

Barriers and Coping Strategies to Adoption of Open, Distance and E-learning in Tertiary Institutions in Uganda

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Abstract

There is a clear indication that the level of adoption of Open, Distance and e-Learning (ODeL) by tertiary institutions is still very low in Uganda. This study examines the barriers and possible strategies to improve the adoption of ODeL in tertiary institutions, which is critical in teaching and learning. This study used a qualitative research approach involving conversational focus discussion groups to explore the institutional administrators' perspectives on the level of adoption of ODeL. The study results showed a drop in the enrolment levels in most tertiary institutions during the Covid -19 period. Whereas a few ICT facilities were available in all institutions, there was no indication that some were specifically dedicated to ODeL use. Critical barriers to ODeL adoption included the high cost of equipment needed to start ODeL, limited internet bandwidth, the high cost of data, limited skills of the staff and students, practical academic programmes requiring physical presence, declining enrolment levels, programmes examined by external bodies that did not embrace online assessment, and lack of policies for ODeL implementation and assessment. The study recommends a participative approach involving different stakeholders right from management down to individual staff and students, developing institutional policy guidelines for ODeL, conducting institutional readiness for online teaching, learning and assessment, training staff and students, and creating the awareness that integrating ODeL into curricula is critical and a necessity. Therefore, concerted efforts by the tertiary institutions and government are pivotal to enable investment in ICT Infrastructure, the development of ODeL policy, and the training of staff and students of tertiary institutions to appreciate ODeL as a valuable mode of learning delivery in the contemporary world.

***Keywords:** Barriers; Strategies; ODeL; Tertiary institutions; ICT facilities; Internet access.*

Introduction

Open, Distance and e-Learning (ODEL) is an umbrella ellipsis representing teaching and learning approaches that employ a variety of electronic and non-electronic technologies (Muyinda, 2022). In practice, in teaching and learning, ODEL involves approaches like open learning, distance learning, electronic learning (e-learning), online learning, mobile learning (m-learning), flipped classroom and blended learning. The implication is that the ODEL approach to learning can be implemented with or without electronic resources and internet connection. In the case of tertiary institutions in Uganda, there seems to be a narrow perspective on ODEL with a bias towards e-learning.

Whereas the generally accepted meaning of tertiary institution considers all institutions offering formal post-secondary education, including public and private universities, colleges, technical training institutes and vocational schools (World Bank, 2021), in the Ugandan higher education context, tertiary institution refers to “any Public or Private Institution, School or Centre of Higher Education other than a University, one of the objects of which is to provide post-secondary education offering courses of study leading to the award of certificates or diplomas and conducting research and publish” (Universities and Other Tertiary Institutions Act [UOTIA], 2001, p.2). The inference is that while referring to tertiary institution in this study, all post-secondary educational institutions, with the exemption of universities and other degree-awarding institutions, are considered.

ODEL gives students who perform multiple roles and who are affected by the barriers of distance, cost and time an opportunity to study from wherever they are or whenever they wish to do so (Maboe, 2019). For effectiveness, ODEL adoption requires knowledge of technology among distance learning students and instructors since teaching and learning are often blended. It is critical for institutions to provide access to technological tools for students and staff to interact in an online learning environment. Dron (2022) posits that to be human is to be a user, a creator and a participant, in a world of technologies from computers to pedagogical methods. Whereas Anderson (2009) calls the relationship between technologies and pedagogies a dance relationship, Fawns (2022) terms the relationship as inextricably entangled. The implication is that, either directly or indirectly, learning is influenced by technologies, though at varying levels. Commentators contend that ODEL institutions should commit themselves to allocating sufficient resources to support staff and students academically, cognitively and administratively (Maboe, 2019). Literature indicates a wide variation between ODEL adoption and implementation between developed and developing countries. In the later case, until recently, there have been limited attempts to use e-learning alongside traditional classrooms (Al-Azawei, Parslow & Lundqvist, 2016). This could be accounted for by different barriers that are preventing the successful adoption and implementation of ODEL. In their study at Kyambogo University in Uganda, Wanami and Kintu (2019) posit that key barriers to the use of ODEL include delayed timely feedback on assignments and examinations, poor course assessments, poor methods of presentation and delivery of content, and limited peer support.

