



Assessing e-learning technological capacities in African universities

ANDREW KAPONYA AND JOLLY NTABA | Oct. 2023



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ASSESSING E-LEARNING TECHNOLOGICAL CAPACITIES IN AFRICAN UNIVERSITIES

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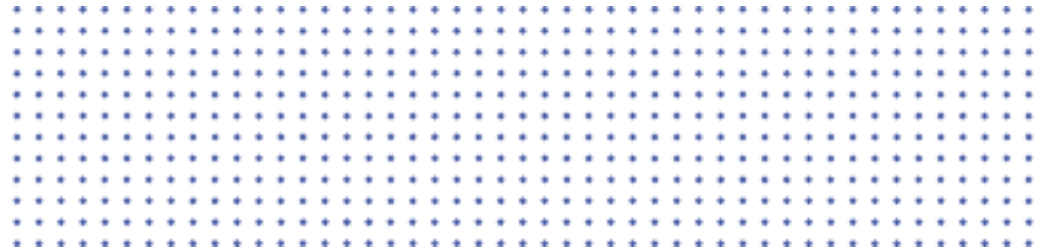
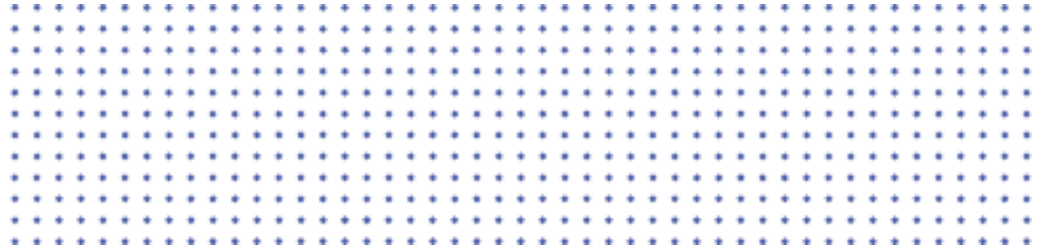


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EXECUTIVE SUMMARY

The CoMMPASS project’s curriculum will be conceptualized as a Small Private Online Course (SPOC) and later on, in the best-case scenario, as a Massive Open Online Course (MOOC). The SPOC will enable users to complete individual or all modules in self-study, and to download didactically prepared material for teaching. The content of the modules should convey both basic knowledge on the topic of migration and mobility from a journalistic perspective, as well as journalistic tools, based on concrete and practice-relevant examples.

The e-learning modules work with introductory texts, best practice examples and case studies, in-depth readings, but also with (interactive) videos, audios, role plays, branching scenarios and quiz formats, so that the most varied and interactive didactics possible can be offered. This methodological diversity ensures that participants fully exploit the contents of each module. In addition, different learning types are also addressed.

Preliminarily, a paid Content Management System (CMS) or Learning Management System (LMS), such as WordPress, Open edX or Moodle was foreseen subject to results of the needs and technological capacities of beneficiary institutions. The CMS/LMS will be used as a White Label, which means it will be adapted according to the specifications of CoMMPASS specially developed Corporate Identity.

A modern and attractive user interface of the CMS (WordPress) or LMS (Open edX or Moodle) is recommended. The technical handling of the learning process for the participants in the CMS/LMS should be intuitive, uncomplicated and flexible. Thus, the project can accommodate learners with different (also those with limited) experience in the field of online self-study, too. With these authoring tools, the team members can technically produce the content themselves, and do not need an additional developer. As a result, elements are implemented exactly as they were didactically conceived.

Another important aspect of the assessment that was taken was based on what has been noted that partner higher education institutions will establish the CoMMPASS SPOC in local curricula within the 3-year course of the project, and thus make the project results sustainable on a long-term basis. These partners will establish the course at the postgraduate (MA) level, so that interested participants would already have a solid knowledge base in journalism. This would also facilitate the use of the SPOC by practicing journalists in the media industry.

On the pan-African level, the proposed CoMMPASS SPOC addresses the African Union (AU)’s goals for tertiary education in numerous ways, since AU Science, Technology and Innovation Strategy for Africa (STISA) places science, technology and innovation at the epicentre of Africa’s socio-economic development and growth, as stated in the Agenda 2063, the shared framework for inclusive growth and sustainable development rooted in Pan Africanism. It is also in line with the Continental Education Strategy for Africa (CESA 16-25) which highlights the need to harness the power of ICT to improve access to, and the quality and management of, education and training systems in Africa. Several of its strategic objectives are concerned, in particular the second (“Build and rehabilitate infrastructure”) and the third (“Harness the capacity of ICT”).

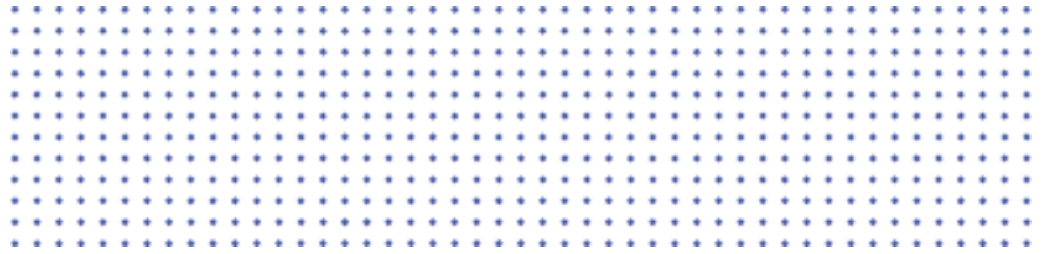


For the purposes of needs assessment and capacities assessment, it was also necessary that a review of users of the proposed SPOC be done to help shape the recommendations therein.

