1 Introduction and Context

Rwanda Vision 2020 aims at moving Rwanda from “an agriculture based economy to a

knowledge-based society “and middle-income country 2020. Education is a key sector

to this social and economic transformation, tapping into the limitless potential of an

empowered population. At the same time, the Vision 2020 places ICTs at the heart of the

transformation across all sectors. The use of ICT in education is seen as a strategic lever

for achieving this transformation. This policy complements the overall “SMART

RWANDA” Strategy, it implements the SMART EDUCATION policy.

The Education Sector Strategic Plan (ESSP) calls for 3 strategic goals to be addressed for

education to fulfill its potential in the development of Rwanda.

 To expand access to education at all levels:

 To improve the quality of education and training:

 To strengthen the relevance of education and training to the labor market

including the insertion of 21st century skills

Technology in education can be used to achieve these goals and address the key

challenges of access, quality, equity, relevance and management efficiency with tangible

advantages that can be seen and measured in numerous ways.

At primary and secondary levels, gross enrolments ratios are growing and more

children are in school. However, the number of trained teachers to sustain these

enrolment ratios is still low. At higher education levels, the levels of enrolment are still

very low. Here technology to support Open and Distance Learning (ODeL) can play a

critical role train new teachers, up-skill existing unqualified teachers and increase

access to tertiary education.

While more children are enrolled in basic education, the key challenge remains the

quality of education they are getting. Here technology can be used to improve the

quality of teaching and learning materials through the use of digital learning resources.

Multimedia interactive digital content can be used to motivate students, improve

conceptual understanding and retention of key topics. ICTs can help simplify the use of

regular assessments to keep track of student performance. ICTs can help with real time

data gathering of enrolment, assessments, performance to improve decision making and

effective management of the education sector leading to informed prioritization and

allocation of resources. ICTs can also be used to strengthen teacher professional

development thereby contributing to the improvement of quality of education.

Lastly, students must be prepared for the 21st century and given abilities needed to

succeed and thrive in today’s complex, technology-based global economy, and to be

active 21st century global citizens. Some of these skills include Critical Thinking,

Problem Solving, Communication, Collaboration and Visualization. Technology in

education enables the development of these important skills.

Since 2008, MINEDUC has implemented the One Laptop per Child (OLPC) program at

primary schools and computer labs for secondary schools.

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250,000 OLPC devices were deployed in 764 schools thus reaching only 10% of primary

students. The program faced challenges in capacity building of teachers due to a high

learning curve, the cost of deployment was also high while it only reached a few

students and lastly, the lack of integration of the program in the normal learning and

teaching activities was the main challenge.

For Computer labs, only 5% of secondary schools benefited from the program and the

labs were used only for ICT lessons.

This policy has now been revised to a “One Digital Identity Per Child” and ‘Smart

Classrooms” in all primary and secondary schools. While a device for every child

remains the end goal, MINEDUC is shifting from One Laptop Per Child (OLPC) to the

concept of a “Smart Classroom” following changing technology, to reduce costs and

increase access and equity. More importantly, the policy will ensure that technology is

integrated in all education processes i.e. preparation, delivery of lessons, assessments

and research.

2 Vision Statement

The Vision for ICT in Education is:

“To harness the innovative and cost-effective potential of world-class educational

technology tools and resources, for knowledge creation and deepening, to push out the

boundaries of education: improve quality, increase access, enhance diversity of learning

methods and materials, include new categories of learners, foster both communication

and collaboration skills, and build capacity of all those involved in providing education.”

Thus, ICT in education will contribute to achieving the Ministry of Education mission “to

transform the Rwandan citizen into skilled human capital for the socio-economic

development of the country by ensuring equitable access to quality education focusing

on combating illiteracy, promotion of science and technology, critical thinking, and

positive values” (ESSP, 2013).

3 Strategic Goals

ICT is an enabling tool and a cost effective solution to improve and increase access to

education. ICT must therefore be incorporated in a systemic process, within the context

of challenges to be met, strategic issues to be addressed and key result areas to promote

with tangible indicators of success.