Literature Review

Trend in students’ enrolment during Covid-19 period

The World Health Organisation (WHO) declared Covid-19 a pandemic in 2020, soon after students had reported to schools and higher education institutions, and many of them reported a significant decline in student enrolment worldwide (Bassok & Shapiro, 2021; Musaddiq & Bacher-Hicks, 2021). This shrank tertiary education sector enrolment and threatened the viability of universities and colleges in many countries (MacGregor, 2022). Indeed, closure of educational institutions because of the Covid-19 pandemic affected over 1.6 billion learners (UNESCO, 2020; World Bank, 2020). The same sources indicate that in earlier comparable situations in Sierra Leone and Liberia after the Ebola outbreak, enrolment in educational institutions dropped by 13% and 25% respectively. Just like in many African countries, there has been a dramatic enrolment decline of over 30% in regions of Central Asia and Eastern Europe (MacGregor, 2022).

The implication is that the Covid-19 pandemic did not only affect the health sector but also the education sector, with an adverse impact on enrolment in the higher education sub-sector.

Barriers faced in embracing ODeL in higher education

Although the role of online learning cannot be underestimated in ODeL adoption and implementation, especially during the Covid-19 pandemic, it is not free of challenges (Sun et al., 2020). Literature indicates several barriers to embracing ODeL in the developing countries which include poor infrastructure, financial constraints, inadequate support, lack of e-learning knowledge and teachers' resistance to change (Al-Azawei et al., 2016; Kisanga & Ireson, 2015). Indeed, in Africa, and in Uganda in particular, constraints such as meagre financial resources, lack of e-learning knowledge and limited academic staff enthusiasm to change and adopt new learning technologies were observed. Moreover, Zamani and Esfijani (2016) classify barriers faced in ODeL adoption and implementation in terms of personal challenges (associated with internal personal features and behavioral habits), attitudinal inhibitors (internal variables that are related to the attitudes and perspectives of ODeL users) and contextual inhibitors (external variables that comprise the limited ICTs skills and organisational support in the use of ODeL). Relating to Uganda, attitudinal inhibitors such as limited access, appreciation and adoption of ICTs to enhance ODeL, loomed large during the Covid-19 pandemic period.

Poor ICT infrastructure is the main barrier to ODeL adoption and implementation (Zamani & Esfijani, 2016). Research indicates that low-income countries suffer from a lack of network infrastructures, computers and internet access, with an adverse effect on online learning (Ouma, 2021; Tadesse & Muluye, 2020; Zang, 2020). Indeed, limited infrastructure to support and sustain ODeL is a critical challenge in many universities in the developing world (Berhanu, 2010). In his earlier study in one university in Uganda, Ouma (2021) found poor ICT infrastructure and internet access to be critical impediments faced in online learning. Further still, Bagarukayo and Kalema (2015) posit that limited ICT infrastructure is a critical barrier to ODeL which does not allow the application of Web 2.0 technologies in many African countries. Acquiring, adopting and adapting the necessary ODeL infrastructure remain a costly enterprise (Pujari, 2020). Therefore, tertiary institutions in low-income countries like Uganda should make strategic decisions to invest in ODeL infrastructure for enhanced support, teaching and learning.

Financial constraints are yet another critical barrier to ODeL adoption and implementation globally but are more pronounced in many low-income countries (Niranjan, 2020; Ouma, 2021). The challenge of limited funding for ODeL implementation cuts across public and private educational institutions in the developing countries (Basilaia & Kavadze, 2020). Ouma (2021) argues that though external funding support could be sought by the universities, there is need for a strategic planning focus to deliberately devote more resources to ODeL infrastructure development and skills development for staff to effectively use the acquired infrastructure to achieve the desired learning outcomes. Indeed, Ouma's was a study conducted in Uganda and emphasises the challenges posed by limited finances that impede online learning in Uganda and other developing countries.

Research indicates that limited understanding of ODeL by the lecturers facilitating the implementation is a critical barrier to ODeL adoption, especially in the developing countries. This derives from their decimal earlier experiences, which shapes their attitude to ODeL (Fazio, 2007). For example, many lecturers consider ODeL to be synonymous with internet access and the use of e-mails for communication and information sharing (Muyinda, 2022; Unwin et al., 2010). Additionally, even where ODeL-enhanced technologies are used in teaching and learning in developing countries, many lecturers still lack sufficient knowledge and skills to effectively integrate technologies (Marwan, 2008; Ouma, 2021). The situation seems more precarious in Sub-Saharan Africa, where lecturers are hampered by limited training, knowledge and skills (Vegas, 2020). In the context of Uganda, from the literature, there is a clear indication of the existence of decimal ODeL knowledge and skills among students and staff that impedes the implementation process (Mayende et al., 2014; Muyinda, 2022; Ouma, 2019). Therefore, the above studies conducted in Uganda, Africa and Asia insinuate that lack of understanding and appreciation, as well as

limited knowledge and skills to champion the cause of ODeL implementation by academic staff in higher institutions of learning, is a critical impediment to the successful learning and enhancement of ODeL.

