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# Towards a Guide for Developing and Delivering Content Online in Higher Education in Developing Countries: A Case of Makerere University-Uganda

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# **Towards a Guide for Developing and Delivering Content Online in Higher Education in Developing Countries: A Case of Makerere University-Uganda**

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## Abstract

Many higher education institutions in developing countries are struggling to develop and deliver content online. This was evident during the outbreak of the COVID-19 pandemic. This study therefore aimed at suggesting guidelines for contextualized development and delivery of online content within higher education institutions in developing countries with a particular focus on Makerere University in Uganda. The guidelines were developed by answering the following research questions. a) What are the characteristics of well-developed and delivered online content? b) What are the opportunities and challenges in developing and delivering online content in higher education institutions? c) What are the guidelines for developing and delivering online content within Higher education institutions in developing countries? The study adopted exploratory survey design and design science methodology. Mixed methods (qualitative and quantitative methods) were used. The qualitative methods were interviews, observations, and focus group discussions. The quantitative methods were survey. The analysis of the data was descriptive statistics for quantitative methods while thematic analysis for the qualitative methods. Data was collected from MCF e-Learning Champions and e-Learning Coordinator within Makerere University. The findings from this study are based on three objectives. The respondents characterized a well-developed and delivered content online as being interactive and student centered and activity based developed content with clear instruction. Some opportunities were identified; flexibility, interactivity, and accessibility. The study also identified some challenges; unstable and costly internet, limited online navigation skills and experience, and limited access to online facilities, delayed feedback, and learner isolation. Continuous training and capacity building in online content development and delivery assist in mitigating many challenges. For online content development instructional designers or content developers should pay attention at ensuring that the content constructively aligned by starting from intended learning outcomes (ILO), topics/units, learning activities, resources, assessment while for online content delivery the facilitators or faculty should ensure they are actively engaging within the course by providing timely feedback. The study concludes that online content development and online content delivery supplements each other. Well-developed online content makes online delivery more effective.

## Introduction

### Project Description

In the last two years, the development and delivery of content online have gained unprecedented importance world over due to the outbreak of the COVID-19 pandemic. The onset of this pandemic caused the lockdown of almost all the economies including the education sector, leaving online teaching and learning as the only option to facilitate continued teaching and learning. Ultimately, higher Institutions of learning started delivering their courses through Open Distance and e-Learning (ODeL) (UNESCO, 2020).

In Uganda the National council for higher education developed guidelines for the emergency open distance and e-Learning delivery. Despite the plenty of opportunities offered by developing and delivering content online, developing countries, and Uganda in particular, faced ODeL system implementation challenges and limitations during the COVID-19 period. The system was mainly characterized by a lack of ICT skills among the facilitators and learners, a lack of skills in content development and delivery by the facilitators, and limited infrastructure (Zarei & Mohammadi, 2021).

### Problem Statement

In the last two years, the development and delivery of content online have gained unprecedented importance the world over due to the outbreak of the Covid-19 pandemic. The onset of this pandemic caused the lockdown of almost all the economies including the education sector, leaving online teaching and learning as the only option to facilitate continued teaching and learning. Ultimately, higher Institutions of learning started delivering their courses through ODeL (UNESCO, 2020). In Uganda, the National council for higher education developed guidelines for the emergency open distance and e-Learning content development and delivery. Despite the plenty of opportunities offered by developing and delivering content online, developing countries, and Uganda in particular, faced the ODeL system implementation challenges and limitations during the COVID-19 period. The system was mainly characterized by a lack of ICT skills among the facilitators and learners, a lack of skills in content development and delivery by the facilitators, and limited infrastructure (Zarei & Mohammadi, 2021).

In Makerere University, the largest proportion of the teaching staff could not afford to develop and deliver content online, this was mainly due to lack of access to computers systems, high cost of the internet, and limited knowledge of the use of the system among other various unexplored associated needs and challenges (Nawangwe et al, 2021). This study will therefore explore and analyze the needs, opportunities, and challenges associated with developing and delivering content online to craft guidelines for effective contextualized development and

delivery of online content within higher education institutions in developing countries with a particular focus on Makerere University in Uganda.

### **Context and Rationale**

Given the importance identified during COVID-19 that developing and delivering content for online learning is very critical for the success of online teaching and learning. The study was to establish guidelines for developing and delivering online content in higher education institutions. Given that many institutions within developing countries are struggling to adopt the development and delivery of online content, this artifact provided contextualized guidelines in higher education institutions in developing countries towards effective development and delivery of online content.

### **Research Questions**

This study mainly answered the following research questions:

1. What are the characteristics of a well-developed and delivered online content in higher education institutions in developing countries?
2. What are the opportunities and challenges in developing and delivering online content in higher education institutions in developing countries?
3. What are the guidelines for developing and delivering online content within higher education institutions in developing countries?

## **Literature Review**

### **Overview**

This section reviewed literature regarding the characteristics of a well-developed and delivered online content in higher education institutions. The section also discussed literature on the opportunities and challenges in developing and delivering online content in higher education institutions in developing countries. The literature review provided guidance on the development of the survey tool that was used for data collection.

### ***Characteristics of a Well-Developed and Delivered Online Content in Higher Education Institutions***

Online content delivery and learning are catalyzing a pedagogical shift in how teaching and learning are conducted. This mode of content delivery and learning is largely characterized by a shift away from top-down lecturing and passive students to a more interactive, collaborative approach in which students and instructors co-create knowledge in the learning process. The instructor's role is changing from the "sage on the stage" to "the guide on the side" (Stern, 2018). Furthermore, the advancement of the internet and technology have proved important in providing resourceful information for content development and supporting online content

delivery (Grabe & Christopherson, 2005). More so, online content delivery provides an excellent opportunity to lecturers for its unboundedness by time or location allowing for accessibility to instruction at anytime from anywhere (Lan & Sie, 2010; Bala et al., 2021). Teachers find the online teaching environment a convenient way to fit education facilitation into their busy lives. The ability to deliver content and access a course from any computer with Internet access, 24 hours a day, seven days a week is a tremendous incentive for many teachers and students today (Stec et al., 2020).