The overall goal of this ICT in Education policy is to further access, equity, quality and

relevance, as the key principles underpinning Rwanda’s ICT and education policies.

Promoting ICT to provide access to education for all and quality education that is

relevant with regard to the labour market is the foundation of this Policy and Strategic

Plan at the core of ESSP and ICT in Education Policy.

This policy's strategic goal is to encourage programmes and projects that will maximize

on the benefits of ICT in providing universal access and quality education for all.

Proposed solutions are aligned with the strategic objectives in the following section.

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4 Strategic Objectives

To achieve successful education transformation, the ICT in education policy calls for the

implementation of four strategic objectives.

Strategic Objective 1: Develop a competent & relevant ICT professional base to meet

industry needs

 Policies: Clear and effective policies that encourage and empower teachers and

students to use ICT as an integral part of the education process.

 Curriculum and Content: Development and acquisition of digital content,

aligned with the curriculum and that focuses on project and activity-based

learning and is fully integrated with the use of ICT, along with the associated

formative assessments. This will require the acquisition of a content distribution

platform and eventual shift from print to digital content as infrastructure is

deployed in schools. REB will brief publishers on the new curriculum to develop

e-textbooks in line with the new curriculum and adapt local and international

content to complement/ supplement the core e-textbooks. Digital content has

advantages of reducing costs of printing, distribution, replacement due to wear

and tear and enriching the learning experience.

 Management and Information System: Real time data gathering system with

business intelligence to enable the report of various reports

Strategic Objective 2: Increase ICT penetration and usage at all educational levels

 ICT Infrastructure: is the scalable ICT infrastructure, broadband and user

support required to transform our schools into “Smart Schools” (in line with the

Smart Rwanda vision). Interactive White Boards, servers, local area networks,

cloud services, broadband connectivity and power.

 Devices: student and teacher devices with appropriate education software

Strategic Objective 3: Develop Education leadership and teachers’ capacity and

capability in and through ICT

 Leadership Development: Leadership development in the ministry and among

school leaders that helps, leads, supports and encourages the regular use of ICT

in schools and classrooms.

 Teacher preparation and development: Teachers remain key to the successful

integration of ICT in education. As such, the ICT in Education Policy envisions a

concerted teacher training effort to transform teaching methodology from

teacher-centered method to learner-centered method. A policy change will be

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made to require all teachers to complete a minimum number of training courses

per year on the integration of ICT. To ensure adequate teacher preparation and

motivation, all teachers will be provided with a laptop issued by MINEDUC (and

with connectivity), through a purchase program over 2 to 3 years. Teacher

training will also be included in Pre-Service Teacher training programs.

Strategic Objective 4: Enhance teaching, learning & research through ICT integration

in HLIs

 Higher education, research and innovation: higher education is critical to spark

an innovation economy to transform Rwanda and ICT are seen as a key ingredient

and catalyst. Investments in higher education will be prioritized to increase access

to higher education, improve quality and drive research and innovation.

 Device: All students in HLI will be encouraged to own a device through a student’s

purchase program. Students finance will be expanded to include the purchase of a

device.

 Online Services: HLI institutions will be required to provide online services

including the access of syllabus, registrations, grades, courses and other

 Connectivity: A broadband network will interconnect high-speed research and

education institutions as well as connect them to the internet at a promotional

education rate

5 SWOC analysis

This document has been developed in consultation with a wide range of stakeholders.

Prior to developing this Policy an analysis of the strengths, weaknesses, opportunities

and challenges (SWOC) concerning the ICT in Education environment was carried out at

different planning and validation workshops with key stakeholders. The major

challenges identified included: inadequate infrastructure; high power costs; equipment;

and connectivity costs. The absence of a culture around the use of ICT also prevented

the widespread adoption of such tools in education, as did the limited availability of

digital content, expertise and project coordination. It was recognised that high-level

support of ICT in Education initiatives shows promise of rapidly transforming the

sector. New opportunities to expand infrastructure, integration of ICT for core / elective

/ subject learning, develop partnerships with the public and private sectors, and create

new links with regional and international initiatives will be identified. Methodologies

include: strong partnership with private sector and access to knowledge experts.

