

A Digital Education Transformation Roadmap to achieve a Distributed Learning Ecosystem: Case-Study of the University of Mauritius

Abstract

The University of Mauritius embarked on the open and distance learning journey in 1993 and engaged in the promotion of distance eLearning and technology-enhanced learning in 2001. The University has moved from a traditional credit system to the learner-centered credit system, inspired by the ECTS model in 2018. Such a model is heavily reliant on improved teaching and learning infrastructure, including technology-enabled educational practices, as well as on smart and improved services to academics and students. Within the 21st century context, the strategy of the university is to shift the focus from distance education and dual-mode status, as digital technologies have helped to overcome the distance and real-time barrier through virtualization and two-way communication in real-time. With the pervasiveness of technologies and their influence on higher education in a global context, the digital transformation of universities can bring a real shift in paradigm the need to achieve dual-mode status to the mode of "distributed learning – friendly" institution. In this paper, we report the journey of the University of Mauritius through its different transitions from traditional distance education to eLearning and to finally engage in a holistic digital learning transformation by shifting to a learner-centered, technology-enabled educational model. The key components of the model are the (i) Policy Environment, (ii) Centre for Innovative & Lifelong Learning, (iii) Digital Learning Infrastructure, (iv) Training & Capacity-Building and (v) Monitoring & Evaluation.

Introduction

New trends in technology have prompted education reformers to rethink and question the value and sufficiency of the traditional curriculum to impart education in the digital age. On the other hand, there are mixed results and criticisms of the so-called promises of e-learning to transform the teaching and learning landscape. Distance education was the subject of the same assumptions with the growth of e-Learning. While some researchers are still defending quite rightly to some extent, the idea that distance education and e-Learning are two distinct elements, institutions that are either open universities or traditional universities or even dual-mode institutions are subject to the pressure of adopting and integrating ICTs within their operational framework to remain competitive and to address the learning needs of the target audiences in the 21st century.

For the past two decades, the University has been emphasizing on the need to operate as a dual-mode institution as highlighted in its successive strategic plans. The concept of distance education emerged in the 1990s and the Centre for Distance Learning was established in 1993. In 2001, to catch the eLearning bandwagon, the VCILT was created in a bid to modernize the distance education concept by fully utilizing the possibilities offered by IT-enabled networked systems and the Internet. The main difficulty and barrier that has been faced at the University were that academics, in general, were reluctant to some extent to integrate ICTs in their teaching. This can

be attributed to the fact that the University has been stressing on the use of technologies to promote 'distance and online learning'.

In this paper, we report the journey of the University of Mauritius through its different transitions from traditional distance education to eLearning and to finally engage in a holistic digital learning transformation by shifting to a learner-centered, technology-enabled educational model. The key objective is now to depart from the dual-mode institutional model to put in place a Distributed Learning Ecosystem to help the University in its renewed vision to become a research-engaged and entrepreneurial institution.

The Distance Education Paradox, Technological Revolution and the Changing Higher Education Landscape

Holmberg (1989) highlighted that the main defining feature of distance education is the separation of teacher and learner, usually in both time and space. Garrison (1990) argued that the paradox that exists in distance education is that it is a phenomenon that has proved its existence but has not yet been able to define itself. This paradox is the result of laying focus on the term "distance" more than the term "education". Around three decades later, it can reasonably be argued that, in such a technologically-driven world dominated by the Internet and connectivity, the paradox is even more meaningful. However Guri-Rosenblit (2005, 2009) argued that e-Learning and distance education constituted two distinct phenomena, supporting the position of Bates (2005) who wrote that supporters of e-learning "who see e-learning as an educational paradigm shift, making obsolete all forms of distance education that preceded it" make a fundamental mistake, since "distance learning can exist without online learning, and online learning is not necessarily distance learning". According to Guri-Rosenblit (2009), "bridging over the digital divide, designing cost-effective modes of utilizing the new technologies, redesigning the roles of actors in the distributed teaching responsibility within the industrial model of distance education, and creating effective quality assurance mechanisms" are the key challenges for the future development of distance education within the digital age.

