Ministry of Education and Sports

DRAFT-1

DIGITAL EDUCATION STANDARDS AND GUIDELINES FOR FOR THE EDUCATION AND SPORTS SECTOR

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1.0   BACKGROUND

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). In this regard therefore, the Ministry of Education and Sports (MoES) has prioritized the adoption and integration of ICT in teaching, learning and management of education and sports systems in a bid to achieve efficient and effective service delivery. To facilitate the above, the Ministry of Education and Sports has developed a 5-year Digital Agenda Strategy in Education and Sports greatly informed by stakeholder consultations in Uganda. Digital Education Standards and Guidelines (DESG) have been developed as a guide to implement the Digital Agenda in education sector. The document presents six standards and guidelines; Management and Governance, ICT infrastructure and Systems, Pedagogy and Andragogy, Content Development, Professional Development and Research, Development and Innovation, System Adoption and diffusion. The guidelines provide additional advice and support for policies, procedures to deliver efficient and effective digital education targeting a wide variety of audience.

1.2   TARGET AUDIENCE

The standards and guidelines target a wide variety of stakeholders. These include Education institutions (Universities, Tertiary, Secondary and Primary) Government Ministries and Department Agencies (MDAs), Regulatory and Examination Bodies, Education Development Partners (EDPs), Civil Based Organizations (CBOs), Non-governmental Organizations (NGOs), Faith Based Organizations (FBOs) and the general public. Key user such as educators, students, school and educational institution leaders. Others targeted ate ICT for education system industry and vendors, ICT experts, instructional designers,

and those with responsibility for developing digital capability, instructional designers, administrators, policy makers and quality assurance agencies.

SECTION 1: STANDARDS AND GUIDELINES FOR MANAGEMENT AND GOVERNANCE

1.0 Introduction

There is need for strategic management and governance in the deployment of e-Learning in the education sector in Uganda. As a standard, all institutions implementing e-Learning should have a dedicated e-Learning Unit with the sole responsibility of deploying and managing the deployment of the e-Learning as well as putting in place its governance/management structure. The unit should have a suitable organizational structure and governance/management mechanism to provide quality e-Learning services to the teachers and learners in the institution. The emphasis must also be to ensure that the deployment, usage and services provided by all educational institutions meet the requirement of the National Digital Agenda and ICT in Education Policy.

1.1 Organizational Structure

1.1.1 Establishment of the Unit

a) A dedicated e-Learning unit MUST be established or utilize the existing ICT support units at the institutional level to support the institution/national agendas of eLearning.

b) The senior management of the institution MUST be committed to provide the eLearning unit with appropriate staff and funding.

c) This unit can be established as a stand-alone entity or can be part of any existing Teaching and Learning Unit/Centre.

1.1.2 Vision

a) The institutions MUST have a clear vision and clear outcomes on the integration of e-Learning in the teaching and learning practices.

b) The vision MUST be integrated and aligned with the institutions and the national education sector digital agenda for teaching and learning excellence.

c) The vision MUST incorporate the advancement of global knowledge and 21st century skills of teaching and learning practices.

1.1.1 Functions

a) The unit or existing units SHOULD be empowered to plan, manage, deploy and maintain the e-Learning activities.

b) The unit or existing units SHOULD be responsible to actively promote e-Learning activities campus-wide.

c) The unit SHOULD inculcate the e-Learning adoption and usage within the Education sector.

d) The unit SHOULD develop programmes towards the enculturation of e-Learning.

e) The unit SHOULD provide the mechanism for monitoring, evaluation and assessment of e-Learning initiative and outcome.

f) The unit MUST be accountable to the senior management

1.1.4 Plan

a) The unit MUST develop comprehensive e-Learning plans to achieve the stated vision and outcomes that are in line with Digital Agenda.

b) The plan MUST be well coordinated with all units/departments/faculties/colleges within the institution to ensure that all the academic staff and students are fully engaged in e-Learning practices.

c) The institutions strategic and operational plans MUST recognize and support the use of technologies to facilitate learning and teaching.

d) Specific plans relating to the use of e-Learning SHOULD be aligned with the Education sector' strategic and operational plans.

e) Planning for e-Learning SHOULD be aligned with the budgeting process and financial allocation disbursed by the Education sector vote.

f) The planning of e-leaning SHOULD cover all aspects and stakeholder needs and requirements.

1.1.5 Security and Secrecy of Learning Management System (LMS)

a) All users of the LMS MUST authenticate with unique user credentials.

b) All users of the LMS MUST adhere to the Uganda National Computer Misuse Act 2011.

c) All users of the LMS MUST not use the system for purposes other than those of the institution.

d) The institutions must be responsible for the accuracy, integrity, and/or legality of the content uploaded to LMS.

e) The institutions SHOULD define procedures for the management of the data and database of the LMS.

1.1.6 Quality

a) Institutions SHOULD ensure that the processes for quality assurance are in place and integrated within the administrative and operational system of e-Learning.

b) Where appropriate, institutions SHOULD consider using resource mechanism in the process of planning and quality improvement.

c) Coordination for the integration of quality mechanism SHOULD occur across all key functional areas within the institution.

d) Institutions SHOULD measure the relevant key performance indicators (KPIs) and report to MoES and all key stakeholders.

1.1.7 Evaluation and Reporting

a) Institutions SHOULD put mechanisms to report the outcomes of KPIs to senior management and to the MoES for appropriate intervention and further improvements.

b) Evaluation and feedback system SHOULD be fully integrated within the LMS for continuous improvement purposes.

1.1.8 Leadership

a) The appointed person to lead the e-Learning Unit SHOULD be an exemplary leader and preferably an academic practitioner of e-Learning.

b) The leader of the e-Learning Unit SHOULD keep abreast of local and global e-Learning trends and advancements.

1.1.9 Committee

a) The institutions SHOULD establish clear management structures to identify the responsibilities and authorities within the management structure.

b) Institutions must have e-Learning management committees or ICT committees established to oversee the operationalization and direction of the overall e-Learning agenda of the Education sector.

c) The e-Learning or ICT committee MUST provide regular report to the senior management of the institution university regarding the deployment of e-Learning within the Education sector.

d) The members of the e-Learning committee SHOULD consist of representatives of the stakeholders. For example, Head of ICT, ICT leaders within the institutions, ICT Professional of Educators, and User of e-Learning representative such as students.

e) The committee MUST be sufficient in number, technically competent and appropriately trained to support the implementation and to ensure good governance and effective deployment of e-Learning.

f) The committee MAY consist of several working committees that report to the management committees depending on the nature and structures in place. Suggested e-Learning Committees;

i) Technical committee
- This committee manages and maintains the e-Learning platform and databases and provides efficient infrastructure for e-Learning deployment.
- The technical committee MUST be competent in the technical aspect of e-Learning (LMS, databases, server, etc.).
- The committee MUST be appropriately trained an technologies committee sufficient support to faculty members.

ii) Training Committee
- This committee plans and delivers regular professional development trainings related to e-Learning.
- The committee members MUST be competent with the training skills and delivery.
- Trainers MUST undergo regular competency 'Training for Trainers' Programmes offered by accredited or professional institutions of government or private agencies.
- Trainers SHOULD be certified trainers or with background training of technology in education

iii) Content development committee
- This committee is responsible for overseeing, monitoring
- and providing recommendations to the senior university management on the progress of the e-Learning content
- development.
- The committee members MUST be highly competent and knowledgeable in content development authoring tools.
- The committee members MUST be knowledgeable in the current trends and capabilities of various authoring tools.
- The committee MUST be competent in Instructional Design and learning theories.

iv) Faculty/school/department/sections representative committee

- The representative is empowered to execute the resolution of the central e-Learning committee at the faculty/school/department/section level.
- The representative is responsible for carrying out the e-Learning activities at the faculty/school or department level.
- The representative SHOULD function as the faculty/school/department/section based administrators of the e-Learning platform for the purpose of providing support to the faculty/school/department members and resolving issues on e-Learning.
- The representative is responsible for monitoring and reporting of the e-Learning activities of the faculty/school/department/section to the management e-Learning committee.

1.1.10 Stakeholder

a) The stakeholders of the e-Learning Unit are the government, ministries, development partners, religious organizations, non-governmental organizations, civil society organizations, the universities, the industries, the lecturers, the students and community.

b) The institution wide integration and implementation of e-Learning activities SHOULD be aligned to the desired outcomes and vision of all the stakeholders involved.

c) The stakeholders MUST be selectively involved in relevant decision making pertaining to the e-Learning implementation of the institution.

