

Digital agenda for the Education and Sports sector

Concept Note

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1 Background

A global revolution is currently taking place in education and training. It is driven by the changing nature of work, the realities of the information age, emerging technologies, globalization and an awareness of the need for inclusion in educational opportunities.

Education systems are obligated to deliver on public expectations of quality education for economic growth and social development. However, in the context of developing countries, quality improvement and the enhancement of excellence must take into consideration the need for increased access, equity and redress. These efforts are, in most instances, undermined by factors such as fiscal constraints, spatial barriers and other capacity-related limitations to delivery. As demonstrated in various contexts and world-wide, Information and Communication Technologies (ICTs) have the potential and capacity to overcome most of these barriers.

The Government of Uganda (GoU), like other economies attaches great importance to the development of education by recognizing education as an essential tool for transformation of society, national growth and prosperity of all Ugandans. Education is one of the government's cornerstones and pillars for poverty alleviation and national developments as expressed by the Uganda' Vision 2040 and the Global Sustainable Development Goals (SDG 4). GoU believes that "every child matters and every child can achieve" when given quality education. The provision of education services is the mandate of the Ministry of Education and Sports (MOES) to ensure Uganda is transformed into a modern knowledge economy and nature's learner civilization.

At the apex, the Uganda Government Vision 2040 acknowledges the potential of the ICT to accelerate development, create jobs and increase productivity. The Vision calls for a comprehensive skills development plan (in addition to investment in ICT infrastructure and innovation):

*"Uganda shall develop digital literacy by adopting globally-benchmarked, industry-rated skills assessment, and training and certification standards. The curricula and learning content will also be progressively reviewed and developed in order to align what learners are taught and what industry globally requires. These efforts will be coupled with international industry collaboration in testing and certification standards. ICT shall be mainstreamed in education to take advantage of ICT-enabled learning and to prepare future generations of ICT-savvy workers, and ensure their effective utilization"*¹. This had earlier on been cited in the National

¹ Uganda Vision 2040 accessed at <https://www.greengrowthknowledge.org/sites/default/files/downloads/policy-database/UGANDA%29%20Vision%202040.pdf>

Development Plan (NDP) II², NDP III calling for Digital skills for all if the country was to maximize the benefits from ICT.

On the ICT specific side, the GOU acknowledges the inadequate and unskilled professional ICT human resources in both public and private sectors and the general low ICT literacy among the population. On the other hand, at the Education and Sports Sector level, a number of strategies have been proposed that include developing curriculum for all levels of education, developing scheme for equipping education institutions, training civil servants, developing the National Research and Education Network and developing and implementing a certification framework among others³.

The Education and Sports sector strategic plan 2017/2018-2019/2020 (ESSP) calls for the promotion of e-learning and computer skills in Secondary and Tertiary institutions.

The development and implementation of Digital Agenda for Education in Uganda is therefore timely and important in ensuring ICT deployments aligns with the strategic goals of the Education and Sports Sector.

2 Situation Analysis

The application of ICT, world-over has become a critical part of the learning process for academic institutions both outside and inside the classroom setting. Many institutions that have fully adopted ICT have recorded immense advancement in the application of ICT for the improvement of learning methods, teaching, research, development and administrative functions.

2.1 The Education Sector Key Issues and Challenges

The World Bank DE- Uganda Country Diagnostic Digital Skills Report, 2020 presents status and challenges to the digital transformation for the formal education sector in Uganda as follows:

a) Inadequate Policy Framework

While the national policies and plans clearly identify the need to develop digital skills across the country, there is a big gap towards implementation. The following are key constraints at the policy level:

- i. **There is no entity or group of entities focused on driving the development of digital skills policies and programs.** Because digital skills development happens both inside and outside formal education and touches on jobs and labor, a cross-ministerial steering committee is often required to drive the digital skills agenda. This appears to be lacking in Uganda.

²<http://npa.go.ug/wp-content/uploads/NDPII-Final.pdf>

³https://ict.go.ug/wp-content/uploads/2018/11/ICT_Policy_2014.pdf

Ideally, such a committee should be led or co-led by the Ministries of Education and ICT but also involve other key stakeholders inside and outside government including the private sector and donor agencies.

- ii. **Uganda lacks a national digital skills framework that guides government policies, programs, curriculum and standards for digital skills.** Even more critical, Uganda lacks an approved ICT in Education Policy making it difficult to adopt standards to be met in the formal education sector.
- iii. While national level policies and strategies recognize the need to develop ICT skills in education and among ICT industry practitioners, there is no national ICT or Digital Skills Framework to define what competencies, skills, knowledge and proficiencies are required at different levels of education sector or by workers and citizens.
- iv. The lack of a national or education sector specific framework has likely hindered the systematic development of digital skills in both the formal and informal sectors as well as the provision of adequate funding to developing digital skills. The development of the National Digital Skills Framework could be captured as a priority activity under the National Development Plan III under development.

b) Lack of Adequate Digital Equipment and Connectivity in the Formal Education Sector

Digital Skills development is hampered by lack of adequate equipment, software and connectivity at all levels of the education system. The general feedback is that schools and tertiary level institutions lack adequate equipment such as computers, software and content and connectivity to adequately develop the digital skills of students. At the university level, stakeholders indicate that there is a need to improve the ICT infrastructure and increase and reskill the Human Resources at all institutions, to upgrade the teaching and learning ICT labs, provision ICT research infrastructure such as High Performance Computing (HPC) and strengthen the Research and Education Network of Uganda (RENU) to support the development of intermediate and advanced digital skills that incorporate new ICT areas such as Data Science, Artificial Intelligence and Internet of Things (IoT).

1) Secondary School Level

At the secondary school level, the main provider of ICT equipment and Connectivity has been Uganda Communications Commission through the Rural Communications Development Fund (RCDF) in partnership with the Ministry of Education. Almost all government owned schools and all national teacher training colleges were equipped with ICT labs between 2008 and 2014, a tremendous achievement that made possible the delivery of digital skills training at nearly every government secondary school.

Stakeholder feedback however points out that most of the equipment is due for replacement. Another observation made by stakeholders is that the school labs that were delivered are based on a thin-client technology while the Uganda National Examinations Board requires “fat client” computers for Computer Studies and ICT Subsidiary. Another issue pointed out is the sustainability of the connectivity as school lacked funds to continue paying for connectivity after RCDF support ended. Stakeholders feel that the lack of an ICT in Education policy may be hindering continuous and sustained investments in the ICT infrastructure and connectivity by the Ministry of Education and its Partners.

II) Tertiary level

The tertiary level lacks adequate infrastructure for both intermediate and advanced digital skills. There is low levels of computing equipment and internet access at higher education institutions in Uganda.

This is borne out by the State of Higher Education Report 2017/2018 which notes that the Computer to Student ratio at higher education institutions is still low at 1:16. However, even the low computer to student ratio masks deeper challenges. As the report notes, the “majority of these computers are old with a limited life span and cannot support modern software programmes.”

Finally, the **higher education sector lacks any High-Performance Computing (HPC) facilities** for data analytics and research. The lack of HPC facilities hinders the development of skilled data analysts and the development of skills such as machine learning and artificial intelligence. Despite this challenge, it is important to note that Makerere University hosts an Artificial Intelligence (AI) and Data Science research Hubs, which one of the few in Africa. It would be important to support the activities of this research hub as its research is practical and oriented towards using AI to solve Uganda’s and Africa’s challenges.