New trends in technology have prompted education reformers to rethink and question the value and sufficiency of the traditional curriculum to impart education in the digital age, also called 21st-century education (Craig 2009). Bryant (2012) highlighted that "there is little evidence that there has been institutional level change, in terms of teaching, learning, and assessment or pedagogical strategy, aside from changes in administrative processes connected to those strategies or to enshrine within them the didactic content-driven transmissive models of the existing pedagogy". The promises of the technological revolution have also not been matching the expectations concerning cost-savings and revenue generation, and such initiatives have been implemented to varying levels of successes unless and until the institutions overcome the challenge of scaling up those processes in a holistic manner (Bryant 2012). McAvania (2017) adopts a highly critical posture concerning the promises and failures of technologies to transform education and

institutions arguing that there has been too much focus on the technology in isolation, about its capacities and features rather than on looking at how it integrates or not with the educational practice.

It is clear from the literature that technological revolution is challenging higher education business models due to an implosion of online learning, with a major portion being offered for free under the concept of Massive Open Online Courses (MOOCs) or as Open Educational Resources (Economist 2014). The Economist (2014) further highlights the rising cost of higher education being transferred on to the students have increased student debts in the United States while predicting that in two decades, there will be mass bankruptcies among American colleges. According to Bryant (2012), complex challenges are awaiting the modern university in the digital age. Such challenges according to Bryant (2012) are linked to the impacts of ICTs on organizational operations, the need for learner-centered instruction, for the promotion of skills development, curriculum re-thinking and the needs of business and industry.

In this context of a redefinition and a rethinking of the higher education landscape within a technology-driven environment, the concept of distributed learning has emerged. Distributed learning cuts across traditional distance education and online learning and is also relevant in conventional face-to-face contexts where it is mainly referred to as blended learning (Moore et al. 2011). Distributed learning brings the best of both systems as the learner and the teacher in such a setting might explore any or more than one of these configurations within a course namely, (i) separation both in time and space, (ii) separation only in physical space but in real-time (e.g. a webinar), (iii) separation in time (asynchronous) but within hyperspace and (iv) in real-time and in same space (hyperspace) and finally they can also be in presential face-to-face.

With the pervasiveness of technologies and their influence on higher education in a global context, the digital transformation of universities can bring a real shift in paradigm the need to achieve dual-mode status to the mode of "distributed learning – friendly" institution. The concept of micro-campus has recently been coined by the University of Arizona as a distributed educational model, where students can get a degree of the University by studying in their own country following lectures on a blended learning model. Micro-campuses leverage technology to deliver cutting-edge education to students wherever they are in the world while preserving an in-class, on-campus experience through a local partner university (White 2017). Such a model relies heavily on the flipped classroom teaching and learning model.

The Context: eLearning at the University of Mauritius

The concept of distance education emerged in the 1990s and the Centre for Distance Learning was established in 1993. The impetus came from the need to adopt new teaching, and learning approach in certain modules, due to the inadequacy of the conventional method to fulfill the expectations of both "the students and the Faculty members". In this endeavor, the University of Mauritius was supported financially, and also in terms of expertise (through the Laurentian University, Canada),

by the Canadian International Development Agency (CIDA). Furthermore, a report in the early 90s by Sir John Daniel made the recommendation that the "University of Mauritius has the opportunity to rapidly expand its curriculum rapidly by the use of distance learning courses". The idea was to adopt the concept of a dual-mode institution in line with the philosophy of Rumble (1992) of a traditional face-to-face university using distance education to offer some courses off-campus to gain a competitive advantage over single-mode universities. The focus of the Centre for Distance Learning was initially on identifying courses with certain well-defined characteristics that could be offered on Distance Education mode. For instance, the cohort size and commonality across curriculums were determinant factors. The pedagogical approach consisted of a self-instructional manual complemented with 15-hour tutorial sessions in the replacement of 45 hours of lecturing. As of 2004, more than a dozen of 45-hour learning units were currently offered using print-based distance learning mode at the University of Mauritius via the Centre for Distance Learning (CDL). It has to be noted that at the CDL, "DE" is used to refer to the use of a mixed-mode approach, where there is more frequent interaction between the tutor and the student and where the clientele consisted mainly of on-campus students.