In the same vein, research findings indicate that lecturers' resistance to change and acceptance of ODeL as a formidable learning model hinders ODeL adoption (Garrison 2011; Mnyanyi, 2010; Nihuka & Voogt 2012). This attitude has been branded as a resistance culture where lecturers habituated to the traditional physical classroom instructional mode are reluctant to adopt the ODeL mode of instruction (Rolfe et al., 2008). It is equally challenging for lecturers to put their instructional materials in other formats, which could be explained by limited self-esteem, limited ICT skills and absence of incentives to motivate the adoption of ODeL (Buabeng-Andoh, 2012; Saekow & Samson, 2011). This challenge of academic staff resistance to adopt new technologies for teaching and learning has been indicated in studies conducted in Uganda and Africa as a whole (Muyinda, 2022; Ouma, 2021). The implication is that if higher institutions of learning do not strategise to sensitise and train both academic and ICT support staff in the effective adoption and use of ODeL, staff resistance to change will remain a stumbling block to the success of ODeL as a model of instruction.

Strategies used in implementation of ODeL

Training of academic staff and administrators in ODeL pedagogies is vital for higher institutions of learning to address the poor perception that ODeL is limited to internet learning (Kisanga & Ireson, 2015; Wanami & Kintu, 2019). Through training, both novice academic staff and those experienced in ODeL can appreciate the potential of electronic media such as radio, television, the intranet, the internet, CDs and mobile telephony. ODeL awareness and sensitisation programmes for both staff and students ought to be considered and addressed. This is pivotal in addressing staff and students' reluctance, resistance and limited understanding of the ODeL mode of instruction. Additionally, it should be a responsibility of tertiary institutions to prepare students and staff to overcome negative perceptions about the overall quality of their ODeL-delivered programmes (Gaskell & Mills, 2014).

Research highlights the dire need by educational institutions to provide financial, technical and managerial support geared towards the adoption of ODeL (Kisanga & Ireson, 2015). This is critical to ensuring that the necessary ODeL infrastructure is in place with clear budget allocations, and that the desired technical support to both staff and students are carefully planned and supported. Studies indicate the need for government intervention to supplement the meagre resources and efforts of individual institutions to address financial constraints, as well as the need for collaborating with partner institutions and donor organisations (Kisanga & Ireson, 2015). In the Ugandan context, Wanami and Kintu (2019) urge educational institutions to ensure timely feedback on the assessment of students to build confidence in the ODeL mode of instruction, facilitate staff to attend regular refresher pedagogical courses, and nurture peer support practices among the students and staff to enhance their understanding of ODeL. All the above interventions have a financial cost implication for tertiary institutions, their staff and students, which necessitates thorough planning for effective allocation of resources.

The use of more affordable instructional materials like CDs is a reliable medium of accessing content in ODeL in geographical zones characterised by a scarcity of resources. Studies conducted in both developing and developed countries indicate that the challenges of blended learning in the ODeL could be mitigated by the use of CDs as an alternative means to access learning resources, supplemented by the use of print-based materials, radio and television (Kisanga & Ireson, 2015; Mtebe & Raphael, 2013). In the Ugandan context, where the challenge of poor methods of presentation and delivery of content in ODeL has been emphasised (Wanami & Kintu, 2019), the use of CDs, which is relatively affordable, with relevant instructional materials could support the reversal of the trend.

Higher education institutions need to design a strategic approach to the adoption of ODeL that factors out barriers and involve all key stakeholders in tertiary education (Kisanga & Ireson, 2015). The role and support of the institutional management team cannot be underestimated in ODeL adoption and implementation. Management should be informed of the benefits of ODeL to encourage them to become supportive because they have the power to allocate resources, especially regarding issues related to ICT

infrastructure and staff training. Although this claim assumes that the resources to be allocated for ODeL implementation are available, this is often not the case, especially in the Ugandan context (Muyinda, 2022; Ouma, 2021). That notwithstanding, the pertinent role of management in promoting and sustaining ODeL implementation is critical in higher education institutions.