Among the information gaps, revealed by a mapping exercise, included: insufficient

monitoring and evaluation of ICT in Education projects at school level; a lack of analysis

of the outcomes of partnerships; and unclear standards in the sector. This policy will

structure, catalyse, regulate and monitor initiatives on ICT in Education, in response to

national development requirements, challenges and opportunities.

Analysis revealed the many challenges to be overcome in order to disseminate the use

of ICT throughout the nation generally and in education specifically. With a poor

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infrastructure – 16% of electricity coverage in households by 20121, 47% in public

schools2, low connectivity rates3, lack of equipment and high costs – access to ICT in the

education system is very limited (computer to students ratio in secondary schools 40:1;

16% of primary schools use XO laptops)4. In addition, due to a lack of ICT culture and of

understanding of its possible applications and benefits in education, communities and

educational institutions are often reluctant to adopt ICT and adapt their teaching

methods. Even when such material and cultural barriers are overcome and ICT in

Education initiatives are taken up, other challenges arise, such as, limited availability of

digital learning material, lack of expertise in project management skills and poor

coordination of initiatives, systematic road map for ICT Teachers Professional

Development, e-readiness survey, analysis and ICT infrastructure plan and technical

support.

However, one of the major strengths of ICT in Education is that it is already strongly

supported by the Government and well taken into account in national policy documents,

and various projects are already implemented or underway. New opportunities must

now be seized in order to further the dissemination of ICT in the education sector,

through the development of infrastructure, partnership building with private and public

institutions and the creation of new links with regional and international initiatives.

This policy supports open access education resources to mitigate against identified lack

of digital learning content.

Strengths Opportunities

• Existing ICT in Education projects and

programmes within MINEDUC and

learning institutions

• Existing draft ICT in Education Policy

as a guiding document

• Existing ICT in Education pillar within

the NICI Plan

• Establishment of the REB/ICT in

Education Department

• Huge Potential local and international

development partnership with the

private sector, non-governmental and

inter-governmental actors

• Existing linkage with regional and

international initiatives

• Benefit from an economy of scale for

learning institutions and MINEDUC

implementing agencies

• Existing national, cross-border, and

submarine communication network

• Commitment from the Government to

support ICT in Education

Weaknesses Challenges

• Poor infrastructure: 47% only of

electricity coverage in public schools

• 6% primary and 18% secondary

schools only connected to Internet

• Limited ICT in Education resources

• Expertise turnover in learning

institutions

1 Rwanda Ministry of Infrastructure (MININFRA), 2013: http://mininfra.gov.rw/25/

2 ICT Total Cost of Ownership report 2013.

3 MYICT 2012, Rwanda ICT Sector Profile – 2012: 6% primary school and 18% secondary schools with Internet

connection; ITU ICT Eye, 2012: households with Internet access at home: 2.4%...

4 Draft ESSP, 2013.

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• Computer to students ratio in

secondary 40:1

• 16% of primary schools only use XO

laptops

• High cost of access and usage of

digital content

• Poor coordination mechanisms

among ICT-related initiatives

• Lack of awareness about the benefits

and limitations of ICT in Education

• Resistance to change mindset

• Limited infrastructure such as power,

connectivity, and equipment

• Limited ongoing technical and

pedagogical support to schools

• Limited participation of local

institutions (private, public and civil

society) in ICT in Education

• High recurring cost

6 The Purpose of the Policy Document

The ICT in education policy is designed to guide the process of harnessing, deployment

and exploitation of ICTs within the Education Sector to support its organizational

activities and operations within the framework of the national ICT-led development

vision. The ultimate purpose of this policy document is summarized in the followings

points:

• Building a common shared understanding and synergy for what ICT in education

means among all stakeholders.