While the Research and Education Network of Uganda (RENU) is active and has connected over 150 institutions across the country, the State of Higher Education report and stakeholder limited internet access remains a challenge.

c) Low Capacity by the Formal Education Sector to Foster Digital Skills

In a well-equipped and modern education system, basic digital skills can be provided in school education (up to high school level); intermediate level skills at the upper secondary level, in TVET institutions and technology programs in short-cycle tertiary institutions; advanced digital skills for the ICT professions in university undergraduate programs in engineering, sciences, mathematics and related fields; and highly specialized digital skills for the ICT professions in university postgraduate programs in the same fields.

A quick review of the new lower secondary curriculum, current minimum standards for IT related degree programs as well as feedback from stakeholders all indicate that there is a need

to revisit and update the curricular at all levels. However, this should be preceded by developing a national digital skills framework.

I) Digital Skills at Primary and Secondary level

There is no digital skills development at primary level and digital skills courses at secondary level are optional. At secondary school level, Computer Studies (recently rebranded as ICT) is one of the courses offered at lower secondary (O Level) and ICT as a Subsidiary course at Upper Secondary (A Level). These courses offer basic and intermediate level skills. However, none of these courses are compulsory for all students.

A review of the new syllabus for the ICT subject for Lower Secondary (O Level) shows a heavy tilt towards “computer applications.” Comparing it to international competency frameworks such as the UNESCO Digital Skills Competency Frameworks (shown in Annex 1) also shows that the **new lower secondary syllabus is light on topics such as privacy and identity protection (vital in today’s digital economy) as well as programming or computational thinking.**

On a positive note, the **new Lower Secondary Curriculum calls for the integration of ICTs across the entire curriculum which could develop digital skills for all students.**

II) Digital Skills at Tertiary Level

The Tertiary education sector is typically responsible for developing advanced digital skills through Science, Technology Engineering and Mathematics (STEM) courses and specifically at Faculties, Colleges or Departments of Engineering and Computer Science. The tertiary education level in Uganda is quite small. As noted in the latest available State of Higher Education 2017/2018 report⁴, the gross enrolment ratio of 6.85% in 2017/18 is “far below the world average of 24% and the preferred 40% needed for economic take off.” Of the total student population of 261,087 in 2017/18, only 96,602 (37%) were enrolled in STEM courses. The low Gross enrolment ratio is likely to lead to reduced supply of highly skilled ICT professions.

d) Outdated Curriculum to Foster Digital Skills

The curriculum for advanced digital skills requires to be updated.

A quick review of the new lower secondary curriculum, current minimum standards for IT related degree programs as well as feedback from stakeholders all indicate that there is a need to revisit and update the curricular at all levels. However, this should be preceded by developing a national digital skills framework

The National Council for Higher Education (NCHE), which is the accrediting and quality assurance body for the tertiary sector developed minimum standards for undergraduate

⁴ Available at <http://www.unche.or.ug/webpages/publications.aspx>

courses at Universities covering Computer Science, Information Systems and Software Engineering among others in 2014⁵. These standards are now due for an update given the fast-changing nature of digital technologies and required skills. For example, the 2014 standards barely mention Artificial Intelligence and Virtual Reality and do not cover Internet of Things (IoT) or Data Analytics which are now hot topics in the digital economy.

The need to update the curriculum for STEM courses at the tertiary level to bring it into line with digital advances and **reskill** the teaching human resource to enable them to teach advanced digital skills should be emphasized. As already mentioned above, it should be noted that Makerere University hosts an active advanced Artificial Intelligence and Data Science research hub⁶.

e) Lack of Demand Data for Digital Skills

There is very limited data on digital skills supply and demand as well as skill needs, for each competency area and levels of digital skills for digital skills by industry. Uganda has not undertaken a national or large representative **ICT skills assessment** to determine the demand for skills, the level and type of ICT skills available, as well as the gaps that need to be filled. The development of a National Digital Skills Framework should include Digital Skills Assessment. National Digital Skills Assessments can be carried out using online tools in line with the Digital Skills Framework. Good practices in the European Union exist and can be easily adapted for Uganda. Demand studies and research should be commissioned at regular intervals to inform the digital skills and digital economy agenda.

f) High levels of Illiteracy Out of School Youth and Foundational Skills

The high population of the youth out of school, low learning outcomes in foundational literacy and numeracy at the primary level and relatively high adult illiteracy rate could hinder the wide development of basic and intermediate digital skills necessary for Uganda's digital education vision.

" Digital literacy development could and should be an integral part of a general literacy program as digital literacy depend on general literacy.

Digital skills are built on foundational skills such as literacy, numeracy and socio-emotional skills. The latest Uwezo learning outcomes assessment notes that *"by the age of 14, only a minority of children have achieved P2 reading competence (about 40% in English and 34% in a local language). P2 numeracy competence is achieved by about 55% at that age."*⁷The 13th

⁵<http://www.unche.or.ug/webpages/publications.aspx>

⁶<http://www.air.ug/>

⁷<https://twaweza.org/go/uwezo-uganda-eighth-learning-assessment-report>

Edition of the World Bank Economic Update for Uganda (2019)⁸ discusses in detail the state of the education sector and recommends increased investment in education. In particular, the Economic Update discusses in detail the education and learning crisis facing Uganda. According to this report, *“A child born today in Uganda is expected to complete only seven years of education combined by age 18, compared to a regional average of 8.1.35 Because of the low levels of learning achievement in Uganda, this is only equivalent to 4.5 years of learning ... with 2.5 years considered as lost due to poor quality. Uganda’s score on this component is below the SSA average.”*

g) Low levels of awareness and practice for inclusion

1) Women in Technology

The numbers of Girls enrolment in Science, Technology, Engineering and Mathematics (STEM) is quite low. At Makerere University, the largest university in the country, women enrolment in STEM courses is about 30% according to data from the 2016 Report of the Visitation Committee on Makerere University⁹. The government is, however, aware of this situation and is taking steps to address low girl participation in STEM. The Makerere University Council recently passed an affirmative Action Policy to provide a 40 percent enrollment quota for female students in STEM¹⁰.

II) Special Needs Education (PWDs)

Inclusiveness of the information society have not prominently featured the needs of persons with disabilities. Overall dominant institutional attitudes towards those with a disability may inhibit inclusion

A major challenge around digital accessibility concerns the present inability of technology to cover the diverse types of disabilities. More specifically, as Kelly and colleagues (2010) and Lazar and colleagues (2015) explain: while perceptual disabilities (i.e., those involving vision and hearing limitations) and physical disabilities (i.e., those involving limitations of use of limbs as well as speech) have been the focus of accessibility solutions, cognitive disabilities have proven difficult to address., screen readers can help persons who have visual limitations and captioning of videos can help persons who have hearing limitations. Similarly, certain types of keyboards and other hardware devices can help persons who have physical limitations. However, in case of cognitive impairments such as Down syndrome or Alzheimer's disease, technology is yet unhelpful and needs to be attended to

⁸<http://documents.worldbank.org/curated/en/925741559163051034/pdf/Economic-Development-and-Human-Capital-in-Uganda-A-Case-for-Investing-More-in-Education.pdf>

⁹<http://www.education.go.ug/wp-content/uploads/2020/01/The-Report-of-the-Visitation-Committee-on-Makererere-University-2016-compressed.pdf>

¹⁰<https://news.mak.ac.ug/2019/08/mak-council-approves-stem-affirmative-action-policy>

h) Low Levels of STEM Training to Drive the Digital Vision

Overall figures for graduates in engineering and computer science are hard to come by. However, some insight can be gained from the UBOS thematic report on education which reports that almost 80,000 and 43,000 people aged 14-64 report specialization in Engineering and Computer and Information Science respectively.

