students to get access to data and conduct research conveniently. Access to data is one of the crucial factors for better research and easier collaboration between researchers, students, and the industry. Creating an enabling environment for access to data and research materials through technology will benefit students and researchers in particular and the country in general.

7.2.9. Strategic Objective 9: Provide Digitally Inclusive Education for All

Goal

The goal of this strategy is to deliver equal access to education to all citizens of the country and refugees based on their needs, interests, and the national education roadmap.

Description

Every child has the right to quality education and learning (UNICEF).³⁶ In a developing country like Ethiopia, where over 70% of the population is not urbanized, the provision of quality education becomes a challenge. It is to be noted that Ethiopia is the largest host for refugees in Africa. If standardized and quality education is to be delivered for all citizens including refugees, using digital technology such as e-learning is inevitable. Thus, inclusive education can be made possible through online education/e-learning to all citizens in rural areas, semi-urban areas, and urban areas and host community schools for refugees. It can also support home education for those who choose it, persons with disabilities and special needs, non-formal adult education, homestay parents, etc. so that they can shape their future by developing their skills to realize their full potential.

³⁶ (UNICEF 2023) <https://www.unicef.org/education/inclusive-education>

Part II – Implementation Plan

8. Strategic Objective Implementation Plans

The Ethiopian Digital Education Strategy needs to be implemented in the five years between 2023 and 2028. Having a strategic plan on its own will achieve nothing unless it is supported by projects and an associated set of activities to achieve the strategic objectives defined in the strategic plan.

Accordingly, each of the 9 strategic objectives defined in the previous section can only be achieved through well-planned projects and activities within a given time frame having an appropriate performance measurement/indicator (KPIs).

The projects identified along with all details are presented below.

SO-1- Ensure an Enabling ICT for Education and e-learning Policy

Project 1.1: Develop appropriate ICT in Education policy

- **Objective:** To develop an ICT Policy for all education sector
- **Responsible bodies:** MoE, HEIs, CTEs, Schools, Key stakeholders, Private sector, Development partners
- **Activities and timeline**

Table 9: Project 1.1 Activities and Timeline

Activities	Timeline	
	Start (year)	End (year)
● Consult key stakeholders, the private sector, private schools, and partners in the development process	2023	2023
● Develop the ICT for education policy	2023	2023
● Get the policy approved and endorsed by the relevant body	2024	2024
● Create awareness to stakeholders and disseminate the policy	2024	2024

Key Performance Indicators (KPI)

Table 10: Project 1.1 Key Performance Indicators (KPI)

Indicator	Baseline	Target	Data Source	Frequency
Key stakeholders consulted	NA	1	MoE, Key Stakeholders	Once
Completed ICT in Education Policy	NA	100%	MoE	Monthly
ICT in Education policy approved and endorsed by the relevant body	NA	100%	MoE	Once
Awareness about the ICT policy created among stakeholders through workshops and ads	NA	100%	MoE, Stakeholders	Monthly

Project 1.2: Develop e-learning policy/guideline

- **Objective:** To develop an enabling e-learning policy and guideline for use in teaching learning
- **Responsible bodies:** MoE, HEIs, CTEs, Key stakeholders, Development partners
- **Activities and timeline**

Table 11: Project 1.2 Activities and Timeline

Activities	Timeline	
	Start (year)	End (year)
● Consult key stakeholders, the private sector, private schools, and partners in the development process	2023	2023
● Develop e-learning policy	2023	2023
● Develop e-learning guideline	2023	2023
● Create awareness to stakeholders so they can use and uphold the e-learning policy/guideline	2023	2024

Key Performance Indicators (KPI)

Table 12: Project 1.2 Key Performance Indicators (KPI)

Indicator	Baseline	Target	Data Source	Frequency
Key stakeholders consulted	NA	1	MoE	Once
Completed e-Learning Policy	NA	100%	MoE	Once
Completed e-Learning Guideline	NA	100%	MoE	Once
Awareness about the e-Learning policy and guideline created among stakeholders through workshops and ads	NA	100%	MoE, Key stakeholders	Annually

Project 1.3: Develop guidelines for digital content, data creation, and its appropriate use

- **Objective:** To standardize the creation and use of digital contents and multimedia resources
- **Responsible bodies:** MoE, MInT, HEIs, CTEs, Key stakeholders, Private sector
- **Activities and timeline**

Table 13: Project 1.3 Activities and Timeline

Activities	Timeline	
	Start (year)	End (year)
● Consult key stakeholders, the private sector, private schools, and partners in the development process	2023	2023
● Adopt/customize/develop a framework for instructional design and digital content development	2023	2024
● Develop a standard for the creation and use of digital content and multimedia resources	2023	2024
● Develop guideline for the use of multimedia resource centers	2023	2023
● Establish a quality assurance mechanism for the implementation of the standard	2024	2024

Key Performance Indicators (KPI)

Table 14: Project 1.3 Key Performance Indicators (KPI)

Indicator	Baseline	Target	Data Source	Frequency
Key stakeholders consulted	NA	1	MoE	Once
Guideline on how to utilize multimedia resource centers developed	NA	100%	MoE	Once
Guideline is developed for collecting, storing, sharing, and use of standardized data for educational decision making	NA	100%	MoE	Once

SO-2- Create an Enabling Infrastructure and Connectivity for Digital Education in Ethiopia

Project 2.1: Mapping all educational institutions with existing infrastructure and connectivity

- **Objective:** To understand and the existing situation and with respect to infrastructure and connectivity for educational institutions
- **Responsible bodies:** MoE, MInT, Telecom, Telecom regulatory agencies, Development partners
- **Activities and timeline**

Table 15: Project 2.1 Activities and Timeline

Activities	Timeline	
	Start (year)	End (year)
● Conduct baseline study on the existing situation	2023	2023
● Map educational institutions with infrastructure	2024	2024
● Map educational institutions with connectivity	2024	2024
● Provide prioritized recommendation	2024	2024

Key Performance Indicators (KPI)

Table 16: Project 2.1 Key Performance Indicators (KPI)

Indicator	Baseline	Target	Data Source	Frequency
Baseline study conducted	NA	100%	MoE	Once
Educational institutions mapped with existing infrastructure and connectivity	NA	100%	MoE	Once
Prioritization completed	NA	100%	MoE	Once

Project 2.2: Enhancing EthERNET and related infrastructure

- **Objective:** To expand the connectivity and capacity of EthERNET between and within educational institutions

Responsible bodies: MoE, MInT, Telecom Regulatory Agencies, Telecom companies, Educational Institutions, Development partners

- **Activities and timeline**

Table 17: Project 2.2 Activities and Timeline

Activities	Timeline	
	Start (year)	End (year)
● Conduct baseline study on the current connectivity status of EthERNet	2023	2023
● Connect educational institutions to EthERNet	2024	2028
● Scale up EthERNet infrastructure to be secured and redundant to support resilient digital education services	2024	2028
● Enhance the connectivity of buildings, offices and computer laboratories in educational institutions	2024	2028
● Provide Wi-Fi access to students in dormitories and gathering areas in HEIs	2024	2026
● Ensure the sustainability of ICT infrastructure and connectivity	2024	2028