1.1.11 Manpower for the unit

a) The running of the unit MUST be supported by sufficient number of supporting staff who are technically competent and appropriately trained to support the implementation and to ensure good management and deployment.

b) The team SHOULD comprise of a good mixture of instructional designers, system administrator, planner, administrator, e-Learning experts and research officers.

c) The Instructional Design qualified staff MUST be appointed to support the content development process.

d) Suitable career path and promotional opportunities for the staff MUST be considered in their appointment.

1.1.12 Funding for the unit

a) Sufficient and continuous funding MUST be allocated by the unit to ensure the smooth and sustainable operation of the e-Learning Unit.

b) The unit MUST be accountable to the senior management of the university on the outcomes of the e-Learning activities.

c) The purpose of the funding SHOULD cover content development, professional development, training, software procurement, incentives and other e-Learning acculturation activities.

d) Education sector COULD consider creating - a small percentage from student allocated solely for content development purpose to enhance and increase the ability of e-content for teaching and learning.

1.1.13 Research and Development (R&D)

a) Sufficient and continuous funding SHOULD be allocated to the unit to undertake the R&D activities related to e-Learning practices, especially in higher education level.

b) The unit SHOULD be responsible for establishing baseline data on the usage and enculturation of e-Learning of the institution and it SHOULD be carried out periodically for the purpose of providing the progress report for institutional KPI and national development plan

c) The unit SHOULD provide avenues or opportunities for academicians to carry out their research (Action Research) for innovative e-Learning practices.

d) The data collected MUST be analyzed and benchmarked against the global trend and the outcomes are proactively planned and proposed in order to shape and leap the future of e-Learning practices of the Education sector.

e) The R&D MUST initiate understanding of the local culture and needs in promoting e-Learning at the institutions.

f) The institutions, especially higher education institutions SHOULD consider a small percentage (1%) from the government overall funding for R&D related to Teaching and Learning.

g) The survey on the effectiveness of e-Learning (student satisfaction) SHOULD be done on a regular basis (at least once every academic year).

1.2 Governance

1.2.1 Policy and Practices

Each institution, particularly at higher education level MUST have a clear policy and strategy for digital learning. The policy document and strategies SHOULD envisage the future trend of e-Learning.

a) Policy and practices development
   i) The e-Learning policy and practices at all levels of education MUST be consistent and in support of Digital Agenda for e-Learning and National Development Plan Phase III.
   ii) The development of the policy and practices MUST involve all stakeholders of the institutions.
   iii) The evidence of continuous policy development SHOULD be documented to reflect the dynamism and comprehensiveness of the process.

b) Policy and practices approval
   i) The approval of the e-Learning policy MUST involve the in-house and national academic bodies.

c) Policy and practices implementation
   i) The policy MUST be communicated to all stakeholders based on the principle of transparency, accountability and authority.
   ii) Support forcontent development SHOULD be given whenever necessary.
d) Policy and practices revision
   i) The policy MUST be regularly reviewed (at least once every 3 years) to conform with the current development of e-Learning practices in the use of ICT in teaching and learning.
   ii) The rapid growth of ICT SHOULD be considered so that the policy conforms with the current trend of technology.

1.2.2 Governance structure

Institutions MUST have clear governance structure and the relationships within the structure and their impact on the e-Learning policy and practices.

1.2.3 Functional integration between colleges/faculty/department/sections

There MUST exist a functional integration between the e-Learning Unit with the Colleges/Faculty/Department/Sections to ensure the smooth running of the e-Learning activities at all levels of the academic structure of the institutions.

1.2.4 Data collection
a) The additional database system MUST be in place for the purpose of capturing data on the e-Learning usage at institutional level.
b) The system SHOULD be comprehensive to capture the usage of e-Learning down to the micro level that includes the activities carried out by individual lecturers/instructors/teachers.
c) Apart from system-based data collection, instrument-based data collection SHOULD also be carried out periodically.
d) Data collected MUST conform to the institutional KPI and National Digital Agenda for e-Learning requirements.

1.2.5 Reporting of statistics

The data must be regularly reported to the institutional e-Learning management committees so that the committee could carry out the intervention to further improve the e-Learning deployment. The planning and implementation of e-Learning MUST comply and meet the Digital Agenda, National Development Plan and the ICT in Education Policy.

SECTION 2: STANDARDS AND GUIDELINES FOR ICT INFRASTRUCTURE AND SYSTEMS

2.0 Introduction

ICT infrastructure and Systems refers to information and communications Technologies such as computers and the Internet, as well as fixed-line telecommunications, mobile phones, other wireless communications devices, networks, broadband and various specialized digital devices. ICT infrastructure and Systems is a basic need of every institution at all levels to deploy the e-Learning services. The proposed ICT infrastructure and Systems should serve as the basis to the guidelines and procedures for the institutions. The planned ICT infrastructure and Systems must be aligned with the requirements of the institution and National Digital Agenda for e-Learning.

2.1 ICT Strategic Planning

a) Institutions MUST have ICT Strategic Planning which is to be reviewed regularly (at least every three years) to take into account the advancement of technology (including mobile) and the needs of the stakeholders.

b) The implementation of e-Learning with regard to infrastructure and Systems MUST be included in the ICT Strategic Planning of the institutions.

c) ICT Strategic Planning for the e-Learning MUST be aligned with the requirement of institution, Digital Agenda and National Development Plan.

2.2 ICT Infrastructure and Complementary System

2.2.1 Budgeting

a) Sufficient funding MUST be made available for the procurement of any equipment and software to support e-Learning.

b) Institutions SHOULD make sure that evaluation processes are in place to justify the required annual budget on the ICT infrastructure and complementary systems (such as power, computer labs, studios) with regard to e-Learning requirement.

2.2.2 Maintenance

a) Institutions at all levels MUST make sure responsibilities and processes for maintenance and administration of the ICT infrastructure and systems in supporting the e-Learning services are effective and efficient.

b) Comprehensive project management processes SHOULD be in place with clearly defined responsibility and processes applied systematically with priority given to the ICT infrastructure and systems of the e-Learning facilities.

c) Institutions MUST allocate resources comprehensively for maintenance and upgrading of existing equipment.

2.2.3 Facilities

a) Institutions SHOULD provide facilities for video conferencing and web meeting for teaching and learning purposes.

b) Institutions SHOULD Plan for complementary facilities such as power and computer labs that enable effective digital education

c) Institutions SHOULD provide auto lecture capture system for selected lecture halls.

d) e-Learning facilities for students MAY involve the use of some, or all, of the following technologies:
    i) Desktop and laptop computers, Tablets or Smart phones
    ii) Software, including assistive software
    iii) Projectors
    iv) Interactive whiteboards
    v) A high definition webcam
    vi) Headphone with built-in microphone
    vii) Electronic communication tools, including email, discussion boards, chat facilities and video conferencing
    viii) Virtual Learning Environments (VLEs)
    ix) Learning activity management systems
    x) Online meeting tools such as Zoom, Meet, Canvas, Blue Jeans etc

e) Institutions at all levels SHOULD set up an e-content development studio for lecturers/teachers/instructors equipped with the necessary equipment and software such as (but not limited to):
    i) Workstation and laptop computers to support full multimedia development and video editing services
    ii) A high definition webcam, digital video cameras complete with the green room facilities
    iii) Headphone with built-in microphone
    iv) Software to develop e-content
    v) Interactive whiteboards
    vi) Digital display
    vii) Sufficient digital storage to support multimedia production and back-up
    viii) Mobile and wireless tools, including tablet and smartphones

f) Lecturers/instructors/teachers and e-Learning support staff MUST be equipped with computers or notebooks or any other equipment (including mobile) needed to deploy e-Learning.

g) f) Institutions at all levels MUST provide sufficient ICT infrastructures for the students and staff with special needs.

h) Institutions at all levels SHOULD provide internet bandwidth connectivity with a MINIMUM of 512KB per student.

i) Internet connectivity SHOULD cover all the premises allocated for the learning and teaching activities and the WiFi coverage SHOULD cover a minimum of 80% of the campus buildings including the hostels.

j) WiFi facility in lecture hall/ lab/ tutorial room SHOULD cater for the needs of BYOD for teaching and learning.

k) Institutions at all levels SHOULD provide facilities such as WiFi, power socket etc. in the lecture hall/ lab/ tutorial room to cater for the needs of BYOD for teaching and learning.

l) For the implementation of blended/ flipped learning, access to social media (eg. facebook) and video streaming (youtube) related to teaching and learning SHOULD not be restricted.