In 2001, to catch the eLearning bandwagon, the VCILT was created in a bid to modernize the distance education concept by fully utilizing the possibilities offered by IT-enabled networked systems and the Internet. One certainty is that it has surely brought in some important innovations in the teaching and learning landscape. Inevitably, as any innovative practices, it has brought its share of disruption in the traditional university setting, which are referred to as constructive disruption technologies. As an innovative practice would have to face, the eLearning initiative at the University of Mauritius had to face much more resistance than initially expected and the VCILT has had over the years to fight a battle to justify its existence in a traditional university setting. In 2004, the Lifelong Learning Cluster (LLC) was set up as an initiative of the VCILT. The LLC regroups three centers namely the VCILT, the CDL (now known as the Centre for Professional Development and Lifelong Learning) and the CITS (Centre for Information Technology and Systems).

This Lifelong Learning Cluster (LLC) was created to pool resources from these three Centres (human infrastructure and financial) to technologically design programs of studies and identify and supervise research projects in the ICT and Lifelong Learning. The LLC became the focal point for satisfying the existing and emerging needs of non-conventional learners. To summarise the concept, the LLC emerged as a virtual faculty that was empowered to mount and run its courses and enroll students on its taught and research programs, without compromising on the individual autonomy of any of the centers. Since its inception in 2004, the University has witnessed an exponential increase in the enrolment of students on the so-called 'non-conventional' programs of studies that regroups traditional distance education and online courses. Since 2004, the VCILT emerged to become the teaching, research, and development arm of the Lifelong Learning Cluster, the CITS as the ICT infrastructure arm and the CPDL as an essentially administrative arm of the cluster. In 2014 the University merged the CPDL and the VCILT to create the Centre for

Innovative & Lifelong Learning (CILL) to scale up the Distance eLearning initiative to offer fully online courses both locally and internationally and at the same time to consolidate the institution as a dual-mode University. The Centre offers some fully online and blended learning programs of studies in the fields of ICT, Education Technologies, Business Administration, Quality Assurance in Higher Education and some stand-alone modules.

The Problem Statement

For the past two decades, the University has been emphasizing on the need to operate as a dual-mode institution as highlighted in its successive strategic plans. In line with the arguments of Tallvid (2016), the main difficulty and barrier that has been faced at the University were that academics, in general, were reluctant to some extent to integrate ICTs in their teaching. This can be attributed to the fact that the University has been stressing on the use of technologies to promote 'distance and online learning'. Therefore, anyone without an interest in such a modality would stick to the traditional teaching and learning method. In 2017, the University has approved the technology-enabled learning policy and in 2018 shifted its teaching and learning system to a learner-centered educational model adapted from the European Credit Transfer System (ECTS). In this model, technology-enabled learning plays an important role to promote pedagogies such as flipped classroom, critical reflection, computer-mediated communication and interaction, virtual lectures and webinars. However, McAvinia (2017) highlighted that while "education at all levels has changed in the digital age, but the transformation has been slow". It is therefore stressed that the implementation strategies behind the technology-enabled learning policies have to be well articulated to ensure academics' uptake of the same. A digital transformation roadmap is essential to achieve the goal of the institution sustainably. The methodological approach to develop a digital transformation roadmap for the University of Mauritius is mainly qualitative using methods linked to (i) reflective practices from experience, (ii) a shared visioning process, (iii) desk-studies and (iv) analysis of international and regional trends in education, ICTs, and education technologies. Techniques such as future wheels, a Delphi exercise with key stakeholders and experts in the field as well as a future's workshop were applied following which the key components of the roadmap emerged. These components are described in the next section.