From the needs and e-learning technological assessment collected from 12 beneficiaries and partner institutions in Africa (Uganda, Malawi, Burkina Faso, Ethiopia, Kenya, Ghana, Nigeria, Cameroon, and Guinea-Bissau), the finding is that while there is a consensus on the need to embrace e-learning in higher education institutions in sub-Saharan Africa, there are capacity challenges that need to be addressed. These challenges have led some institutions not to embrace e-learning or with a blended model of delivery with students also attending classes physically. For the 12 institutions that participated in the assessment, two do not use e-learning, while ten use it. However, out of the latter, three have used e-learning for a period of ten years while seven have used e-learning for less than five years. As far as the platform is concerned, Moodle, often “usually implemented institution-wide” (Cheung Kong et al, 2017), is seen to be the most used platform for e-learning. All institutions have complained about a lack of technical capacities to fully use e-learning such as lack of infrastructure and staff training gaps.

The study revealed that most participant higher education institutions (8 out of 10) use Moodle as content management system, while 2 use Google Classroom. When the institutions were asked to indicate other CMS/LMS they are familiar with, they indicated the following: Canvas, Blackboard, Edvance 360, Brightspace, Articulate, Disco, Ganesha, Claroline, WebCT and EdX.

After a self-assessment of the ability of the teaching staff in using e-learning platforms, the challenges, legal frameworks, and impact studies, the report ends with various recommendations based on eight different indicators. It concludes that Moodle should be adopted and that before implementation, trainings on the use of the platform should be conducted targeting all project beneficiaries, since apart from lack of sufficient and reliable ICT infrastructure it has been discovered that institutions face other challenges with e-learning including capacity of institutions, administrators, instructors, and students.



INTRODUCTION

Migration is now one of the key challenges to achieving the Sustainable Development Goals, particularly in the most vulnerable countries and especially in Africa. In order to raise awareness and empower citizens to counter the misinformation and disinformation often associated with these issues, media coverage is therefore crucial.

From 2023 to 2026, the EU-funded Erasmus+ CoMMPASS project (“Communicating Migration and Mobility - E-Learning Programs and Newsroom Applications for sub-Saharan Africa”) aims to build a distance learning platform on this topic for journalists and future journalists in Burkina Faso, Uganda, and Malawi, before expanding to other African partner countries. The online course will be available in English, French, Portuguese, and Swahili.

Project partners from six African and two European universities will jointly decide on the structure, content, and technology of this distance learning facility. They share their specific competencies for the common good, and all partners benefit through mutual knowledge sharing and capacity building.

Numerous interviews and reports have highlighted the gaps and shortcomings in this area, but there are very few specific academic studies. In a series of workshops with leading African journalism educators, several members of the CoMMPASS project have jointly identified specific challenges that need to be addressed in higher journalism education and newsrooms in African countries when it comes to covering migration: The issue is severely underreported in African countries (Assopgoum, 2011; Jaiteh, 2015; Chinje, 2016) or the same frames used by Western media are used (Harber, 2015; Serwornoo, 2018).

Against this background, the proposed online course should be equally useful and applicable to newsrooms and the media industry in sub-Saharan Africa, as well as to local NGOs and other media institutions. Given the current drastically changed conditions for education and training due to the Covid-19 crisis and the move towards digitisation to cope with the massive influx of new students, the need for such an online tool has become even more urgent, as has the need to build bridges between academia and industry.

Given that no academic curriculum for journalism training offers a substantive and interdisciplinary introduction to the analysis of migration issues, the design of this programme was considered in the light of four state-of-the-art reports.

The first report set the stage by reviewing the literature on migration and mobility, with a focus on sub-Saharan and North African narratives in countries of origin, transit, and destination for migrants. It includes good practices in reporting on migration and mobility and lessons learned.

The second maps best practices, methods, and techniques of e-learning curricula. It includes the results of a large-scale baseline study of potential beneficiaries in the six African universities that will be targeted initially, detailing students' needs and constraints in relation to e-learning.



The third report focuses on the needs of mid-career journalists for training in migration reporting: it includes the interests of journalists and media houses, the incentives expected from an e-learning platform and an assessment of lessons learned (both successes and failures) from previous experiences. It is based on interviews with editors, media managers, journalists, and other stakeholders.

Finally, the fourth step recommends the most relevant technological solutions for the platform to be developed. These are based on a consideration of the digital divide and the technological environment in sub-Saharan countries, derived from interviews with experts and students.

These four reports function as a coherent whole, not only to highlight the extent to which African media have so far failed to tell the “African story” of migration. More importantly, they aim to provide solid, cross-referenced, and balanced data so that the next generation of media content producers can be trained and capacity building and empowerment can have a real and sustainable impact.



RATIONALE & DISCUSSION

The CoMMPASS curriculum will be available on an e-learning platform, freely accessible to users within Higher Education Institutions (journalism students and educators) as well as outside (newsrooms, individual journalists, media NGOs, media-related foundation, development actors, etc.). Therefore, it will be conceptualized as a Small Private Online Course (SPOC) and later on, in the best-case scenario, as a Massive Open Online Course (MOOC).

The SPOC will enable users to complete individual or all modules in self-study, and to download didactically prepared material for teaching. The content of the modules should convey both basic knowledge on the topic of migration and mobility from a journalistic perspective, as well as journalistic tools, based on concrete and practice-relevant examples. The 14- module set of interactive, multi-lingual e-learning sessions will teach how to cover migration and mobility. The e-learning modules work with introductory texts, best practice examples and case studies, in-depth readings, but also with (interactive) videos, audios, role plays, branching scenarios and quiz formats, so that the most varied and interactive didactics possible can be offered.