Several commentators contend that educational institutions should budget for and invest in ICT infrastructure development as a critical component of the ODeL system (Niranjan, 2020; Tadesse & Muluye, 2020; Zang, 2020). In the context of Uganda, Muyinda (2022) and Ouma (2019) observe the presence of financial constraints in many higher educational institutions but underscore the need for strategic development of ODeL infrastructure and building the capacity of the students and staff for the sustained adoption of the ODeL mode of instruction. It can then be argued that amidst the existing hardships in the implementation of ODeL, tertiary institutions in Uganda have to invest in modern technologies if they are to remain relevant and competitive in the globalised educational environment.

Research Questions

This study explored the following questions:

- (i) What barriers do tertiary institutions in Uganda face in the adoption ODeL?
- (ii) What strategies should tertiary institutions adopt for the successful implementation of ODeL in Uganda?

Methodology

The study used a qualitative research approach involving conversational focus group discussions (FGDs) to collect data from the institutional managers involved in ODeL during and after the Covid-19 pandemic in Uganda. Preference for interpretivism over positivism in this study was premised on the argument that reality is socially constructed and it is through social construction that individuals attach meaning to reality. Given its qualitative nature, the study considered 20 tertiary institutions in Uganda selected from the four regions – Central (7), West (5), East (4) and North (4). The selection was limited to tertiary institutions that partially made an effort to use the ODeL approach to learning during the Covid-19 pandemic lockdown period.

Although the composition of the groups varied in terms of numbers per institution, the range was 8–12 participants drawn from different academic units (Morgan, 2013). The participants were comprised of members of institutional management involved in ODeL implementation. The exact numbers and the selection of participants were decided by the institutional management but there had to be representation from management, staff and students (based on their involvement in ODeL management, teaching and learning) so that responses could be obtained from the right respondents.

The study had 20 FGDs with 8–12 participants in each group. The names of the tertiary institutions were concealed in line with research ethical values (Fraenkel & Wallen, 1996). English was used as a medium of discussion since all the participants could speak and write using English as a medium of communication. Individual participants consented prior to the start of the FGDs. The FGD method allowed probing by the researchers (Morgan, 2013). A focus group guide was designed to guide the FGDs with concise and clear questions (Krueger & Casey, 2015). The FGD guide was piloted in two institutions outside the main study that informed further improvement. Participants consented before the start of the group conversation (Cohen, Manion, & Morrison, 2011).

Data Analysis

The study used the thematic analytic technique based on data reduction, data display, data verification and drawing conclusions in data analysis (Miles & Huberman, 1994). Field notes were made and the audio-recorded conversations were transcribed. The reviewed transcripts were then imported into Nvivo 11 data organisation computer software for data organisation and coding by creating nodes based on the study themes and sub-themes. The 20 tertiary institutions were coded as FGD 1, FGD 2, ..., FGD 20. The FGD

numbers were given randomly and are not indicative of any seniority or credibility attached to specific tertiary institutions. During the analysis, some of the qualitative data were quantified and expressed in form of percentages.

Results and Discussion

Barriers faced in adopting and using ODeL

Challenges posed by examining bodies

The majority of the study participants from the tertiary institutions claimed that the examining bodies were unable to examine students online. Results reveal that the majority of the tertiary institutions in Uganda depend on external examining bodies for summative assessment of their students:

A majority of the students are examined by Uganda Business and Technical Examinations Board (UBTEB), and the examination board did not have provisions for examining students online, hence the institution could not apply to implement ODeL system. Even our programmes that are examined by national bodies like Uganda Nurses and Midwives Examination Board (UNMEB) and Uganda Allied Health Examinations Board (UAHEB) came to [a] halt because the examining bodies lacked provision for online examination. (FGD 12)

Our institution has not embraced ODeL due to the nature of programmes mounted and the examining bodies involved. These bodies like UBTEB have not yet embraced ODeL in their mode of assessment. (FGD 4)

Results reveal the critical role of assessment in driving learning using the ODeL mode. Given the nationwide lockdown during the Covid-19 period, physical assessments, just like physical classroom lessons, were not possible as the examining bodies had not provided for online assessments, hence the inability of the majority of tertiary institutions to mount their programmes using the ODeL mode. Similarly, an earlier study in Uganda attributes the reluctance of higher institutions to embrace ODeL to the fear of possible court cases brought by students based on the claim that their admission letters had no clause relating to either online learning or examination (Ouma, 2020).