The UoM Digital Learning Transformation Roadmap

A digital learning roadmap is, therefore, an essential element, for an institution with a long-standing aim to establish itself a dual-mode university, and with a renewed aspiration to improve the overall students learning experience and outcomes through technology-enabled learner-centered methods. The main challenge is how to engage in a holistic digital transformation of the institutional teaching and learning system to have a single distributed technology-enhanced learning framework that allows its learners to learn anywhere, anytime within a student-centered, and outcomes-based framework. The UoM Digital Learning Roadmap is illustrated in the concept model as in Figure 1 below.

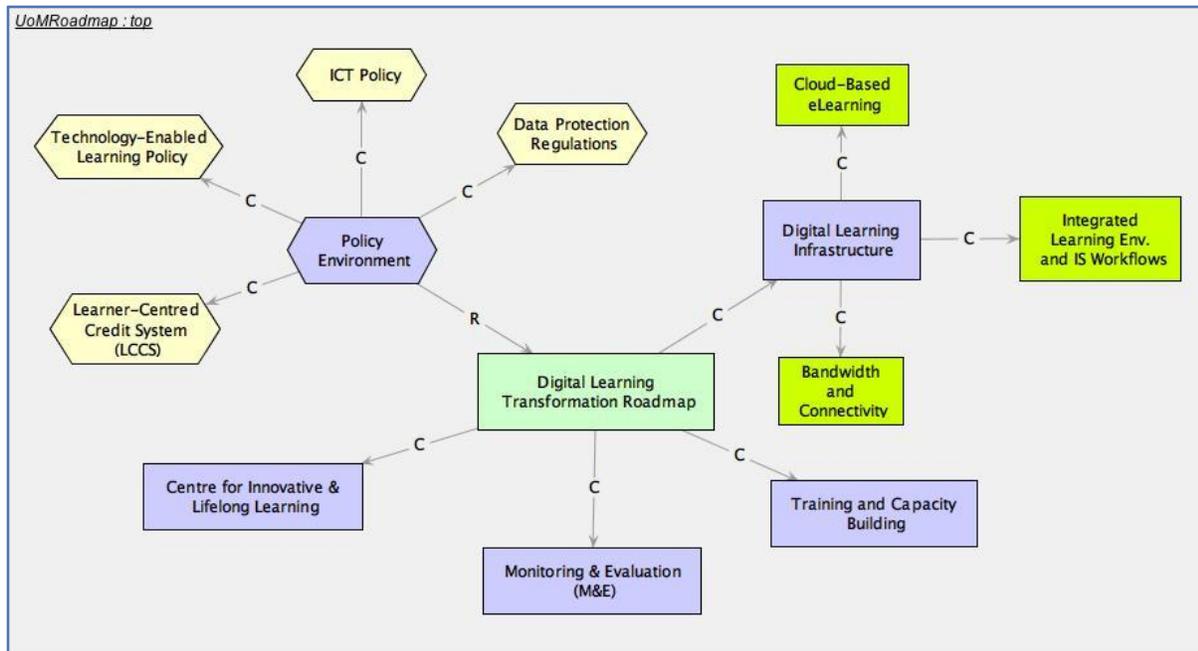


Figure 1: High-Level Structure of the UoM Digital Learning Transformation Roadmap

The policy environment

The policy environment layout the foundation of a successful digital learning transformation strategy taking into consideration the teaching and learning model in place, the technology-enabled learning plans within a well-defined framework of an overarching institutional ICT policy and the broader legislative provisions such as compliance with data protection regulations. The University of Mauritius has recently put in place two key instruments namely the learner-centered credit system and the technology-enabled learning policy to drive its digital learning transformation. These instruments also ensure that the process conforms to the quality assurance processes in place at the University.