Key Performance Indicators (KPI)

Table 18: Project 2.2 Key Performance Indicators (KPI)

Indicator	Baseline	Target	Data Source	Frequency
Percentage of EthERNet connected educational institutions	NA	100%	MoE	Quarterly
Established Redundant and secure EthERNet	NA	100%	MoE	Quarterly
Percentage of educational institutions using EthERNet cloud service	NA	100%	MoE	Quarterly
Percentage of buildings connected to EthERNet	NA	80%	MoE	Quarterly
Percentage of Dormitories and gathering areas with Wi-Fi access	NA	75%	MoE	Quarterly

Project 2.3: Enhance SchoolNet and related infrastructure for general education institutions

- **Objective:** To expand the connectivity and capacity of SchoolNet and related infrastructure for general education schools
- **Responsible bodies:** MoE, MInT, CTEs, Schools, Telecom companies, Development partners
- **Activities and timeline**

Table 19: Project 2.3 Activities and Timeline

Activities	Timeline	
	Start (year)	End (year)
● Conduct baseline study on current status of SchoolNet	2023	2023
● Connect all general education schools to SchoolNet	2024	2027
● Provide access to the internet for all general education schools	2024	2027
● Establish a data center for SchoolNet	2024	2024
● Scale up SchoolNet infrastructure to be secured and redundant to support resilient digital education services for general education	2024	2028
● Establish a within school connectivity general education schools	2024	2026
● Ensure the sustainability of ICT infrastructure and connectivity	2024	2028

Key Performance Indicators (KPI)

Table 20: Project 2.3 Key Performance Indicators (KPI)

Indicator	Baseline	Target	Data Source	Frequency
Percentage of SchoolNet connected general education schools and to the internet	NA	100%	MoE	Annually
Established redundant and secure SchoolNet	NA	100%	MoE	Annually
Establish a data center for SchoolNet	NA	1	MoE	Yearly
Percentage of general education schools using SchoolNet cloud service	NA	50%	MoE	Annually
Percentage of buildings connected to SchoolNet	NA	50%	MoE	Annually
Percentage of schools with Wi-Fi access	NA	50%	MoE	Annually

Project 2.4: Create an enabling environment to make digital devices accessible

- **Objective:** To provide teachers and students access to digital devices and assistive technologies at low or no-cost
- **Responsible bodies:** MoE, Ministry of Finance (MoF), Private sector, Commercial Banks, Development partners
- **Activities and timeline**

Table 21: Project 2.4 Activities and Timeline

Activities	Timeline	
	Start (year)	End (year)
● Provide digital devices/gadgets (Radio/ TV/ tablets/ computers/ projectors/ etc.) to educational institutes	2023	2028
● Collaborate with Ministry of Finance (MoF) to remove tax from digital devices and assistive technologies	2023	2023
● Facilitate production of digital devices and assistive technologies within the country in PPP	2024	2026
● Collaborate with Commercial Banks to facilitate loan to teachers and students	2023	2024

Key Performance Indicators (KPI)

Table 22: Project 2.5 Key Performance Indicators (KPI)

Indicator	Baseline	Target	Data Source	Frequency
Tax regulation revised for digital devices	NA	100%	MoF, MoE	Once
Percentage of devices and assistive technologies made/ produced per student, teachers	NA	50%	MoE, PPP	Annually
Collaboration with Commercial Banks	NA	100%	Commercial Banks, MoE	Once
Percent of students/teachers who received loan to buy digital devices	NA	100%	Commercial Banks	Annually

Project 2.5: Digitalize the existing educational resource center and build new ones

- **Objective:** To enhance the capacity of the existing educational resources centers for improved access to educational materials/resources
- **Responsible bodies:** MoE, MInT, HEIs, CTEs, NALA, digital Libraries
- **Activities and timeline**

Table 23: Project 2.5 Activities and Timeline

Activities	Timeline	
	Start (year)	End (year)
● Establish educational resource centers in selected educational institutes	2023	2024
● Provide the necessary resources for educational resource centers	2023	2024
● Train resource center manpower so they can provide the necessary support and services to students, teachers and the school community	2024	2025
● Digitalize educational resources	2024	2027

Key Performance Indicators (KPI)

Table 24: Project 2.5 Key Performance Indicators (KPI)

Indicator	Baseline	Target	Data Source	Frequency
Select educational resource centers	NA	100%	MoE	Once
Percentage of educational resource centers established	NA	100%	MoE	Annually
Percentage of trained personnel from resource centers	NA	100%	MoE	Annually
Percentage of digitalized resources	NA	50%	MoE	Annually

Project 2.6: Provide cloud services to students, teachers, and school community

- **Objective:** To provide accessible and resilient cloud infrastructure to educational community and fulfill the hardware, software, and other middleware tools for services such as LMS, ERP, and Student Management Systems
- **Responsible bodies:** MoE, MInT
- **Activities and timeline**

Table 25: Project 2.6 Activities and Timeline

Activities	Timeline	
	Start (year)	End (year)
● Conduct baseline study and needs assessment	2023	2023
● Provide access to cloud-based infrastructure to educational institutions	2024	2024
● Provide cloud-based education services to educational institutions	2024	2025

Key Performance Indicators (KPI)

Table 26: Project 2.7 Key Performance Indicators (KPI)

Indicator	Baseline	Target	Data Source	Frequency
Completed baseline and assessment report	NA	100%	MoE	Once
Percentage of educational institutes with access to cloud based infrastructure	NA	50%	MoE	Annually
Percentage of educational institutes with cloud based education services	NA	50%	MoE	Annually

Project 2.7: Establishing digital education centers of excellence at selected five HEIs

- **Objective:** To establish center of excellence in 5 selected HEIs with appropriate manpower
- **Responsible bodies:** MoE, HEIs, Development partners
- **Activities and timeline**

Table 27: Project 2.8 Activities and Timeline

Activities	Timeline	
	Start (year)	End (year)
● Establish centers of excellence in selected universities	2023	2024
● Identify and approve the required human resource	2023	2024
● Populate the centers with the necessary manpower	2024	2024
● Provide the necessary resources to support the universities within their cluster	2024	2028

Key Performance Indicators (KPI)

Table 28: Project 2.9 Key Performance Indicators (KPI)

Indicator	Baseline	Target	Data Source	Frequency
Percentage of established centers of excellence	NA	100%	MoE	Once
Required Human resource identified and recruited	NA	100%	MoE	Once
Percentage of resources made available	NA	100%	MoE	Once

SO-3: Promote EdTech Innovation and Encourage PPP

Project 3.1: Develop a PPP strategy for EdTech

- **Objective:** To develop a PPP strategy to create an enabling environment for the private sector and other stakeholders to partner with MoE in EdTech
- **Responsible bodies:** MoE, Private sector, Key stakeholders
- **Activities and timeline**