2.2 Achievements and Opportunities

Uganda has over the years has made significant progress on the digital journey in the education sector. The philosophy that drives the transformation is digitization for all, which embodies the realization that technology and scientific advances, will fail to deliver improvements in education delivery for every citizen if digitization is not inclusive and available for all: the literate and illiterate, urban and rural dwellers, young and old, men and women, companies and individuals, public and private sector.

The following are some of the major achievements that have been made over the years:

2.2.1 Digital Infrastructure and Connectivity

Uganda has made progress to have affordable, accessible, resilient and secure digital infrastructure and connectivity across the country as a foundation to achieve the potential of ICTs in Education.

The total optical fibre network for both Government and private owned spans around 12,000 km covering 49 percent of all districts and 24 percent of the sub-counties.

To improve service delivery and increase uptake of e-services, government developed common core infrastructure such the National Data Center and Disaster Recovery Site as foundations to facilitate affordable, reliable and secure storage and communication for amongst others the education sector.

To improve the *practical skills for students and teachers, Government through UCC has setup and equipped over 1,300 School ICT Labs.

To improve access to online service, MyUG was unveiled in 2016 so that people can have access to free wireless internet and the number of people using the service has grown tremendously to tens of thousands since. There are 284 sites in Kampala and Entebbe.

The cost of internet bandwidth has been progressively falling. The price of internet for Government has significantly dropped, from an average cost of 1 Mbps/month of USD 300 in

2015 to USD 70 in 2018 through NITA-U. The commercial ISPs have accordingly lowered their prices for 1 Mbps/month from an average of USD 515 in 2015, down to USD 237 in 2018.

2.2.2 e-Government Services

Over 297 Government Services have been put online , 10 of which are for the Education Sector.

The National Information Technology Authority, Uganda (NITA-U) partnered with UNICEF to introduce Kolibri; a free e-Learning platform to assist children during the school shutdown caused by the COVID-19 pandemic.

Government has embarked on the establishment of a Whole-of-Government Integration and data sharing platform to facilitate the seamless collecting and sharing of Government Data. Application Programming Interfaces (APIs) have been developed to facilitate integration as the platform is being completed. Data collection and development of data catalogue is also underway

Government has embarked the development of Digital Identify to be used by government and businesses to enhance service delivery and ensure the dignity of citizens who often are challenged to prove who they are and also improve security and reduce corruption.

2.2.3 Open, Distance and e-Learning

The Government has adopted e-Learning as an alternative to face-to-face learning. To facilitate this, the Uganda National Council of Higher Education has issued guidelines for adoption of an emergency open, distance and e-learning (ODEL) system by the higher Tertiary Institutions (HEIs).

Several education institutions have adopted ODeL as a method of learning especially in the Covid-19 lockdown period. The teaching is undertaken remotely and on digital platforms. In response to significant demand, many online learning platforms are offering free access to their services. There are, however, challenges to overcome in the adoption of ODeL. Some students without reliable internet access and/or technology struggle to participate in digital learning.

2.2.4 Local Content, Research and Innovation

To foster the development of local content, the Government of Uganda designed a National ICT Initiatives Support Programme (NIISP) to facilitate the creation of an ICT innovation ecosystem and marketplace for Ugandan innovative digital products.

A National ICT Innovation hub has been constructed by the MoICT & NG to incubate the youth to develop local products that can be consumed locally and even exported regionally and internationally.

One of the systems that has been developed under the support of NISSP is the Academic Information Management System (AIMS) – implemented at several universities and tertiary institutions.

2.2.5 Cyber Security, Data Protection and Privacy

To improve the uptake of and responsible use of online services, the Government has developed and implemented a National Information Security Framework and Policy; Electronic Transactions, Computer Misuse and Electronic Signatures Laws; The Data Protection and Privacy Law; and Social Media Guidelines

2.2.6 Human Capital Development

Uganda embarked on ICT Human Capital development by putting in place policies, programmes and activities aimed at building capacity at Community/User, Professional Level, Expert, Teacher, and Support Level.

The Government of Uganda through the Ministry of ICT&NG and its Agencies, specifically Uganda Communication Commission (UCC) is spearheading country-wide ICT capacity building programme to skill secondary school teachers (10, 000 Teachers retooled, 2,000 ICT Head Teachers sensitization, 625 ICT Teacher Training on Maintenance, 5 Regional Trainings on e-Government Services, 5,000 people – Digital Skilling in Communities) aimed at deepening the integration of ICTs in teaching and learning.

The Government setup the Uganda Institute of ICT (UICT) as a Centre of Excellence for ICT Training, Applied Research and Consulting. This Institute provides ICT Skills-based and market driven training and applied research.

One of the strategies that the Government has implemented is Integrating ICT into mainstream educational curricula as well as other literacy programmes to provide for equitable access for all students regardless of level.

The Government has setup mechanisms that promote collaboration between industry and training institutions to build appropriate human resources capacity

The promotion of twinning of training institutions in Uganda with those elsewhere to enhance skills transfer has been commenced.

2.2.7 Legal and Regulatory Framework

A tremendous improvement has been made in the Legal and Regulatory Framework including but not limited to policies, laws, regulations and Organizational Architecture. The following are the specific areas:

- (a) The Uganda Vision 2040 provides for priority areas for ICT and education

- (b)** The National ICT Policy 2013 provides for policy direction of ICT in education
- (c)** The Digital Uganda Vision provides for priority areas of ICTs in education
- (d)** The National e-Government Master plan provides for priority areas of ICTs in education
- (e)** NDP III has priorities for ICT in education
- (f)** A regulatory framework is in place to regulate the utilization of ICTS in amongst other the Education Sector; Computer Mis-use Law, Electronic Signatures Law, Electronic Transactions Law, Electronics Transaction Regulations, 2013, Data Protection and Privacy Act, 2019, etc
- (g)** An ICT in Education Policy is under development which will provide clear procedures within a legal framework to allow schools and Institutions to evaluate their progress and measure how they stand against benchmarks of effective and highly effective practice using digital technologies in teaching and learning
- (h)** Review of the policy on the ethical use of the internet and online safety for young people in our schools and institutions is also underway

The achievements notwithstanding, the following are the challenges in the policy, legal and regulatory environment: (a) The current policies and legislations are out-date and not matching with current times; (b) The emergence of new technologies such as the Fourth Industrial Revolution (4IR) comes with legal and policy challenges which the current legal and policy environment is unable to cope with, (c) There are fragmented efforts for policy and legislation development that are a potential risk of duplications and conflicts, (d) The era of Data Privacy and Protection is still not yet completely taken care of

A gap analysis on the policy, legal and regulatory environment has been conducted and it identified areas that need to be reviewed and new laws, policies, strategies and frameworks that need to be developed.

2.3 Way Forward

Although there have been some attempts in Uganda utilize ICTs to mitigate the key issues and challenges above, there has is no systematic and systemic strategy for adoption of ICT in education institutions. Where attempts have been made for adoption, it has remained ad hoc and also characterized with fragmentations as well as initiatives stopping at piloting stage.

There is need to have a deliberate Digital Agenda Strategy developed to guide sustainable adoption, implementation, monitoring & evaluation, measuring and reporting on ICTs in education in the country.