There are other several incentives available for teachers once they are well trained and guided on the use of online content development and delivery. They can use new-age technologies, such as casting, to make lectures more interactive for students. Online content delivery is also being supported by multimedia content, virtual reality, and augmented reality (Kumar et al., 2021). In addition, there are many other characteristics and opportunities associated with online content development and delivery cited in extant literature. These include student-centered approaches that lead to increased variety and creativity of learning activities, increased student-to-teacher and student-to-student interaction and discussion leading to more clarity and understanding of the issues at hand, and greater outreach to new students' markets (Ferdig & Trammell, 2005).

### ***Opportunities in Developing and Delivering Online Content in Higher Education Institutions***

Previous studies show that e-Learning offers many benefits for students because this type of learning involves student-centeredness, it is more flexible, and it can also improve interaction with students by providing asynchronous and synchronous tools such as e-mail, forums, chats, videoconferences (Rawashdeh et al., 2021). Furthermore, internet technologies facilitate the distribution of content at the same time, to a large number of users; e-Learning platforms offer many advantages to learners such as control over the content, control over the time spent learning, and thus the process can be adapted according to the learner needs and objectives of learning. This might contribute to better communication with the students and in spite of some inherent challenges brought by this time of crisis, e-Learning might enhance the learning process for students (Jenna Gillett-Swan, 2017).

Further to these opportunities and needs fulfillment, development and delivering content online increases the depth of understanding and retention of course content, it enhances technology skills, and life skills like time management, independence, and self-discipline, and is convenient due to 24/7 accessibility of online content (Pathan et al., 2008). In addition, this mode of content delivery enables leveled playing field as students can take more time to think



and reflect before communicating, while it enables improved administration due to its ability to allow time to examine student work more thoroughly, document and record online interactions, and manage to grade online (Kumar et al., 2021). Additionally, preparation and delivering content online implies accommodation of more students, increased student satisfaction which in turn leads to higher retention and fewer repeats, while it lessens demand on limited campus infrastructure.

While the development and online content delivery provide opportunities for the way education is delivered and accessed by learners, assessment practices are often limited in the variety and modes in which they are allocated in the online environment (Jenna Gillett-Swan, 2017). For example, where group presentations within the tertiary environment have been traditionally conducted via predominantly face-to-face mediums, the online environment presents additional opportunities for summative assessment with group presentations that are not limited to a solely live option (Williams et al., 2012). Even so, online group presentation assessments do not appear to be a common practice which may be due to some of the difficulties experienced by both students and academics in using an online delivery platform (Gregory & Salmon, 2013). This is where “the sharing of ‘good practice’ and ‘lessons learned’ among members of the higher education community can help academic teachers concentrate on effective uses of technology and to avoid the unnecessary duplication of effort and expense (Kirkwood & Price, 2014).

### ***Challenges in Developing and Delivering Online Content in Higher Education Institutions***

Despite the opportunities provided by developing and delivering online content, there are plenty of challenges that are associated with online content development and delivery. When it comes to technology which is the gist of online content development and delivery, teaching with it is not a one size fits all approach as it depends on the types of technology in use at the time and also the curriculum content being taught. This means that the incorporation of technology provides additional factors for consideration in terms of teaching pedagogy and the construction of learning experiences (Orlando & Attard, 2016). For instance, Jenna Gillett-Swan (2017) cites that many initial users of online systems tend to focus more on delivery than the task or content.

Furthermore, challenges in the online space and limitations of the software used in the process can slow down interaction and provide limits to functionality while also adding to the time limitations and frustrations experienced by both facilitators/staff and students (Jenna Gillett-Swan, 2017). Reflecting on a lecturer’s perspective for facilitating learning online, the study aimed at developing strategic guidelines for preparing to teach in an online environment focused around pedagogical strategies for supporting facilitators to ensure that content development and

delivery are effective to all students irrespective of their diverse backgrounds. Particularly, the study explored and guided on different strategies that can be adopted in tutorials to overcome technological limitations tutors could experience to streamline and smoothen the process of content development, online delivery, and ultimately learning.

However, when using e-Learning platforms there are also some elements that might be considered obstacles in students' process of learning, such as decreased motivation in students, delayed feedback due to tutors' absence online at the time students may need help, or feelings of isolation due to lack of physical presence of classmates (Jenna Gillett-Swan, 2017).

Nonetheless, these obstacles can be overcome with the help of teachers who should adapt their teaching strategies to the needs of students. In order to do so, experience and knowledge about teaching in the online environment are necessary. Thus, we believe that these challenges and disadvantages could be more prominent while the educational process takes place exclusively online. This might happen due to the lack of teachers' experience in using e-Learning and due to the short time in which they had to adapt their teaching style to the new conditions. Relevant in this way are the results of a study conducted by the School of Education Gateway at the beginning of the pandemic which showed that 66.9% of respondents affirmed that they used online platforms for teaching for the first time (Coman et al., 2020).

Thus, it can be inferred that students and teachers were not ready for an entirely online experience. Therefore, both faculty and students came across many challenges. The Organization for Economic Co-operation and Development (OECD) mentioned that some of the challenges universities have to face were; keeping an equilibrium between online courses, that could affect students health, then spending many hours in front of a screen, and non-digital activities, analyzing and focusing on student's emotional health, providing them with support throughout the process of learning, taking into account the fact that not all students have access to the internet, and managing and monitoring their access to devices in order to effectively collaborate with them (OECD, 2020).

Furthermore, universities also struggle with keeping the content of the course consistent and relevant, with communicating clearly with the academic community, and also with acquiring and recruiting students (Marinoni et al., 2020). On the other hand, students also had to face challenges and a study focusing on students' perspective on e-Learning identified that among the main challenges that students encountered were accessibility, connectivity, lack of appropriate devices, social issues represented by the lack of communication and interaction with teachers and peers (Aboagye et al., 2020).

Even though some universities had used E-Learning as an additional method before the Coronavirus pandemic, most of them were not ready for a full online experience. Thus, in order to continue to properly deliver education, optimization of the E-Learning process is necessary. This optimization should also take into account student-teacher interaction, and the language used in the communication between students and teachers should be clear, but it should also contain specific terms for their field of study (Goian, 2004). Furthermore, Sun et al. (2020) in their study on students' experience during online courses showed that students believe teachers should know how to adapt their lectures to the online environment, not just simply transfer online the information that was usually taught in the traditional way, and that they should give an adequate number of projects and assignments.