2.3   ICT Systems

2.3.1 Learning Management Systems

a) The LMS SHOULD support the Global Learning Consortium's content package, Learning Tools interoperability (LTI) and Shareable Content Object Reference Model (SCORM) standards for content import and export.

b) The LMS SHOULD be grounded in the context of the institution's learning and teaching strategy.

c) The LMS MUST be part of the institutions primary Integrated Management System.

d) Institutions at all levels SHOULD allow the use of other cloud based e-Learning platform (e.g. Moodle, Blackboard, Kolibri, Google Classroom) to be used; however, provision of reporting of data of usage must be made available.

e) The LMS SHOULD at least support Web 2.0 or upgraded emerging technologies based teaching and learning methodologies and good practice.

f) Guidelines (including compliance with legal requirements, accessibility and learning designs) of the LMS SHOULD be readily available to all teaching and learning staff and in use.

g) Monitoring/tracking tools for the usage of the LMS MUST be made available and in use.

h) The LMS monitoring/tracking tools SHOULD be able to track the individual activities.

i) Deployment of the LMS SHOULD be systematically evaluated at the unit of study level including students' learning outcomes.

j) Institutions at higher levels MUST provide online library services including online journals, online database, e-books, audio and video materials to accessed from and integrated to the LMS.

k) The LMS services SHOULD be highly accessible, scalable, flexible and sustainable. Education sector MUST provide a 24/7 LMS uptime with proper back-up all the time.

l) The e-Learning content in the LMS MUST be available in the PRIMARY ARCHIVE for at least THREE YEARS and FIVE YEARS in the secondary archive.

m) Teaching and learning public domain resources like OER or MOOC SHOULD be made available and in use as part of the LMS.

n) Institutions at all levels MUST develop rubrics to measure the LMS effectiveness.

o) The LMS SHOULD support cross-platform to cater for the needs of BYOD.

p) Institutions at all levels MUST provide facilities for the e-Learning content in the LMS such as server and data storage.

SECTION 3: STANDARDS AND GUIDELINES FOR PEDAGOGY

3.0 Online Pedagogy

Online pedagogy is essential for the success of any e-Learning implementation. This section provides some standards and guidelines on effective e-Learning pedagogy and delivery as well as the implementation of Blended Learning.

3.1 Principles for Effective e-Learning Pedagogy

3.1.1 Curriculum alignment

The e-Learning pedagogy SHOULD be matched with and aligned to:

a) The accredited programmes with the curriculum through clear objectives;
b) The learner's diversity and learning styles;
c) The relevance of content covered;
d) The appropriateness of student activities; and,
e) The nature of the assessment.

3.1.2 Contextualized content

Learning materials SHOULD be based around meaningful goals and work related tasks which are expressed in practical language. Contextualized content SHOULD be directly relevant to the learner.

3.1.3 Innovative approaches

It SHOULD be evident why learning technologies are being used, rather than a non-technological approach which achieves the same end as effectively.

3.1.4 Learner engagement

For the learner to learn, the e-Learning pedagogy SHOULD engage the learner. This means that it must gain and hold their attention, and direct attention to the most important parts, while at the same time not compromising instructional quality.

3.1.5 Learner motivation

Learner motivation is very important in e-Learning pedagogy. Motivation SHOULD be centred on the learner seeing one concrete benefit or interest in the materials. Motivation also supports the process of directing the learner's attention and helps recall.

3.1.6 Effective learning

The e-Learning pedagogy SHOULD use a range of different approaches that will allow the student to choose one that suits his/her learning preferences or that can be personalized to his/ her needs.

3.1.7 Meaningful interaction

Students SHOULD be required to interact with one another, with the instruction, with the content, with the entire class, in small groups or teams, one-on-one with a peer, etc. Good instructional interactivity SHOULD have the following components:

a) It offers genuine challenge and opportunities for practice to the learner and is based on application of learning rather than rote regurgitation.
b) It is strongly aligned with the work-related context.
c) The activity is easy to perform functionally and strongly associated with the learning task.
d) The feedback should be specific to the learner's response and consequences of interaction SHOULD be context related and reinforce the underlying learning points.

3.1.8 Strive for presence

The following are three forms of presence that SHOULD be strived for in e-Learning environments:

a) Social presence

Social presence can at least be in the following three forms:

    i) Affective -The expression of emotion, feelings, and mood.

    ii) Interactive -Evidence of reading, attending, understanding, thinking about others' responses.

    iii) Cohesive - Responses that build and sustain a sense of belongingness, group commitment, or common goals and objectives.

b) Cognitive presence

The extent to which the instructor and the students are able to construct and confirm meaning through sustained discussion in a community of inquiry. It can be demonstrated by introducing factual,   conceptual, and   theoretical knowledge into   the discussion.

c) Teaching presence

Teaching presence is the facilitation and direction of cognitive and social process for the realization of personally meaningful and educationally worthwhile learning outcomes.

3.1.9   Coherence, consistency and transparency

The e-Learning pedagogy MUST be internally coherent and consistent in the way the objectives, content, student activities and assessment match each other. It MUST be open and accessible in its design.

3.1.10 Inclusion

The institution apply the Web Content Accessibility Guidelines (WCAG), which the World Wide Web Consortium developed in order to make web content more accessible to people with disabilities. The e-Learning pedagogy SHOULD support inclusive practice seen in terms of different types and range of

achievement; physical disabilities that can be supported by e-Learning; different social and ethnic groups; and gender. This means that files, such as Word docs, PowerPoint slides, PDFs, etc. SHOULD be created with suitable styles and headings and whenever possible, be available in alternative formats such as large print, audio, Braille and if possible, DAISY, sometimes known as digital talking book format. For persons with visual impairment Text to Audio Tools must be adopted. For persons with hearing impairment Caption tools can be used. Software tool tools that enable accessibility should be considered.

3.2   Effective Online Course Architecture

3.2.1 The 'access to learning' and 'course introduction' SHOULD be made available throughout the course.

3.2.2 Learning SHOULD be constructed in modular elements centred on clearly stated learning objectives.

3.2.3 Adaptive learning SHOULD consider the following:

a) The learner controls content sequencing,

b) The learner controls content presentation speed,

c) Access to learning support is not constrained, and

d) The learner may repeat sections as required prior to undertaking summative assessments.

3.2.4 Instructional units SHOULD be organised such that the learner can bookmark and return to the last previously visited unit.

3.2.5 Learning events SHOULD be clearly and closely coupled to the learning objectives and SHOULD be sufficient to allow the learner to achieve the learning objective.

3.2.6 Learning materials SHOULD be designed around learning sessions of 10-30 minutes delivery duration (shorter is generally better).

3.2.7 The learner SHOULD have the amount of time for an instructional unit indicated (normally before they start the unit).

3.2.8 Learning sessions SHOULD be designed to be as self-contained as possible.

3.2.9 The general events of instruction SHOULD be contained within a single learning session including at least the following:

a) Clear statement of objective(s),

b) Overview of instructional materials,

c) Recall of prerequisites/context setting,

d) Optional (pre-tests, recall and refresher questions from previous

e) sessions, other forms of reinforcement of prior learning),

f) Delivery of instructional materials (instructional content and

g) instructional interactions/activities),

h) Provision for learning practice or formative assessment,

i) Session summary.

3.2.10 Within the course, there SHOULD be congruence between learning objectives, instructional materials and formative as well as summative assessment.

3.2.11 Summative assessment SHOULD be sufficiently detailed to ensure the learner has achieved the learning objectives.

3.3 Effective Online Course Delivery

3.3.1 Course objectives

a) The learning objectives of the course MUST be clearly stated and understandable to the student.

b) A complete and clear course syllabus SHOULD be available for review.

c) The course SHOULD be organized in coherent and sequential manner.

d) Assignments are aligned with stated objectives/learning outcomes.

e) Meaningful assessments SHOULD be created and provided as follows:

i) The type and quality of student assessments included are appropriate for the course and tied to course objectives.

ii) Students are provided opportunities for formative assessment and feedback.

iii) Instructor feedback is more than a grade.

iv) Clear grading criteria are defined.

v) Consistent feedback is given.

vi) Student assessments are external to the online learning environment where appropriate.