The Digital Learning Infrastructure

For such digital learning transformation to occur, there is a need for a robust and resilient technical infrastructure to ensure a high level of secured and uninterrupted service. For the past few years, the eLearning servers hosted on-site have been experiencing increased traffic and load and has experienced some technical glitches that impact the user experience. Cloud-based eLearning solutions are considered a reliable alternative to be explored while there is a need to integrate learning environments with the main student information systems. At the same time, to improve on-campus user experience, WIFI coverage expansion and increased internet bandwidth are already being implemented.

Strategic re-alignment of the CILL

When the Centre was established in 2014, fostering industry linkages was one of the main objectives since the work-based learning project was under the Centre and that it was given the responsibility to administer a key training program in collaboration with the Mauritius Police Force. In 2017, the University-Industry Liaison Office (UILO) was set up as the focal point of contact of the University with industry, and student placement is now handled at the UILO. The CILL, therefore, has to re-align its focus to provide for the enabling environment and to support the institutional development in terms of curriculum development, technology-enabled learning, support faculties to offer fully online programs and most importantly to maintain rigor in research, development, and experimentation of new educational technologies.

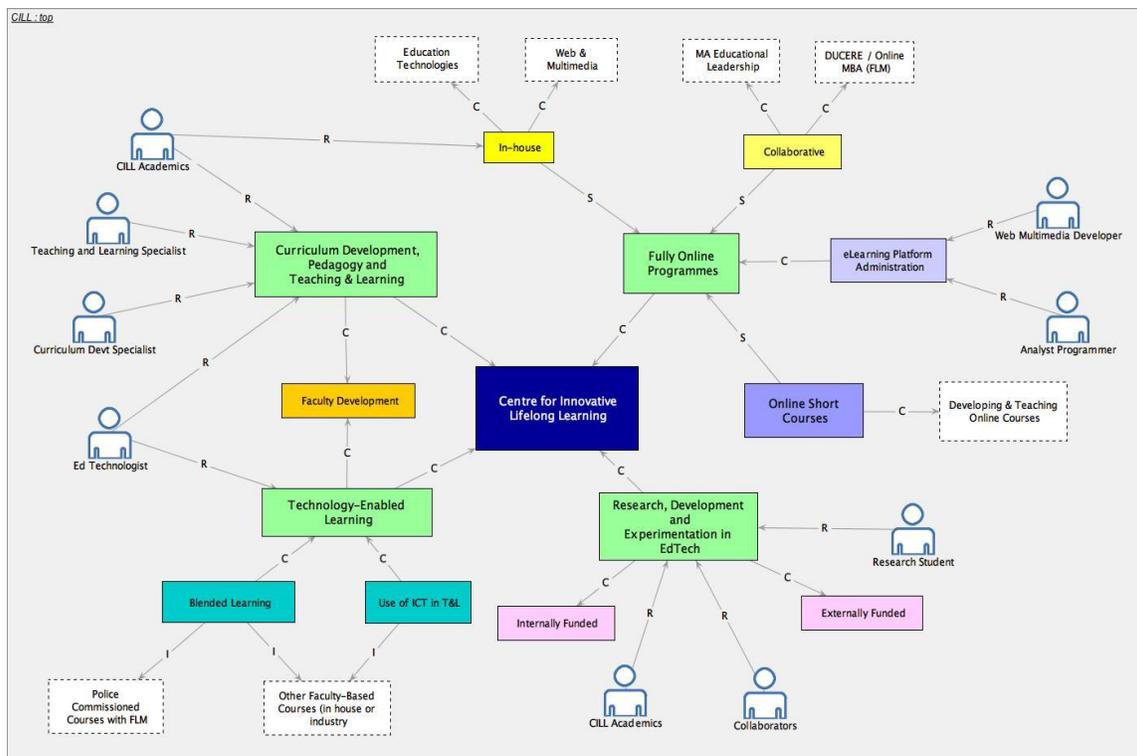


Figure 2: Re-alignment of the strategic focus of the CILL

Training and Capacity-Building

No institutional transformation can effectively take place without a good implementation plan that includes training and capacity-building of staff. A sustained training and capacity-building plan is an important element for success. Such training and capacity building should not just be one-off activities but needs to be sustained with a clear plan of expected outcomes and measurable impacts over time. Academics and support-staff alike need to be fully conversant with the institutional vision and be provided with the relevant skills, and tools to be efficient and for a smooth transition. Training on teaching and learning with technology, digital classroom management, use of