This methodological diversity ensures that participants fully exploit the contents of each module. In addition, different learning types are also addressed. Journalism educators shall also use the MOOC to connect to an (inter)national pool of journalists, migration experts, and other potential speakers for seminars. In this way, the platform will also offer networking opportunities. For the technical implementation, reliable server capacity is needed. At the same time, there is need to ensure that key didactic elements can be implemented.

Baseline recommendations of technological solutions

Preliminarily, a paid Content Management System (CMS) or Learning Management System (LMS), such as WordPress, Open edX or Moodle was foreseen subject to results of the needs and technological capacities of beneficiary institutions. The CMS/LMS will be used as a White Label, which means it will be adapted according to the specifications of CoMMPASS specially developed Corporate Identity.

A modern and attractive user interface of the CMS (WordPress) or LMS (Open edX or Moodle) is recommended. The technical handling of the learning process for the participants in the CMS/LMS should be intuitive, uncomplicated and flexible. Thus, the project can accommodate learners with different (also those with limited) experience in the field of online self-study, too. Moreover, free authoring tools such as h5p (<https://h5p.org/>) can be preferred. With these authoring tools, the team members can technically produce the content themselves, and do not need an additional developer. As a result, elements are implemented exactly as they were didactically conceived.

Previous e-learning experiences from TU Dortmund has shown that by combining a CMS/LMS and an authoring tool, e-learning content works smoothly also on smartphones, tablets and other mobile devices. This is particularly relevant for the use of an online learning tool that is supposed to work worldwide – even in regions where potential participants do not



have the necessary computer equipment. Moreover, parts of the e-learning contents will be available for download, so that potential users in remote areas and rural regions without stable internet can profit from the e-learning elements as well. The CMS will enable all partners to add and update contents autonomously during and also after the funding period, so that project outcomes can be continuously updated by partner HEIs even after the end of the project period. It was further noted that the server will preferably be located within one partner HEI, or decentralized in all project countries.

Against the availability of the preliminary recommendations that were made, it was still necessary to build on the existing knowledge by carrying out a study to assess the needs of higher education institutions in sub-Saharan Africa to provide data that allow technological guidance, discussed in the initial phase of the project. Pragmatic solutions will be jointly taken to ensure a timely technological set-up of the platform, and ensure that the server capacity has been transferred to partner HEIs no later than the final phase of the project.

Alignment with national and institutional e-learning strategies

Another important aspect of the assessment that was taken was based on what has been noted that partner higher education institutions will establish the CoMMPASS SPOC in local curricula within the 3-year course of the project, and thus make the project results sustainable on a long-term basis. These partners will establish the course at the postgraduate (MA) level, so that interested participants would already have a solid knowledge base in journalism. This would also facilitate the use of the SPOC by practicing journalists in the media industry.

In this respect, it may be useful to analyse what the partner institutions have already done in terms of e-learning. For example, in 2018, the government of Burkina Faso created a virtual university dedicated exclusively to online training (UV-BF), in response to the high need and demand for higher education under the condition of a very limited number of institutions in the country. UV-BF aims at giving students the opportunity to benefit from university diploma training in the cycles *BTS* (BTEC Higher National Diploma), *licences* (bachelors), masters as well as short-term certifying training (two, three or four months).

Experiences in Burkina Faso

The Thomas-Sankara University has been promoting the use of information and communication technologies in education and teaching since its foundation. It has also accompanied and supported individual teachers' experiences, which has led since 2010 to academic training offers on the platform of the *Agence Universitaire de la Francophonie* (AUF). In order to federate and give synergy to these scattered experiences, an Open distance learning institute (*Institut de formation ouverte à distance*, IFOAD) was created in January 2014 at the University Ouaga II later renamed Thomas-Sankara University. The primary mission of IFOAD is to organize, coordinate and manage all open and distance learning activities of the university, in collaboration with the training structures, notably the training and research units (*Unités de formation et de recherche*) and institutes (which benefit from greater autonomy). To this end, it aims to: develop and popularize distance education and training; train teachers and researchers in the use of information and communication technologies for education; organize the certification of skills in information technology and communication for all students of the University; expand the space of influence of the University beyond its traditional geographic space through networking and partnership with countries in the sub-region.

Experiences in Uganda

Makerere University being a public university, is highly responsive to Uganda’s national strategic plans. In particular, the University’s ICT-Strategic Plan (2020-2030) clearly draws from Vision 2040¹, stating that

Uganda shall develop, improve, and retool its ICT talent pool by building mechanism by adopting globally benchmarked, industry-rated skills assessment and training and certification standards. The curriculum and learning content will also be progressively reviewed and developed in order to align what students are taught with what industry globally requires. It shall be mainstreamed in education to take advantage of e-learning and to prepare future generations of ICT-savvy workers and ensure their effective utilization (p. 36).

The Strategic Plan also responds to aspirations of the third National Development Plan² (NDPIII) stating that it will

enable the acceleration of the entire economy and this supports the digital transformation and the move towards digital (smart) health, digital (smart) agriculture, digital (smart) manufacturing, digital (smart) cities, among others (p. 179).

More so, the 2020/2021- 2024/2025 Strategic Plan of the National Council for Higher Education³ (NCHE) stipulates its strategic objective as being to “promote use of Information Communication Technology in all sectors of the Council and in [Higher Education Institutions]” (p. viii), with emphasis on “implementation of Online and digital (ODEL) capacity indicators to support mainstreaming online/e-learning in [Higher Education Institutions]” (p. 20).