3.3.2 Pedagogical: Learning and teaching theory

a) Instructor/facilitator SHOULD facilitate the learner's efforts in constructing and interpreting new knowledge (Active Learning) through:

i) Student engagement

- Students are requested to introduce themselves to the group.
- Discussions are learner focused.
- Students have opportunities to make choices about course content or activities.
- Cooperation and collaboration between students is encouraged.

ii) Course facilitation

- Moderate discussions.
- Present content in a logical progression.
- Make content available to students in manageable segments.
- Scaffold important information to learners who face difficulties
- Provide a statement introducing students
- Create course assignments and projects that require students to make appropriate and effective use of external resources, including print, library, web-based, and other electronic resources.
- Provide students with mental models (schemas) to help organize materials.

b) Instructor/facilitator SHOULD integrate the diversity of students' needs and experiences into the learning process (Constructive Learning, Prior Knowledge) by considering:

i) Diverse learning styles.

ii) Prior experience and knowledge.

iii) Cultural diversity.

c) Instructor SHOULD encourage and develop higher-level critical thinking (Intentional Learning) by

i) Providing opportunities for students to work at the higher levels of Bloom's taxonomy: knowledge, comprehension, application, analysis, synthesis, and evaluation.

ii) Giving students opportunities to engage in abstract thinking and critical reasoning.

d) Instructor/facilitator SHOULD promote self-directed learning, guided discovery and reflection (Reflective Learning) by:

i) Encouraging personal autonomy.

ii) Providing opportunities for reflection (meta cognition).

iii) Encouraging self-assessment.

iv) Providing opportunities to identify topics, problems, cases

v) and make informed judgments.

e) Instructor/facilitator SHOULD facilitate learning through interactive, collaborative activities (Collaborative Learning).

i) Encouraging learner cooperation.

ii) Developing varied collaborative activities: research and group projects; peer assessments.

f) Instructor/facilitator SHOULD anchor instruction with authentic tasks situated in real-world contexts (Contextual Learning) by creating:

i) Activities relevant to learners that allow learners to attach personal meaning to content.

ii) Authentic activities that involved problem-based or case-based activities.

iii) Simulations (e.g. role-play) that apply to real-world issues.

g) Instructor/facilitator SHOULD promote a conversational, social and dialogical process (Conversational Learning) by:

i) Incorporating social aspects to improve satisfaction, provide a realistic environment, present multiple viewpoints, and overcome anonymity.

ii) Developing varied opportunities for interaction: student-student; student-instructor; student-content.

iii) Ensuring a sense of community by:

- Creating a safe environment;
- Participating in discussions (and/or chats) and post a self-introduction;
- Acknowledging learner contributions;
- Moderating disagreements and group problems;
- Providing separate communication opportunities for sharing non-course information.

3.3.3 Class Management

a) Post course materials online in advance so learners can plan.

b) Ensure that all learners are 'on board' at the beginning

c) Provide clear and concise directions on how to navigate through the course.

d) Convey changes and updates.

e) Return learner calls/emails quickly to allow learners to progress.

f) Refer problems to appropriate sources and follow up to ensure resolution.

g) Have an alternate plan in case the LMS is unavailable.

h) Make a course backup at the beginning and the end of the academic calendar.

3.4 Implementation of Blended Learning

3.4.1 Blended learning implementation options

a) The online component of a blended learning course MAY be implemented according to one of the following ways:

i) By hours in week

- For example , the traditional course of 3 hours F2F instruction per week for a three credit course is reduced to 2 hours F2F + 1 hour guided online learning.

ii) By weeks
- Online learning is designed according to the weeks in the semester/term.
- Example: 10 weeks of fully F2F is followed by 4 weeks of totally online learning.

iii) By alternate weeks
- Online learning is designed into alternate weeks.
- Example: 1 week of F2F is followed by a week of total online learning and so on.

iv) By topics
- Topics are chosen to be taught online and the hours are estimated based on the length and depth of the topics.

v) By tasks
- Tasks are chosen to be completed online rather than in-class. The estimated time to complete is calculated equivalent to student learning time in class.

vi) Case by case
- Technology is integrated into the classroom. Students are assigned technology related tasks (the present F2F hours are maintained).
- Utilizing other models of blended learning such as Flipped Learning or wrapping a MOOC is encouraged as long as the instruction and learning tasks are carefully designed and student learning time calculated to meet the credit hour requirement.

3.4.2 Credit hours and student learning time (SLT) for blended learning

a) Blended learning MUST be implemented in accordance with the credit hours specified for each course:

i) Course coordinators and e-Learning instructors MUST plan for the online component to fulfil the student learning time (SLT) necessary for the credit requirement of the course.

- A credit hour is an amount of work represented in intended learning outcomes and verified by evidence of student
- achievement.
- MQA : A credit is the total student learning time (SLT) required to achieve the identified learning outcomes for a particular module at the micro level and for the programme at the macro level.
- One credit equals 40 notional hours of SLT.

ii) The online component of a blended learning course comprises activities such as lectures, projects, problem based tasks and discussion in general. These can be in the form of watching and comprehending instructional videos, playing a learning game, watching and comprehending animations, completing a simulation, readings, forum discussion, MOOC participation, responding and posting one's work with peer evaluation, self assessment, quizzes etc.

iii) Calculation of online student learning time SHOULD be based on the following activities:

- The time spent in synchronous live instruction. This is equivalent to F2F on location instruction.
- The average time spent on a screen and the number of screens viewed in the course of online instruction. The average time spent on a "screen" is generally calculated as being between 3-5 minutes per screen.
- The run-time for required media based assignments. This must take into account the actual length and the expected multiple viewings of the media (video, audio, animation, simulation) for review and re-enforcement of the material.

- The time required to consume content such as by reading an article, watching a self-paced instructional video, playing an instructional game etc.
- The instructor expectation of time spent in online instructional tasks and activities such as:
  i) Postings to group discussion sites/bulletin board.
  ii) Online group project work
  iii) Use of class social media sites for group discussion/ participation
  iv) Student-teacher interaction
  v) The suggested allocation of SLT for a Blended Learning course with 30% -50% online component is given below
  vi) Attendance in the blended mode teaching need not be measured solely on physical presence. It SHOULD include learner's engagement (e.g. forum participation) in completing the online task which may or may not be traced by the system. Student engagement in the online task SHOULD be seen as equal or more important than mere physical presence.

3.4.3 Role of the instructor/facilitator and teaching hours
  a) The role of the e-Learning instructor/teacher shifts towards a facilitator and a collaborator as percentage of online learning increases.
  b) Delivery and teaching hours:
  i) The traditional teaching hours or instructional time spent in a specific location (class, lab etc.) need not necessarily apply to online instruction where learning takes places anytime, anyplace and anyhow.
  ii) Extra hours should be factored in to account for the hours spent on instruction and facilitating student online learning.
  iii) A minimum of 2 hours online is equivalent to 1 hour F2F on location.

3.5 Online Instructional Interactions

3.5.1 The learner SHOULD be actively and mentally engaged with the instructional content through instructional activities.

3.5.2 Instructional materials SHOULD contain meaningful interactions (this may be interaction with the materials, interaction with the facilitator or interaction with other students).

3.5.3 Interaction SHOULD be focused on learning content, and SHOULD cause the learner to reflect on the learning content. Interaction (wherever practical) SHOULD directly involve the learning content rather than being mediated through standard interface elements.

3.5.4 Interaction SHOULD be focused to allow users to gain confidence that they are learning and reinforce content presentation through active manipulation.

3.5.5 Formal student interaction, required by learning objectives SHOULD be focused on the learning objective and SHOULD be moderated as appropriate.

3.5.6 Asynchronous student interaction with learning facilitator SHOULD occur within predefined time windows and latency periods.

3.5.7 Interactions that support learner practice SHOULD:

   a) Accurately reflect the context of real world skill application,

   b) Explain what the reason for the interaction is,

   c) Where complex or extended, be broken into sub-components,

   d) Be interspersed through the instructional session as opposed to being concentrated in one particular section of a session,

   e) Follow a designed elaboration strategy - should build from simple to complex, or should support skill practice with worked examples prior to scenario based learning,

   f) Feature reinforcement, or multiple examples, Include examples as to where the learning might be applied,

   g) Be paced to allow learner reflection and consolidation.

3.5.8 Assessment questions SHOULD:

a) Be constructed in such that the mechanism for answering questions is straight forward,

b) Be focused on testing knowledge through application to a job relevant task (and avoid the student simply 'parroting' the information back in a rote fashion),

c) Cover areas and learning objectives that have been previously taught,

d) Be pitched at a suitable level of difficulty for the audience,

e) Be clearly worded (i.e. avoid negative constructions),

f) Have clear instructions as to how to answer the question,

g) constructions should be varied, and suitable for the type of question being asked,

h) Be programmed to prevent invalid questions or answers,

i) Give the learner the opportunity to change their mind,

j) Where questions or assessments are timed this is to be clearly stated at the beginning, and an indication of elapsed or remaining time to be displayed.