The practical nature of most courses

Astonishingly, majority of the participants and tertiary institutions expressed the view that the practical nature of most of their academic programmes could not allow them to adopt and embrace the ODeL mode of delivery. What makes it peculiar is the seemingly general perception that practical academic programmes are incompatible with the ODeL system, which is, however, not the case in all circumstances since there are simulations to enhance practical work using ODeL. The results suggest that hands-on practical experience is needed for practical programmes which could not be supported by the ODeL system:

We did not embrace ODeL system because the programmes offered are mainly practical (hands-on), hence requiring physical presence of the students. Due their practical nature, our courses require on-site practical training, hence it was not possible to take on ODeL system. (FGD 18)

The institution used an open distance mode of learning, which was restricted to theoretical lessons. The institute used a blended approach involving use of Zoom to teach but it was not effective. Practical lessons or practicum was not conducted during the implementation of open distance learning to the students. (FGD 20)

This finding insinuates that there was limited adoption and use of ICTs in teaching and learning in the study areas, which corroborates the findings of several earlier studies (Ouma, 2021; Tadesse & Muluye, 2020; Zamani & Esfijani, 2016; Zang, 2020) that contend that low-income countries suffer from a lack of network infrastructures, computers and internet access, with an adverse effect on pedagogy and learning. The inability to conduct practical lessons using the ODeL system signals not only limited knowledge

about the use of ICTs by students and staff, but also the absence of the right ODeL facilities and equipment in the study context.

Lack of ODeL infrastructure, appropriate gadgets and supportive policies

The study consistently found a lack of policy documents such as those about ICT, ODeL and examinations, to guide on ODeL adoption and implementation in the tertiary institutions:

The equipment needed to start ODeL is quite expensive. Our college does not have a learning management system with clear ODeL guiding policy. The institution has only 20 computers and we depend on the internet provision by the hospital, which is often insufficient for educational purposes. (FGD 15)

Like earlier studies carried out in Uganda and elsewhere (Bagarukayo & Kalema, 2015; Ouma, 2019; Pujari, 2020), the results from 80% of the participants consistently indicated the absence of ODeL support policies and infrastructure. The implication is that ODeL implementation could not be strengthened without the presence of guiding policy documents and basic ICT facilities and equipment, hence the limited drive for a changeover to ODeL pedagogies in the study area. Similarly, the results indicated that both staff and students at the tertiary institutions lacked appropriate gadgets such as laptops and mobile telephony to access learning using the ODeL system:

A number of students and staff did not have appropriate gadgets for Online teaching and learning. In addition, staff and students lacked technical knowhow. Poor quality gadgets which are not compatible with ODeL tools. Most students did not have ICT gadgets to help facilitate learning using Zoom. This affected learning through the platform.

Indeed, the poor ICT infrastructure and non-affordability of facilities and equipment by educational institutions, staff and students have been observed as a critical barrier to ODeL which do not allow application of Web 2.0 technologies in Africa (Bagarukayo & Kalema, 2015; Pujari, 2020). In line with Maboe (2019), this situation necessitates intervention by tertiary institutions through liaising with ICT providers and so that they are able to supply the necessary ICT gadgets to staff and students on affordable terms.

Unreliable internet network connectivity and accessibility

The results reveal that poor internet connectivity with meagre bandwidth is a critical barrier to ODeL adoption and implementation in most tertiary institutions:

There were issues of network challenges. For most of the time, the college did not have internet. There is poor network coverage in the college and a number of students come from remote areas with poor network connectivity and power challenges.

The institute is located in hard-to-reach area. We can't connect to technologies like fibre which have fast connection. Currently we are using microwave which is old technology with poor signal connection. Internet speed of (10 mbps) still on the low end to support effective teaching and learning.

Results suggest that tertiary institutions located in rural and hard-to-reach places such as islands and mountainous areas have an internet network too poor to reliably support ODeL and sustain learning. This finding corroborates those of other studies (Ouma, 2019; Sanga, 2020) that indicate that poor internet connectivity and limited bandwidth are ODeL-distracting elements in the developing world. The implication is that poor internet access breeds inefficiency in ODeL implementation, especially in a virtual learning environment.

High cost of data

Consistent with the literature, the expensive nature of ODeL (specifically the online component) in connection with data has been observed in Uganda and other low-income countries (Basilaia & Kvavadze, 2020; Niranjana, 2020; Ouma, 2021). This finance-related barrier to ODeL adoption and implementation was severally pointed out by management, staff and students of tertiary institutions:

The institute does not have funds to implement ODeL systems. A number of students and staff did not have money for data. Data is expensive for privately sponsored students. (FGD 11)

Data is given to government-sponsored students only, leaving out private students to fend for themselves. The high costs of internet bundles affected students' involvement in learning. Online learning requires use of internet. However, the high costs make it difficult to afford by the students. (FGD 16)