The e-learning environment at Makerere University is supported by several policies. The capstone one is the reviewed Makerere University Directorate of ICT Support Strategic Plan 2020-2030⁴ whose stated mission is

to ensure high and sustainable availability of ICT resources that are responsive to the needs of the university and beyond through quality management, control and maintenance processes that are customer oriented.

It is in light of such robust policies that the Makerere University’s Institute of Open Distance and e-Learning (ODEL) was created to provide oversight and backstopping functions in the entire university. During the Covid-19 pandemic, the ODeL facilitated e-learning in all units of the university through various platforms, but mainly the Moodle-based Makerere University E-Learning Environment (MUELE).

On the pan-African level, the proposed CoMMPASS SPOC addresses the African Union (AU)’s goals for tertiary education in numerous ways, since AU Science, Technology and Innovation Strategy for Africa (STISA) places science, technology and innovation at the epicentre of Africa’s socio-economic development and growth, as stated in the Agenda 2063⁵, the shared framework for inclusive growth and sustainable development rooted in Pan Africanism:

the Agenda 2063 project for the African Virtual and E-University aims to use ICT based programmes to increase access to tertiary and continuing education in Africa by reaching large numbers of students and professionals in multiple sites simultaneously. It aims to develop relevant and high quality Open, Distance and e-Learning (ODEL) resources to offer students guaranteed access to the University from anywhere in the world and anytime.

It is also in line with the Continental Education Strategy for Africa⁶ (CESA 16-25) which highlights the need to harness the power of ICT to improve access to, and the quality and management of, education and training systems in Africa. Several

¹ <http://www.npa.go.ug/uganda-vision-2040/>

² http://www.npa.go.ug/wp-content/uploads/2020/08/NDPIII-Finale_Compressed.pdf

³ <https://unche.or.ug/wp-content/uploads/2021/09/NATIONAL-COUNCIL-FOR-HIGHER-EDUCATION-strategic-plan-2020-21-to-2024-25.pdf>

⁴ <https://policies.mak.ac.ug/sites/default/files/policies/Makerere-University-ICT-Strategic-Plan-2020-2030.pdf>

⁵ https://au.int/sites/default/files/documents/36204-doc-agenda2063_popular_version_en.pdf

⁶ https://www.adeanet.org/en/system/files/resources/cesa_16-25_english_v9.pdf

of its strategic objectives are concerned, in particular the second (“Build and rehabilitate infrastructure”) and the third (“Harness the capacity of ICT”).

Experiences in Malawi

The Malawi National ICT for Development Policy⁷ of 2006 (under revision in 2021) had thus identified as critical the role of ICT in equitable education access and delivery. One of the policy objectives had been to

promote e-learning and e-teaching including e-distance education, training, and virtual learning systems to complement and supplement face-to-face campus, televised and broadcast education and training systems (p. 11).

Since then, ODeL has been envisioned and encouraged and has been operationalized especially through the Malawi College of Distance Education (MCDE), that provides alternative formal primary and secondary education and private colleges as well. MCDE was born out of the 1973 merger between Malawi Correspondence College, established as a department of the Ministry of Education and Culture in 1965 and the Schools Broadcasting Unit.

Otherwise, until the onset of the pandemic, ODeL education was restricted to few projects run by Mzuzu University, the University of Malawi and the Lilongwe under the Higher Education Science and Technology (HEST) Project funded by the African Development Bank. A combination of online open and distance teaching became an urgent necessity as the pandemic forced suspension of face-to-face classes.

Who will use the proposed SPOC?

For the purposes of needs assessment and capacities assessment, it was necessary that a review of users of the proposed SPOC be done to help shape the recommendations therein. The aim of the CoMMPASS project is to fill the described void in journalism education. In the three-year course of the project, a consortium of six higher education institutions from three countries in Africa (Burkina Faso, Malawi, and Uganda) and two from Europe (Germany and Portugal) are supposed to conceptualize and implement an innovative and interactive 14-module MOOC to facilitate better coverage on migration and mobility. Thus, the project is designed as a multi-country project and involves countries of origin, transit, and destination of migration.

All beneficiaries and associated partners (from Ethiopia, Kenya, Ghana, Nigeria, Cameroon, and Guinea-Bissau) are based in Least Developed Countries. The SPOC will train journalism students on the MA level as well as practicing journalists how to report matters of migration in ways that are research-based, use reliable data sources, comply with ethical journalism, communicate with the audience proficiently and, if possible, practice collaborative journalism. The project will impact a more comprehensive coverage of migrant matters in origin and transit countries, and a more balanced and informed public debate across countries and cultures about these crucial matters of global governance. The MOOC will be developed in four key languages (English, French, Portuguese, Swahili), to ensure that its results can be exploited widely.

The project will support the highly-needed digital transformation of higher education in sub-Saharan Africa. E-learning has been addressed by the National Councils for Higher Education and other relevant national strategies in partner countries as a key priority. The National Council for Higher Education in Uganda, in its 2020/21-2024/25 strategic plan, emphasizes access as a top priority (p.22, section 4.4). Online Distance and e-Learning (ODeL) is seen as an enabler for this access, particularly in the context of the Covid-19 pandemic, and in light of a renewed awareness of the higher education needs of persons with disabilities.