3.5.9 In formative assessment questions, feedback SHOULD be:

a) Specific to the user's answer,

b) Focused on the learning goal,

c) Containing information relating to the question and the answer to stimulate user recall,

d) Comprehensive and suggest a further cause of action to the use

3.6 Features of Good Online Instructors

3.6.1 Besides experience with and knowledge of course content, the following COULD be used as a checklist for selecting a good online instructor.

a) A basic understanding of the Internet, word processing, and e-mail.

b) Some background or experience in teaching or training.

c) Reliable Internet access at work or home.

d) Prior experience teaching the course in a face-to-face setting or experience with the content.

e) Significant time to devote to course development and ability to complete initial drafts of course content prior to the course open date.

f) The ability to devote 6-9 hours per week to teach the course (for a 3-credit hour or equivalent), depending on the level of interaction and volume/length of assignments.

g) The ability to express ideas, concerns, suggestions, and answers to students succinctly and clearly, in writing.

h) A willingness to modify and adapt teaching methods and strategies based on student or participant feedback.

i) Able to integrate technology into teaching creatively.

3.7 Facilitating Online Discussions

The following guidelines in facilitating online discussion COULD be adopted:

3.7.1 Give students clear expectations about online discussion requirements, deadlines, and grading procedures.

3.7.2 Assess the quality as well as the quantity of the students' online posts. Using rubrics will allow students to have a clear guideline of your expectations for quality of their posts

3.7.3 Provide a schedule for students of upcoming discussion board deadlines. Give as much notice as possible.

3.7.4 Provide structure for students to post to threads. A good structure lessens the frustration of what to write.

3.7.5 Do not allow domination of the discussion. If students are dominating the discussion, privately ask them to slow down a little.

3.8   Assessing Discussion Board Activities

Assessing discussion board activities COULD take many forms. Regardless of the type of assessment strategy or tool used, the following guidelines COULD be adopted:

a) Assessment MUST match learning outcomes
b) Assessment MUST be aligned with instruction.
c) Students MUST be given clear guidelines regarding how their work will be assessed.

Assessment COULD be done in the following ways:

i)   Teacher Assessment

Teacher assessment is probably the most commonly used assessment. Any of the tools listed on this page can be used by teachers to assess their students.

ii) Self-Assessment

Encourages students to think about their own learning and to reflect upon areas of strengths and weaknesses.

iii) Peer Assessment

Actively involves students in the assessment process and encourages critical thinking skills. Students often respond more positively to feedback from their peers.

3.9   Guideline for Fair Use

Under Fair Use guidelines, instructors MAY use a portion of a copyrighted work once in their classroom teaching during a course. Fair Use MUST stand the tests of brevity, spontaneity for teaching effectiveness, and avoid cumulative effect that impacts a single work or author. Current copyright law gives educators the ability to use certain copyrighted works for educational purposes without securing permission or license.

3.10 Dealing with Cheating/ Plagiarism

There will always be students attempting to cheat in exams regardless of the delivery methods. The following are some guidelines on how instructors COULD initiate to make cheating more difficult:

a) Use question pools and randomize the question selection. This will allow instructors to make each student's test at least slightly different from the next. The greater the number of questions in the pool, the more the randomization that can occur.

b) Make the test available for a short time-period. There are two ways instructors can achieve this effect. They can place a time limit on how long students will have to complete the test. They may also control the amount of time students have to access the test by limiting the dates of availability.

c) Present one question at a time. Any item presented on a computer screen can be copied and printed including your tests. One way to deter this from occurring is to present one question at a time and prohibit backtracking. This allows a student to see only one question on the screen at a time and they are not allowed to navigate back to a previous question once it is answered.

d) Use a lock-down browser software to secure online tests. This software is administered at an enterprise level and will keep students from copying and/or printing tests, switching windows, accessing other URLs and block other applications from running. This option will require that students go to a testing centre in order to take their tests.

e) Require a proctor. Instructors can require students to take the tests in a proctored environment. This can usually be set up with another school, library or testing centre. Proctors are provided with password access to your test and specific instruction regarding what a student may do or use during the assessment.

3.11 Encouraging Academic Honesty

Academic honesty and plagiarism have become more complicated issues with the explosion in access and use of the Internet. The following are some ways that COULD be adopted by instructors on how to encourage academic honesty and discourage plagiarism.

a) Include information in the syllabus about intellectual property and academic honesty. Go over that information with the class.

b) Provide online resources that further explain the details (and examples) of plagiarism and adhering to copyright law. This is sometimes more meaningful at the time of the assignment.

c) Be a role model.

d) Explain where and how online resources are obtained.

e) Exemplify and discuss ways to cite resources.

f) Discuss the libraries' role in helping access to electronic reference materials.

g) Discuss the negative impact of online "paper mills" that allow students to purchase work instead of creating their own.

h) Indicate the utilization of search engines or software to detect plagiarism.

SECTION 4: STANDARDS AND GUIDELINES FOR CONTENT DEVELOPMENT

4.0 Introduction

Development of the e-contents or digital content is one of the most important aspects in the implementation of e-Learning programmes. This section will discuss five important aspects of e-content development: approaches of content development, software and tools, process of content development, quality of content development and finally the contemporary and future approaches.

4.1 Approaches of Content Development

There are various approaches to content development and which approach is best for all levels education will be very much dependent on the time constraint, availability of expertise, budget and the e-Learning culture in the institution. Institution MAY consider adopting one or more of the following:

4.1.1 Self-Development (Lone Ranger) Approach

This is the simplest approach to develop contents for e-Learning whereby the lecturer/instructor/teacher involved will create contents to be used in his/her own online class. To adopt this approach, the instructor SHOULD acquire some skills to use certain tools to create contents which are both interactive and engaging. Currently, there are a number of tools which can be considered as rapid e-Learning software, such as screen casting software and PowerPoint to Flash conversion software. There are number of software available for content development which institutions can choose based on their relevance and affordability.

4.1.2 Outsource

The second approach is by outsourcing the content development process to a commercial content developer. This approach has the advantage of quick turnaround time and, if properly managed, will produce the best results.

a) The Institutions MUST form a team of knowledgeable persons who can represent the institution in all discussions with the vendor.

b) The team MUST be able to set clear requirements and MUST communicate them clearly to the vendor.

c) A proper quality assurance process MUST also be in place. It SHOULD be done not only at the beginning or the end of the project but also throughout the development process.

d) In selecting the vendor, the e-Learning team SHOULD first evaluate the capability of the people who will be working on the project, and then the capacity of the vendor in terms of human resources, as well as the vendor's financial stability.

e) The institutions MUST be prepared for any potential risks. The specifications and guidelines are the first important documents that define acceptable quality, and they are also the documents that MUST be referred to in the event of disputes.

4.1.3 In House Development

Higher Educational Institutions should be build capacity for in-house content development. In house content development requires the work of a group of professionals who will form a team to develop contents for the institutions.

a) The team SHOULD include a project manager, instructional designers (IDs), subject matter experts (SMEs), web developers, graphics artists, multimedia developers, programmers and technical support staff.

b) The project manager SHOULD conduct needs and audience analyses before starting the content development project He / she SHOULD also coordinate all activities and roles in the different stages of the process.

c) Instructional designers (IDs) SHOULD work with managers to understand the curriculum requirements, collaborate with SMEs to define which learning outcomes are to be covered in the course and choose the appropriate instructional strategy. IDs also SHOULD be responsible for designing specific e-Learning activities and materials that will be part of the course.

d) The subject matter experts (SMEs) are the lecturers who contribute the knowledge and information required for a particular course. They SHOULD collaborate with IDs to design a course and define assessment strategies. In the full online learning mode, SMEs SHOULD be involved in writing the text of e-Learning lessons, while in the blended mode SMEs SHOULD act as online as well as classroom instructors.

e) Web developers SHOULD be responsible for developing the course websites, assemble the course elements, create the courseware, adapt the interface of a learning platform (LMS) and install the courseware on a server.

f) The Graphics artists SHOULD create graphics including navigation buttons and icons.

g) Multimedia developers are personnel who SHOULD be doing the audio and video editing, animation, and develop media and interactive components of the courseware.

h) Sometimes programmers are needed to develop complex interactions within the courseware. The technical support staff SHOULD assist both producers and users of e-Learning courses at every stage of the process.

i) Some of the roles described in this section COULD be combined into a single job profile.

j) The actual composition of the team depends on factors such as the size of the project, the amount of work outsourced, the

4.1.4 Lecture/lesson Capture System

Lecture/lesson capture is a general term describing any technology that allows instructors to record what happens in their classrooms and make it available digitally.

a) The technology SHOULD record the instructor's audio and video, as well as the presentation conducted using PC, laptop or tablet, synchronize them and webcast them as streaming videos or archives for video on demand mode.

b) Lecture/lesson capture systems for the Institutions SHOULD be managed by the technology or ICT support unit.

c) The system SHOULD be automated in ways that allow the lecturer/teacher to use a touch screen interface to start and stop the recording of a lecture. The recording SHOULD be processed and uploaded to a server that can be accessed by students.

d) If a class is conducted in a location where an automated recording system is not available, a portable recording system COULD be used. Some editing is required to synchronize lecture slides for viewing alongside the relevant sections of audio and/or video recordings of the instructor.

e) If the two options above are not available, the lecturers/teachers COULD use some commercially available software applications to capture their own video, the computer screen, PowerPoint, and audio.