• Creating an enabling environment, mechanisms and priorities for ICT in

education.

• Development of modern, relevant content fulfilling the needs and expectations of

citizens, industry, and society in general.

• Harmonization between centralized and decentralized levels of the education

system.

• Leveraging Public Private Partnerships and support of Development Partners.

• Strengthening Rwanda's effort to export ICT in education models to Africa in

general and to the EAC and COMESA in particular.

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Short-Term Medium-Term to Long-Term

 Policy development and

review of strategy

 ICT competencies for

teachers

 Acquisition of existing econtent

 Affordable connectivity

 Infrastructure for schools and

teacher training

 Procurement support and

maintenance of infrastructure

 New e-content for Rwanda

 Evaluation of classroom

Performance

 Pre-service and in-service

training for teachers

 Contextualization of content

7. Implementation of the Policy in four phases

Phase 1 ( FY

2015-2016)

Phase 2(FY 2016-

2017)

Phase 3(FY 2017-

2018)

Phase 4(FY 2018-

2019)

ICT in Education

policy approved

Smart Classrooms and

new curriculum

integrated for P1, P2

P4, P5, S1, S2, S4 and

S5

Smart Classrooms and

new curriculum

integrated for all

grades.

Student purchase

programs

initiated

30% of schools

equipped with Smart

Classrooms and power

(grid, solar or petro

generator).

70% of schools

equipped with Smart

Classrooms and power

(grid, solar or petro

generator).

100% of schools

equipped with Smart

Classrooms.

Awareness

campaigns to

students, schools,

parents, teachers

about

HLI will deliver 50% of

the teaching using

digital courses and

online resources.

HLI will deliver 80%

of the teaching using

digital courses and

online resources.

HLI will deliver 100%

of the teaching using

digital courses and

online resources.

Open Distance

Education University

will be up and running.

Teacher professional

development and

online community

established.

Online teachers’

community scaled

nationally.

Most teachers actively

participate in online

teachers’ community.

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880,000,000 Rwf 12,004,000,000 Rwf 14,874,000,000Rwf 8,139,000,000 Rwf

8 ICT in Education Policy Areas

The policy has eleven main policy statements as follows.

8.1 ICT in Formal Education

Improve preparation of the current generation of students for a workplace where ICT

tools such as computers, Internet and other related technologies, are becoming ever

more present. This will include technological literacy and the ability to use ICTs

effectively and efficiently to provide a competitive edge in an increasingly globalized job

market. The focus in formal education is:

 Ensuring primary, secondary, TVET and Higher Education educators use ICTs in

their teaching and learning practices.

 Promoting the use of Open Distance and e-Learning (ODeL).

 Promoting the use of Open Education Resources.

 Promoting the teaching of ICT as subject matter.

 Raising awareness among students, teachers, and parents of the value of ICTs.

 Making ICTs available to all formal education levels, and enable students, at all

educational levels, to use ICTs in their learning as a tool and as a methodology.

 Enabling all teachers and administrators to use ICTs as a management tool to

support the educational process.

 Using ICTs to support the emergence of teaching and pedagogical studentcentred

approaches and encouraging research and collaborative learning.

 Facilitating access to a wider range of knowledge for students and teachers to

support the teaching and learning process.

 Using ICTs as a tool to improve quality of education in all subjects at all levels

and supporting the effort of the Education Quality Assurance Department in

improving the quality of education.

 Ensuring the availability of infrastructure that is critical to successfully integrate

ICTs at all levels of education.

 Establishment of the Rwanda Education and Research Network (RwEdNet) to

ensure that scientists and researchers in higher learning institutions in Rwanda

are connected to the regional and international body of research.