3 Goal and Specific Objectives of the Digital Agenda

The goal of the Digital Agenda is to provide the necessary framework to optimize the co-ordination of diverse opportunities for the process of integration of ICT in education and the institutionalization of an ICT culture;

The specific objectives are:

- (a)** To develop a consolidated and integrated strategic direction of how ICT shall facilitate and improve the delivery of digital literacy in the country;
- (b)** To review, align, harmonize and synergize the existing fragmented initiatives into one overarching strategic framework;
- (c)** To institute an integrated implementation approach, coordination and monitoring & evaluation mechanisms of ICT initiatives;
- (d)** To align ICT initiatives to the objectives of the Education and Sports sector strategic plan; and
- (e)** To effectively use and promote adoption of mature and emerging technologies

4 Rationale for the development of the Education digital Agenda

The needs and expectations of the Country's constituents to embed Information and Communications Technologies (ICT) in teaching, learning, assessment and management & administration, policy development & analysis have grown tremendously. The need and expectations dictate the need to reaffirm our mission and address fundamental questions such as:

- a) The Dilemmas of ICT in Education
 - Questions about the value of ICTS
 - The myths of ICT in education
 - The pressures of ICT in education
- b) The realities of ICT in Education
 - Analyze Educational objectives
 - Determine Objective for ICT
 - Understand Potential of ICTs
 - Examine suitability of ICTs
 - Plan strategy for adoption
 - Implement prerequisites and corequisites
 - Evaluate and adjust continuously
 - Align with National Policy frameworks

To address these core questions, we put forth the following Digital Agenda to help define who we are and where we are going as a country in utilization of ICT in Education and specifically teaching, learning, assessment and management & administration, policy development & analysis.

5 Expected Results and Beneficiaries

The expected results and beneficiaries of the Digital Agenda include:

No.	Beneficiary	Expected Results
1	Students	<ul style="list-style-type: none"> (a) Using ICT to open up new forms of learning and collaboration to support different styles of learning. (b) Student centered learning and acquisition of 21st Century Skills (c) Experiencing joy, satisfaction, passion and success in their education and lifelong learning. (d) Actively engaged in learning – both in and out of school. (e) Accepting ownership of their learning – involving the ability to be self-directed, a decision-maker, and a manager of priorities in and out of school. (f) Using technology to achieve personal learning goals and to succeed in various learning activities (g) Use technology to monitor and ensure student attendance (h) Using ICTs critically and ethically. (i) Critical thinking that arises out of utilization of ICTs by students
2	Teachers	<ul style="list-style-type: none"> (a) Taking a more facilitative role, providing student-centered guidance and feedback, and engaging more frequently in exploratory and team-building activities with students. (b) Using ICT to “support an enquiry process and enable their students to work on solving complex real-wor problems” by engaging in “collaborative project-based learning activities that go beyond the classroom” (c) facilitating formative and summative assessments; (d) Enabling personal growth through increased networking and interaction with their peers;

		<ul style="list-style-type: none"> (e) Facilitating increased interaction with students; (f) Providing for differentiation of learners according to their strengths and weaknesses so that they are targeted better. (g) Supporting students to create and innovate so that they are engaged in managing their own learning goals and activities. (h) Use of technology to monitor and ensure teacher attendance results under students and teachers respectively (i) Accepting ownership of their own professional learning and, where appropriate, designing and participating in learning communities that make extensive use of technology.
3	Educational Institutions	<ul style="list-style-type: none"> (a) Taking a guided and lead role in planning how they will effectively embed safe and ethical use of ICT in teaching, learning, assessment, monitoring & evaluation and policy & decision making practices based on a deliberate strategy (b) Improved data management and record keeping; (c) Creation of a knowledge base , better information sharing and security; (d) Better learning and teaching methods; (e) Reduced costs of teaching and learning in the long run; (f) Better monitoring of curriculum coverage and improved teachers and student attendance (since they will not be required to be in specific places like schools at a particular time (g) Strengthening relationships and stakeholder engagement through the use of ICT.
4	Parents and Guardians	<ul style="list-style-type: none"> (a) Improved engagement with their children’s learning through the use of ICT (b) Improved collaboration with and participation in school activities and programmes using ICT. (c) Cost saving in the long run and; (d) Easing student management and monitoring.
5	Government including Ministry of Education & Sports and other MDAs/LGs	<ul style="list-style-type: none"> (a) Enhanced the strategic direction of the education and Sports sector, providing improved mechanisms for monitoring and evaluating the implementation and Utilization of ICT in education; A better mechanism to monitor and evaluate the implementation and utilization of ICT in education.

		<p>(b) Improved support supervision and performance management as well as improved data management and record keeping</p> <p>(c) Better planning, financing and policy making as expected results for Government, MoES and other MDAs</p> <p>(d) All Current and Future curricula will include clear statements that focus on the development of digital learning</p> <p>(e) improved awareness of the use of ICT in education;</p>
6	Industry	(a) Improved ICT and general skills aligned to market needs
7	Development Partners	<p>(a) Improved co-funding of initiatives of ICT in education based on a clear strategic direction</p> <p>(b) Strengthened Awareness and Sensitization for the ICT in Education Vision, Priorities and Serialization.</p> <p>(c) Improved coordination and rationalization of support from Development Partners</p>

6 Digital Agenda Focus Areas and Priorities

Arising out of a quick document review, environmental scan and stakeholder engagements conducted, the following have been identified as the priorities and focus areas for the Digital Agenda of the Education and Sports Sector.

The focus areas shall be enhanced and based on evidence in regard to the prevailing digital situation (ICT penetration) in the Education and Sports sector which will be obtained from the situational Analysis that will be undertaken.

6.1 Focus Areas

(a) Expanding Educational Opportunities

It is unrealistic to assume that conventional delivery mechanisms will provide educational opportunities for all in affordable and sustainable ways. ICTs have the potential to help reach this objective. They can overcome geographic, social, and infrastructure barriers to reach populations that cannot normally be served by conventional delivery systems. Additionally they provide feasible, efficient, and quick educational opportunities.

The capacity of ICTs to reach students in any place and at any time has the potential to promote revolutionary changes in the traditional educational mode. ICTs eliminate the premise that

learning time equals classroom time. To avoid overcrowded classrooms, a school may adopt a dual-shift system without reducing its students' actual study time.

i). *Open, distance and electronic learning (ODEL):*

- Open and Distance Learning Systems automated to provide online, all services including admissions, examinations, e-Accreditation and grievance
- Open Schooling systems strengthened by harnessing ICTs innovatively. Access to e-books, digital learning resources, Digital Repositories (with relevant learning resources) etc.
- Use of ICT to open alternate possibilities for students who have dropped out, cannot continue formal education or are students of the non-formal system of education. Existing formal systems of Education will be strengthened with ICT based instruction available in Open and Distance Learning Systems so as to cater to the needs of such learners
- A mentoring system for students involving expert lecturers/teachers. Online courses, online on demand exams, and digital repositories and content, media broadcasts planned through electronic based, open learning systems allowing multiple entry and exit points, opening out the Institutions resources to non-formal students, guidance and counseling, will result in effective use of ICT for open and distance learning.

ii). *Radio*

Radio has the potential to expand access to education. It is almost universally available, inexpensive, reliable, easy to use and maintain, and usable where there is no electricity infrastructure. Radio can offer many educational advantages, but it also has some drawbacks.

iii). *TV*

Television programs can bring abstract concepts to life through clips, animations and simulations, visual effects, and dramatization. They can also bring the world into the classroom. However, TV broadcast shares with radio programs' rigid scheduling and lack of interactivity.

iv). *Virtual and Remote Laboratories*

Virtual laboratories are web applications that emulate the operations of real laboratories.

- Virtual laboratories can be accessed anywhere without the need for a physical system (e.g. in the current Covid-19 situation)
- Enable students to practice in a “safe” environment before using real, physical component

v). ICT for Persons with Special Needs

Use of ICT to catalyze the cause and achieve the goals of inclusive education and in conformity to national and international guidelines for accessibility

Inclusiveness of the information society have not prominently featured the needs of persons with disabilities. Overall dominant institutional attitudes towards those with a disability may inhibit true inclusion. The education digital agenda should outline strategies for inclusiveness to offer and design digital learning and teaching to be **inclusive** and **safe**. To ensure equity, accessibility for PWDs shall be provided through ICT resources like visual or hearing aided equipment, requisite software and training of ICT centre attendants will be promoted. For the physical (limb) disability, access to application software and other ICT resources should be easily accessible for example; computers, desk phones, conference rooms among others.