4.1.5 Open Educational Resources (OER)

Another approach for content development is to make use of open educational resources (OER) which are freely available from the internet. The OER are usually released under creative commons license that permits access, use, repurposing, reuse and redistribution by others with no or limited restrictions. OER materials can be downloaded, shared, reused and remixed for various educational purposes.

a) Locating OER

To locate suitable OER we COULD use some specialized search engines that search specifically for OER. Some examples:

   i) Creative Commons Search: http://search.creativecommons.org.

   ii) Open Courseware Consortium:
      http://www.ocwconsortium.org/courses/search.

iii) Another approach is by searching major OER repositories such Massachusetts Institute of Technology Open Courseware Repository (MIT OCW).

b) Development of OER

i) The process of developing OER contents is very similar to the process of developing learning materials to be used in the classroom. The main difference is the requirement that everything included in the contents MUST be free of any copyrighted materials.

ii) If it is necessary to include copyrighted materials in the developed resource, written permission of the copyright owner SHOULD be obtained.

iii) In order for the OER to be useful to others, the file type, size and formatting MUST be fully accessible and adaptable. For example, for the common file types, the following file formats SHOULD be used:

- File type   Format
- Text files   Open document format (.odt);
- rich text format (.rtf);
- portable document format (.pdf)
- Images   PNG or JPEG
- Audio   MP3
- Video   MPEG4

iv) Before publication, the owner SHOULD decide how open the resource will be and then select the corresponding license to give access while preserving the author's rights.

c) Copyright of OER

Creative Commons (CC) licenses are a specific type of open license, used commonly with OER, whichallow sharing resources for free. For more information and the generation of CC licenses, Education sector SHOULD refer to Creative Commons website (http://creativecommons.org).

4.2   Software and Tools

Effective online contents will usually involve the use of the following elements: text, image, graphics, audio, video, animation, and or simulation. Choosing the correct software or tools for e-content development is also important. Factors that developers SHOULD consider when choosing the software or tool are usability, maintenance, accessibility, compatibility and affordability.

4.2.1 Usability

In order to develop e-content, it is wise to choose the development tool that the developer is familiar with. Also, the tool SHOULD have a user-friendly interface that can be familiarized easily.

4.2.2 Maintenance

If a developer chose to use a downloadable software or tool from the internet, it is advised that the developer look for any online tutorials related to the software or tool. This can be helpful in times when help is needed to solve immediate problems related to the software or tool while developing e-content.

4.2.3 Accessibility

a) The developed e-content lessons SHOULD be usable on various devices including smart phones and other mobile devices.

b) If the developed e-content lesson is available online, it SHOULD be accessible with several web browsers (e.g. Internet Explorer, Edge, Mozilla Firefox, Safari, and Google Chrome).

c) The e-content lessons that support various devices usually are using HTML5 or SCORM formats. Recommended standards for various forms of e-contents are listed in Annex 2.

4.2.4 Compatibility

a) If the chosen software has to be downloaded first before lessons can be developed, SHOULD be choose software that is compatible with various operating systems such as Windows, Linux and Macintosh.

b) The best e-content software MUST be flexible in terms of file formats and can easily incorporate documents, audio, video and interactive components.

4.2.5 Affordability

Basically the tools that can be used to develop such contents can be divided into three types. They are commercial, free and online software.

a) The commercial software usually requires license which COULD be purchased either yearly or perpetually.

b) The free software COULD be downloaded from the Internet and some of them are as good as the commercial ones.

c) The online version is usually hosted on a server and users MUST have Internet connection to use them. The choice of software is very much dependent upon the budget of the institution, ease of use and user requirements.

Some examples of software and tools commonly used for content development are listed in Annex 3.

4.3   Process of Content Development

The development of e-content materials is a complex one, involving multiple steps or phases. For educational or training materials, instructional design model (ID Model) is a process framework that SHOULD be used. These models SHOULD be used to guide the approach to the art or science of instructional design. Prescriptive models provide guidelines or frameworks to organize and

structure the process of creating instructional activities. There are numerous instructional design models available such as ADDIE Model, ASSURE Model, Dick & Carey Model, Hannafin & Peck Model, Waterfall Model, Rapid Prototyping Model, Hypermedia Design Model, Multimedia Design Model and the list is continually growing.

4.4 Quality of Content Development

The development of quality e-contents SHOULD consist of content, design and delivery. Content includes the research and organization of materials. Design is the architecture of the e-content and the graphical enhancements. Delivery is how the idea and messages are being presented.

The followings are some key points for planning, creating and delivering quality e-Content for learning and teaching:

4.4.1   Design and layout of the contents SHOULD be consistent.

4.4.2   Organization and presentation of information SHOULD be clear.

4.4.3   Navigation within the content SHOULD be consistent and easy-to- use.

4.4.4   Design of materials and graphics used MUST be presentable.

4.5 Intellectual Property Rights and Copyright Issue

Intellectual property rights is important as it gives protection to the owner or developer of the e-Learning resources, provides rules and regulations to the users that have access to the materials and guidelines on how the e-contents can be distributed. In order to encourage continual development of e-content, the protection of copyright is very important. In Uganda, the protection of IPR is managed by Uganda Registration Services Bureau (URSB). E-Content developers, authors and users SHOULD have a clear understanding on the basic principle of intellectual property rights protection and copyright law. These include what is protected under the law, what constitutes copyright infringements and the exceptions under fair use policy.

4.6   Contemporary Approaches in e-Content Development

Currently, mobile and personal technology is increasingly being viewed as a delivery platform. Sooner or later this emerging trend will affect the way e-contents are being developed.

4.6.1 Mobile First

This is the approach when the e-content developers SHOULD prioritize the mobile platform first and the other platforms become secondary. In other words, the developer starts the entire design process by designing for the smallest screen.

4.6.2 Mobile Ready

In this approach, the content developer SHOULD develop e-contents that are flexible enough to be viewed by using either the desktops or mobile appliances, depending on the user preferences. Mobile ready concept can be associated with the responsive approach to give satisfactory e-content user experiences when they view it.

4.6.3   Responsive

The basic idea of this approach is that the e-content SHOULD detect and deduce what type of device is currently being used to view it and adapt its content appropriately to fit the screen of the device. Responsive design approach aims to improve user experiences when browsing the e-content by repaginating text, resizing photos, provide optimized useful navigational features for smart phones, tablets, e-readers, laptops, game consoles and other internet- enabled devices. On top of that, it can also adjust the file size of the e-content depending on the bandwidth and speed of the receiving device. Development of e-content in HTML5 supports responsive design features so that the content developed has the same impact across the myriad of devices that the learners use.

4.6.4 Assistive @ Adaptive

Assistive or Adaptive Technology commonly refers to products, devices or equipment, whether acquired commercially, modified or customized, that are used to maintain, increase or improve the functional capabilities of individuals with disabilities. Assistive (or Adaptive) technology enables people with physical disabilities to have more accessibility when navigating web pages and access e-content materials; such technologies include navigation screen reader and speech recognition.

4.6.5 Gamification

Gamification is the use of game thinking and game mechanics in a non-game context to engage users/audiences and solve problems. Knowledge retention for game or simulation is generally higher than traditional instruction.

4.6.6 Virtual Reality

Virtual reality (VR) can improve digital education by providing students with memorable and immersive experiences that would otherwise not be possible. VR content can be made accessible to every student and can be easily monitored by teachers. Virtual experiences have the power to engage and inspire students in a unique and powerful way.

4.6.6 Augmented Reality

Augmented Reality (AR) is a technology that blends digital information with the information from physical-world environments, enabling users to interact with virtual objects and view the physical environment (usually through a digital camera in a mobile phone or tablet) simultaneously. AR enable digital content to be created in real time with smartphones, laptops, tablets etc.

4.6.7 Artificial Intelligence

Artificial Intelligence content in education enables institutions to carve out personalized learning experiences for students. From student data, AI can analyze the student's learning speed and needs. With the results, institutions can personalize course outlines that enhance learning based on students' strengths and weaknesses.