This result insinuates that amidst financial hardships, ODeL, in the form of online learning, limits learning access to only those who can afford data and blocks those who cannot afford data from accessing learning resources. The results corroborate those of earlier studies that underpin financial constraints as a critical barrier to embracing ODeL in low-income countries (Niranjan, 2020; Ouma, 2021)

Limited skills and knowledge by staff and students

The results reveal that among both students and staff the skills and knowledge required to use the ODeL approach to learning were limited in the majority of the tertiary institutions:

A number of students and staff lacked ICT skills and it took time to have them trained. The staff are so reluctant to adopt online learning as demonstrated from the low enrolment into the Enabel-facilitated courses. Both staff and students need a lot of capacity building. Their level of apprehension of ICT was very low. In addition, there were reported resistances from the staff. (FDG 1)

The students are used to face-to-face interaction with the lecturers, and therefore reluctant to adopt ODeL system, particularly online learning. We need to prepare both the students and their lecturers to consider this form of learning. (FGD 14)

The institute was not prepared and did not have capacity to implement ODeL. The limited facilities in place, training of staff and students and the adaptation to ODeL by staff and management were some of the issues that affected the adoption of ODeL as an alternative mode for continuity of learning during the Covid-19 period. The tutors underwent training but it was not sufficient for them to be effective. (FGD 19)

The challenge of limited knowledge, skills and capacity to adopt and adapt to the ODeL system is not peculiar to Uganda and Africa (Ouma, 2019; Vegas, 2020); it has also been observed in studies conducted in other developing countries like Indonesia (Marwan, 2008). The claim that students are used to face-to-face interaction and reluctant to adopt the ODeL system, as shown in this study, is consistent with the findings of an earlier study that described the students' inability to meet physically as making them feel like having 'invisible' members (Ouma, 2021). The gist of this is that as a prerequisite to effective ODeL implementation, tertiary institutions should strategically invest in capacity building for their respective staff and students.

Distracting learning environments

The study found that several places from which the students attended the lessons during the virtual classes were noisy and not conducive to learning and yet the lecturers had limited control over such circumstances:

There were cases of distraction of the learning due to the poor learning environments of the learners. Some parents did not believe in distance learning. Sometimes, students could either forget to mute or genuinely could not mute their mobile telephony or laptops for lack of the necessary knowledge and skills. (FGD 12)

It can be construed from the results that the learning environment situation has a direct influence on learning, that is, a noise-free environment enhances learning, and the inverse is also true. The perceived negative connotation of the quality of distance learning by the parents corroborates what has been termed as a resistance culture by those accustomed to traditional physical classroom instruction and reluctance to change (Garrison 2011; Nihuka & Voogt 2012; Rolfe et al., 2008).

Strategies used in the implementation of ODeL

Initial investment in affordable ODeL equipment by tertiary institutions

Although the study results conform to those of earlier studies indicating that financial constraints are a critical barrier to ODeL adoption and implementation (Basilaia & Kvavadze, 2020; Niranjan, 2020; Ouma,

2021), the participants claimed that increased investment in affordable technologies by tertiary institutions ensured that learning was not halted with or without physical meeting in the classroom environment:

We could strengthen the use of print materials that can reach and be used by the students in remote and hard-to-reach areas in the country. The CDs are affordable compared to other modern technologies. (FGD 4)

The institution should be able to provide a conducive environment for the lecturers to record their lectures and be able to share with the students before the scheduled timetable for teaching and learning. Our students can get the recorded lessons and go through them even in places without internet connection. (FGD 15)

In line with Kisanga and Ireson (2015) and Mtebe and Raphael (2013), the results suggest that the use of more affordable instructional materials like CDs and print materials is a reliable medium of accessing content in ODeL, especially in resource-scarce learning environments. Additionally, the results highlight the need for lecturers to record their lectures to enable students to access recorded learning materials even when they missed the real-time class lessons when confronted with unreliable internet connectivity.

Winning the support of management in the tertiary institution

The majority of the participants claimed that the ODeL approach to learning could be strengthened if there is proper buy-in and support from the management of tertiary institutions. This should be reflected in terms of ODeL policy development, infrastructure enhancement, financial support and ensuring that staff and students are adequately prepared to become active in adopting and using ODeL to facilitate learning:

Our institutional top management shows commitment and readiness to invest and blossom ODeL implementation. The staff (both academic and administrative) and the students are appreciating the role of ODeL in institutional academic programmes delivery and the management are seen playing their support role. (FGD 7)

Emphasis on the need for management strategic intervention in this study corroborates the findings of earlier studies that underpin the importance of the role and support of the institutional top management in ODeL adoption and implementation in educational institutions (Kisanga & Ireson, 2015; Ouma, 2021). The reasoning is that management has the power to take decisions and influence budgeting and resource allocation to facilitate ODeL implementation.