Table 29: Project 3.1 Activities and Timeline

Activities	Timeline	
	Start (year)	End (year)
● Consult key stakeholders including the private sector, innovators, and developers in the development process	2023	2023
● Encourage and support innovators to develop EdTech applications	2023	2028
● Partner with the private sector and stakeholders to develop EdTech applications	2024	2028
● Assess the utilization and relevance EdTech applications developed	2024	2028

Key Performance Indicators (KPI)

Table 30: Project 3.1 Key Performance Indicators (KPI)

Indicator	Baseline	Target	Data Source	Frequency
Key stakeholders consulted	NA	100%	MoE	Once
Strategy is formulated to develop EdTech applications in PPP	NA	100%	MoE, Private sector	Once
Number of EdTech applications developed	NA	10	MoE, private sector	Annually
Assessment on utilization and relevance of EdTech applications conducted	NA	100%	MoE	Annually

Project 3.2: Establish Tech Hubs at selected educational institutions

- **Objective:** To promote EdTech, digital innovation, entrepreneurship, and technology adoption
- **Responsible bodies:** MoE, HEIs, CTEs, Private sector, Development partners
- **Activities and timeline**

Table 31: Project 3.2 Activities and Timeline

Activities	Timeline	
	Start (year)	End (year)
● Identify educational institutions to establish technology centers	2023	2023
● Establish all-accessible technology centers/hubs at the selected educational institutions	2024	2024
● Develop guideline for the hubs to support other educational institutions in their cluster	2024	2024
● Develop incentive guideline for EdTech innovators from all walks of life	2024	2024
● Incentivize the usage of the tech-hubs	2024	2028

Key Performance Indicators (KPI)

Table 32: Project 3.2 Key Performance Indicators (KPI)

Indicator	Baseline	Target	Data Source	Frequency
Educational institutions identified for establishment of technology centers	NA	100%	MoE	Once
Percentage of technology centers established	NA	100%	MoE	Annually
Guideline is developed to support educational institutions within the cluster of the technology centers	NA	100%	MoE	Annually
Incentive guideline formulated to encourage faculty and students to use the technology centers	NA	100%	MoE	Once

Project 3.3: Develop/customize a localized learning platform to support curricular requirements at all levels of education

- **Objective:** To develop/customize LMS for use in educational institutions at all levels
- **Responsible bodies:** MoE, MInT, Key stakeholders, Development partners
- **Activities and timeline**

Table 33: Project 3.3 Activities and Timeline

Activities	Timeline	
	Start (year)	End (year)
● Develop or customize existing E-learning platform (LMS)	2024	2024
● Populate the platform with the necessary digital content, curricula, teachers and student information	2024	2028
● Provide training to the users of the LMS	2024	2024
● Provide maintenance and support services for the continued use of the LMS	2024	2028

Key Performance Indicators (KPI)

Table 34: Project 3.3 Key Performance Indicators (KPI)

Indicator	Baseline	Target	Data Source	Frequency
LMS developed/ customized	NA	2	MoE	Once
Percentage of digital content populated	NA	75%	MoE	Annually
Percentage of trained teachers in using the e-Learning platform	NA	75%	MoE	Annually
Service level agreement signed with developers	NA	1	MoE	Once

Project 3.4 Digitization of administration and student services

- **Objective:** To digitalize the management and administration of digital education through ERP and student management systems
- **Responsible bodies:** MoE, MInT, Development Partners, Private sector
- **Activities and timeline**

Table 35: Project 3.4 Activities and Timeline

Activities	Timeline	
	Start (year)	End (year)
● Conduct requirement study for the envisaged systems	2023	2024
● Design and develop the required systems	2024	2025
● Implement the developed the systems	2025	2025
● Provide maintenance and support for the system	2025	2028

Key Performance Indicators (KPI)

Table 36: Project 3.4 Key Performance Indicators (KPI)

Indicator	Baseline	Target	Data Source	Frequency
Requirement for the envisaged systems identified	NA	100%	MoE, MInT, Developers	Once
ERP and Student management systems developed	NA	100%	MoE, MInT, Developers	Once
ERP and Student management systems implemented	NA	100%	MoE, MInT, Developers	Once
Service level agreement signed	NA	100%	MoE, Developers	Once

Project 3.5: Digitalization of teacher licensing, secondary school leaving examination, and HE exit exam administration

- **Objective:** To enhance and facilitate teacher licensing, school leaving, and exit exam administration process through automated system
- **Responsible bodies:** MoE, MInT, NEAEA, Private sector
- **Activities and timeline**

Table 37: Project 3.5 Activities and Timetable

Activities	Timeline	
	Start (year)	End (year)
● Conduct a requirement study related to teacher licensing, school leaving examination, and HE exit exam administration	2023	2023
● Design and develop a secure system for teacher licensing, exam administration	2023	2024
● Design and develop a secure system for secondary school leaving	2023	2024
● Design and develop a secure system for HE exit exam administration	2023	2024
● Provide training to the users of the system	2024	2024
● Provide maintenance and support services for the continued use the exam systems	2024	2028

Key Performance Indicators (KPI)

Table 38: Project 3.5 Key Performance Indicators (KPI)

Indicator	Baseline	Target	Data Source	Frequency
Requirement gathered for teacher licensing, secondary school leaving exam, and exit exam administration.	NA	100%	MoE, NEAEA	Once
A system for the exam administration and teacher licensing designed and developed	NA	1	MoE, NEAEA	Once
Percentage of employees who have participated on the training	NA	100%	MoE, NEAEA	Annually
Service level agreement signed for maintenance and support of the systems	NA	1	NEAEA, Developers	Once

SO-4: Promote the Development of Curriculum-Aligned Digital Content

Project 4.1: Digitization of text books, reference materials, and digital content to support the teaching learning process at all levels

- **Objective:** To digitize text books, reference materials, and digital content to support the teaching learning process at all levels
- **Responsible bodies:** MoE, MInT, HEIs, CTEs
- **Activities and timeline**

Table 39: Project 4.1 Activities and Timeline

Activities	Timeline	
	Start (year)	End (year)
● Develop a legal framework and guideline to incentivize digital content developers	2023	2023
● Create an enabling environment (production facility) for creation of pedagogically rich digital content	2023	2023
● Digitize educational content (reference materials, and digital content) for the revised curricula	2024	2025
● Develop digital interactive text-books in line with the standard curriculum-based contents	2024	2025
● Partner with stakeholders to provide access to digital content	2023	2028

Key Performance Indicators (KPI)

Table 40: Project 4.1 Key Performance Indicators (KPI)