SECTION 5: STANDARDS AND GUIDELINES FOR TRAINING AND PROFESSIONAL DEVELOPMENT

5.0   Introduction

e-Learning instructors, trainers and content developers require quality professional development to ensure the successful delivery of e-Learning. e-Learning instructors must be well trained in online course design and/or online facilitation; trainers and content developers must be equipped with the latest knowledge and skills of using technology tools to create materials to support e-Learning. These guidelines for professional development place focus on the lecturers/teachers/instructors in institutions who are the e-Learning facilitators and most often, the content developers.

5.1   Institutions Plans for e-Learning Training

Institutions MUST strategically plan for e-Learning training.

5.1.1 A clear and structured annual strategic training plan based on institutions' needs and current developments MUST be formulated and documented.

   a) Training plan MUST include components to enhance (1) awareness, (2) adoption of e-Learning and (3) instilling culture of e-Learning in the institution.
   b) A clear process that includes all the above three components MUST be in place.

5.1.2 Planning of training on e-Learning MUST include both staff and students.

5.2 Training Facility

e-Learning instructors and content developers MUST have access to training facility.

5.2.1 A centre or unit MUST be established in the institution to manage training for the e-Learning instructor.

5.2.2 A dedicated e-Learning training lab MUST be provided for e-Learning training.

5.2.3 A dedicated content development lab /studio MUST be provided for e-content development training.

5.2.4 Relevant tools and software MUST be made available to content developers.

5.3 Training Programme for e-Learning Instructors

5.3.1 Education sector MUST provide initial briefing and awareness programme for prospective e-Learning instructors.

   a) The relevant centre or unit MUST conduct briefings and promotions to enhance awareness on e-Learning among institutions lecturers/teachers/instructors and students.

   b) The relevant centre or unit SHOULD provide information on e-Learning through emails and web pages.

5.3.2 Institutions MUST provide training for the e-Learning instructors.

   a) The relevant centre or unit MUST schedule training sessions and develop relevant e-Learning training module,

   b) Training MUST be provided in pedagogical, technical and networking dimensions.

   c) A pedagogical dimension, which implies an understanding and application of the opportunities to use e-Learning in a local curriculum context.

i) Principles of teaching SHOULD emphasize the underlying theory of learning process (Cognitive, Psychomotor, Affective).

ii) Comprehensive training MUST be provided by teacher professional training body or other similar institutions on online pedagogy – learning activities, the know-how to replace f2f with online teaching and tips on strategies for successful online facilitation.

iii) A technical dimension, which implies an ability to select, use and support a range of technology and ICT resources as appropriate to enhance teaching effectiveness; also to update skills and knowledge in the light of new developments.

iv) A collaboration and networking dimension, which includes an understanding of learning networks and collaboration within and between partners; and the ability to create and participate in communities of practice.

d) Training MUST be provided at the minimum of two stages:

i) Basic Training for the e-Learning instructor Training in online pedagogy and the basic use of a Learning Management System- online facilitation, online discussion, online assessment and content uploads must be provided to all e-Learning instructors. These include models of blended learning such as the flipped classroom and mobile learning.

ii) Intermediate Training for the e-Learning instructor Training in instructional design, resource and content development, sharing and collaboration, research and new online technologies must be made available to e-Learning instructors/online educators. These include Training and professional Development

- At least one full-fledge authoring tool for e-content development
- Latest web and social media tools
- Utilization and development of open resources

e) Training of Trainers /Master Trainers

- Qualified instructors MAY be awarded the lecturers/teachers the master trainer status upon completion of relevant training modules set by the Training Institutions Offering Pragrammes in online delivery.

- The Institutions MAY employ trainers who are not e-Learning instructors to train on the use of technology tools and they may be awarded the institutional master trainer status upon completion of relevant training modules set by the university as ToT or equivalent.

5.3.3 e-Learning instructors MUST be kept abreast of the latest e-Learning technologies.

a) The MoES and institutions MUST organize seminars or webinars on recent e-Learning technologies.

b) Selected online educators MUST be given the opportunity to be trained nationally or internationally;

c) Institutions SHOULD allocate grants for e-Learning to lecturers/teachers/instructors to participate in training programmes.

5.4 e-Learning Instructor's Academic Load

The institutions in all levels MUST recognize online teaching or online instruction as similar or more in terms of load and instructor's teaching time as that of the face to face in person instruction.

5.4.1 Teaching hours: Hours spent teaching in an online environment MUST be calculated and credited into the e-Learning instructor's official teaching hours.

5.4.2 Teaching Evidence: Educators MUST be able to show evidence that the online learning has taken place based on the platforms they use. These may be a tracking system in the LMS or links to the conversational URL.

5.5   Provision of Training

5.5.1 Institutions at all levels MAY enlist e-Learning training providers that include:

a) – an accredited national training center.

b) Institution own e-Learning training center.

c) Vendors who are enlisted for specific e-Learning tools.

d) Experts may be enlisted to conduct seminars on recent e-Learning tools and techniques.

5.6   Training Budget

5.6.1   A minimum of 0.5% of institutions yearly training budget SHOULD be allocated for e-Learning training.

5.6.2   e-Learning trainers SHOULD be given rewards for the hours of training conducted.

5.7   Mode of Training

5.7.1   Training MAY take place on an individual basis, group workshops or seminars.

5.7.2   e-Learning training MAY be conducted via several modes:

a) Face-to-face on location or face-to-face onsite

b) Blended learning

c) Flipped training

d) Web seminars

5.7.3 It MAY also be conducted as

a) Training on demand

b) Clinic basis

c) Ad-hoc training

5.8 Training Hours and Certification

5.8.1 Institutions at all levels MUST provide sufficient number of e-Learning trainers.

  a) Institution e-Learning trainers MUST attend a professional Training of Trainers offered by an accredited or certified body.

  b) Institutions e-Learning trainers MUST be trained on the latest and future technologies such as gamification, VR, AR, AI and learning analytics.

5.8.2 Hours spent being trained MUST be recognized by the institutions.

  a) Training hours MUST be credited into the e-Learning instructor's official training record.

  b) A minimum of 20% of institutions teachers/instructor's continuous professional development (CPD) allocation SHOULD be dedicated to e-Learning training.

  c) The recognition of CPD hours MAY include the non-face to face training.

5.8.3   e-Learning   instructors and   trainers MUST be given the acknowledgment by the institution upon completion of various levels of training.

5.8.4   e-Learning instructors MUST be given opportunity to be trained as e-Learning trainers and be given trainer certificate upon completion of both basic and selected e-Learning modules.

5.8.5   Institutions SHOULD acknowledge the skills of an e-Learning trainer; Institutions SHOULD set to give annual award or recognition to the best training facilitator or e-Learning trainer.

5.9 Evaluation of Training

5.9.1 The effectiveness of each level of training MUST be evaluated. Institutions MAY assess according to:

  a) Reaction - increase in awareness and what participants thought and felt about e-Learning (End of training session).

b) Learning - the resulting increase in knowledge and/or skills, and change in attitudes (End of training session).

c) Behaviour - transfer of knowledge, skills, and/or attitudes to the trainee's classrooms (3-6 months after training session).

d) Results - the final results that occurred because of participation in a training program (more flipped classroom, e content developed etc.).

5.9.2 The relevant e-Learning unit or centre SHOULD be responsible in assessing and evaluating the effectiveness of training.

5.9.3   Both quantitative and qualitative evaluation MAY be used.

5.9.4   The evaluation MUST be properly reported and documented.

5.10   Learning Communities

5.10.1   Sharing of expertise among Education sector SHOULD be practiced.

5.10.2   The ministry SHOULD provide opportunities for educators to build online learning communities and to work together in pairs or teams, with access to follow-up discussions to share information.

5.10.3   e-Learning instructors SHOULD be encouraged to be members of existing global e-Learning communities.

5.11   Research, Development and Innovation

5.11.1   e-Learning Content Development

Institutions at all levels SHOULD support the e-Learning instructor's initiative to produce e-content/e-Learning resources.

a) Facility, software and training are provided to support e-content development.

b) Completed and reviewed e-content is recognized as an indicator of the online educator's scholarship.

c) e-content that prescribes to criteria set by the institutions is recognized as equivalent to academic publication.

d) A national repository is made available for the online educator to share his/her e-content and access those developed by others.