Developing ODeL-supportive policies

The study found that to have a clear direction in the implementation of the ODeL system, tertiary institutions should formulate an ODeL policy and other related policies, such as ICT and examinations policies:

Our institution developed an ICT policy and an ODeL policy and were approved by the Academic Board and Governing Council. There is also need to revise the examination policy to incorporate the aspects of ODeL. (FGD 2)

In line with several studies (Bagarukayo & Kalema, 2015; Ouma, 2019; Pujari, 2020), the results suggest that for the effective implementation of ODeL system, tertiary institutions should have relevant policy or policy guidelines for staff, students and management. Lack of policy or having a faulty policy amount to planning for ODeL implementation 'without a plan', which is most likely to have an adverse effect on the implementation owing to unclear policy guidelines.

Regularisation of programme review and accreditation

Results from participants and tertiary institutions revealed the need for a review of academic programmes to incorporate the aspects of ODeL and have them approved by the academic organs at institutional level. Although many students' representatives (65%) did not have a clear understanding of the programme accreditation process, the staff and management representatives indicated the need to regularly conduct programme reviews and seek accreditation from the National Council for Higher Education (NCHE) after incorporating components of ODeL:

The institution has taken the initiative to regularise programme accreditation to ensure the accreditation of all programmes not accredited and a review of those that require review. The review process addresses the ODeL component so that it becomes part of the curriculum in terms of mode of delivery. (FGD 10)

The institution was in the process of reviewing its strategic plan, and would see how to incorporate ODeL system. We need to submit an application to NCHE for approval of ODeL when ready and should make efforts to implement advanced ODeL strategies. (FGD 16)

The results imply that the programme review process by tertiary institutions should make the ODeL component visible, applicable and relevant to the learning needs of the students and staff. Consistent with Kasanga and Ireson (2015), the results indicate that even institutions that hardly embraced ODeL during the Covid-19 pandemic lockdown period are now incorporating it into their strategic planning in preparation for seeking approval from the NCHE, which regulates higher education in Uganda.

Conducting regular institutional readiness assessment for ODeL

The majority of the participants from tertiary institutions recommended that there should be regular institutional readiness assessments for both students and staff to ascertain their readiness to embark on ODeL implementation:

We carry out institutional readiness assessment to determine the level of readiness for online teaching and learning by our staff and students. A survey to ascertain the readiness of the students for online teaching, learning and assessment is conducted annually. (FGD 3)

The implication of the results is that tertiary institutions should not be seen to be forcing students and staff to adopt and embrace ODeL, which is implied by the fact that stakeholders are not consulted to establish their readiness to embrace ODeL implementation. This conforms to what Ouma (2021) phrased that planned regular stakeholders' readiness assessment could be a 'passport' to nurturing a sustainable ODeL implementation in the tertiary institutions.

Organising regular training programmes for students and staff

The study found that the majority of the participants indicated the need for frequent training of staff and students not only to appreciate but also to adopt and use the ODeL system in educational service delivery:

Trainings are conducted for both staff and students on virtualisation or onlinisation of learning. Such trainings should be regularly conducted. We train the students on online teaching, learning and assessment. (FGD 9)

There is training of staff on approaches of learning and teaching online. Such trainings are regularly conducted. Staff are encouraged to undertake such online modules. We retool the staff by equipping them with ICT pedagogical skills and knowledge needed in online teaching, learning and assessment. (FGD 14)

This finding is consistent with those of earlier research (Kisanga & Ireson, 2015; Muyinda, 2022; Ouma, 2021), who posit that sustainable progress in ODeL implementation leans much on adequate orientation and regular training programmes for students, staff and administrators, and addresses the poor perception that limits ODeL to internet learning.

Conducting benchmarking and networking activities

The majority of the respondents and institutions were of the view that conducting benchmarking and networking activities between tertiary institutions in Uganda, and in the East African region as a whole, can enable them to learn from experiences elsewhere how to nurture a strong ODeL-driven culture and drive learning among the students:

We need to do more networking with internet service providers to benefit from zero-rate internet for learning management system. This should focus on seeking support from the mobile network service providers like MTN and Airtel. (FGD 7)

The institution undertakes benchmarking visits to other institutions to facilitate improvements in the ODeL delivery systems. I think we should undertake more benchmarking with other institutions like NTC Mubende and Kabale University on ODeL systems. (FGD 8)

The results imply that benchmarking activities expose tertiary institutions to ODeL practices in other tertiary institutions, hence constitute a learning ground to guide further improvement. Similarly, networking with like-minded educational institutions encourages knowledge and experience sharing about the implementation of ODeL to match the changing trends in educational pedagogy beyond the Covid-19 pandemic period.