Indicator	Baseline	Target	Data Source	Frequency
Legal framework and guideline developed to incentivize digital content developers	NA	1	MoE	Once
Enabling working and production facility established	NA	75%	MoE	Annually
Percentage of courses/modules whose digital content is produced	NA	50%	MoE	Annually
Percentage of digitally interactive text-books produced	NA	75%	MoE	Annually
No of partnerships established for provision of access to digital text-books	NA	10	MoE	Annually

Project 4.2: Revise curricula at all levels to accommodate digitally enabled education

- **Objective:** To revise curricula at HEIs, CTEs, and schools for easy integration of digital education
- **Responsible bodies:** MoE, HEIs, CTEs
- **Activities and timeline**

Table 41: Project 4.2 Activities and Timeline

Activities	Timeline	
	Start (year)	End (year)
<ul style="list-style-type: none"> Facilitate enabling environment (establish teams, collaborate with educational institutions) for harmonized revision of curricula 	2023	2023
<ul style="list-style-type: none"> Revise the curricula in light of the digital education technology 	2023	2024
<ul style="list-style-type: none"> Implement the revised curricula in HEIs, CTEs, and schools 	2024	2028
<ul style="list-style-type: none"> Put in place a quality assurance mechanism 	2024	2028

Key Performance Indicators (KPI)

Table 42: Project 4.2 Key Performance Indicators (KPI)

Indicator	Baseline	Target	Data Source	Frequency
Enabling environment created	NA	100%	MoE, HEIs, CTEs	Once
Percentage of curricula revised	NA	100%	MoE, HEIs, CTEs	Annually
Percentage of HEIs, CTEs, and schools using the revised curricula	NA	100%	MoE, HEIs, CTEs	Annually
Quality assurance mechanism in place	NA	100%	MoE, HEIs, CTEs	Annually

Project 4.3: Adopt and use Open Educational Resources (OER)

- Objective:** To implement Open Educational Resources (OER) (free and openly licensed educational materials that can be used for teaching learning, research, community service, and other purposes) in HEIs, CTEs, and secondary schools as appropriate
- Responsible bodies:** MoE, MInT, HEIs, CTEs, Private Sector
- Activities and timeline**

Table 43: Project 4.3 Activities and Time

Activities	Timeline	
	Start (year)	End (year)
<ul style="list-style-type: none"> Facilitate the provision and use of OER 	2024	2028
<ul style="list-style-type: none"> Prepare guideline for OER administration 	2024	2024
<ul style="list-style-type: none"> Assess the use of OER in the education sector 	2028	2028

Key Performance Indicators (KPI)

Table 44: Project 4.3 Key Performance Indicators (KPI)

Indicator	Baseline	Target	Data Source	Frequency
Percentage of education personnel using OER	NA	50	MoE	Annually
OER guideline prepared	0	1	MoE	Once
The use of OER assessed	NA	1	MoE	Once

SO-5: Advance Digital Literacy and Skills for Teachers and Other Staff

Project 5.1: Provide digital literacy and skills/online training

- **Objective:** To enhance the digital skills of teachers and other staffs in education institutions
- **Responsible bodies:** MoE, HEIs, CTEs, Development partners, Private sector
- **Activities and timeline**

Table 45: Project 5.1 Activities and Timeline

Activities	Timeline	
	Start (year)	End (year)
● Assess skill gap on teachers and other staff	2023	2023
● Develop and/or adapt a digital education competency framework for teachers and other staff	2023	2023
● Establish and execute digital literacy and skills development as a continuous professional development program for teachers, educational leaders and admin staff, or education workforce including parents and community	2023	2028
● Improve capacity of pre-service teachers	2023	2028
● Establish special incentives scheme to attract and retain digitally capable teachers	2023	2028
● Prepare and implement teacher orientation package on integration of ICTs in the teaching/learning process to include ideas for all subject areas	2023	2028

Key Performance Indicators (KPI)

Table 46: Project 5.1 Key Performance Indicators (KPI)

Indicator	Baseline	Target	Data Source	Frequency
Assessment conducted on skill gap	NA	1	MoE	Once
Competency framework developed	NA	1	MoE	Once
Percentage of teachers/instructors and other staff who participated in digital skill training	NA	50%	MoE	Annually
Percentage of teachers oriented on the integration of ICT in subject matter education	NA	50%	MoE	Annually
Number of incentive schemes to retain digitally capable teachers	NA	100%	MoE	Annually

Project 5.2: Re-orient educational leadership on the digital education

- **Objective:** To improve educational leadership in view of digital education at all levels.
- **Responsible bodies:** MoE, HEIs, CTEs
- **Activities and timeline**

Table 47: Project 5.2 Activities and Timeline

Activities	Timeline	
	Start (year)	End (year)
● Assessment of level of awareness on philosophy and implementation of digital education	2023	2023
● Launch digital education capacity development program for educational leaders at all levels	2023	2028
● Monitoring the capacity development program for further improvement	2023	2028

Key Performance Indicators (KPI)

Table 48: Project 5.2 Key Performance Indicators (KPI)

Indicator	Baseline	Target	Data Source	Frequency
Identified level of awareness on philosophy of implementation of digital education	NA	100%	MoE	Once
Percentage of educational leaders participated on digital education capacity development	NA	85%	MoE	Annually
Impact assessment conducted	NA	1	MoE	Once

Project 5.3: Facilitate experience sharing schemes on digital education for teachers and educational leaders

- **Objective:** To facilitate knowledge and experience sharing on digital education at all levels
- **Responsible bodies:** MoE, HEIs, CTEs
- **Activities and timeline**

Table 49: Project 5.3 Activities and Timeline

Activities	Timeline	
	Start (year)	End (year)
● Facilitate teachers and educational leaders exchange schemes within the country and abroad	2023	2028
● Establish and support a network for sharing of experiences and best practices (lessons learnt) in relevant meetings and fora at regional and district levels	2023	2028
● Establish and support communities of practice	2023	2028

Key Performance Indicators (KPI)

Table 50: Project 5.3 Key Performance Indicators (KPI)

Indicator	Baseline	Target	Data Source	Frequency
Percentage of teachers and educational leaders who participated exchange schemes	NA	5%	MoE	Annually
Number of professional networks/ fora organized	NA	10	MoE	bi-annually
Number of communities of practice established	NA	10	MoE	Annually

SO- 6: Advance Digital Literacy and Skills for Students and Adults

Project 6.1 Mainstream ICT courses in curricula and other training initiatives

- **Objective:** To enhance the digital skills of students so that they can benefit from the digital education system
- **Responsible bodies:** MoE, HEIs, CTEs, Development partners
- **Activities and timeline**

Table 51: Project 6.1 Activities and Timeline

Activities	Timeline	
	Start (year)	End (year)
● Integrate ICT courses into the STEM and other initiatives	2023	2023
● Revisit the ICT course content in curricula to include skill-based elements	2023	2023
● Encourage students to be engaged in ICT clubs and career guidance programs	2023	2028

Key Performance Indicators (KPI)

Table 52: Project 6.1 Key Performance Indicators (KPI)