5.11.2   e-Learning Research and Development

a) Education sector SHOULD support the online educator's use of research to determine academic needs of students and successful e-Learning strategies.

   i) A percentage of the institution's Research grants are given to support e-Learning research.

   ii) Successful e-Learning research is recognized as an indicator of the online educator's scholarship.

   iii) Reviewed articles and publications related to e-Learning are recognized as indicators of the online educator's scholarship.

   iv) The MoES supports the online educator's innovation in e-Learning.

   v) A national platform for exhibition and awards is made available for the online educator to display and be recognized for his/her e-Learning innovation.

SECTION 6: STANDARDS AND GUIDELINES FOR ADOPTION AND DIFFUSION

6.0   Introduction

e-Learning adoption and diffusion among communities in the institutions is a long and challenging process. Adoption and diffusion of e-Learning is a very important process in order to sustain effective teaching and learning practices within all levels of the institutions communities. It requires the enterprise wide commitment among the institutions communities. The proposed e-Learning Adoption and diffusion must be aligned with the requirement of Digital Agenda, National Plan and e-Learning strategy of the institution.

6.1   Strategic Planning

Strategic planning for e-Learning Adoption and diffusion MUST be in place in all institutions where all proposed strategies in e-Learning Adoption MUST comply with the following characteristics:

6.1.1   Aligned - The strategic plan of e-Learning adoption and diffusion MUST conform with the organizational goals.

6.1.2   Enterprise wide - Everyone in the organization MUST be included in the strategic plan of e-Learning adoption and diffusion.

6.1.3   Continuous – The strategic plan of e-Learning adoption and diffusion programme MUST be operational all the time.

6.1.4   Proactive - The strategic plan of e-Learning adoption and diffusion MUST use innovative, preventive, and protective measures.

6.1.5   Validated - The strategic plan of e-Learning adoption and diffusion program MUST be reviewed and audited to ensure it achieves the stipulated objectives.

6.1.6   Formalized - The strategic plan of e-Learning adoption and diffusion MUST include authority, responsibility and accountability.

6.2   Operationalization

6.2.1 The e-Learning adoption and diffusion related activities MUST be included as part of the Key Performance Indicator (KPI) in the annual performance appraisal.

6.2.2 Lecturers/Teachers/Instructors MUST be proactive in developing and using e-Learning resources effectively such as using appropriate and current teaching and learning technologies.

6.2.3   Institutions at all levels MUST provide regular training programmes for academic staff, supporting staff and students.

6.2.4   Institutions at all levels MUST disseminate the policies, enterprise wide effectively with clear defined operational concept of e-Learning from time to time.

6.2.5   Institutions at all levels MUST allocate a specific budget from tuition fees for e-Learning adoption and diffusion program.

6.2.6   Each institution is encouraged to establish a dedicated e-Learning unit/ centre/representative at the faculty level with qualified e-Learning staff to strengthen the implementation of e-Learning adoption and diffusion.

6.3   Awareness Raising and Implementation

6.3.1   The e-Learning adoption and diffusion activities aim to increase the awareness among communities.

6.3.2   All e-Learning adoption and diffusion activities SHOULD be coordinated by the relevant centre or unit at every institution.

6.3.3   Institutions at all levels SHOULD establish the special interest group on e-Learning adoption and diffusion to serve as a focus group and act as a catalyst to influence the institutions communities on e-Learning.

6.3.4   The annual e-Learning adoption and diffusion activity which comprises of carnival, seminars, workshops, exhibition, competitions etc. SHOULD be organized in order to share some best practices and experiences of e-Learning adoption and diffusion activities in teaching and learning.

6.3.5   The unit/centre related with e-Learning MUST create websites or any online medium (email, facebook, twitter, blog) to disseminate the latest information on e-Learning.

6.3.6   The unit / centre MUST use social media tools to share activities and resources.

6.3.7   Institutions   SHOULD   organize   awareness   programmes   by creating promotional items such as tagline, slogan, banner, bunting, logo, short film, booklet, etc.

6.3.8   The e-Learning adoption and diffusions champions COULD organize promotional shows to enlighten the institution communities.

6.3.9   The e-Learning adoption and diffusion week/month dedicated to e-Learning adoption and diffusion activities SHOULD be organized in all institutions.

6.3.10   The responsible unit in each institution SHOULD showcase e-Learning product, best practices and innovation through various platforms i.e. LMS, website etc.

6.3.11   Institutions SHOULD produce and disseminate publications on best practices on e-Learning, pedagogy and current technology which have to be shared by all academicians widely.

6.3.12   Institutions SHOULD encourage knowledge sharing on the awareness and practice related to creative commons, pedagogy and current technology.

6.4 Monitoring and Evaluation

6.4.1 Appropriate mechanism for monitoring of e-Learning activities and improvements by the users/Heads of Department/Deans MUST be in place.

6.4.2 Institutions at all levels SHOULD conduct self-assessment and evaluation of e-Learning practices using the following instruments:

a) Quantitative and qualitative survey
b) Case study
c) Comparative study
d) Netnography (Social behavior of net citizens)
e) Indicator index and benchmarking among peers

6.4.3 Inventory adequacy check (IAC) for e-Learning adoption and diffusion activities at all levels in the institution SHOULD be established.

6.4.4 Each institution MUST provide a sustainable reviewing system (SRS) in order to enhance the quality of e-Learning and this can be conducted by internal and external assessors.

6.5 Recognition

6.5.1 All e-Learning activities SHOULD be recognized and used for career path advancement and promotion in the institution.

6.5.2 Institutions at all levels MUST recognize e-content published to be equivalent to publication based on the standard set by the MOES Digital Agenda.

6.5.3 All e-Learning activities SHOULD be included in the Student Center Learning initiatives.

6.5.4 Institutions are encouraged to retain the excitement and motivation of e-Learning culture through the recognition of e-Learning Champion (eLC).

6.5.5 Education sector MUST acknowledge e-Learning outstanding participation (students and lecturers) in the form of certificates of merit, awards, letters of appreciation etc.

6.6 Awards

6.6.1 Institutions at all levels SHOULD provide a number of monetary award for e-Learning Champion (eLC) for their outstanding involvement/ activities/innovation of e-Learning activities such as:

    a) e-content development

    b) e-Learning innovation

    c) open courseware (OCW)

    d) e-Learning movers

6.6.2 All eLCs at Education sector COULD be nominated for the national or international level award in e-Learning.

6.7 System Acquisition

Institutions, especially HEIs are encouraged to develop eLearning systems in-house in order to build local capacity and local content. Acquisition of systems SHOULD follow the procurement laws of the country. The following are guidelines for system acquisition for adoption for digital learning.

6.7.1 The platforms adopted or acquired must have the layout and navigational structure of content shells than can be customizable to meet teacher, learner, program, departmental, college, and/or institutional requirements.

6.7.2 The system MUST support the Global Learning Consortium's content package, Learning Tools interoperability (LTI) and Shareable Content Object Reference Model (SCORM) standards for content import and export. The system MUST support the Web Content Accessibility Guidelines, the World Wide Web Consortium developed in order to make web content more accessible to people with disabilities.

6.7.3 Adopted systems must be able to integrate with the institution's enterprise student information system for content shell creation, content enrolment management, assessment submission and grading.

6.7.4   The system must be easy to use with less significant web browser configuration for end-users; affordable additional plug-ins and codecs.

6.7.5   The system must provide traditional and contemporary content item types, tools, and learning objects.

6.7.6   The system supports the integration of third-party teaching and learning plug-ins and APIs as well as academic integrity monitoring.

6.7.8   The system is enables identity and verification learners.

6.7.8   The system supports learning object repositories and centralized management of distributed content.

6.7.9   The system supports mobile devices for users participate in the content delivery process.

6.7.10   The system supports single sign-on Enterprise Resource Planning (ERP) systems and sub-systems.

6.7.11   The system provides functionality to share, collaborate, and manage learning objects.

6.7.12   The system can be kept current with the most recent security patches and updates.

6.7.13   The hosting infrastructure provides a system uptime of 99.99%.

6.7.14   System backups can be performed every 24 hours or less.

6.7.15   Data retrieval and/or restoration can occur within the institutionally defined recovery times.

6.7.16   System upgrades, bug fixes, etc. can be deployed and thoroughly verified in a test environment prior to deployment in the production environment.

6.7.17   Content and data deletion can follow institutional data retention policies.

6.7.18 Mechanisms for technical support for students, instructors, and staff is available 24/7 via phone, email, and/or chat are enabled.

6.7.18 A "frequently asked questions"/technical support knowledge base is made available online as part of the system.

6.7.19   Participation and availability of local IT support is considered in system development, implementation and support

6.7.20   Local content in terms system development and support be considered in the acquisition of the systems for T&L.

REFERENCES

GLOSSARY

ANNEXES