A major challenge around digital accessibility concerns the present inability of technology to cover the diverse types of disabilities. More specifically, as and [Lazar and colleagues \(2015\)](#) explain: while perceptual disabilities (i.e., those involving vision and hearing limitations) and physical disabilities (i.e., those involving limitations of use of limbs as well as speech) have been the focus of accessibility solutions, cognitive disabilities have proven difficult to address., screen readers can help persons who have visual limitations and captioning of videos can help persons who have hearing limitations. Similarly, certain types of keyboards and other hardware devices can help persons who have physical limitations. However, in case of cognitive impairments such as Down syndrome or Alzheimer's disease, technology is yet unhelpful and needs to be attended to.

(b) Increasing Efficiency

The capacity of ICTs to reach students in any place and at any time has the potential to promote revolutionary changes in the traditional educational model.

- ICTs eliminate the premise that learning time equals classroom time. To avoid overcrowded classrooms, a school may adopt a dual-shift system without reducing its students' actual study time. Students may attend school for half a day and spend the other half involved in educational activities at home, in a library, at work, or in another unconventional setting. They may be required to watch an educational radio/television program and complete related activities or work on an online lesson at the school technology lab or in a community-learning center.
- ICTs can make multi-grade schools in areas with low population density viable institutions rather than unavoidable. While the teacher attends to certain students who need individual attention, other students can listen to an educational program on the radio, watch a television broadcast, or interact with multimedia computer software.
- ICTs can provide courses that small rural or urban schools cannot offer to their students because it is difficult for those institutions to recruit and retain specialized teachers, particularly to teach mathematics, science, and foreign languages. Schools that do not need a full-time physics or English teacher can use radio, TV, or online instruction, using already developed multimedia materials and sharing one "teacher" among several schools. Alternatively, retired or part-time teachers who live hundreds of miles away can teach the online courses.

(c) Enhancing Quality of Learning

- i). ICTs motivate and engage students in the learning process. Students are motivated only when the learning activities are authentic, challenging, multidisciplinary, and multisensory. Videos, television, and computer multimedia software can be excellent instructional aids to engage students in the learning process. In addition, sound, color, and movement stimulate the students' sensorial apparatus and bring enjoyment to the learning process
- ii). ICTs bring abstract concepts to life. Teachers have a hard time teaching, and students have a hard time learning, abstract concepts, particularly when they contradict immediate intuition and common knowledge. Images, sounds, movements, animations, and simulations may demonstrate an abstract concept in a real manner
- iii). ICTs have the potential to let students explore the world in cost-effective and safe ways. Videos and computer animations can bring movement to static textbook lessons. Using these tools, students can initiate their own inquiry process, develop hypotheses, and then test them.
- iv). ICTs allow students to use the information they acquire to solve problems, formulate new problems, and explain the world around them.
- v). ICTs provide access to worldwide information resources.

- vi). They offer the most cost-effective (and in some cases the only) means for bringing the world into the classroom.
- vii). The supply (via the Internet) students with a platform through which they can communicate with colleagues from distant places, exchange work, develop research, and function as if there were no geographical boundaries.

(d) Enhance Quality of Research and Innovation

Traditional Research and Innovation could be improved through the use of ICTs specifically in Information gathering, analysis, knowledge production development and overall research and innovation project management. Specifically ICT potential areas for Research and Innovation are:

- i). **Improved communication:** Revolutionize the way researchers and innovators communicate amongst themselves and with other stakeholders
- ii). **Data/Information gathering and sharing:** Improve the speed, quality of information gathering and sharing
- iii). **Simulations:** Virtual Labs and robotic and other experiments
- iv). **Evaluation:** Various tools and technology of feedback and evaluation
- v). **Research and Innovation Project Management:** Various tools to support the entire value-chain of managing Research and Innovation Projects

(e) Enhance quality of Teaching, Assessment, and Teacher Professional Learning and Development

Teaching is one of the most challenging and crucial professions in the world. Teachers are critical in facilitating learning and in making it more efficient and effective; they hold the key to the success of any educational reform. ICTs can enhance quality of learning through the following:

- i). **Quality of Teaching:** ICTs and properly developed multimedia materials can enhance the initial preparation of teachers by providing good training materials, facilitating simulations, capturing and analyzing practice-teaching, bringing world experience into the training institution, familiarizing trainees with sources of materials and support, and training potential teachers in the use of technologies for teaching/learning
- ii). **Quality of Assessment and Evaluation:** ICTs can facilitate authentic assessment: Assessment evaluates the achievement of educational goals and skills, and must be realistic in terms of complexity, able to measure students' ability to shape facts, identify strengths and weaknesses in each student's performance
- iii). **Teacher Professional Learning:** ICTs open a whole world of lifelong upgrading and professional development for teachers by providing courses at a distance, asynchronous

learning, and training on demand. ICTs' advantages include ease of revisions and introduction of new courses in response to emerging demands.

- iv). **Professional connection:** break the professional isolation from which many teachers suffer. With ICTs, they can connect easily with headquarters, colleagues and mentors, universities and centers of expertise, and sources of teaching materials.

(f) ICT for Skills Development (TVET and job oriented areas of general education)

There was a time when planning for vocational and technical training was a straightforward exercise, but this is no longer the case. Sectoral needs, job definitions, skill requirements, and training standards are changing faster than the life cycle of a training program. Traditional training programs cannot address these new realities adequately; they are costly in terms of travel and lost time on the job, disruptive, slow to be modified, and incapable of responding to new needs and provisions in a timely fashion.

- i). ICTs have the potential to contribute to skill formation in the same way that they enhance the quality of learning and teaching in general. Additionally, network technologies have the potential to deliver the most timely and appropriate knowledge and skills to the right people, at the most suitable time, in the most convenient place. E-training allows for personalized, just-in-time, up-to-date, and user-centric educational activities.

(g) Sustained Lifelong Learning

The modern demands on societies and individuals necessitate lifelong learning for all, anywhere and anytime. Certainly, formal, traditional systems cannot cope with this demand, even if they are well financed, run, and maintained. It is not possible to bring learning opportunities to all of the places where adult learners are. Likewise, it is not feasible to accommodate all learners in adult education centers and offer them programs that meet their many needs. The diversity of requirements and settings calls for a diversity of means.

- i). ICTs may provide their most valuable contribution in this domain. They are flexible, unconstrained by time and place, can be used on demand, and provide just-in-time education. They have the potential to offer synchronous as well as asynchronous learning opportunities. Above all, if well prepared, they can pack a wealth of expertise and experience in efficient packages that can be modified and updated in response to feedback, new demands, and varied contexts. Possibilities fall in a wide range of technologies, including videos, correspondence, Internet, and e-learning superstructure.

(h) Administration and Management of Educational Institutions using ICTs; and Improving Policy Making and Implementation

Many educational institutions and systems have introduced simple management and statistical information systems, but this should be only the beginning. More specifically, technology for management can be the underpinnings of reform in two areas:

- i). **Management of Institutions and Systems:** At the school/institution level, technologies are crucial in such areas as admissions, student flow, personnel, staff development, and facilities. At the system-wide level, technologies provide critical support in domains such as school mapping, automated personnel and payroll systems, management information systems, communications, and information gathering, analysis, and use.
- ii). **Management of Policy Making:** Here ICTs can be valuable in identification, collecting, storing and analyzing data from different sources (big data) on education indicators, student assessment, educational physical and human infrastructure, cost, and finance. More important, they can assist in constructing and assessing policy scenarios around different intended policy options to determine requirements and consequences and to help select those that are the most appropriate. During policy implementation, ICTs can facilitate tracer studies and tracking systems as well as summative and formative evaluation.