Indicator	Baseline	Target	Data Source	Frequency
Completion of the integration of ICT course in STEM and other initiatives	NA	100%	MoE	Once
Number of revised curricula with improved ICT course content	NA	100%	MoE	Once
Percentage of students who participated in ICT clubs and career guidance programs	NA	75%	MoE, HEIs, CTEs	Annually

Project 6.2: Digital literacy and skills development training for students and adults

- **Objective:** To enhance the digital skills of students and adults in education institutions
- **Responsible bodies:** MoE, HEIs, CTEs, Development partners, Private sector
- **Activities and timeline**

Table 53: Project 6.2 Activities and Timeline

Activities	Timeline	
	Start (year)	End (year)
• Develop and/or adapt a digital literacy competency framework for students at all levels	2023	2023
• Develop and/or adapt a digital skill training module based on the competency framework	2023	2024
• Setup and configure a centralized virtual training center	2023	2023
• Organize and conduct digital skill training	2023	2028
• Conduct continuous evaluation and impact assessment	2023	2028

Key Performance Indicators (KPI)

Table 54: Project 6.2 Key Performance Indicators (KPI)

Indicator	Baseline	Target	Data Source	Frequency
Digital literacy competency framework developed	NA	100%	MoE	Once
Completed digital skill training module	NA	100%	MoE	Once
Established and configured virtual training center	NA	1	MoE	Once
Percentage of students and adults who participated in digital skill training	NA	75%	MoE	Annually

Project 6.3: Provide training on e-safety and ethical issues to students and adults

- **Objective:** To enhance e-safety and ethical issues awareness of students and adults at all levels
- **Responsible bodies:** MoE, HEIs, CTEs, Private sector
- **Activities and timeline**

Table 55: Project 6.3 Activities and Timeline

Activities	Timeline	
	Start (year)	End (year)
• Prepare training modules for e-safety and ethics issues	2023	2023
• Organize and conduct trainings on e-safety and digital ethics	2023	2028
• Conduct continuous evaluation and impact assessment	2023	2028

Key Performance Indicators (KPI)

Table 56: Project 6.3 Key Performance Indicators (KPI)

Indicator	Baseline	Target	Data Source	Frequency
Completed training modules	NA	100%	MoE	Once
Percentage of students and adults who participated in the trainings	NA	75%	MoE	Annually
Impact assessment completed	NA	100%	MoE	Once

Project 6.4: Mainstream digital entrepreneurship programs at all levels

- **Objective:** To enhance the entrepreneurship skill and awareness of students and adults
- **Responsible bodies:** MoE, HEIs, CTEs, schools
- **Activities and timeline**

Table 57: Project 6.4 Activities and Timeline

Activities	Timeline	
	Start (year)	End (year)
● Prepare digital entrepreneurship modules	2023	2023
● Ensure the mainstreaming of entrepreneurship skills and awareness	2023	2024
● Conduct continuous evaluation and impact assessment	2023	2028

Key Performance Indicators (KPI)

Table 58: Project 6.4 Key Performance Indicators (KPI)

Indicator	Baseline	Target	Data Source	Frequency
Completed digital entrepreneurship module	NA	100%	MoE	Once
Percentage of curricula with inclusion of digital entrepreneurship content	NA	75%	MoE	Annually
Impact assessment conducted	NA	100%	MoE	Once

SO-7: Promote Effective Data Governance and Analytics for Education

Project 7.1: Data literacy programs for teachers, students, and the leadership at MoE, HEIs, CTEs, and schools

- **Objective:** To equip all stakeholders (teachers, education experts, school management, and students) with the necessary skill in manipulating, analyzing, and using educational data.
- **Responsible bodies:** MoE, HEIs, CTEs, Private sector,
- **Activities and timeline**

Table 59: Project 7.1 Activities and Timeline

Activities	Timeline	
	Start (year)	End (year)
● Design a training module for data manipulation, analysis and use of educational data (excel, python, Tableau, and Power BI, etc. depending on their roles and requirements)	2023	2024
● Organize and conduct training on AI, data science for manipulation and analysis of educational data	2023	2028
● Conduct continuous evaluation and impact assessment	2023	2028

Key Performance Indicators (KPI)

Table 60: Project 7.1 Key Performance Indicators (KPI)

Indicator	Baseline	Target	Data Source	Frequency
Completed training modules	NA	100%	MoE	Once
Percentage of trainees who have completed the training	NA	25%	MoE	Annually
Evaluation and impact assessment conducted	NA	100%	MoE	Once

Project 7.2: Standardize educational data quality

- **Objective:** To standardize and enhance educational data quality.

Responsible bodies: MoE, HEIs, CTEs, Schools, Development partners

- **Activities and timeline**

Table 61: Project 7.2 Activities and Timeline

Activities	Timeline	
	Start (year)	End (year)
● Develop data quality standard for the education sector	2023	2023
● Setting an integration mechanism for various operational databases for data collection at all levels	2024	2024
● Setup and configure a centralized data-warehouse for educational data	2023	2023
● Monitor data quality periodically	2023	2028

Key Performance Indicators (KPI)

Table 62: Project 7.2 Key Performance Indicators (KPI)

Indicator	Baseline	Target	Data Source	Frequency
Completed data quality standard	NA	100%	MoE	Once
Databases integrated	NA	85%	MoE	Once
A usable Data warehouse	NA	100%	MoE	Once

Project 7.3: Facilitate educational data analytics

- **Objective:** To get relevant insight for proper and effective decision related to the education system
- **Responsible bodies:** MoE, HEIs, CTEs, Schools, Researchers, Students,
- **Activities and timeline**

Table 63: Project 7.3 Activities and Timeline

Activities	Timeline	
	Start (year)	End (year)
● Investigate and identify the specific pressing areas for data analytics in education sector	2023	2028
● Conduct the required data analytics periodically and provide recommendations to decision makers	2023	2028
● Evaluate, assess and provide feedback on the analytics results and its input for decision making	2023	2028
● Provide a platform for dissemination/reporting of results and feedback	2023	2028

Key Performance Indicators (KPI)

Table 64: Project 7.3 Key Performance Indicators (KPI)

Indicator	Baseline	Target	Data Source	Frequency
Identified pressing areas for data analytics in education sector	NA	100%	MoE	Once
Relevant recommendations provided for decision making	NA	80%	MoE	Annually

Project 7.4: Improve the functionalities and use of HEMIS/EMIS

- **Objective:** To enhance the use of HEMIS/EMIS for decision making
- **Responsible bodies:** MoE, MInT, HEIs, CTEs, Schools, Development partners
- **Activities and timeline**

Table 65: Project 7.4 Activities and Timeline

Activities	Timeline	
	Start (year)	End (year)
● Identify the requirements for the improvement of the Higher/Education Management Information System (HEMIS/EMIS)	2023	2024
● Improve the Higher/Education Management Information System (HEMIS/EMIS) based on the revised requirement	2024	2025
● Provide training to the users of the HEMIS/EMIS system	2025	2025
● Provide maintenance and support service	2025	2028