eLearning platforms, communication and collaboration tools such as GSuite or Office 365 and conduct of virtual lectures/webinars are important but these should not be restricted to those topics only. Academics and support staff need to be fully accompanied throughout the process.

Monitoring and Evaluation

The lack of monitoring and evaluation often leads to incomplete initiatives and plans which are not fully implemented. It is important to set measurable targets and to come up with a monitoring and evaluation plan to ensure the transformational process remains on track and as expected. This further has to be linked to a formal performance management system and to link the digital learning transformation initiative with appropriate reward and recognition mechanisms.

Discussion

While both arguments of Guri-Rosenblit (2005) and Bates (2005) about the distinct nature of eLearning and Distance Education remain valid even today, the relevance of the arguments in a technology-driven world is however debatable. In the context of digital networked learning through the internet, a learner engaged in "distance education" might not necessarily be separated in time due to real-time virtual communications that might be taking place. Furthermore, since both the learner and the teacher might be 'physically' distant, it can be argued that they are within the same 'hyperspace' in the pure digital sense. This makes the definition proposed by Homberg (1989) an obsolescent one in the digital age. The key question is whether the term distance learning or distance education is itself valid in the 21st century. As argued by Guri-Rosenblit (2009), distance education in its traditional form is still important in remote areas where connectivity is inexistent either due to a lack of infrastructure or due to lack of financial means of third-world countries.

On the one hand, open universities are more and more adopting e-learning and digital technologies for the dissemination of self-instructional materials while trying to provide student-student interactions and improve the student-teacher communication to address the feeling of isolation of many "distance" learners. On the other hand, more and more traditional universities are shifting away from the classic face-to-face teacher-centered systems to adopt more learner-centered approaches and rich pedagogies which are technology-enabled to improve student learning experiences. For example, as mentioned by White (2017), through the adoption of the flipped teaching method, traditional institutions are shifting the lectures or reading materials online, a feature which would characterize a classic operational mode of providers of distance education, while keeping classroom time to stimulate debate, discussion and critical thinking or simply as tutorial sessions.

The digital transformation of Education through state-of-the-art technological developments such as high-quality video conferencing over the internet, virtual reality and immersive media is blurring more and more the distinction between distance learning institutions and traditional or

dual-mode universities. With new educational models such as the 'micro-campus' concept and the ubiquitous nature of ICTs, the educational transaction is more and more distributed in nature, where learning can take place anytime and anywhere without being confined to the physical boundaries of the traditional classroom. However, institutions have to ensure that they do not fall into the 'technology trap', as highlighted by McAvania (2017), where they look at the technology in isolation rather than as from a systemic point perspective. While the issue that Universities irrespective of their status (traditional, distance-learning or dual mode) are facing are more linked to the adaptive challenges facing the higher education sector in the wake of the technological advancements, having recourse to short-term technical solutions (such as heavy upfront investment in high-end technology) might not necessarily lead to a sustainable and re-conceptualized educational ecosystem.

Conclusion

The University of Mauritius has come a long way since stepping into distance education in 1993 and subsequently into eLearning in its quest to consolidate its dual-mode status. With a renewed vision and a commitment to offering high-quality education, it is now re-orienting its strategy to promote the concept of distributed learning supported by a robust and resilient technology-enabled learning policy and implementation framework to operate within a global context. Learning design through innovative pedagogies remains, at the core of the educational transaction and transformation within a technology-enabled environment.

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