6.2 Foundations

In order to provide a foundation for the Focus Areas, the Digital Agenda shall amongst others include the following:

(a) ICT Infrastructure, systems and Connectivity

Appropriate, cost-effective, and sustainable technology for the different education objectives. This shall include all the components of infrastructure which are:

- i). **Enterprise Architecture, Interoperability of Systems and Standards:**
Education institutions, just like other complex organizations, must develop an efficient and cost effective method of collecting, building and sharing information to accomplish its strategic goals. To be supported to achievement of the strategic goals through utilization of ICTs, there needs to be:
 - An Education Enterprise Architecture and Interoperability Framework that facilitates a coordinated approach to investing in technology, processes and people across the Educational Institutions enable them deliver change and transformation initiatives; improving the student experience, digitizing traditional student and staff services, addressing security concerns etc.
- ii). **Basic Computing Infrastructure:**
 - Definition, enforcement and certification of compliance to an optimum ICT infrastructure for different education levels and purposes

iii). Connectivity and Internet

- Access to broadband services such as the National Backbone Infrastructure (NBI) and/or other affordable, secure and efficient for purposes of connectivity
- Access to affordable and reliable Internet Services such as those provided by RENU, NITA-U, and other providers who support education institutions

iv). Software and Systems

- **Learning Management System (LMS):** Deploy and track online training initiatives, Diverse content management, Course creation tools, learning paths, testing & assessments, interactive discussion and peer support. Reporting and tracking (learner-oriented dashboards and reports built for teaching staff). Interactive online classrooms, Gamification, Competency-based education, Mobile learning, Accessible gradebooks, Personalized Online Training Experience and Open, Distance and Electronic Learning (ODEL)
- **Education Management Information System (EMIS)**
 - Student data tracking: collect and report data on student attendance, behavior, and progress
 - lecturer/teacher tracking: Collect and manage data on lecturer/teacher qualifications and attendance
 - University/ Other Tertiary Institution Data: Manage data on educational institutions to optimize resources and services.
 - Library automation, locally cached offline access to internet resources, office automation, maintenance of records, resource planning, etc.
 - Institution mapping, automated personnel and payroll systems, management information systems, communications, and information gathering, analysis, and use
 - Big Data Management and Analytics
- **Data and Systems Integration**

Most interactions in the education are based on interoperability amongst a diversity of data management systems, content repositories, and software applications.

There is need for

- Integrated usage of the digital content needed for learning and assessment in an array of platforms;
- Governance and exchange of administrative and academic data between the software applications and databases in order to evaluate performance and perform integrated reporting;

- Integration of administrative and educational applications between themselves and also with the local and system-wide enterprise software systems

(b) The application of 4IR technology, particularly AI, to improve learning outcomes through personalized, adaptive learning platforms, distance learning and greater availability of content; platforms to enhance collaborative learning; and the dissemination of advanced pedagogies – Let it be stand-alone

(c) Enabling Complementary Infrastructure

- i). Regular and regulated supply of electricity, appropriate electrical fixtures, adequate power backup and support, including alternate sources of energy and greening the Education Sector
- ii). Physical facilities like an adequately large room, appropriate lighting and ventilation, durable and economic furniture suitable for optimization of space and long hours of working
- iii). Adequate safety precautions and rules for use will be established. E.g. Each laboratory equipped with a portable fire extinguisher and students and lecturers/teachers trained in its use

(d) Digital Content

- i). Development, implementation, enforcement, assessment to compliance to a standard for digital content development and resources, sharing and dissemination

(e) Regulatory and Policy Reform

- i). Identification and development of all the required Regulatory and Policy Reforms in relation to the Digital Agenda
- ii). Ethical use of ICTS

(f) Ensuring Effective Implementation of ICT in the Education and Sports Sector

- i). **Digital Agenda Dissemination and Sensitization:** To ensure that the different stakeholder know the Digital Agenda and their respective responsibilities
- ii). **Governance and Institutional Framework:** A well-defined governance structure to provide improved visibility, coordination, and control of activities. The main goal of governance is to assure all stakeholders that operations will go as expected—that the results achieved will be in line with the decisions made. The governance structure that incorporates the knowledge, skills, and stakeholder needs in a way that absorbs and takes advantage of stakeholder contributions on a continuous basis.
- iii). **Partnerships:** Recognizing the value of multi-stakeholder partnerships, and valuing the opportunity that lies from the possible support from global corporations and development partners. There is need to develop various modes of collaboration and partnerships

(g) Assessing the capacity of education institutions in regard to their readiness for the Digital agenda. Some of the areas to focus on are:

- I) Foundational infrastructure
- II) Complementary Infrastructure
- III) Human Resources and skill sets
- IV) Policies and Practices
- V) Business Architecture and Business Processes

6.3 Some Learning Technologies

This Section provides a summary of some of the widely used families of Technologies and systems in Education. Consideration of the choice and use of the different Technologies and Systems shall be made putting into consideration the following:

- a) Effective use of digital technology is driven by learning and teaching goals rather than a specific technology: the technology is not an end in itself. It's about how any new technology will improve teaching and learning interactions.
- b) New technology does not automatically lead to increased attainment.
- c) How will any new technology support pupils to work harder, for longer, or more efficiently, to improve their learning?
- d) Pupils' motivation to use technology does not always translate into more effective learning, particularly if the use of the technology and the desired learning outcomes are not closely aligned.
- e) Teachers need support and time to learn to use new technology effectively. This involves more than just learning how to use the hardware or software; training should also support teachers to understand how it can be used for learning

The choice and adoption of the available technologies shall be guided by and fit into the theory of change and Enterprise architecture as the superintendent framework.

No.	Family	Attributes
Software		
1	School and student administration	<ul style="list-style-type: none"> a) Normally referred to as Education Management Information System (EMIS) is a system for the collection, integration, processing, maintenance and dissemination of data and information to support decision-making, policy-analysis and formulation, planning, monitoring and management at all levels of an education system. b) It is a system of people, technology, models, methods, processes, procedures, rules and regulations that function together to provide

		education leaders, decision-makers and managers at all levels with a comprehensive, integrated set of relevant, reliable, unambiguous and timely data and information to support them in completion of their responsibilities' (UNESCO, 2008: 101).
2	Teaching, Tutoring and Assessments	<p>Also known as Learning Management Systems (LMS) enables the management and delivery of learning content and resources electronically to students</p> <ul style="list-style-type: none"> a) Administration of learning b) Content authoring and management c) Course Mgt & delivery (including virtual classrooms) d) Online Secure Examination/Assessment Management, e) Microworlds, Simulation, Experimentation, Gamification f) Virtual, Augmented and Mixed Reality g) Virtual Learning Environment (VLE) h) Personal learning pathways i) Connects teachers with students and parents to build classroom communities
3	Professional Development and interactive working	<p>Tools that allow teachers and students to interact with others and also develop professionally, examples include:</p> <ul style="list-style-type: none"> a) Social computing refers to the use of social software, i.e. systems which support collective gathering, representation, processing and dissemination of information. b) Social software (also called social networking software) enables social computing, i.e. it enables people to rendezvous, connect or collaborate through computer-mediated communication and to form online communities. c) Massive Open Online Course (MOOC) Platform d) Self-directed learning content
4	Professional tools	<p>Professional Tool is a software tool that is used in a work context to produce some kind of contents and that has been mainly developed for this purpose. Characteristics include:</p> <ul style="list-style-type: none"> a) Project-oriented learning engages learners in some kinds of projects that usually will lead to products. However, the main goal the process is the learning effect and not the product in itself. b) Office tools (word processors, spreadsheets, presentation tools) c) Some cognitive tools like concept maps and note-