Key Performance Indicators (KPI)

Table 66: Project 7.4 Key Performance Indicators (KPI)

Indicator	Baseline	Target	Data Source	Frequency
Additional requirement and improvement for HEMIS/EMIS identified	NA	100%	MoE, Development partners	Once
HEMIS/EMIS updated/enhanced	NA	100%	MoE, Development partners	Once
Percentage of trained personnel on using HEMIS/EMIS	NA	75%	MoE, Development partners	Annually
Service level agreement signed	NA	1	MoE, Developers	Once

SO-8: Facilitate Research, Cooperation, and Learning

Project 8.1 Foster research and innovation on digital education

- **Objective:** To promote research and innovation on digital education to provide improved service at all levels.
- **Responsible bodies:** MoE, MInT, HEIs, CTEs, Researchers, Innovators, Schools
- **Activities and timeline**

Table 67: Project 8.1 Activities and Timeline

Activities	Timeline	
	Start (year)	End (year)
● Identify thematic areas for research and innovation in priority base through a national workshop on EdTech	2023	2023
● Organize a yearly conference and innovation competition platform to encourage researchers and innovators	2023	2028
● Ensure the quality of the research and innovation outputs	2023	2028
● Disseminate research output in publication	2023	2028

Key Performance Indicators (KPI)

Table 68: Project 8.1 Key Performance Indicators (KPI)

Indicator	Baseline	Target	Data Source	Frequency
Identified thematic areas in digital education for research	NA	100%	MoE	Annually
Number of conferences and innovation competition platforms organized	NA	5	MoE	Annually
Percentage of research and innovation outputs published	NA	80%	MoE	Annually

Project 8.2: Develop knowledge and innovation management platform

- **Objective:** To establish and maintain a local knowledge and innovation management platform
- **Responsible bodies:** MoE, MInT, HEIs, CTEs, Private Sector
- **Activities and timeline**

Table 69: Project 8.2 Activities and Timeline

Activities	Timeline	
	Start (year)	End (year)
● Develop a Platform (for local conferences and workshop) to exchange EdTech knowledge and innovation	2023	2028
● Design and develop a knowledge management system that can serve as a central repository for EdTech innovation, knowledge and research outputs	2024	2025
● Maintain and support the platform for sustainable use	2024	2028

Key Performance Indicators (KPI)

Table 70: Project 8.2 Key Performance Indicators (KPI)

Indicator	Baseline	Target	Data Source	Frequency
Number of conferences and workshops conducted	NA	3	MoE	Annually
Implemented Knowledge Management System	NA	1	MoE	Once
Service Level Agreement (SLA) signed with developer	NA	1	MoE	Once

Project 8.3 Establish IT clubs in schools and campuses

- **Objective:** To create an environment where learners can interact and discuss about the technology for better skill and awareness creation.
- **Responsible bodies:** MoE, School leadership, HEI, and CTE leadership
- **Activities and timeline**

Table 71: Project 8.3 Activities and Timeline 67

Activities	Timeline	
	Start (year)	End (year)
● Conduct a preliminary assessment on the organization, requirements, working modalities and revisit the working document to guide the enablement and mission of such IT clubs	2024	2024
● Set up the IT clubs in all HEIs, CTEs, and secondary schools	2024	2024
● Monitor and evaluate the tasks and achievements of the IT clubs periodically	2024	2028

Key Performance Indicators (KPI)

Table 72: Project 8.3 Key Performance Indicators (KPI)

Indicator	Baseline	Target	Data Source	Frequency
Approved working document guiding the establishment and management of IT clubs	NA	100%	MoE	Once
Percentage of schools and HEIs with IT clubs	NA	50%	MoE	Annually

Project 8.4: Adopt and use Artificial Intelligence (AI)

- **Objective:** To implement and adopt AI in HEIs, CTEs, and secondary schools as appropriate
- **Responsible bodies:** MoE, MInT, HEIs, CTEs, Private Sector
- **Activities and timeline**

Table 73: Project 8.4 Activities and Timeline

Activities	Timeline	
	Start (year)	End (year)
● Implement AI enabled platforms to support students at all levels	2023	2028
● Establish AI Labs in each campus/schools	2024	2024
● Prepare AI implementation and usage guideline	2024	2024
● Organize periodic experience sharing sessions	2024	2028
● Assess the use of AI in the education sector	2028	2028

Key Performance Indicators (KPI)

Table 74: Project 8.4 Key Performance Indicators (KPI)

Indicator	Baseline	Target	Data Source	Frequency
AI enabled platform implemented	NA	50%	MoE	Annually
Percentage of AI labs established	NA	25%	MoE	Annually
Guideline prepared	0	100%	MoE	Once
Number of experience sharing sessions organized	0	26	MoE	Annually
The use of AI assessed	NA	1	MoE	Once

SO-9: Foster Digitally Inclusive Education for All including Refugees

Project 9.1: Ensure digital content and tools for PwDs and special need

- **Objective:** To make sure that the digital education content and IT tools are inclusive so that PwDs and special need students are benefited
- **Responsible bodies:** MoE, Development Partners
- **Activities and timeline**

Table 75: Project 9.1 Activities and Timeline

Activities	Timeline	
	Start (year)	End (year)
● Review curricula and related contents and IT tools to identify potential gaps	2023	2023
● Develop an inclusive digital education content at all levels	2023	2028
● Provide appropriate IT tools and devices for PwDs and special need students	2023	2028
● Evaluate and assess feedbacks on the inclusiveness	2023	2028

Key Performance Indicators (KPI)

Table 76: Project 9.1 Key Performance Indicators (KPI)

Indicator	Baseline	Target	Data Source	Frequency
Gaps identified	NA	100%	MoE	Once
Percentage of inclusive educational content and IT tools delivered	NA	75%	MoE	Annually

Project 9.2: Ensure gender equity in digital education

- **Objective:** To enhance gender responsive digital education in order to reduce gender inequality in digital competence
- **Responsible bodies:** MoE, HEIs, CTEs, Secondary Schools, Development partners
- **Activities and timeline**

Table 77: Project 9.2 Activities and Timeline

Activities	Timeline	
	Start (year)	End (year)
● Gap assessment on gender equity in digital education	2023	2024
● Conduct training and development focused on gender responsive digital education	2023	2028
● Conduct impact assessment	2028	2028

Key Performance Indicators (KPI)

Table 78: Project 9.2 Key Performance Indicators (KPI)

Indicator	Baseline	Target	Data Source	Frequency
Gaps identified on gender equity in digital education	NA	100%	MoE	Once
Percentage of people who participated on the training	NA	85%	MoE	Annually
Impact assessment completed	NA	100%	MoE	Once

Project 9.3: Ensure equity in digital education for refugees

- **Objective:** To make sure that the digital education content and IT tools are inclusive so that refugees students are benefited
- **Responsible bodies:** MoE, Development Partners
- **Activities and timeline**

Table 79: Project 9.3 Activities and Timeline

Activities	Timeline	
	Start (year)	End (year)
● Gap assessment on equity in digital education for refugees	2023	2023
● Develop and/or revise an inclusive digital education content for refugees		
● Conduct training and development focused on refugee responsive digital education		
● Evaluate and assess feedbacks on the inclusiveness	2023	2028

Key Performance Indicators (KPI)

Table 80: Project 9.2 Key Performance Indicators (KPI)

Indicator	Baseline	Target	Data Source	Frequency
Gaps identified	NA	100%	MoE	Once
Percentage of inclusive educational content developed and/or revised	NA	75%	MoE	Annually
Percentage of people who participated on the training	NA	85%	MoE	Annually

9. Resource Mobilization and Monitoring

9.1. Resource Mobilization

The Ministry of Education requires a large amount of financial and human resources to successfully implement the aforementioned strategic objectives and the associated projects. This funding can be acquired through efficient resource mobilization.