⁷ https://npc.mw/wp-content/uploads/2020/07/national_ict.pdf

Journalism students are in the focus of the project from the very first stage onwards. Thus, the project has an inclusive emphasis on the involvement of students in all project steps. The perspective of journalism students will be systematically included via a non-academic partner, Media Challenge Initiative. This NGO has been founded by journalism graduates and alumni of the Ugandan partners, and has initiated challenges and awards addressing journalism students in past years. It also acts as an incubator for journalistic start-ups, and will provide a regional knowledge transfer to Burkina Faso and Malawi.

The CoMMPASS SPOC will teach journalism students and practising journalists how to design story ideas from the audience perspective, systematically training the entrepreneurial skills of future journalists. Real problems of migration coverage will be at the core of this learner-centered curriculum: Students will be trained to take informed decisions about stories' content, trustworthy sources, research techniques, and ethical dilemmas associated with migration coverage. Journalism students from all partner HEIs will collaborate and cross-border network in a joint workshop on migration coverage. An award for the best student's journalistic article on migration, prominently will fuel students' sense of initiative. Students will furthermore be encouraged to create a students' alliance in order to make their voice heard in academic institutions, and systematically connect with the media industry and journalistic associations and federations: The CoMMPASS project seek to encourage African partners to create a Forum for African Journalism Students as well as fostering clusters of African Journalism Educators.

Methodology

The study adopted a mixed method approach of collecting data with descriptive analysis being used. The assessment targeted institutions that are partners and associate partners of CoMMPASS. The six partner institutions include; Malawi University of Business and Applied Sciences (MUBAS), Livingstonia University (Malawi), Makerere University (Uganda), Uganda Christian University, *Université* Thomas-Sankara (Burkina Faso) and *Université* Joseph-Ki-Zerbo (Burkina Faso). There are 8 associated partners including Daystar University (Kenya), University of Media, Arts and Communication-Ghana Institute of Journalism (Ghana), *Universidade Lusofona da Guine* (Guinea Bissau), Haramaya University (Ethiopia), Addis Ababa University (Ethiopia), University of Cape Coast (Ghana), Paul University (Nigeria), The total sample therefore was 13, with both public and private institutions.

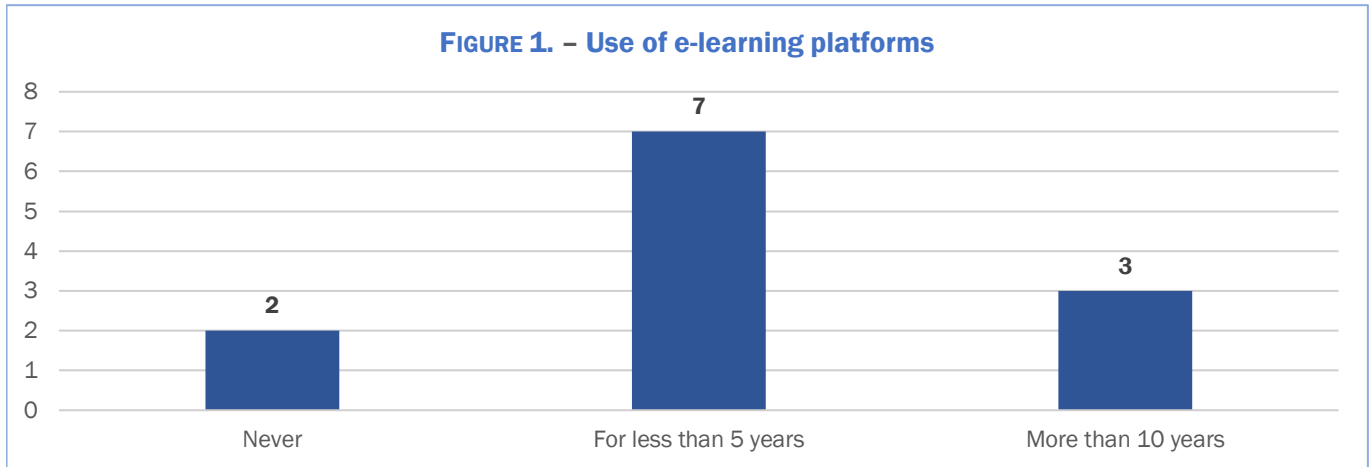
Data used in this study is both primary and secondary data. Secondary data was sourced from the project document and e-learning impact studies in sub-Saharan Africa. Primary data was collected through 13 one-to-one-interviews and one Focus Group Discussion. A total of 13 questionnaires were also sent to the participating institutions. Descriptive analysis was done using Excel, while content analysis was done on one-on-one interviews and Focus Group Discussions.

The key research questions for the study were:

1. What are the e-learning management systems that higher education institutions in sub-Saharan Africa are familiar with?
2. What e-learning content management systems/Learning management systems are being used by most Higher Education Institutions in sub-Saharan Africa?
3. What are the benefits of the current e-learning systems being used by most institutions in sub-Saharan Africa?
4. What are the disadvantages of the current e-learning systems being used by most institutions in sub-Saharan Africa?
5. What are the technological capacities and incapacities that exist in institutions to use and manage e-learning?

Study findings

Out of the 13 institutions that were earmarked for the study, 12 responded to the study. Out of the 12 respondents, 6 are partner institutions and 6 are associate partners.



From the needs and e-learning technological assessment, the finding is that while there is a consensus on the need to embrace e-learning in higher education institutions in sub-Saharan Africa, there are capacity challenges that need to be addressed. These challenges have led some institutions not to embrace e-learning or with a blended model of delivery with students also attending classes physically. For the 12 institutions that participated in the assessment, two do not use e-learning, while ten use it. However, out of the latter, three have used e-learning for a period of ten years while seven have used e-learning for less than five years. As far as the platform is concerned, Moodle, often “usually implemented institution-wide” (Cheung Kong et al, 2017), is seen to be the most used platform for e-learning. All institutions have complained about a lack of technical capacities to fully use e-learning such as lack of infrastructure and staff training gaps.