8.2 ICT in Non-Formal Education

ICT provides opportunities for self-learning and distance-learning independently of

time or place. Enable citizens to have learning and development opportunities

throughout their lives, anywhere—irrespective of age, gender or geographic location—

thus supporting the country’s aspiration to build a knowledge-based economy. The

focus in non-formal education is:

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 Promoting the use of community learning and information centres and libraries,

and open and distance learning centres to support literacy and learning

opportunities to all Rwandans. Expand activities to include the use of video,

radio and TV.

 Promoting the use of ODeL.

 Creating and leveraging partnerships with private and community-based

organizations to provide learning opportunities and improve ICT literacy for all

Rwandans.

 Leveraging ICT infrastructure in schools to encourage and support afterschool

programmes to target students, out-of-school leavers, and local communities to

develop life and ICT skills, and provide other lifelong learning opportunities.

8.3 Access and Equity

This policy recognizes ICTs to be a cross-cutting area aimed at equality and equity to all

Rwandan citizens. The focus is on:

 Using ICTs to provide educational opportunities to all Rwandan citizens

regardless of gender, age, geographical location, or special educational need.

 Providing a basic ICT model to all schools and community centres regardless of

gender, age, geographical location, or special educational need.

 Providing access to ICT in learning centres for people in very remote, rural, and

economically disadvantaged areas.

 Promoting a “Bring Your Own Device” (BYOD) programme for teachers and

students in order to increase ICT penetration at all levels.

8.4 Infrastructure

Efforts will be made, to provide the needed infrastructure to the remote and

underserved areas using technological solutions that are suited to local needs and

conditions. The focus is on:

 Providing all formal and non-formal education institutions with the essential

infrastructure to facilitate the adoption of ICTs within the education system.

 Developing infrastructure in close collaboration and coordination with relevant

ICT stakeholders and partners, to optimize synergy and cost-effectiveness.

 Explore alternative energy solutions where necessary.

 Ensuring that well-trained and capable human resources are available to

maintain ICT in Education infrastructure.

 Defining a replicable, scalable, reliable and sustainable technology model to be

introduced in schools.

 Developing and adopting assistive technologies for people living with

disabilities.

8.5 Curriculum design, delivery and assessment

For successfully integrating ICTs in education, curriculum revisions must be continually

conducted, along with training on ICTs and ICT-enabled teaching and learning taught as

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both a subject and pedagogy using learner-centered and interactive methods. The focus

is on:

 Providing curriculum at all levels of education.

 Promoting a blended learning approach and establishing appropriate

mechanisms and guidelines for regulating the development and use of electronic

content.

 Exploring options for obtaining copyrights of existing electronic material in the

medium term.

 Creating and developing Rwanda-specific national electronic content, in all

subjects, on the long term to be used as supplementary material, aligning it with

the national curriculum, and revising the curriculum accordingly.

 Enabling teachers to use open educational resources, Massive Open Online

Courses, create electronic content, and share knowledge experiences and

practices using technology.

 Creating a centralized digital library/repository (Rwanda Educational Portal) of

digital learning material to be accessed by all schools.

 Developing content and training manuals for pre-service teachers on using ICT in

teaching and learning.

 Ensuring that learners and educators are empowered to encounter internetrelated

risks to privacy and content quality.

 Using ICTs as a tool to design tests and testing tools incorporating ICT based

student assessment tools.

 Mandating and empowering the Curriculum developers to be the focal point of

coordination for the development of electronic content

8.6 Training and Capacity Building

ICT-enabled training methods will be fully explored, including distance education, elearning,

and blended learning. Pre-service and in-service training will be offered on a

continuous basis to enable staff and other stakeholders to keep up to date with

technological and pedagogical developments. The focus is on:

 Providing pre-service training of teachers on the effective utilization of

technology (software and hardware) in their teaching and learning.

 Ensuring that teachers are able to:

 access a wider range of high quality tools and resources to create innovative,

challenging and engaging learning opportunities;

 plan, schedule and deliver more personalized and effective teaching and

learning;

 communicate and collaborate more extensively and effectively with their

students and parents;

 efficiently access and exploit a greater range of student performance data to

analyze progress and act on it;

 Improve practice through greater professional collaboration in their own

school, across the Rwanda and internationally.