Moreover, Popa et al. (2020) identified seven important aspects that stand at the basis of online education and that have an essential role in optimizing learning in special circumstances like the ones created by the Coronavirus pandemic. These aspects involve: managing and developing internet infrastructure in order to avoid interruptions, especially during video-conferences; using friendly tools, that help students assimilate and understand information; providing reliable, interactive and diverse electronic resources; using social networks to build online communities for students in order to reduce feelings of isolation; using various effective techniques such as debates, or learning based on discovery and experience; providing services that help students and teachers learn about the latest policies adopted by universities and the government; and encouraging collaboration between these institutions (Popa, *et al.*, 2020).

## **Methodology**

### **Overview**

This section discussed the research design, population, sample size and sample techniques that were used in the study. The section further described the methods and tools of data collection, and data analysis methods.

### **Research Design**

This research was planned to create an artifact (guidelines for effective development and delivery of online content in higher education institutions). Hence the design science methodology was adopted. The design science stages are adopted from Chatterjee and Hevner (2010) and Peffers et al. (2007). The stages are: definition of the objectives for a solution, design and development, demonstration, and evaluation. The distinct stages and their corresponding descriptions are in the subsequent itemized section below.

### **Definition of the Objectives for a Solution**

This stage involved the use of the problem definition and knowledge of what were the possible and feasible to define the objectives. In this study research questions were used. The following are the research questions that were identified to solve the problem.

1. What are the characteristics of a well-developed and delivered online content in higher education institutions in developing countries?
2. What are the opportunities and challenges in developing and delivering online content in higher education institutions in developing countries?
3. What are the guidelines for developing and delivering online content within higher education institutions in developing countries?

### **Design and Development**

This stage established an artifact to use in this research. The artifacts are the guidelines for the effective development and delivery of online content in higher education institutions. The artifact was established after finding out the needs of the users of the proposed solution. The needs were established using a mixed-methods approach involving both quantitative and qualitative methods. Triangulation enabled the study to identify the quantitative aspects to precisely measure the quantifiable variables for objectivity, while the qualitative aspects enable the necessary exploration to support quantitative results to arrive at conclusive findings (Creswell & Creswell, 2018).

### **Population, Sample size, and Sampling Techniques**

A preliminary survey by the project team established that there are 32 MCF e-Learning Champions and 23 e-Learning Coordinators across Makerere University. The e-Learning Champions and Coordinators are lecturers teaching at Makerere University from different disciplines. The MCF e-Learning Champions and Coordinators were chosen because they are the early e-Learning adopters at Makerere University and helping with the coordination of e-Learning within the university. These constituted the population of 55. It is from this population size that the samples were drawn. Particularly, a sample of 40 e-Learning Champions and Coordinators were involved in the study. The sample size has been arrived at using Krejcie and Morgan (1970) Table for sample size determination. See Appendix I. The samples were selected using purposive sampling since the study needed to identify only the participants with specific characteristics which could only be identified using this sampling technique (Lucas, 2014).

### **Data Collection Methods and Tools**

Data were collected using both quantitative and qualitative methods. The quantitative methods involved the use of a self-administered semi structured survey to solicit data from the selected e-Learning Champions and Coordinators at Makerere University. The questionnaire was structured using nominal and ordinal scales. For conceptual variables, a five-point Likert-type scale—1-Strongly Disagree, 2-Disagree, 3-Neutral, 4-Agree, 5-Strongly Agree—for the conceptual variables. Qualitative methods involved the use of face-to-face interviews to solicit data from selected online content development and delivery experts among the sample. The justification for the target of the MCF e-Learning Champions and inators because they are ones who are familiar and with knowledge of opportunities and challenges associated with online content development and delivery which other faculties many not have experienced.

### **Data Analysis**

Quantitative data was analyzed using descriptive statistics (frequency counts, percentages, means, standard deviations). This was done with the aid of the Statistical Package for Social Sciences (IBM, 2017) and MS Excel. Thematic analysis was adopted for qualitative data.

### **Demonstration**

This stage was demonstrated by use of the artifact to solve one or more instances of the problem. The guidelines were applied within authentic online courses to help in the evaluation. The authentic courses were within Makerere University and they were used iteratively to demonstrate the instances of the problem as suggested from the artifact. This helped in gradually improving and refining the artifact.

### **Evaluation**

This stage observed and analyzed how well the artifact provided a solution to the research issue that were investigated. At this point, mixed methods (qualitative and quantitative methods) were used. The qualitative methods were used through interviews, observations, and Focus Group Discussions to evaluate the development and delivery of online content while quantitative methods were used for online surveys. This stage iterated the design and development stage or the definition of the objectives of a solution stage. The iteration helped in improving the objective of the solution and the artifacts. Online courses within Makerere University were used to improve the artifact.

## Research Findings

### Overview

This section is the presentation of the research findings based on the themes developed in line with the research questions. The research questions were; what are the characteristics of well-developed and delivered online content, what are the opportunities and challenges in developing and delivering online content in higher education institutions? and what are the guidelines for developing and delivering online content in higher education institutions in developing countries?

### Profile Information of the Respondents

The profile of information of the respondents was solicited regarding their gender, highest education level attained, subject matter expertise and years of service in the institution. The results are summarized in Table 1.

**Table 1**

*The profile information of the respondents*

<b>Gender of the respondent</b>	Frequency	Percent
Female	17	42.5
Male	23	57.5
Total	40	100.0
<b>Highest level of education attained</b>	Frequency	Percent
Masters	11	27.5
Ph.D.	29	72.5
Total	40	100.0
<b>Subject matter expertise</b>	Frequency	Percent
Agriculture	2	5
Business and Management	5	12.5
Computing and Information Science	5	12.5
Education	14	35
Engineering and Design	2	5
Health	3	7.5
Humanities and Social Sciences	4	10
Law	1	2.5

Natural Sciences	2	5
Veterinary	2	5
Total	40	100.0
<b>Years of service in the profession</b>	<b>Frequency</b>	<b>Percent</b>
11-15 years	6	15.0
16-20 years	19	47.5
>20 years	15	37.5
Total	40	100.0

Source: Survey Data (2022)

The results in Table 1 show that both gender categories were involved in the study, although male (57.7%) were slightly more than their female counterparts who participated at 42.5%. The study further indicated that the majority of the participants, 72.5% were Ph.D. holders, while the rest (27.5%) had attained masters level of education. According to the results in Table 1, the majority of the participants, 35.0% were experts in the area of education. Education is also the home to the Institute of ODeL with the highest number of e-Learning champions. When you categorize them into science (Agriculture, Engineering, Health, Natural Science, Veterinary, Computing & Information) vs non-science (Education, Humanities and Social Science, LAW and Business and Management) colleges. Science are represented by 40% and non-science are represented by 60%. The results in Table 1 demonstrate that most of the participants, 47.5% has a service experience of 16–20 years, followed by 37.5% that had more than 20 years' service experience in the profession, and 15.0% who had 11–15 years of experience in the service.