Use of e-learning in partner countries and institutions

While the study reveals higher adoption of e-learning mode of delivery in higher education institutions, participating institutions note that there is a great need for the adoption of e-learning despite the technological challenges that individual institutions are facing as well as challenges facing countries in sub-Saharan Africa in general. Participants note that to increase access to tertiary education in respective countries, e-learning is a solution because most institutions lack space to accommodate a lot of students. They also cite convenience that e-learning offers to students that cannot manage on-campus learning. Other studies that have been conducted in partner countries have indicated that Covid-19 pandemic accelerated the use of e-learning in higher education institutions (Mpirirwe et al, 2021). While some institutions had already adopted OdeL model before the pandemic, some institutions embraced the model during and after the pandemic, while others also dropped the model after embracing it due to challenges they faced. One participant stated that

e-learning adoption is a must especially this time when technology is advancing and at this time when sub-Saharan Africa is lagging behind in terms of access to higher education due to space challenges (personal interview)

CMS and LMS used

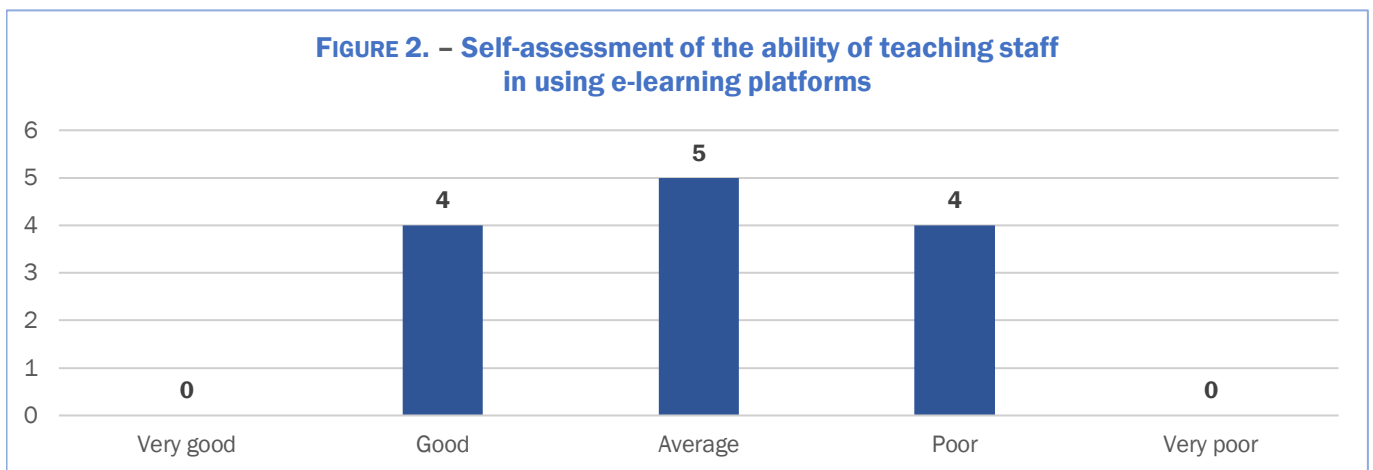
The study revealed that most participant higher education institutions (8 out of 10) use Moodle as content management system, while 2 use Google Classroom. When the institutions were asked to indicate other CMS/LMS they are familiar with, they indicated the following: Canvas, Blackboard, Edvance 360, Brightspace, Articulate, Disco, Ganesha, Claroline, WebCT and EdX.

Ability of the teaching staff in using e-learning platforms

The assessment rated the ability of the teaching staff in participating institutions in using e-learning platforms, as it has been done in some other backgrounds. As an example, Collin et al (2018) tried to characterize the profiles of university teachers adopting technologies, through a questionnaire completed by 391 university teachers from two universities in Québec. Ivala (2018) states that:

The Moodle curriculum promotes horizontal (societal), vertical (discipline), and diagonal (personal) needs that are generated by competence-based, performance and pragmatic curricula (p. 171).

In the CoMMPASS assessment, the abilities were rated on a scale of very poor, poor, moderate, good, and very good. Out of the 12 institutions that responded to this question, 4 participant institutions indicated good abilities, 5 of which indicated having average abilities, while the other 3 indicated poor on abilities of staff in using e-learning platforms.



Participating institutions were asked to cite benefits of CMS/LMS that they use. For those that mentioned Moodle as their platform indicated the following benefits;

- Moodle is an open-source learning management systems hence it is cost effective
- Moodle has a wide variety of plugins that are downloadable (some of these plugins are free and others are paid for)
- Moodle is a very user-friendly learning management system for both instructors and learners
- Moodle’s usability cuts across multiple electronic devices with ease of application in both IOS, and Android in addition to all browsers.