		<ul style="list-style-type: none"> taking tools like the Scribe note-taking application d) Internet publication tools like web-pages, CMSs and associated search technology e) Reference managers, links managers, etc., in particular those who allow sharing information with others. f) Internet communication tools like E-mail, Forums, browsers, etc. g) Computer-assisted design tools h) Simulation and modeling tools i) Visualization tools j) Data processing tools, like statistics programs k) Programming and development tools l) Resource management, databases, libraries
Hardware		
1	<ul style="list-style-type: none"> a) Special purpose PCs like OLPC (one laptop per child). b) PDAs, mobile phones, etc. (see mobile learning and [[ubiquitous computing] c) e-book hardware d) Classroom technology such as embedded PCs, overhead projects, smartboards, voting devices e) Immersive virtual reality systems such as caves f) Digital design and fabrication (e.g. 3D Printing) 	

7 Direction and implementation method

The Digital Agenda is a five (5) year Strategy for how ICT is going to facilitate the improvement of digital literacy for the country. The commencement and duration shall align with NDPIII 2021-25. The Digital Agenda shall also align with the Digital Uganda Vision.

The implementation of the Digital Agenda starts in the year 2021 and is a responsibility of every citizen of Uganda. The Presidency, Parliament, Judiciary, Ministries, Departments and Agencies, Local Governments, Private Sector, Media, Civil Society and Development Partners will align their plans and strategies to achieve this Vision.

The implementation of this Digital Agenda Strategy shall be within the framework of the Comprehensive National Development Planning Framework (CNDPF) as adopted by Government in 2007. In this regard, specific Strategies, Interventions, Programs/projects Plans; and Annual Plans/Budgets will be developed and implemented in a coherent and harmonized manner to realize this Digital Agenda. All operational and strategic actions of government, private sector, civil society, development partners and media shall be directed to the implementation of the Digital Agenda. An appropriate policy, legal and institutional framework will be instituted to ensure all government and non-government actors implement this Digital agenda.

The strategies, interventions and expected Outcomes shall be expounded further and where necessary supporting detailed strategies, project proposals, implementation guidelines and work plans developed to support implementation.

The methodology of implementation shall involve identification of low-laying fruits (immediate priorities, mid-term, medium-term and long-term priorities. Implementation shall be dependent on most effective and impactful initiatives

To facilitate ownership and implementation of this Digital agenda, mechanisms will be instituted to ensure that different key stakeholders understand and support the achievement of this Digital Agenda. It will be translated, simplified and continuously disseminated in various fora.

7.1 Coordination/Institutional Framework

Given the scope and complexity of the programs proposed in the Digital Agenda in Education, the Implementation strategy envisages additional technical assistance in the areas of program planning and management, including intensive coordination of program activities at the school, district and regional levels.

It is also recommended that the following structures are put in place to ensure the effective implementation of the Digital Agenda:

- (a)** Cabinet Sub-Committee
- (b)** Steering Committee
- (c)** Technical Committee
- (d)** Advisory Board
- (e)** Committees of Parliament (Education and ICT)
- (f)** Implementation Directorate/Department at the Ministry of Education and Sports

The roles, composition and responsibilities shall be reviewed, defined and refined progressively throughout the development of the Digital Agenda Strategy.

It is proposed that there are several National, Sectoral, Technical and guidance frameworks, policies and strategies that the Digital agenda should align with.

With the wide acceptance of the Digital Agenda (Strategy) in Education spanning for 5 years is being proposed with reviews thereafter. The next step would be to develop an Implementation Digital Master Plan for Education. The wide scope of the Digital Agenda requires that priority to be given to areas that are supportive of the ESSP, MoES Vision and the key dimensions of the Strategy identified above, geared to improve the adoption of ICT for and in Education from Basic level to Tertiary/ University levels. Inevitably it shall have to be aligned with the Uganda's

Vision 2040 and the e-Government Policy developed by NITA-U. Based on these factors the Implementation Digital Master Plan for Education will focus on effectiveness within the first three (3) years for the Digital Agenda. The plan shall ensure the priority areas have are taken care of with including other broader areas such as e-Inclusion, Education and Training, Network Readiness and Infrastructure Development, and Policy and Legal Framework, to mention.

It is envisioned that the successful projects of this three-year plan will be the spring board for the success of the remaining two dimensions of the Digital Agenda 2020-2024. Undertaking a country-wide implementation of a Digital Agenda in Education requires an approach that will ensure that the projects and programs deliver what they envisioned: improved education services delivery, value-for money, reduction in the cost of service delivery, maximizing benefits to be achieved particularly improved learner achievements, and market oriented education for all learners. The key to realizing the benefits from Digital Master Plan shall include impeccable Program Management, Proactive Management of Change, and Accountability by all stakeholders, and Relevant Measurement.

The Digital Agenda for Education envisions that the Benefits Realization Approach be used to undertake identified projects in this Implementation Education Master Plan. It should be noted, however, that the Digital Master Plan is not an exhaustive listing of the initiatives, strategies and interventions that will take place over the next 3 years, what is envisioned in this Digital Master Plan will be updated as consultations are had with government and all other key stakeholders.

7.2 Change Management

A comprehensive change and adoption strategy to promote and enforce the development and use of ICT in Education for both public and private institutions at all levels shall be developed

Although ICT in education has proved to bring about genuine potential benefits in many countries, several practical experiences indicate that the obtained benefits can vary greatly depending on several factors, including the willingness of the actors to use ICT solutions to interact with the education system. Therefore, to ensure the maximum benefit is obtained from the Digital investments, the Ministry intends to establish a comprehensive change, adoption and transition strategy to promote and enforce the use of these solutions at all levels in the education system. As part of the ICT in Education Change and Adoption Strategy, the following shall be undertaken:

- a) Establish national awareness and education campaigns on the Digital Agenda programs.
- b) Review existing Education facility and provider accreditation acts to enforce the use of Digital solutions and required standards.
- c) Review and propose standards, frameworks, policies, laws and guidelines required for the implementation of the digital agenda

- d) Build Digital skills capacity and capability by establishing national coordination of changes to education programs.
- e) Promote and empower local companies with the capacity and capability to develop and maintain large-scale Digital solutions for the Education Sector.

7.3 Monitoring and Evaluation

Monitoring and evaluation of the Digital Agenda shall be undertaken within the mechanisms of the Comprehensive National Development Planning Framework (CNDPF). The National Development Plans, ICT Sector Plans, Sector Plans and MDA/LG Plans shall periodically outline the policy changes and strategies required for cost-effective achievement of results aimed at realizing the Digital Agenda.

- (a)** The Minister of Education and Sports shall have overall oversight responsibility for achievement of the Digital Agenda targets sequentially falling during his/her term of office. He/she shall therefore institute the necessary mechanisms for Improved Monitoring and evaluation of the Digital Agenda. A committee Chaired by the Minister of Education and Sports shall be instituted for purposes of reviewing progress of the Digital implementation annually.
- (b)** Parliament shall provide an oversight function to ensure effective implementation of the Digital Agenda. Government will put in place strong data capture, management and analysis systems.
- (c)** The MDAs and local governments shall be responsible for production of regular reports on the Implementation of the Digital Agenda, specifically in areas that they are responsible for
- (d)** The private sector, civil society and development partners shall participate in funding and in independent assessments of the country's performance towards realization of the Digital Agenda
- (e)** A Digital Agenda Balanced Score Card framework will be developed for all implementing sectors and agencies to follow in line with SIPs. The monitoring and evaluation framework shall also make use and support production and analysis of data from national surveys and reports on education digital agenda of the country.