### **Characteristics of a Well-Developed and Delivered Online Content**

The study identified a number of characteristics of a well-developed online content in higher institutions of learning. These characteristics are presented in Table 2. Note that the results are interpreted based on the mean values defined by a five-point Likert-type scale as follows: 1-Strongly Disagree, 2-Disagree, 3-Neutral, 4-Agree, 5-Strongly Agree.

#### **Table 2**

*Descriptive statistics on the characteristics of a well-developed and delivered content online*

<b>Characteristics</b>	<b>N</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>	<b>Std De v.</b>
Student centered approaches.	40	4.00	5.00	4.65	0.48
Instructivist approaches.	40	1.00	2.00	1.43	0.50
Clear Intended Learning Outcomes (ILOs).	40	4.00	5.00	4.63	0.49
Interactiveness.	40	4.00	5.00	4.68	0.47
Learners engagement	40	4.00	5.00	4.58	0.50
Activities with clear instructions	40	4.00	5.00	4.78	0.42
Allowance for collaboration.	40	4.00	5.00	4.60	0.50
Allow for co-creation of knowledge.	40	4.00	5.00	4.78	0.42
Accessibility by all users	40	5.00	5.00	5.00	0.00
Accessibility with multiple devices.	40	4.00	5.00	4.60	0.50
Have planned resources (text, video, audio, and infographics).	40	4.00	5.00	4.40	0.52
Have activities with specific deadlines	40	4.00	5.00	4.70	0.46
Should have clear support mechanisms	40	4.00	5.00	4.50	0.48
Should have small chunks of content provided at different times	40	3.00	4.00	3.33	0.47
Should adhere to the needs of the audience (learners)	40	4.00	5.00	4.58	0.50
Allow for familiarization and socialization of the learning environment	40	3.00	4.00	3.03	0.37
Should be aligned with the Intended Learning Outcomes.	40	4.00	5.00	4.45	0.50



Should include both formative and summative assessments	40	4.00	5.00	4.65	0.48
Should put allowance for evaluation	40	4.00	5.00	4.63	0.49

Source: Survey data (2022)

The results in Table 2 show that with the exception of instructivist approach (mean = 1.43), possession of small chunks of content delivered at different times (mean = 3.33), and allowance for familiarization and socialization of the learning environment (mean = 3.03) to which the respondents disagreed and were neutral respectively, the respondents agreed with the rest of the characteristics of development and delivery of online content.

These other characteristics included the development and delivery of content online that should be student-centered (mean = 4.65), it should have clear ILOs (mean = 4.63), it should engage learners (mean = 4.58), and it should have activities with clear instructions (mean = 4.78). Furthermore, the study established that a well-developed and delivered content online in higher education institutions should have allowance for collaboration (mean = 4.60), it should be accessible by all users (mean = 5.00), it should be accessible with multiple devices (mean = 4.60), it should have planned resources (text, video, audio, and infographics) (mean = 4.40), and it should have activities with specific deadlines (mean = 4.70).

In addition to the above, the study established that a well-developed and delivered content online should have clear support mechanisms (mean = 4.50), should adhere to the needs of the audience (learners), it should be aligned with the ILOs (mean=4.45), should include both formative and summative assessments (mean = 4.65) and it should put allowance for evaluation (mean = 4.63).

### **Opportunities for Developing and Delivering Online Content**

The study identified a number of opportunities for developing and delivering content online in higher institutions of learning. These characteristics are presented in Table 3. Note that the results are interpreted based on the mean values defined by a five-point Likert-type scale as follows: 1-Strongly Disagree, 2-Disagree, 3-Neutral, 4-Agree, 5-Strongly Agree.

**Table 3**

*Descriptive statistics of opportunities for developing and delivering content online*

<b>Opportunities</b>	<b>N</b>	<b>Mi n.</b>	<b>M ax.</b>	<b>Mea n</b>	<b>Std. Dev.</b>
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Content development and delivery any time	40	3.00	5.00	4.15	0.80
Content developed and delivery from anywhere	40	3.00	5.00	4.23	0.86
Interactive content development and delivery	40	4.00	5.00	4.53	0.51
Content development and delivery online using simple multimedia tools.	40	3.00	5.00	3.30	0.42
Content development and delivery online using mobile devices.	40	3.00	5.00	4.13	0.72
Content accessibility by many students/learners	40	3.00	5.00	3.85	0.74
Access to a wide range of information	40	4.00	5.00	4.35	0.48
Guidance by learning objectives.	40	4.00	5.00	4.38	0.49
Cost effectiveness	40	2.00	5.00	3.34	1.12
Easy content updating	40	4.00	5.00	4.55	0.50

Source: Survey data (2022)

The results in Table 3 demonstrate that with the exception of content development and delivery online using simple multimedia tools (mean = 3.30), and the cost effectiveness of the system (mean = 3.34) to which the respondents were neutral, the respondents agreed with the rest of the attributes as the opportunities for developing and delivering content on line in higher education institutions. These opportunities include content development and delivery any time (mean = 4.15), content developed and delivery from anywhere (mean = 4.23) interactive content development and delivery (mean = 4.53), and content development and delivery online using mobile devices (mean = 4.13). The other opportunities that were identified by the study as indicated in Table 3 are content accessibility by many students/learners (mean = 3.85), access to a wide range of information (mean = 4.35), guidance by learning objectives (mean = 4.38), and easy content updating (mean = 4.55).

### **Challenges in Developing and Delivering Online Content**

The study identified a number of opportunities for developing and delivering content online in higher institutions of learning. These characteristics are presented in Table 4. Note that the results are interpreted based on the mean values defined by a five-point Likert-type scale as follows: 1-Strongly Disagree, 2-Disagree, 3-Neutral, 4-Agree, 5-Strongly Agree.