Acquiring a reliable institutional learning management system

The results underscored the role of a learning management system (LMS) in tertiary institutions. The majority of the tertiary institutions lacked a well-defined LMS and merely relied on Zoom-based online lessons:

The institution should focus on developing a learning management system as a mitigation measure for such eventualities. We use Zoom, but Zoom alone without a clear learning management system is not enough to ensure continuous interactivity in learning. (FGD 17)

The implication is that with a formidable LMS such as Moodle to provide for interactivity of the students with the learning resources, among the students, and also between the students and their lecturers, the actualisation of ODeL in programme delivery and assessment should be one of the principal concerns and the focus of all tertiary institutions. Though the use of Zoom is commendable for real-time lesson delivery, interaction among the students and lecturers is tied to the scheduled institutional timetable, hence the need for a LMS to sustain learning during and after the scheduled timetable allocation.

Strengthening the institutional ICT capacity

Developing and strengthening the institutional ICT capacity as a key driver of ODeL was noted by the majority of the participants in tertiary institutions. Both staff and students expressed the view that with a developed ICT capacity, tertiary institutions can propel ODeL implementation and enable learning beyond the physical classroom environment:

Our institution is strengthening its ICT capacity, including the provision of internet. There is need to procure more computers, encourage students to procure for themselves laptops and bolster the internet capacity. (FGD 9)

Basing on the ICT resources the institution has, it has capacity to implement ODeL. However, the institution needs to invest in regular training of the lecturers for improved implementation of ODeL. In addition, there is need to develop an appropriate learning management system for the institution. (FGD 13)

The results are consistent with those of earlier studies in both low- and high-income countries that stress the central role educational institutions play in ICT provision to facilitate learning during lockdown periods and that is likely to remain a common practice in learning (Muyinda, 2022; Ouma, 2019; Sanga, 2020). In the same vein, commentators have termed the entangled relationship between technologies and pedagogies as a dance relationship (Anderson, 2009; Dron, 2022; Fawns, 2022). The implication is that with the adoption of ODeL, the bond between pedagogies and technologies has been strengthened and seems to be irreversible.

Conclusion and Recommendations

Limited understanding of the scope of ODeL was observed as a common phenomenon in all the tertiary institutions in the study. The majority of the tertiary institutions seemed to treat ODeL merely as online learning that involves the use of electronic resources and the internet. There is need to broaden the scope of ODeL to also consider distance learning, flipped classroom and blended learning, in addition to virtual learning. The use of recorded videos and social media, especially where virtual learning is limited, can be

a good boost to achieving ODeL implementation objectives of ensuring continuity of learning during and beyond national restrictions to physical meetings.

ODeL adoption and use have been sluggish in most tertiary institutions in Uganda. This has been caused by a number of barriers, ranging from limited finances, poor infrastructure and facilities, limited technical support to staff and students, and inadequate knowledge and skills enhancement, to the general public perception that the ODeL system may not yield quality learning equivalent to what is obtained from the traditional physical classroom environment. This is merely attitudinal and tertiary institutions should be prepared to tame and nurture their key stakeholders, namely students, parents and staff, to appreciate and keenly adopt and adapt to the ODeL model. The role of ODeL in enhancing pedagogy has been recognised, especially during the Covid-19 pandemic period when there was a total lockdown that affected physical learning in tertiary institutions in Uganda and beyond. Nonetheless, the use of the ODeL system is likely to stay during and even after the notorious Covid-19 period, hence the need for tertiary institutions to prepare themselves, embrace ODeL and be able to deliver competitive learning in the current globalised educational environment.

The future of ODeL in Uganda, specifically in tertiary institutions, necessitates breaking down the related barriers and instituting an ODeL barrier-free situation for the different stakeholders (namely students, staff, parents and management) to enable them to appreciate, adopt and use ODeL as an alternative mode of learning delivery that complements the physical face-to-face learning system. Breaking down the barriers to ODeL in tertiary institutions in Uganda requires the concerted effort of the individual tertiary institutions, the government and development partners. This would involve investing in ODeL infrastructure and strengthening the capacity and skills of staff and students to acclimatise themselves to this seemingly unavoidable system of learning in the contemporary world.

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