Resource mobilization is a management process that involves identifying people/organizations who share the same values, and taking steps to manage that relationship. This definition depicts resource mobilization as a threefold process, involving Organizational Management and Development, Communicating and Prospecting as well as Relationship Building.



Figure 6: The resource mobilization process

Mobilizing resources is a crucial component of an organization's strategy to ensure projects are implemented and their objectives are achieved. Resource refers to financial funds, technical assistance/cooperation, human resources, physical goods, and free services and facilities.

Structured and efficient resource mobilization allows MoE to:

- mobilize new or additional resources,
- diversify funding sources,
- build or expand partnerships and relationships,
- increase communications,
- build organizational capacity, and
- Properly monitor and evaluate the resources elicited.

The resource mobilization cycle is often broken down into three phases: Planning, Action/implementation, and Reflection.³⁷

³⁷ (Knowhow3000: Resource Mobilization Guide 2021)

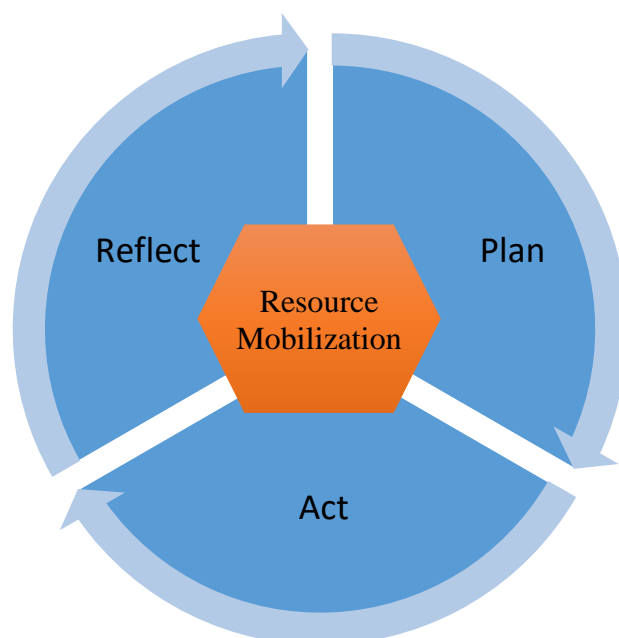


Figure 7: Resource Mobilization Cycle

9.1.1. Plan

The planning phase includes situation analysis of the existing and external resources' environment for identification as well as planning of resource requirements of projects. This will help the ministry to list out and rank its potential resource partners and how best to approach and engage them in its projects. Several projects are currently underway in the Ministry of Education with support from development partners. Identifying these projects and mapping who is doing what, and aligning them with this strategic document will benefit the Ministry in terms of efficient resource utilization.

National entities such as the Ministry of Innovation and Technology (MINT), public and private HEIs, private sector organizations working in EdTech, and international development partners such as UNICEF, UNESCO, International Communications Union (ITU), the African Union (AU), MasterCard Foundation, the GIGA project, etc. need to be communicated to work together with the Ministry on selected and aligned projects to achieve the objectives of the strategy.

In general, resources can be elicited from one or more of the following:

- Public financings such as using existing government budget and investment income
- Leveraging donors and micro-finance institutions
- Private financing through legal mandates as corporate social responsibility
- Charging beneficiaries (such as students, parents, schools etc.)

9.1.2. Act (action or implementation):

The action/implementation phase implements the strategies defined in the planning phase. The diversified potential resource partners identified in the planning phase are approached to mobilize the needed resources for selected or part of projects. This phase is best represented as a five-step process of **Identification, Engagement, Negotiation, Managing and Reporting,**

and Communication of results. Table 9 presents the detailed activities under each one of these tasks.

Table 81: Resource Mobilization Practical Steps

1. Identify	2. Engage	3. Negotiate	4. Manage and report	5. Communicate results
<ul style="list-style-type: none"> • Map resource partner interests • Identify a match between project and resource • Verify resource partner is acceptable 	<ul style="list-style-type: none"> • Resource partner meetings • Develop advocacy tools: e.g. write proposals, concept notes, or develop other communication tools • Deliver presentations to potential resource partners • Foster individual contacts 	<ul style="list-style-type: none"> • Reach an agreement on common interests • Agree conditions of partnership, including procedures on use of resources • Develop and formalize legal agreement 	<ul style="list-style-type: none"> • Acknowledge resource partners' contribution • Ensure efficient and effective operations/ management of resources • Regularly report on resource partner's contribution 	<ul style="list-style-type: none"> • Disseminate information on lessons learned • Develop advocacy communication tools (brochure, website etc.) • Advocate for continued support

9.1.3. Reflect

The resource mobilization effort is expected to be monitored and evaluated at this phase. This will enable further improvement in the process. When resource mobilization is systematically reflected on, successes and failures can yield valuable lessons learnt that will help the Ministry to improve on its efforts to engage various funding sources.

9.2. Monitoring and Evaluation

Monitoring and Evaluation (M&E) is a continuous management function to assess progress in achieving expected results, to spot bottlenecks in implementation, and to highlight whether there are any unintended effects (positive or negative) from project execution.

Monitoring and evaluation usually include information on the cost and performance of the strategy and project being monitored or evaluated. This allows assessing the performance and/or benefits of a project against time and budget.

The credibility of monitoring and evaluation assessments depends to a large extent on how it is conducted. In relation to this, a monitoring and evaluation team has to be established for each project. The team needs to be comprised of experts from the Ministry, development partners, and the beneficiary to encourage a participatory approach in the evaluation of the projects. Participatory M&E involves participants directly in the M&E process. It can add value by ensuring that relevant information and experience are gathered from those who are immediately affected by the project. Moreover, this approach helps in increasing accountability to the participants who have a direct interest in implementation success.

The following diagram (Figure 8) shows the general process for monitoring and evaluation. It is represented as a three-stage activity: **Planning**, **Monitoring**, and **Evaluation** which has team formation and indicator identification at its center.