#### **Table 4**

*Descriptive statistics for the challenges of developing and delivering content online in higher education institutions*

<b>Challenges</b>	<b>N</b>	<b>Min.</b>	<b>Max.</b>	<b>Mean</b>	<b>Std. Dev.</b>
Unstable and costly internet	40	4.00	5.00	4.35	0.48
Limited online navigation skills	40	4.00	5.00	4.40	0.50
Limited access to online facilities	40	4.00	5.00	4.55	0.50
Limited experience in using e-Learning	40	4.00	5.00	4.20	0.50
Limited alternative assessment modalities	40	3.00	5.00	3.25	0.98
Delayed feedback	40	4.00	5.00	4.45	0.50
Decreased learner motivation	40	4.00	5.00	4.43	0.50
Learner isolation.	40	4.00	5.00	4.48	0.51

Source: Survey data (2022)

The results in Table 4 indicate that with the exception of limited alternative assessment modalities (mean = 3.25), the study established that the rest of the attributes are challenges to development and delivery of content online in developing countries. These attributes are unstable and costly internet (mean = 4.35), limited online navigation skills (mean = 4.40), limited access to online facilities (mean = 4.55), limited experience in using e-Learning (mean = 4.2), delayed feedback (mean = 4.45), decreased learner motivation (mean = 4.43), and learner isolation (mean = 4.48).

### **Discussion of Findings**

#### **Characteristics of a Well-Developed Content Online in Higher Education Institutions**

The study identified a number of attributes that characterize a well-developed and delivered online content. These attributes are student centered approaches, clarity of ILOs, need for learners' engagement, and learning activities with clear instruction. Furthermore, the study established that a well-developed and delivered content online in higher education institutions should have allowance for collaboration, it should be accessible by all users, it should be accessible with multiple devices, it should have planned resources (text, video, audio, and infographics), and it should have activities with specific deadlines. In addition, the study established that a well-developed and delivered content online should have clear support

mechanisms, should adhere to the needs of the audience (learners), it should be aligned with the intended learning outcomes, should include both formative and summative assessments, and it should put allowance for evaluation.

As regards to student-centered approach, the study through interviews established that this is important since one of the system objectives is to develop and deliver content to students who are the end users. As regards clarity of intended learning outcomes, the study through key informants established that keeping both the instructors well focused on objectives of the study enabled the developer, deliver and learn useful and applicable knowledge. Furthermore, the study established through interviews with the respondents that well developed and delivered online content should provide learners with engagements, and learning activities with clear instruction which explain well content to the learners who should be able to grasp the intended knowledge from provided content. This position is supported by Stern (2018) who asserts that the ideal model of content development and delivery online is largely characterized by a shift away from top-down lecturing and passive students to a more interactive, collaborative approach in which students and instructors co-create knowledge in the learning process.

Furthermore, the study established that a well-developed and delivered content online in higher education institutions should have allowance for collaboration. Being an online course, collaboration becomes easy and it allows co-creation of knowledge that results in the delivery of the best quality content to the learners. Interviews with the key informants revealed that collaboration can be done through collegial relationships through sharing of ideas, knowledge and skills especially computing skills through arrangements such as conferences.

The study further established that content development and delivery online should be accessible by all users, with multiple devices, it should have planned resources (text, video, audio, and infographics), and it should have activities with specific deadlines. Key informants' interviewed established that multiple devices often used in content development and delivery online include laptops, smartphones, tablets, and notebooks. These mobile facilities enhance convenience to access such content developed and delivered and this can be conducted from anywhere at any time. This view is supported by Lan and Sie (2010) and Bala et al. (2021) that online content development and delivery enables learners to access educational materials anywhere and anytime using mobile and internet technologies. Lan and Sie (2010) further pointed out that is further enhanced by the fact that some features of mobile devices are generally cheap, portable and flexible.

The study further established that content development and delivery online should have planned resources (text, video, audio, and infographics), while it should have activities with

specific deadlines. Interactions with the key informants established that such resources are important to enhance clarity especially for remote located learner. The key informants in the same regard clarified that such learning systems should arrange learning activities such as course works with specific deadlines to the learning ability of students. In addition, the study established that a well-developed and delivered content online should have clear support mechanisms, should adhere to the needs of the audience (learners), it should be aligned with the intended learning outcomes, while should include both formative and summative assessments for evaluation purposes. The key informants were of the view that support mechanisms should be both motivational, psychological and proactive to enhance successful support and students drive to accept the program and to ensure that content delivery is in line with the ILOs, a view that is shared by Rotar (2022). Furthermore, the key informants supported the idea that the development and delivery of content online should involve both formative and summative assessments for evaluation purposes to check the alignment of the learning process with the ILOs.

The study further established that content development and delivery online should not adopt an instructivist approach, but rather an interactive one to enhance learning and ongoing assessment. Key informants interviewed further did not support the idea that online content development and delivery should have an allowance for familiarization and socialization of the learning environment. Their logical is that such allowance have been misused by students who engage in none learning activities. But from the authors' views point, such allowance can be granted within for a limited time since they may be important for constructive social interactions.

### **Opportunities for Developing and Delivering Content Online in Higher Education Institutions**

The study established that there are various opportunities for content development and delivery online. These include flexibility, interactive content development and delivery and content development and delivery online using existing mobile devices. The other opportunities that were identified by the study are content accessibility by many students/learners, access to a wide range of information, guidance by learning objectives and easy content updating. Interactions with the key informants established that flexibility is facilitated by the fact that content can be developed and delivered at any time from any location since it is facilitated by mobile devices. This view point is supported by Bala et al. (2021) who established that content development and delivery online provides an excellent opportunity to lecturers for its unboundedness by time or location allowing for accessibility to instruction at anytime from anywhere.

The key informants further supported the idea that this mode of content development and delivery enables accessibility of the content by many learners in a short time compared to the traditional classroom learning that requires costly traveling of learners to a common meeting point. This is the same reason the key informants supported the view point that content development and delivery online enables learners to access a wide range of information due to the time allowance and convenience offered by the system, a view point that is shared by Stec et al. (2020).

Key informants interviewed also supported the results that development and delivery of content online enabled learning guided by objectives since these objectives can be shared online, and assessment conducted as per the expected learning outcomes, a position that is shared by Spector et al. (2014). Key informants further were in support of the view that development and delivery of content online ease content updating. Their logic was that since the content is stored in a soft form and given an instant and wide access to information through collaborations, updating the online content becomes much easier than the traditional hard copy systems on content development and delivery.