Two institutions that indicated they don’t use e-learning cited lack of infrastructure and capacity in their country as well as their institutions to support e-learning. While one institution using google classroom indicated that they do not have Moodle but planning to have one in the near future, however, currently they do not have resources and infrastructure to support Moodle. One participant institution stated that:

We are aware of Moodle but our institution lacks appropriate ICT infrastructure and support service to adopt it. Apart from that both staff and students lack training in Moodle, hence we use Google Classroom although it is still challenging (personal interview)

Challenges of e-learning

Participating institutions cited the following as challenges of e-learning in their countries and institutions;

- (a) Server overloads especially when majority of students are online and this affects efficiency of the system
- (b) Lack of university wide annual subscriptions to more advanced tools for synchronous learning, such as Zoom and Teams embedded in the learning management system
- (c) Lack of suitable electronic devices and sustainable internet connectivity to support e-learning
- (d) Lack of training in instructional design for instructors
- (e) Lack of training for students to effectively use e-learning
- (f) High cost of data in other countries limit accessibility
- (g) Internet connection problems in some countries

One participating institution indicated that sub-Saharan Africa faces numerous challenges, so e-learning cannot be fully adopted:

Until our institutions address issues of capacity in infrastructure, training gaps and attitude towards e-learning, then we will embrace the technology for most of the programmes. We see that it will take a long time due to funding priorities in our countries and institutions (personal interview)

E-learning needs

Participating institutions cited the following as e-learning needs;

- (a) Improved national technological infrastructure which currently is not conducive for full adoption of OdeL
- (b) Improved funding in OdeL in higher education institutions both from government and corporate world and international donors so as to increase tertiary education access
- (c) Capacity building of OdeL directorates in the institutions in terms of buildings, equipment, and well-trained staff
- (d) Capacity building of Academic staff and students in OdeL.
- (e) Increase access of computers and mobile devices to students by making computers and mobile devices affordable to students
- (f) Improve internet connectivity in schools and make data affordable
- (g) Make e-learning a safe and secure environment for users

Legal frameworks for e-learning

The assessment sought to find out the existence of OdeL legal or policy frameworks in partner countries either at country level or institutional level. The findings are that some countries have existing policies while other countries are in the process of developing policies, yet others do not have.

In Uganda, the National Council for Higher Education (NCHE), a higher education regulating body in Uganda, adopted a minimum standard for Open Distance and E-Learning programmes in 2019. The standards include: needs assessment, accreditation requirements, governance and management, financial resource management, human resources,

infrastructure and facilities, course design and course materials development, and course delivery and learner support services.

Makerere University developed a policy on Open, Distance, and E-Learning which was approved in 2015. The policy aimed to provide a framework for mainstreaming ODeL into different academic programmes in Makerere University while increasing access to higher education in Uganda, and assuring quality of ODeL delivered programmes.

E-learning impact studies

Most studies in sub-Saharan Africa focused on e-learning experiences other than an assessment of technological solutions. However, some countries conducted impact studies on the capacities of e-learning. In a 2021 study that was conducted in Uganda by Mpirirwe et al, to establish the type of e-learning platforms adopted by educational institutions in Kampala, the results showed that most popular platform is Moodle at 98.7%. However, the e-learning platforms were mainly used for posting learning materials and facilitating teacher-student interactions (97.9%), but less for managing assessment for academic progression (73.9%).

In a related study conducted in Malawi, Kayange (2019) focused on the importance and challenges of e-learning in developing countries. He found the following to be the challenges of e-learning: availability and ease of access to internet, electricity challenges, insufficient ICT infrastructure, and lack of trained personnel. ICT illiteracy levels also affect the adoption of e-learning in Malawi.

In another study that was conducted in Ghana by Kotoua et al (2015) found that online education in universities is low and students still prefer face to face classroom teaching.

In the CoMMPASS assessment, participants were also asked to rate the usability of the systems that they use, and Moodle which happens to be the most used system by institutions was described as follows;

- (a) Adaptable.
- (b) Technical handling is good
- (c) It has an ability to accommodate different users
- (d) Can work well on different devices such as smartphones, and laptops
- (e) It is inter operable with other applications
- (f) Can use emails for communication
- (g) The system can produce reports that can be accessed by users

Recommendations

The recommendations on the e-learning management system in this report have taken into consideration the following;

- (a) Which learning management system is familiar and mostly used by institutions in sub-Saharan Africa?
- (b) Can the CMS/LMS be used as a white label? i.e., can the system be adapted according to the project's specially developed corporate identity?
- (c) Will the technical handling of the learning process for the participants in the CMS/LMS be intuitive, uncomplicated and flexible?

- (d) Can the system accommodate learners with different (also those with limited) experiences in the field of online self-study?
- (e) Does the system provide free authoring tools that enable team members to technically produce content without the need of a developer?
- (f) Can the system work smoothly on other electronic devices such as smartphones, tablets, and other mobile devices?
- (g) Usability and adaptability of the system
- (h) Cost effectiveness of the system

Based on the above considerations, having analysed the responses from the partner institutions that participated in the assessment of e-learning technological solutions and needs assessment, it is considered preferable to recommend Moodle as a CMS/LMS to be adopted subject for approval based on the following:

- The assessment has indicated that despite e-learning not being used by some institutions that participated in the study, Moodle came out as the most familiar CMS/LMS.
- Moodle is a platform that satisfies most of the considerations that were prior determined by the project developers in some of the following areas;

Advantages of Moodle

Moodle is free open-source software (FOSS), under the GNU General Public License, which can be modified for both commercial and non-commercial projects without any licensing fees and benefit from the cost-efficiencies, flexibility and other advantages. In Moodle, each course is set up with default course front page from which you as the learner can access the course content, resources, and activities.

It is customisable in the sense that the system be adapted according to the project’s specially developed corporate identity. Refer to the image below where an institution customised the interface. The platform is designed in such a way that lessons can contain text, images, videos, audio among others, and hands-on and assessment activities. The image below shows some tools that can help both students and instructors to navigate the page in a flexible manner.