A detailed Monitoring and Evaluation Framework shall be developed, reviewed, refined and enhanced throughout the process of developing and approval of the Digital Agenda Strategy.

7.4 Transferability, scalability and sustainability potential

A transferability, scalability and sustainability framework shall be developed as part of the Implementation Framework to ensure that the Digital Transformation Objectives are effectively and sustainably implemented.

8 Formulation Process. Timelines and Budget

8.1 Principles for Development of the Digital Agenda

- (a) **Driven by Evidence:** especially findings of different reviews of ICT in education Sector and of all other key evaluations, reviews, and assessments including those conducted by Development Partners.
- (b) **Responsive to the national, regional and global education development Agenda:** Including Vision 2040, NDP III, Digital Uganda Vision, ESSP, SDGs (4 and 9), etc
- (c) **Results oriented, focused and informed by risk assessment,** not attempting to do everything everywhere, yet providing a framework that responds effectively and efficiently to different contexts and emphasizes inclusiveness.
- (d) **Harmonized with the National Planning Framework-** using as much as possible common approaches

8.2 Methodology

The development of the Digital Agenda shall be done using a formalized process to ensure views for different stakeholders are captured, consideration has been made to ensure minimal duplication, policy and regulatory compliance.

The methodology proposed is in compliance with the UNESCO ICT in Education Toolkit and other International Standards. The methodology will comprise of five (5) phases as shown in **Figure 1**.



Figure 1 - Digital Agenda Development Model

For each phase, Entry, Task, Verification, Exit (ETVX) criteria will be used to ensure smooth implementation of the specific phase. The key elements of the ETVX Process Model are described in **Table 1** below:

Criteria	Description
Entry Criteria	A checklist of conditions that must be satisfied before beginning the Phase
Tasks	A set of tasks that need to be carried out to complete the Phase
Verification and Validation	A list of validation tasks to verify the quality of the work items produced by

	the Phase
eXit Criteria	A checklist of conditions that must be satisfied before the Phase is completed

Table 1- ETVX Process Model

8.2.1 Understand

This Phase is the initial one for the taskforce preliminary engagement, understanding and putting in place the environment for the development of the Digital Agenda. In line with the ETVX process model the following are the stages that shall be followed;

(a) Entry Criteria

- Terms of Reference sign-off

(b) Tasks

Activities	Responsibilities	
	Taskforce	Sponsor
Engaging the Focal Point Persons to clarify the assignment	✓	✓
Validation of all requisite documentation related to the assignment	✓	
Identification and validation of the key stakeholders	✓	✓
Development and Presentation of an Concept Note	✓	✓
Concept Note Presentation Issues Arising Report	✓	
Approval of the Concept Note by the Project Sponsor		✓
Identification of additional Stakeholders and Develop a Stakeholder Engagement Plan	✓	✓
Engaging the key stakeholders to understand the existing conditions, issues and problems at hand	✓	✓
Development of a draft Digital Agenda Document Format (Table of Contents)	✓	

(c) Validation

- Regular status review meetings
- External view evaluation
- Stakeholder Engagement Meetings

(d) eXit Criteria/Deliverables

- Concept Note Issues Arising Report
- Concept Note
- Stakeholder Register

- Stakeholder Engagement Plan
- Stakeholder Engagement Report
- Consolidated view report of work done to-date and presentation to key stakeholders

8.2.2 Analyze

This Phase is the analysis stage of the input received from the stakeholders and document review in line with the Inception Report. In line with the ETVX process model the following are the stages;

(a) Entry Criteria

- Signed-off Concept Note
- Signed-off Consolidated View Report

(b) Tasks

Activities	Responsibilities	
	Taskforce	Sponsor
Conduct a SWOT and PESTEL Analysis	✓	
Develop the Target Digital focus areas/desired state and AS-IS Evaluation Criteria	✓	✓
Conduct a Gap Analysis (between the as-is and the target)	✓	✓
Develop a Theory of Change	✓	✓
Validate the Target, Gap Analysis and Theory of Change with the key Stakeholders	✓	✓
Solicit comments from key stakeholders and consolidate into a report	✓	✓
Validate the input and comments with the Core Team	✓	✓

(c) Validation

- Regular status review meetings with Core Team
- Stakeholder Engagement Meetings/Workshops

(d) eXit Criteria/Deliverables

- Target State and Gap Analysis Report
- Theory of Change Report

- Stakeholders Comments Report

8.2.3 Update and Consolidate

This Phase is the consolidation stage of the digital Agenda. In line with the ETVX process model the following are the stages;

(a) Entry Criteria

- Signed-off Target State and Gap Analysis Report (updated with Stakeholder Comments)
- Signed-off Theory of Change Report (updated with Stakeholder Comments)

(b) Tasks

Activities	Responsibilities	
	Taskforce	Sponsor
Develop the draft Digital Agenda	✓	
Validate the draft documents with the core team	✓	✓

(c) Validation

- Regular status review meetings with Core Team

(d) eXit Criteria/Deliverables

- Draft Digital Agenda

8.2.4 Review and Feedback

This Phase is the review stage of the draft Digital Agenda. In line with the ETVX process model the following are the stages;

(a) Entry Criteria

- Signed-off Draft Digital Agenda

(b) Tasks

Activities	Responsibilities	
	Taskforce	Sponsor
Support the Core Team to present the draft Digital Agenda to Wider Stakeholders at a consultative workshop	✓	✓
Solicit comments from key stakeholders and consolidate into a report	✓	✓

Activities	Responsibilities	
	Taskforce	Sponsor
Validate the draft documents with the core team	✓	✓

(c) Validation

- Regular status review meetings with Core Team
- Wide Stakeholder Consultative Workshop

(d) eXit Criteria/Deliverables

- Consultative Workshop Report (with a colonisation of the stakeholder input)

8.2.5 Final Deliverables

This is the final Phase is the review stage of the development of the final Digital Agenda. In line with the ETVX process model the following are the stages;

(a) Entry Criteria

- Signed-off Consultative Workshop Report

(b) Tasks

Activities	Responsibilities	
	Taskforce	Sponsor
Incorporate Workshop Report input into the Final Digital Agenda	✓	✓
Validate the final documents with the core team	✓	✓
The Taskforce to support the Core Team to present the final documents to the Sector Working Group (SWG) for final sign-off	✓	✓
Presentation to Wider Stakeholders – Validation Workshop	✓	✓
Finalize the Digital Agenda	✓	✓

(c) Validation

- Regular status review meetings with Core Team
- Sector Working Group Meeting

- Validation Workshop

(d) eXit Criteria/Deliverables

- SWG Review Report
- Wider Stakeholder Validation Workshop Report
- Signed-off Final Digital Agenda including the following:
 - Implementation Framework
 - Budget
 - Monitoring and Evaluation Framework
- Assignment completion report

8.3 Stakeholder Analysis

A stakeholder analysis and engagement plan shall be developed and implemented. The Initial Digital Agenda Stakeholder Register is shown in **Appendix 9.1**

8.4 Work Plan

The work plan for development of the Digital Agenda aligned to the methodology is provided in **Appendix 9.2**

8.5 Budget

A budget for the development of the Digital Agenda is given in **Appendix 9.3**.

9 Appendices

9.1 Stakeholder Register

9.2 Work Plan



Digital Agenda -

Workplan-2020-07-2



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9.3 Budget