The study established that content development and delivery online using simple multimedia tools and the cost effectiveness of the system may or may not be opportunities for content development and delivery online. The key informants attributed this to the fact that the so called simple multi-media tools might be difficult for both instructors and learners to manipulate. The key informants for instance highlighted that most of them can only comfortably use laptops for content development and delivery, but not other devices such as mobile phones and tabs. The key informants further note that content development and delivery online might be costly in terms of purchasing the facilities, and internet especially for learners who are self-sponsoring. This implied that the majority of the learners in low income developing countries might not afford these facilities and hence may miss out on the learning program through this mode of instruction.

### **Challenges in Developing and Delivering Content Online in Higher Education Institutions**

The study established that there are various challenges in developing and delivering an online course. These challenges include unstable and costly internet, limited online navigation skills and experience, and limited access to online facilities, delayed feedback, decreased learner motivation and learner isolation. As regards the stability and the cost of internet, the key informants established that due to lack of competitiveness in most developing countries, there is reluctance by service providers to offer fast and reliable internet. Moreover, the cost of internet is still too high for both facilitators and learners to afford a mobile device and internet. The key

informants for instance indicated that there are only two seriously competing internet service providers in Uganda, a competition considered not effective to prompt service providers to offer reliable and cost-effective internet service.

The key informants further supported the results that limited internet navigation skills for both instructors and learners is a large limitation to developing and delivering content online. The key informants in this regard highlighted the majority of the instructors and students having limited basic internet navigation skills that may not enable them to have all-round skills required for effective developing and delivering of online content, a position that is supported by Coman et al. (2020) that lack of instructors' skills and experience is an obstacle to e-Learning in developing countries.

Apart from limited skills and experience in internet usage, the key informants also supported the view that online mobile facilities such as lap tops, note books and smart phones are very expensive to both instructors and learners. They highlighted that the average cost of reasonable laptop is USD 880 in countries where the majority of the population live on USD 1.92 per day. This situation gives purchasing of online content development and learning facilities a fourth priority given competing ones such as meals, shelter and health which largely affected the learning and expected feedback of learners who come from humble family backgrounds. This in return lead to decreased learner motivation, a challenge that was increased by learner isolation due to lack of interactiveness offered by the traditional classroom learning modes. This position was supported by Jenna Gillett-Swan (2017) who established that when using E-Learning platforms there are also some elements that might be considered obstacles in students' process of learning, such as decreased motivation in students, delayed feedback or help due to the tutors absence at the time students may need help while learning and feeling isolated due to lack of physical presence of classmates.

Key informants indicated that there is a variety of alternative assessment modalities for online learning. These modalities include writing assignments, collaborative assignments, case studies, and debates that can help reduce the problems often associated with tests and quizzes such as cheating and copying. Furthermore, the key informants stated that assessment can be learner-centered. Learner-centered assessment methods address whether the learner has met the learning outcomes of the course as well as how the learner got there.

Other modalities as per the interaction with the key informants are that authentic assessment methods can reduce cheating. One way to make assignments more authentic and less susceptible to cheating is to have students embed their own experiences in their

assignments. For example, if they are writing about human development, you can have them write about their own development.

The key informants further stated that to reduce vices such as cheating, when students do collaborative assignments, they should be assessed collaboratively. Collaborative assessment is a combination of students assessing themselves and the instructor taking that input and doing the final assessment. In addition to providing a basis for a grade, these collaborative assessments provide useful insights on what worked and what did not work on an assignment, so that they can reflect on what they might do differently next time. The findings contradict those of Jenna Gillett-Swan (2017) that assessment practices are often limited in the variety and modes in which they are allocated in the online environment.

### **Recommendations**

Based on the findings, the following recommendations are suggested as the component of a guide for developing and delivering content online in higher education in developing countries. The system for developing and delivering content online should have the following characteristics: It should be student centered, it should clarify the ILOs, should effectively engage learners through putting an allowance for interactions between instructors and learners, and it should have learning activities with clear instructions. Furthermore, the system should have allowance for collaboration, it should be accessible by all users, it should be accessible with multiple devices, it should have planned resources (text, video, audio, and infographics), and it should have activities with specific deadlines. In addition, the system for content development and delivered content online should have clear support mechanisms, should adhere to the needs of the audience (learners), it should be aligned with the intended learning outcomes, should include both formative and summative assessments, and it should put allowance for evaluation to ensure that students can put into practice what they have learnt.

The development of the above recommended content development and delivery online is supported by the number of opportunities that should be utilized by developers. The opportunities include system flexibility, interactive content development and delivery and content development and delivery online using existing mobile devices. The other opportunities are content accessibility by many students/learners, access to a wide range of information, guidance by learning objectives and easy content updating.

However, the effective development of the study required that certain impeding challenges are mitigated. These challenges are unstable and costly internet, limited online navigation skills and experience, and limited access to online facilities, delayed feedback, decreased learner motivation and learner isolation. Thus, there is need to outsource and



contract internet service providers to provide stable internet and internet accessories at fairly cheaper prices on a long-term basis.

Furthermore, there is need for continuous training in online content development and delivery in line for both instructors and students. This can be done through continuously offered online short courses, online conferences and seminars. The universities in collaboration with the Ministry of Education and ICT can collaborate to solicit funders who can donate cheaper online teaching and learning facilities to both instructors and learners. This will enhance instructors and students access to facilities and hence enhance effective content development and deliver and feedback.

The system should provide for students' interaction to eliminate isolation, boredom and hence motivate student learning. However, this should be managed so that it utilized effectively by students. For instance, internet offers can be offered to students for interaction purposes but for a limited time.

### **Research Contributions and Limitations**

First and foremost, the project is in tandem with the MCF e-Learning Initiative themes number 2, 3, and 4 about knowledge mobilization and training, scaling up/ and innovative approaches to Monitoring, Evaluation, and Research in the context of e-Learning. Therefore, the project is relevant in contributing to the attainment of MCF e-Learning Initiative goals.

To policymakers, the project has built a foundation a foundation for designing a guide for effective online content development and delivery. This will help in mitigating the current and future education challenges in times of need such as the COVID-19 and related pandemics. To practitioners such as higher education institutions, the study will enable them to understand the opportunities and challenges associated with online content development and delivery. This will provide a foundation upon which they can scale up on the guidelines that will be provided by this artifact to seize the opportunities and overcome the challenges that relate to limited capacity in effective content development, delivery, and effective student learning.