 Providing effective ICT literacy training programmes for all teachers at all levels

that promotes change and ensures quality.

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 Supporting head teachers to establish their schools ICT vision, leveraging

available technological infrastructure to better manage the school and foster

modern teaching.

 Training curricula developers on creating and developing digital learning

material.

 Developing general standards, guidelines, and certification requirements for

trainers and training centres.

 Developing a cadre of technical expertise to manage and maintain ICT facilities at

all levels and to optimize uptime.

 Ensuring that students are able to:

 access and exploit world-class educational tools and resources to improve

the quality of engagement and learning outcomes;

 explore and develop their knowledge, skills and understanding through a

more personalized learning experience;

 communicate and collaborate more extensively and effectively with their

peers, teachers and community;

 experience a greater range of formative assessment to support their

educational progress;

 Monitor, reflect on and manage their own learning.

8.7 Management, Support, and Sustainability

Necessary actions will be taken to plan and budget for ICT in Education projects,

including innovative means to secure and optimizing requirements through public

private partnerships. Additionally, income generating activities will be explored and

conducted in order to minimize the Government expenditure on ICT in education

initiatives. The policy will focus on:

 Making necessary budgetary provisions associated with the capital and

operational costs of ICT facilities.

 Developing an income generating strategy in line with ICT in education

programmes.

 Promoting Public-Private-Partnership through “Adopt-and-Sponsor a School”

programme for ICT penetration in schools and higher education in terms of

infrastructure, content development and delivery, and capacity building.

 Adopting a strategy for technical support and maintenance with adequate staff

and budgets to service the needs of the centralized and decentralized levels of

education.

 Providing in-service professional development opportunities for teachers to

enable the use and creation of digital content and pedagogic integration.

 Providing professional development opportunities for school inspectors on the

integration of ICTs in the teaching and learning process.

 Training educational administrators on ICT projects, including planning,

managing, budgeting, resource management, and Monitoring & Evaluation.

8.8 Open Distance and e-Learning

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The main purpose of ODeL is to increase the provision of educational opportunities, at

all levels of education and training to improve access to, quality and effectiveness of the

education system, and improve the efficiency of the educational sub-sector. The ICT in

Education focus is on:

 Setting up an effective ICT support to ODeL

 Building capacity and competency in ODeL delivery including development of

content, training of instructors and delivery of content.

 Enable a blended face-to-face and e-learning approaches as required for

developing appropriate, effective and efficient means of meeting both national

educational objectives and the needs of students.

8.9 Multi-Stakeholder Partnerships

Recognizing the value of multi-stakeholder partnerships, and valuing the opportunity

that lies from the possible support from global corporations and development partners,

the Government of Rwanda will engage in various modes of collaboration and

partnerships. The focus is on:

• Engaging local, regional and global partners in efforts to integrate ICTs in

education and to avail research and innovations to improve the education

system.

• Creating an enabling environment conducive to global and local partners'

investments and support to the education system including:

 Peer to peer research and collaboration.

 Twinning between public and private educational institutions to transfer

and exchange best practices and share available resources.

 Support the integration of ICTs in education.

 Financing of ICTs in education.

 Encouraging the private sector companies to adopt schools to bring about

school improvement.

8.10 Research and Development

Recognising experiences and lessons learned from educators and learners, the

Government of Rwanda will facilitate participatory involvement of stakeholders at all

levels and develop means of disseminating and analysing the feedback to improve

learning outcomes. The focus is on:

 Conducting a needs assessment and establishing a mechanism for continually

identifying best practices and gaps and researching innovative solutions to

improve the education system.

 Creating a venue to facilitate a participatory approach enabling grass-root

research and quality improvements, especially through showcases, seminars,

workshops and conferences.

 Enhancing higher education institutions research and development capabilities.

 Supporting publication of publicly funded research under open access licences.