Moodle allows online teaching by voice heard by learners on Big Blue Button and learners can also speak back to the instructor. Moodle also has a public chat space which allows instructors and learners to communicate through a chat. The image below shows an interface for public chat space. It also provides for a webcam which is a video camera that feeds or streams an image or video in real time to or through a computer to a computer network, such as the internet.

The system has a mechanism that enable users to upload a document that can be downloaded by viewers of a live conference at any time. The image below shows a feature for upload and download.

Learner support services (LSSs) is a generic term which is applied to the range of services that are developed by institutions in order to assist their learners to meet their learning objectives; to gain the knowledge, expertise and skills to be successful and complete their course or studies.

There are different tools for learner support that distance education institutions use, including audio-visual technologies, online communication, face-to-face tutorials, group induction sessions, study workshops, guidance and counselling

sessions, work place mentors, peer learning, access to local libraries, organisation of resource centres, telephone teaching and communication, social media, and interactive teaching through TV and Radio

Capacity building for e-learning

This report recommend that CoMMPASS should build capacity of the project beneficiaries in the following areas;

- (a) Training of trainers in the SPOC
- (b) Training of beneficiary students in the SPOC
- (c) Communicate to beneficiary institutions on the enabling technological environment and the technological requirements for successful implementation of the SPOC

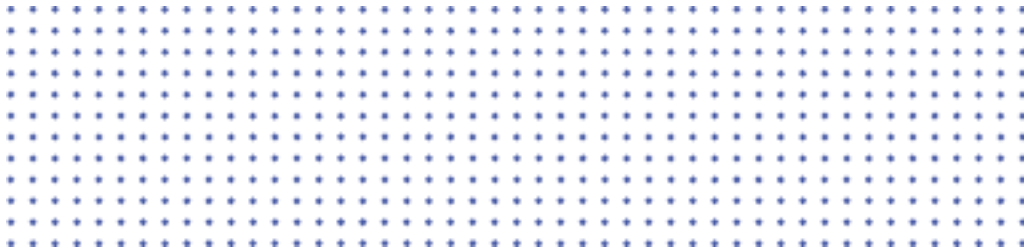


CONCLUSION

This report has focused on the e-learning capacities and needs assessments that were conducted among higher education institutions in sub-Saharan Africa. A total of 12 universities comprising partner and associate partner institutions of CoMMPASS project were involved in the qualitative study. The report aimed to make recommendations of the e-learning technological solutions best suited for a CoMMPASS SPOC that is to be developed.

The assessment focused on the following areas: e-learning content management systems mostly used in sub-Saharan Africa, e-learning technological needs, and challenges of using e-learning technologies. The study found that Moodle is the most used e-learning platform.

However, apart from lack of sufficient and reliable ICT infrastructure it has been discovered that institutions face other challenges with e-learning including capacity of institutions, administrators, instructors, and students. The report recommends that Moodle should be adopted and that before implementation, trainings on the use of the platform should be conducted targeting all project beneficiaries.



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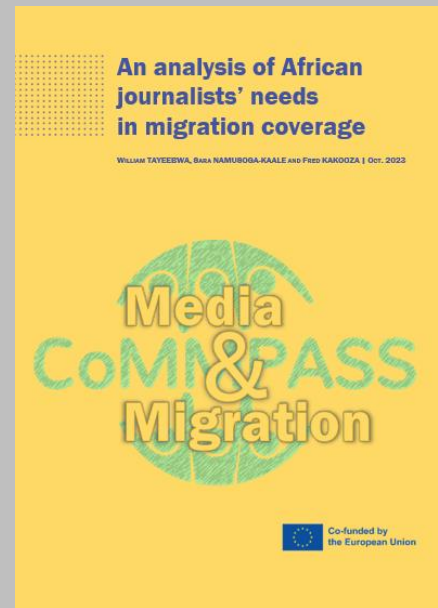
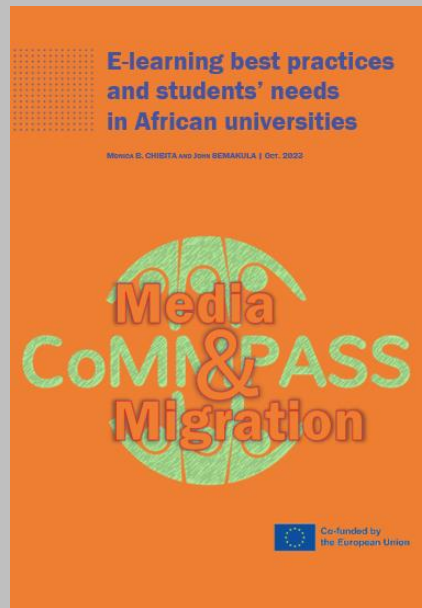
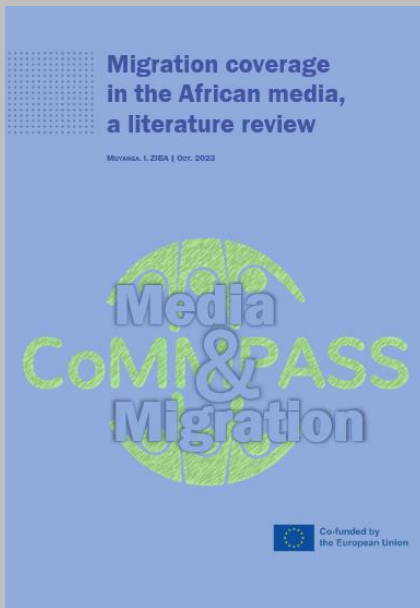
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