To the e-Learning researchers, the study will pave the way for further studies. Since e-Learning is an evolving subject, the study has provided literature and statistics on which future researchers may build to undertake further related studies.

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**Appendix A**  
Table for Sample Determination

N	S		N	S		N	S		N	S		N	S
10	10		100	80		280	162		800	260		2800	338
15	14		110	86		290	165		850	265		3000	341
20	19		120	92		300	169		900	269		3500	346
25	24		130	97		320	175		950	274		4000	351
30	28		140	103		340	181		1000	278		4500	354
35	32		150	108		360	186		1100	285		5000	357
40	36		160	113		380	191		1200	291		6000	361
45	40		170	118		400	196		1300	297		7000	364
50	44		180	123		420	201		1400	302		8000	367

55	48		190	127		440	205		1500	306		9000	368
60	52		200	132		460	210		1600	310		10000	370
65	56		210	136		480	214		1700	313		15000	375
70	59		220	140		500	217		1800	317		20000	377
75	63		230	144		550	226		1900	320		30000	379
80	66		240	148		600	234		2000	322		40000	380
85	70		250	152		650	242		2200	327		50000	381
90	73		260	155		700	248		2400	331		75000	382
95	76		270	159		750	254		2600	335		100000 0	384

Note: N is the population and S is the sample size. Source: Krejcie and Morgan (1970).

## Appendix B Questionnaire

**For Makerere University MCF e-Learning Champions and MAK e-Learning Coordinators  
July 13<sup>th</sup> 2022**

**Dear Respondent,**

We are a Team of MasterCard Foundation Scholars undertaking a study titled “**Towards a guide for delivering and developing content online in higher education in developing countries: A case of Makerere University - Uganda**”. This tool is designed to facilitate collection of data on the same subject. You are kindly requested to provide answers to the questions contained herein so as to enable the researchers to execute this study. This is an academic study and all data collected shall be utilized purely for this intention. In addition, your response will be of great value and will be treated with utmost confidentiality. For any further information, please do not hesitate to reach us on the following contacts:

Godfrey Mayende (PhD)

Tel: 0702 943 834

Email: godfrey.mayende@mak.ac.ug

### **Section A: Profile Information (Please tick (✓) on your appropriate choice)**

#### A1. Gender

1	Female	
2	Male	

#### A2. Highest education level attained

1	Graduate	
2	Post graduate Diploma	
3	Masters	
4	Ph.D.	

#### A3. Subject matter expert in

1	Education		6	Computing and Information Science	
2	Humanities and Social Sciences		7	Natural Sciences	
3	Health		8	Veterinary	
4	Business and Management		9	Engineering and Design	
5	Agriculture		10	Law	

## A4. Years of service at the institution

1	< 5 years	
2	5-10 years	
3	11-15 years	
4	16-20 years	
5	>20 years	

**Section B: Characteristics of Well-Developed Online Content in higher education institutions.**

In the sections that follow, please respond to the following statements by showing your level of Agreement or Disagreement with the ideal characteristics of well-developed online content.

Response Scale: 1-Strongly Disagree, 2-Disagree, 3- Neutral, 4-Agree, 5- Strongly Agree

No.	Statement	1	2	3	4	5
B1	A well-developed online content should embrace student centered approaches.					
B2	A well-developed online content should embrace instructivist approaches.					
B3	A well-developed online content should have clear Intended Learning Outcomes (ILOs).					
B4	A well-developed online content should be interactive.					
B5	A well-developed online content should include activities to engage the learners.					
B6	A well-developed online content should have activities with clear instructions.					
B7	A well-developed online content should allow for collaboration.					
B8.	A well-developed online content should allow for co-creation of knowledge.					
B9	A well-developed online content should be accessible to all users					
B10	A well-developed online content should be accessible with multiple devices.					
B11	A well-developed online content should have planned resources (text, video, audio, and infographics).					
B12	A well-developed online content should have activities with specific deadlines.					



No.	Statement	1	2	3	4	5
B13	A well-developed online content should be constructively aligned					
B14	A well-developed online content should have clear support mechanisms					
B15	A well-developed online content should have small chunks of content provided at different times					
B16	A well-developed online content should adhere to the needs of the audience (learners)					
B17	A well-developed online content should allow for familiarization and socialization of the learning environment					
B18	A well-developed online content assessment activities should be aligned with the Intended Learning Outcomes.					
B19	A well-developed online content should include both formative and summative assessments					
B20	A well-developed online content should put allowance for evaluation					

B21. To what extent do you think content development online in this University demonstrates the above characteristics?

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**Section C: Characteristics of Well-Delivered Online Course in higher education institutions.**

In the sections that follow, please respond to the following statements by showing your level of Agreement or Disagreement with the ideal characteristics of a well-delivered online course.

Response Scale: 1-Strongly Disagree, 2-Disagree, 3- Neutral, 4-Agree, 5- Strongly Agree

No.	Statement	1	2	3	4	5
C1	A well-delivered online course should embrace student centered approaches.					
C2	A well-delivered online course should embrace instructivist approaches.					

No.	Statement	1	2	3	4	5
C3	A well-delivered online course should have clear Intended Learning Outcomes (ILOs).					
C4	A well-delivered online course should be interactive.					
C5	A well-delivered online course should include activities to engage the learners.					
C6	A well-delivered online course should have activities with clear instructions.					
C7	A well-delivered online course should allow for collaboration.					
C8.	A well-delivered online course should allow for co-creation of knowledge.					
C9	A well-delivered online course should be accessible to all users					
C10	A well-delivered online course should be accessible with multiple devices.					
C11	A well-delivered online course should provide for multiple access to resources (text, video, audio, and infographics).					
C12	A well-delivered online course should have activities with specific deadlines.					
C13	A well-delivered online course should be constructively aligned					
C14	A well-delivered online course should have clear support mechanisms					
C15	A well-delivered online course should have small chunks of content provided at different times					
C16	A well-delivered online course should adhere to the needs of the audience (learners)					
C17	A well-delivered online course should allow for familiarization and socialization of the learning environment					
C18	A well-delivered online course should have assessment activities which are aligned with the Intended Learning Outcomes.					
C19	A well-delivered online course should include both formative and summative assessments					
C20	A well-delivered online course should have after course evaluation					

C21. To what extent do you think content delivery online in this University demonstrates the above characteristics?