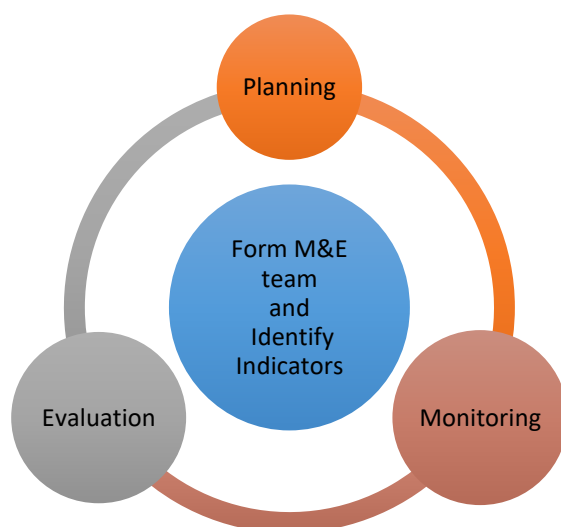


Figure 8: M&E Process Flow

To assess project performance, it is necessary to select indicators, before the implementation of the project, which will permit to rate the targeted outputs and outcomes. According to literature in the area, an outcome indicator has two components:

- The baseline which is the situation before the project begins, and
- The target which is the expected situation at the end of the project.

Finally, it is worth mentioning that the monitoring and evaluation results should inform the Ministry on further improvement in strategy and project implementation.

10. Strategy Governance

The Ministry must ensure that a relevant unit at MoE, such as the planning or change management office, is assigned to take the responsibility of implementing the strategy. The responsibility includes (but not limited to):

- creating awareness among all stakeholders (relevant units at the Ministry, students, teachers, parents, civic society, partner institutions, the private sector, etc.) to work together in realizing the strategy,
- manage resource mobilization with the relevant offices within the Ministry,
- follow up the monitoring and evaluation project implementation,
- Report lessons learnt for top and middle management at the ministry, development partners, and other relevant stakeholders.

References

- African Union, AU. 2023. *Digital Education Strategy and Implementation Plan*. June. <https://au.int/en/documents/20221125/digital-education-strategyand-implementation-plan>.
- Chai, Ching Sing, Cher Ping Lim, Yong Zhao, Jo Tondeur, and Chin-Chung Tsai. 2013. "Bridging the Gap: Technology Trends and Use of Technology in Schools." *Educational Technology & Society*, 16 (2): 59-68.
- Chang, E., and M. & West. 2006. "Digital Ecosystems A Next Generation of the Collaborative Environment." *iiWAS*, 214, 3-24.
- Coursera. 2023. *Data Analytics: Definition, Uses, Examples, and More*. June. <https://www.coursera.org/articles/data-analytics>.
- Dictionary, Global. 2023. *What is Educational technology innovation*. June. <https://www.igi-global.com/dictionary/educational-technology-innovation/34902>.
- Economist-impact. 2022. *Inclusive Internet Index 2022*. June. Accessed 2023. <https://impact.economist.com/projects/inclusive-internet-index/2022/country/Ethiopia>.
- EdTech. 2023. *EdTech: Definitions, Products and Trends*. June. <https://global-edtech.com/edtech-definitions-products-and-trends/>.
- FDRE. 2021. "A proclamation to provide for the definition of the powers and duties of the executive organs of the federal democratic republic of Ethiopia." *Proclamation no.1263/2021*.
- . 2019. "Revised HE Proclamation 1152-2019." *Higher Education Proclamation*.
- IBM. 2023. *IBM Data Governance*. June. <https://www.ibm.com/topics/data-governance>.
2021. *Knowhow3000: Resource Mobilization Guide*. Accessed May 2023. https://knowhow3000.org/wp-content/files/ToolBox%20OD/Communication%20%26%20Marketing/Marketing%20and%20Sales/ENG_GUI_ResourceMobilisation_BFarukuoye-AKoechl-LNixdorf-AWitte-TAs_2021.pdf.
- MInT. 2022. *Ethiopian National Digital Literacy Maturity Survey*. Addis Ababa: Ministry of Innovation and Technology.
- MoE. 2023. *Digital Technology For Education Sector Transformation (D-TEST)*. Accessed June 2023. <https://moe.gov.et/Dtest>.
- . 2023. *E-Learning and D-Library*. Accessed June 2023. <https://elearn.moe.gov.et/>.
- MoE. 2023. *FDRE Ministry of Education Statistics Annual Abstract ESAA (2014EC 2021/22 GC)*. Annual Abstract, Addis Ababa: Ministry of Education.
- . 2023. *Learn English*. Accessed June 2023. <https://learn-english.moe.gov.et/>.
- . 2023. *Policies and Strategies*. June. <https://moe.gov.et/PoliciesStrategies>.
- . 2023. *Vision Mission and Values*. June. <https://moe.gov.et/VMV>.

- MoSHE. 2020. "Digital Skills Country Action Plan (DSCAP) 2020-2030." Addis Ababa.
- MoSHE. 2020. "National ICT Strategy for HEIs and TVETs 2021-2030." Addis Ababa.
- Office-of-the-Prime-Minister. 2020. *FDRE Digital Ethiopia 2025*. Addis Ababa: Federal Democratic Republic of Ethiopia.
- TechnoMars. 2023. *Digital Learning*. June.
<https://www.teachonmars.com/en/blog/2022/02/digital-learning-glossary-all-the-key-definitions/>.
- UNESCO. 2018. *A Global Framework of Reference on Digital Literacy Skills for Indicator 4.4.2*. UNESCO Institute for Statistics.
- . 2023. *Digital Platform*. June.
<https://unevoc.unesco.org/home/TVETipedia+Glossary/lang=en/show=term/term=Digital+platform#start>.
- . 2023. *Educational Technology*. June.
<https://unevoc.unesco.org/home/TVETipedia+Glossary/lang=en/show=term/term=Educational+technology#start>.
- . 2023. *E-Learning*. June.
<https://unevoc.unesco.org/home/TVETipedia+Glossary/lang=en/show=term/term=E-learning#start>.
- . 2023. *Learning Management System*. June.
<https://unevoc.unesco.org/home/TVETipedia+Glossary/lang=en/show=term/term=Learning+Management+System#start>.
- . 2023. *Open Educational Resources*. June.
<https://unevoc.unesco.org/home/TVETipedia+Glossary/lang=en/show=term/term=Open+educational+resources#start>.
- . 2023. *TVETipedia Glossary*. June.
<https://unevoc.unesco.org/home/TVETipedia+Glossary/lang=en/show=term/term=Artificial+intelligence#start>.
- UNICEF. 2023. *Inclusive education*. Accessed June 2023.
<https://www.unicef.org/education/inclusive-education>.
- Zhong, Y. X. 2006. "A Cognitive Approach and AI Research." *5th IEEE International Conference on Cognitive Informatics*. 90-100.



www.moe.gov.et