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**Section F: Challenges in developing and delivering online content in higher education institutions in developing countries**

In the sections that follow, please respond to the following statements to show your level of Agreement or Disagreement with the existence of the following challenges in developing and delivering online content in higher education institutions

Response Scale: 1-Strongly Disagree, 2-Disagree, 3- Neutral, 4-Agree, 5- Strongly Agree

No.	Statement	1	2	3	4	5
F1	Unstable and costly internet is a challenge to online content development and delivery.					
F2	Limited online navigation skills is a challenge to online content development and delivery.					
F3	Limited access to online facilities is a challenge to online content development and delivery.					
F5	Limited online facilitation skills is a challenge in delivering online courses.					
F6	Limited experience in using e-Learning is a challenge to online content development and delivery.					
F7	Limited alternative assessment modalities is a challenge to online content development and delivery.					
F8	Delayed feedback is a challenge to delivery of online courses.					
F9	Decreased learner motivation is a challenge to online course delivery.					
F10	Learner isolation is a challenge to online course delivery.					

F11. Other than the above, what are the other challenges to online content development and delivery?

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F12. Suggest solutions to the challenges above.

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**THANK YOU FOR YOUR COOPERATION**

### **Project Team (Team Members' Roles and Responsibilities)**

Team Members' roles and responsibility are described below for each team member.

#### **Godfrey Mayende**

Mastercard Foundation e-Learning Initiative Champion and currently a Lecturer and Acting Deputy Director of the Institute of Open Distance and e-Learning at Makerere University. Holds a graduate certificate in Instructional Design and Performance Improvement from Arizona State University, USA; Holds a PhD in ICT (Online Learning) titled "Supporting Effective Online Learning Groups for e-Learning Systems" from University of Agder, Norway; Holds PGDE (ICT) from University of Cape Town, South Africa; Holds M.Sc. Eng. (Information Systems) from Norwegian University of Science and Technology, Norway; Holds B.Sc. (Computer Science and Mathematics) from Makerere University, Uganda. Godfrey was the Project Principal Investigator provided leadership in the running of the research project and given his background he provided technical support to the team. In addition he provided expertise in instructional design, design science methodology and mixed methods.

#### **Nazarius Turyakira**

Mastercard Foundation e-Learning initiative champion and holds a graduate certificate in Instructional Design and Performance Improvement from Arizona State University, USA . Turyakira is a lecturer in the Institute of Open Distance and e-Learning, College of Education and External Studies Makerere University Uganda. He holds a master's in Business Administration from Makerere University; a Certificate of Certified Public accountants of Uganda; a Bachelor of Commerce degree from Makerere University. Turyakira was the assistant Project Principal investigator and was giving expertise in budgeting and accountability of the project funds. Also, he provided alternative leadership for the project and since he is an expert in quantitative research, he was involved in data analysis during the needs assessment survey. He was also involved in the entire process of designing the guidelines.

#### **Dianah Nampijja**

Dianah Nampijja is a Mastercard Foundation e-Learning Initiative Champion and currently a Lecturer in the Department of Adult and Community Education, School of Distance and Lifelong Learning at Makerere University. She holds a PhD in Social Sciences titled "Learning with Mobiles. A Developing Country perspective on mobile technologies use in Learning for Livelihood Support" from the University of Agder, Norway. Holds a Certificate in Internal Quality Assurance in higher education, Post Graduate Certificate in Qualitative Data Analysis, International Post Graduate Diploma in E-Teaching, E-Tutoring, and E-Courseware Development, University of Agder, Kristiansand Norway, a Msc in Development Management (University of Agder) and a Msc in Education for Sustainability at London South Bank University. Dianah Nampijja ensured that qualitative data collection and analysis methodologies are well streamlined. Matters of quality assurance in all study activities, while integrating adult learning principles in the design process will be adhered to with Dianah's expertise. In addition, being a female on the team, Dianah will be cognizant of the gender dimensions in relation to online content development and delivery.

#### **Moses Ainomwambutsya**

Moses Ainomwambutsya is a student of Makerere University pursuing a Master's in Business Administration. He holds a Bachelor of Commerce Degree from the same University. Moses is building himself to become an expert in the field of social research. He has acquired expertise in quantitative data analysis using software packages such as SPSS and STATA. He is currently a research director at the Centre for International Studies (Accredited by The Cyprus Institute of Marketing Ltd). He has been consulted to undertake several social development projects, the tasks he has duly accomplished. He will be involved in project administration and

organizing information for accountability, minutes taking, quantitative data collection, and analysis.

**Arthur Mugusha**

Arthur is Ugandan by birth and citizenship, an Anglican Mukiga with one wife and children under legal Marriage, accessible on arthurmugs@gmail.com or via whatsUp on +256772636548. Arthur has studied and passed PLE, UCE, UACE, Diploma (Secondary Education), Bachelor of Education, Master of Arts in African Languages and is currently an enrolled PhD Candidate at Makerere University in the field collecting data. Arthur is an experienced educator since 1996 to date at secondary and university levels. He holds academic coordination experiences, is an advocate of staff welfare and a leader in various social groupings. Arthur participates in National assessment at senior level and is a Kiswahili Specialist / Consultant with National Curriculum Development Centre. He is an eLearning champion with training from University of Agder Norway and Arizona State University.

**Grace Joy Nabude**

Grace is a student of Master of Instructional Design and Technology from Makerere University. She holds a Bachelor of Adult and Community Education. Grace's recent role as an E-learning Support Officer at the MasterCard Foundation E-learning Initiative at Makerere University showcased her technical prowess and collaborative skills. Additionally, her internship with the Uganda Red Cross and contributions to virtual learning experiences at the World Health Summit highlight her adaptability. She is currently involved in three research projects where she is contributing to the writing of scientific papers and project activities.

**Paul Birevu Muyinda**

Dr. Muyinda, is an Associate Professor of Open, Distance and eLearning (ODeL) and the Director of the Institute of Open, Distance and eLearning at Makerere University. He has research interest in digital learning and has worked with different agencies and universities to champion this field. He is the author of more than 100 research articles in open, distance and e-learning. He has recently consulted for COL on policy and strategy for open distance learning. He cherishes sharing and lifelong learning.

## **Appendix E**

Letter of Support from the Institution

**Attached as separate PDF document in submission email.**